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ADHERENCE TO CUPPING PRACTICE GUIDELINES AMONG CUPPING PRACTITIONERS IN MALAYSIA

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***ABSTRACT**--Bekam (or cupping) practice guideline has been published by Traditional and Complementary Medicine Division Ministry of Health Malaysia, first edition of 2011, mainly to focus on proper handling of patients and clinical wastes to ensure safety of both practitioners and patients, in supplementary of optimizing patient care. This cupping practice guideline covers treatment criteria, treatment procedures, documentations and practice facilities. However, there is a scarce research revealing this issue as currently there are profuse emergences of blood borne infection diseases such as HIV/AIDS, Hepatitis B and C due to its invasiveness. Therefore, this study aimed to determine adherence towards practice guidelines among cupping practitioners in Malaysia, as well as to identify factors associated with it. A cross sectional study with random sampling was conducted among 114 cupping practitioners from all over Malaysia using self-administered adherence to practice guideline questionnaire, which consisted of 18 items with 5 Likert scales ranging from "never" to "very often". "Adherence to practice guideline" in this study is defined as practitioners who scored 90 marks to all 18 components of standard precautions in practice guidelines with cut-off point of 90. The mean age was 38 years old with majority of them were male (64.9%), Malay (99.1%), degree holder with various background (27.8%) and part timer (69.9%). Mean duration of working experience was 4 years. A total of 45.6% of respondents attended cupping training from as short as 1 day to 3 years in getting their certificate. Adherence to practice guideline among respondents was 5.3%. The highest adhered practice was wearing gloves during treatment (86.0%), while the lowest was documenting the estimated amount of blood that was released during cupping (19.4%). Multiple linear regression revealed part timers were less adhered to practice guideline as compared to full timers (P<0.001), and higher education (PhD, master and degree) were significantly higher in adherence score as compared to primary and secondary school leavers (P=0.001). Although Malaysian practitioners have lower adherence towards practice guidelines, they practiced well in most of the adherence components per se. Specific measures addressing those issues should be disseminated and implemented to augment the adherence towards practice guidelines.*

***Keywords**--adherence, bekam, cupping, practice guideline, Malaysia*

I. INTRODUCTION

Cupping therapy (or *bekam*) can be defined as therapeutic treatment using evacuated cups being placed to intact or scarified skin in order to withdraw blood and interstitial fluid filled with causative pathological substances (1). The cups may involve glass, plastic or bamboo suctioned on skin to remove toxin and stagnation (2). It has

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been practiced since thousands of years ago by various traditional and complimentary practitioners globally since Ancient Egypt. Among Muslims; it has been regarded as one of the healing method and preservation of health practiced by the prophet (Peace be Upon Him) and his companions (3).

In Malaysia, there are various centres and practitioners providing cupping services to help public in maintaining good health. According to National Health & Morbidity Survey in 2015, an estimated 29.25% of the population had ever used any traditional and complementary medicine practices with consultation and 21.51% of the population used traditional and complimentary medicine within the last twelve months with consultation (4). Among them, 6.45% used Malay cupping for minor illnesses such as myalgia, joint and muscle ache, back pain and cough. It shows that cupping therapy is still on demand and government has taken initiative to provide guidelines for practitioners to minimize the variation in practice in order to protect the users.

Clinical practice guideline is a systematically developed criteria to help practitioners and patients to decide on the appropriate treatment for respective clinical situation (5). The first edition of cupping practice guideline in Malaysia has been published by Traditional and Complementary Medicine Division, Ministry of Health Malaysia in 2011. This guideline mainly focusses on proper handling of patients and clinical wastes to ensure safety of both practitioners and patients, in supplementary of optimizing patient care. In this guideline encompasses several treatment criteria such as indications, contraindications, recommended time, precautions and side effects of cupping therapy. Also, it includes treatment procedure which consist of the apparatus, points application, standard precautions, duration, monitoring, referral, documentations and practice facilities. Apart from that, this guideline also encompassed of graphic illustrations on sterilization and disinfection techniques, standard precautions in healthcare, disposal of infectious clinical waste, Environmental Quality Act 1974, clerking form, consent form and cupping apparatus. This practice guideline is crucial to integrate the evidence-based medicine into practice.

