Perceptions on CPD Programs and Knowledge and Perception on Introducing a Process for Medical License Revalidation in Sri Lanka – A cross sectional study among medical professionals in Sri Lanka

Dr. H. K. M. M. B. Kavisekara[*] / Dr W D N Sanjeewani[**]

*Medical Director /Doctoral Trainee, Ministry of Health - Sri Lanka/ London Metropolitan University – United Kingdom
**Medical Officer, Ministry of Health – Sri Lanka

Abstract- CPD (CPD) is very important for medical professionals. It improves patient safety and other patient