Meanwhile, adherence can be explained as someone complying or behaving exactly according to a regime, advice or belief. Adherence to practice guideline is usually regarded to quality of care as this is one of the indicators in attaining the best decision making. As there is scarce literature available indicating level of adherence to practice guideline among cupping practitioners, compliance to standard precautions among healthcare workers were referred as evidence due to comparable work setting. A previous study conducted among general practitioners stated that 35% of the respondents had difficulties in changing routine and habits to follow guideline with mean perceived adherence was 77% (6). In another systematic review on sustainability of adherence to practice guideline in medical care, it was discovered that only 7 out of 18 evaluations were sustained in the long term (7). It showed only 39% managed to sustain the adherence towards practice guideline in the long run. Furthermore, a previous study conducted among healthcare workers in Ethiopia, depicted that adherence to standard precautions was very low at 12% (8). In this study, adherence was determined as healthcare workers who always complied to the precautions.

The reasons why adherence has been brought into light were because the existence of various methods and techniques in cupping, and non-standardized method of sterilization and disinfection. As according to prior study, 58% of public in Saudi Arabia were having the thoughts that cupping therapy leads to side effects (9). In addition, a previous systematic review conducted to determine adverse events related to cupping therapy reported the events as anaemia (n=5), factitial panniculitis (n=2) and herpes viral infection (n=2) (10). It is therefore important that

cupping practitioners fully adhere to a proper guideline. Hence, this study described adherence towards practice guidelines and sociodemographic factors associated with it among cupping practitioners in Malaysia.

II. MATERIALS AND METHODS

A cross sectional study was conducted among cupping practitioners who registered with *Gabungan Pertubuhan Pengamal Perubatan Melayu Malaysia (GAPERA)*, a body which registered with Traditional & Complimentary Medicine (T&CM), Ministry of Health Malaysia. This is the only registered body who cater for all Malay T&CM modalities. In echoing of World Health Organization (WHO) Traditional Medicine Strategy 2014-2023, it is to strengthen the quality assurance, safety, proper use and effectiveness of T&CM products, practitioners and practices, hence this initiative was developed (11). The researcher attended two events organized by *GAPERA* which gathered all cupping practitioners from across Malaysia to collect data. Systematic random sampling was applied to select respondents in the events.

Data were collected using self-administered questionnaire. The adherence questionnaire was developed based on the Malaysian cupping practice guidelines with acceptable validity and reliability. Adherence questionnaire consisted of 18 items of adherence, as depicted in practice guideline 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”. The minimum score was 18 while the maximum was 90.

The outcome or dependent variable in this study was adherence to practice guidelines which was defined as respondents who scored 90 marks (respondents who rated “very often” to all adherence components). The independent variables were age, gender, education level, income, working experiences, employment status, and number of patients in a week. The score was then classified into dichotomous (adherence/ non-adherence) using cut-off point of 90. This method of scoring is coherent with prior study conducted to measure compliance towards standard precautions (8,12).

Descriptive statistics were used to describe the mean, standard deviation, frequency and percentage of the variables. Univariable analysis were conducted to check the initial relationship between dependent and each independent variable. Simple linear regression was performed to determine the association of age, working experience, income and number of patients per week with adherence score. Independent sample T test was done to identify relationship of gender and employment status with adherence score, meanwhile ANOVA for the association between education level and adherence score. Multiple linear regression analysis was computed to determine factors associated with adherence after controlling for confounders, with significant P value at <0.05.

Ethical approval was obtained from Ethical Review Committee of Universiti Sains Islam Malaysia, 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.

III. RESULTS

The total respondents in this study was 114 practitioners. As shown in Table 1, the mean (SD) age of respondents was 38(11) years old. Majority of them were male (64.9%), Malay (99.1%), and degree holders from

various backgrounds (27.8%). Median (IQR) income of the respondents was RM1500(2580). Meanwhile, the mean (SD) duration of their working experiences was 4(2.6) years. Regarding to employment status, majority (69.9%) of the respondents were part timers and half of them never attended cupping training (54.4%). Mean (SD) number of patients they attended weekly was 9(9.0) patients.

Table 1: Sociodemographic Characteristics (n=114)

Sociodemographic variables	Mean (sd)	n (%)
Age (years)	38 (11)	-
Gender		
Male	-	74 (64.9)
Female		40 (35.1)
Race		
Malay	-	113 (99.1)
Chinese		1 (0.9)
Education level		
PhD	-	1 (0.9)
Master		3 (2.8)
Degree		30 (27.8)
Diploma		23 (21.3)
Certificate (Technical & vocational)		23 (21.3)
Primary & secondary school		28 (25.9)
Working experiences (years)	4 (2.6)	-
Employment status		
Full time		34 (30.1)
Part time		79 (69.9)
Attended cupping training		
Yes		52 (45.6)
No		62 (54.4)
Number of patients/ weeks	9 (9.0)	-
Income (RM)	1500 (2580)*	-

*median (IQR)

Table 2: Adherence to Practice Guidelines Items

No	Item	n (%)				
		Never	**Rarely**	**Sometimes**	**Frequent**	**Very often**
1	I sterilized the cups of cupping after each treatment session.	3 (2.6)	1 (0.9)	7 (6.1)	19 (16.7)	84 (73.7)

2	I used disposable lancet to prick the skin.	12(10.5)	2 (1.8)	1 (0.9)	9 (7.9)	90 (78.9)
3	I washed hand according to 7 steps of proper hand washing before handling each patient.	2 (1.8)	0	7 (6.1)	34 (29.8)	71 (62.3)
4	I washed hand according to 7 steps of proper hand washing after handling each patient.	1 (0.9)	1 (0.9)	8 (7.0)	30 (26.3)	74 (64.9)
5	I washed hand according to 7 steps of proper hand washing when exposed to blood or body fluids.	1 (0.9)	0	4 (3.5)	29 (25.4)	80 (70.2)
6	I washed hand according to 7 steps of proper hand washing after disposing the gloves.	1 (0.9)	1 (0.9)	7 (6.1)	35 (30.7)	70 (61.4)
7	I wore gloves during treatment	1 (0.9)	0	7 (6.1)	8 (7.0)	98 (86.0)
8	I wore face mask during treatment.	5 (4.4)	2 (1.8)	17 (14.9)	22 (19.3)	68 (59.6)
9	I mopped the spill area using chlorine (eg chlorox).	0	3 (2.6)	8 (7.0)	36 (31.6)	67 (58.8)
10	I disposed the contaminated waste of blood or any blood products into the yellow ‘clinical waste'.	18 (15.8)	8 (7.0)	12 (10.5)	31 (27.2)	45 (39.5)
11	I cleansed the skin with 70% alcohol before scarification.	7 (6.1)	3 (2.6)	9 (7.9)	33 (28.9)	62 (54.4)
12	I applied each cup not more than 15 min.	0	3 (2.6)	15 (13.2)	29 (25.4)	67 (58.8)
13	I monitored patients after cupping procedure to prevent from excessive bleeding.	2 (1.8)	1 (0.9)	9 (7.9)	15 (13.2)	87 (76.3)
14	I advised patients to refrain from work for up to 12 hours post-procedure, especially if the total amount of blood drawn is the maximum allowed (450ml).	14(12.3)	4 (3.5)	10 (8.8)	30 (26.3)	56 (49.1)
15	I recorded the number of cups used during cupping.	6 (5.3)	5 (4.4)	14 (12.3)	17 (14.9)	72 (63.2)
16	I recorded the location of the cups used during the treatment.	9 (7.9)	9 (7.9)	14 (12.3)	22 (19.3)	60 (52.6)
17	I recorded the estimated amount of blood that was released during cupping.	38(33.3)	22(19.3)	25 (21.9)	7 (6.1)	22 (19.4)

18	I recorded any complications accordingly.	17(14.9)	8 (7.0)	18 (15.8)	29 (25.4)	42 (36.8)

With regards to adherence, as shown in Table 2, majority of respondents (86%) wore gloves during treatment and 78.9% used disposable lancet to scarify the skin during treatment. It was then followed by 76.3% of them monitored patients after cupping procedure to prevent from excessive bleeding. In contrary, they were lacking in several components of adherence depicted by lower proportion. The lowest proportion was 19.3% of respondents recorded the estimated amount of blood that was released during cupping. In terms of recoding for any complications, only 36.8% of respondents adhered to that, and 39.5% of respondents 'very often' disposed the blood and body fluids residuals into the yellow 'clinical waste' bin.

In overall, following summation of all 18 adherence items, the minimum score was 31 and the maximum was 90. The higher the score indicates better adherence to practice guideline. The median score for adherence was 79. Respondents who adhered to practice guidelines (as in definition) were only 5.3% (Table 3).

Table 3: Overall Adherence to Practice Guidelines

Adherence to practice guideline	Frequency (n)	Percentage (%)
Adherence	6	5.3
Non-adherence	108	94.7
Total	114	100

As shown in Table 4, there were significant association between adherence score and all independent variables such as age, working experience, number of patients weekly and income (P<0.05)

Table 4: Univariable Analysis (Simple Linear Regression)

Variables	b	95% CI	P value
Age	0.25	0.08, 0.42	0.005
Working experiences	1.45	0.71, 2.19	<0.001
Number of patients/ weeks	0.41	0.19, 0.62	<0.001
Income	0.001	0.0003, 0.002	0.008

Furthermore, as demonstrated in Table 5, gender and employment status were significantly associated with adherence score (P<0.05), however education level was not significant (P>0.05).

Table 5: Univariable Analysis (Independent T test and ANOVA)

Variables	Mean (sd)	t (df) F (df)	P value
Gender			
Male	73.9 (11.4)	-2.9 (112)	0.004

Female	80.1 (8.8)		
Education level			
PhD/Master/Degree	79.9 (8.2)	2.5 (3)	0.066
Diploma	76.0 (12.1)		
Certificate (Technical & vocational)	73.7 (9.2)		
Primary & secondary school	73.5 (12.7)		
Employment status			
Full time	81.7 (6.7)	4.6 (101.6)	<0.001
Part time	73.7 (11.6)		

As in multiple linear regression analysis, there was a significant association between employment status and adherence score (P=0.001), as shown in Table 6. Part timers were having less adherence score as compared to full time practitioners by 8 scores. Moreover, there was a significant association between education level and adherence score. Education level was categorized into 4 groups, which consist of PhD, master and degree in group 1, diploma in group 2, vocational certificate in group 3, and primary and secondary school in group 4 (reference group). The higher education attainment with PhD, master and degree holders had significantly higher adherence score as compared to primary and secondary school leavers (P=0.001) by 8 scores. Meanwhile, diploma holder among cupping practitioners had significantly higher adherence score than practitioners with primary and secondary school education (P=0.035) by 7 scores. However, there was no significant association identified between vocational certificate graduates and primary and secondary school leavers practitioners (P>0.05).

Table 6: Factors Associated with Adherence to Practice Guideline using Multiple Linear Regression (Stepwise Selection Method)

Variables	**MLR[a]**			
	Adj. b[b]	**95% CI**	**t stat**	**P value**
Employment status	-8.85	-13.67,4.00	-3.67	0.001
PhD/master/ degree	8.47	3.77, 13.18	3.62	0.001
Diploma	7.14	0.54, 13.74	2.17	0.035
Certificate (Technical & vocational)	1.09	-6.52,8.70	0.28	0.774

[a]Multiple linear regression (R2=; The model reasonably fits well; Model assumptions are met; There is no interaction between independent variables and no multicollinearity problem)

[b]Adjusted regression coefficient

IV. DISCUSSION

4.1Adherence to Practice Guideline Items

Cupping practitioners are always required to adhere to practice guideline and one of its components is standard precaution which include gloving. This study found that majority of the practitioners (86.0%) wore gloves during treatment procedure. Gloves should be worn when there is possible exposure to blood or bodily fluid while 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 study is in congruent with a study from hospitals in South India, stated that 77% of healthcare personnel wore glove during performing procedures (12). Since there were limited literature discussing on the standard precaution among T&CM practitioners, explicitly amid cupping practitioners, it is believed that in clinical setting such as hospitals and clinics would have the similar standard, as both dealing with 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 (8). Another finding from Minnesota depicted 96% of healthcare workers wore disposable gloves whenever needed (13). However, only 35% of healthcare practitioners did hand gloving during procedure in previous study (14).

Next adherence was 78.9% of them used disposable lancet to puncture the skin. Lancet should be sterile 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 (15). High adherence score might be due to repeated education and training conducted by Ministry of Health and GAPERA itself (16). 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 (8).

Another adhered 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 (8). 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 had no proper clinical training for some of them 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 (1). 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 when mishap happened.

In addition, minimal proportion (36.8%) of respondents were recorded having any 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 (17). Therefore, to reduce severity of the marks, practitioners needs 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 (17). 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 study found 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. 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.

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 (18). 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%) (18). 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 (19). Pertinent to the Environmental Quality Act 1974, it was 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 (1).

4.2 Overall Adherence Towards Practice Guidelines

In this study, only 5.3% of respondents were fully adhered to practice guidelines. This finding is in consistent with prior study where the overall compliance to universal precautions guideline among healthcare workers in Pakistan depicted was only 6.6% (12), and 12% of healthcare workers at Northwest Ethiopia (8). On the contrary, in another study conducted from the same vicinity, 65% of respondents had complied to standard precaution practices among healthcare workers (20). Besides, a prior study conducted among healthcare workers in Malaysia demonstrated that 34% adhered to universal precautions practices (21). The small percentages of respondents who

adhered to practice guidelines maybe due to lack of management support, including financial constraint towards safety. All cupping practitioners need to register to any TC&M practitioner bodies appointed by Ministry of Health Malaysia in order to self-regulate the practitioners through the compliance of ethics and practices. There are eight different appointed bodies representing different modalities and *GAPERA* is one of them. Any recent updates or formal education and training should be coming from the body. Previous study conducted among healthcare providers in a hospital in Batu Pahat showed that 37% of respondents never received any training related to clinical waste management in hospital (22). A supporting result has been observed in an Ethiopian study in which management support positively impacted on the adherence towards standard precautions guideline (8). The bodies are accountable to build safety workplace climate for the practitioners and patients in general. Higher authority also can move forward to enhance the adherence by preparing a rewarding system for those who consistently adhering to the guidelines in everyday practice. This can be achieved by regular inspection and checking to the premises. Conferring to national data, an estimated 824 T&CM premises were inspected in the year 2011, with the highest area inspected was at Klang Valley with 381 premises (23). Moreover, the finding could also be explained by the fact that they have insufficient budget for implementing some of the components in the guidelines.

4.3 Factors Associated with Adherence Towards Practice Guidelines

In this study, only two factors were found to be associated with adherence towards practice guideline which were education level and employment status. Preferably, a cupping practitioner ought to have a proper education and vast of working practices. 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 (1). T&CM of MOH has set a benchmark of having a diploma or bachelor's degree in relevant studies to proceed to be a cupping practitioner. This study discovered that practitioners who hold higher education level in any fields like PhD, master and diploma were significantly adhered to practice guideline as compared to lower education as in 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 (8). 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 enhance new knowledge and skill as they effortlessly comprehend basic principles of the guideline and blend it consistently in their daily practice. Moreover, the more knowledgeable the practitioners are the more confident they will be in delivering the care.

Furthermore, being indulged in full time working had greater adherence than those part time practitioners. This is in consistent with findings from North India showed that compliance were well among those who had been in the job for a longer period of time (p=0.014) (24). The probable elucidation might be because they were able to focus on their daily work with greater responsibilities and able to adhere fully to the guidelines. This is because according to McGovern et al., healthcare workers who worked for more than 5 years were 1.7 times more likely to comply with guidelines than those who worked in lesser year (13). This association proposes that practitioners with more time on the job had the chance to integrate experience and judgement into their practice by incorporating the guideline usage in patient care.

V. LIMITATIONS AND CONCLUSIONS

One of the limitations is since this is a cross sectional study design, it is limited in determining contemporaneous associations as compared to causal relationship. Inferences from this study may provide a baseline knowledge and give a contribution to generate future hypothesis such as in prospective longitudinal study. Additionally, recall bias could be a problematic due to total reliance on self-report data in this study. However, the questionnaire has gone through validation process as self-rated tool in measuring adherence among practitioners. Another limitation is the sample size was not achieved its prior calculated sample. The reason because of too small population of cupping practitioners in Malaysia and low response rate among them. According to T&CMD Annual Report, an estimated 4910 of various practitioners, not limited to only cupping practitioners had voluntarily registered with e-PENGAMAL, and cupping practitioners might be lesser than that.

In conclusion, overall adherence to practice guideline was very low among cupping practitioners in Malaysia. Education level and employment status of the practitioners were significantly influenced the adherence. Nevertheless, they practiced well in most of the adherence components per se. Specific measures addressing those issues should be disseminated and implemented to augment the adherence towards practice guidelines.

REFERENCES

1. Tradisional BP. Garis Panduan Amalan Perubatan Tradisional & Komplementari : Bekam. 2013.
2. Jadhav DK. Cupping Therapy : An Ancient Alternative Medicine. J Phys Fitness, Med Treat Sport. 2018;3(1):1–4.
3. El-shanshory M, Hablas M, Shebl Y, Fakhreldin R, Attia M, Ayat M, et al. Al-hijamah (wet cupping therapy of prophetic medicine) significantly and safely reduces iron overload and oxidative stress in thalassemic children : a novel pilot study. J Blood Med. 2018;241–51.
4. Institute for Public Health (IPH). National Health & Morbidity Survey (NHMS 2015) Traditional & Complimentary Medicine. Vol. Volume IV, Ministry of Health. 2015.
5. Shaneyfelt TM, Mayo-smith MF, Rothwangl J. Are Guidelines Following Guidelines ? The Methodological Quality of Clinical Practice Guidelines in the Peer-Reviewed Medical Literature. Am Med Assoc. 1999;281(20):1900–5.
6. Lugtenberg M, Burgers JS, Besters CF, Han D, Westert GP. Perceived barriers to guideline adherence : A survey among general practitioners. BMC Fam Pract. 2011;12(98).
7. Ament SMC, Groot JJA De, Maessen JMC, Dirksen CD, Weijden T Van Der, Kleijnen J. Sustainability of professionals ' adherence to clinical practice guidelines in medical care : a systematic review. BMJ Open. 2015;
8. Haile TG, Engeda EH, Abdo AA. Compliance with Standard Precautions and Associated Factors among Healthcare Workers in Gondar University Comprehensive Specialized Hospital, Northwest Ethiopia. J Environ Public Health [Internet]. 2017/01/16. 2017;2017:2050635. Available from: https://www.ncbi.nlm.nih.gov/pubmed/28191020
9. Al-yousef HM, Wajid S, Sales I. Knowledge , attitudes , and perceptions of cupping therapy (CT) in Saudi Arabia-a cross-sectional survey among the Saudi population . Biomed Res. 2018;29(January):3351–5.

10. Kim T, Hyung K, Choi J, Soo M. Adverse events related to cupping therapy in studies conducted in Korea : A systematic review. Eur J Integr Med [Internet]. 2013;1–7. Available from: http://dx.doi.org/10.1016/j.eujim.2013.06.006
11. Malaysia M of H. Traditional and Complementary Medicine (T&CM) Act. 2015.
12. Yousafzai MT, Janjua NZ, Siddiqui AR, Rozi S. Barriers and Facilitators of Compliance with Universal Precautions at First Level Health Facilities in Northern Rural Pakistan. Int J Health Sci (Qassim). 2015;9(4):389–99.
13. Mcgovern PM, Vesley D, Kochevar L, Gershon RRM, Rhame S, Anderson E. Factors Affecting Universal Precautions Compliance. 2000;15(1):149–61.
14. Chang DTS, Lai NM, Ng NSQ, Ho WP, Tan TY, Chua J, et al. Adherence To Major Standard Precautions : An Audit Of Venepuncture And Intravenous Cannula Insertion In The Paediatric Unit Of Hospital Sultanah Aminah , Johor Bahru. Malaysian J Paediatr Child Heal. 2012;
15. Luo Y, He GP, Zhou JW, Luo Y. Factors impacting compliance with standard precautions in nursing, China. Int J Infect Dis [Internet]. 2010;14(12):e1106–14. Available from: http://dx.doi.org/10.1016/j.ijid.2009.03.037
16. Report A. Traditional an Complementary Division (T&CMD) Annual Report 2015. 2015.
17. Chirali IZ. What to Expect During and after Cupping Therapy. Tradit Chinese Med Cupping Ther Third Ed. 2014;87–90.
18. Sudhakar V, Chandrashekar J. Dental health care waste disposal among private dental practices in Bangalore City, India. Int Dent J. 2008;58(1):51–4.
19. Razali SS, Ishak MB. Clinical waste handling and obstacles in Malaysia. J Urban Environ Eng. 2010;4(2):47–54.
20. Beyamo A, Dodicho T, Facha W. Compliance with standard precaution practices and associated factors among health care workers in Dawuro Zone , South West Ethiopia , cross sectional study. BMC Health Serv Res. 2019;4:4–9.
21. Aziz NA, Rahman AA, Othman N. Knowledge of blood-borne infectious diseases and the practice of universal precautions amongst health-care workers in a tertiary hospital in Malaysia. Southeast Asian J Trop Med Public Health. 2010;(September).
22. Nazli SN, Karuppannan S, Omar D. Knowledge and Awareness of Clinical Waste Management among Medical Practitioners in Hospital Batu Pahat, Johor. Int J Innov Manag Technol. 2014;5(2):5–8.
23. T&CM Division. Annual Report 2011 T&CM. 2011.
24. Kermode M, Jolley D, Langkham B, Thomas MS, Holmes W, Gifford SM. Compliance with Universal/Standard Precautions among health care workers in rural north India. Am J Infect Control. 2005;33(1):27–33.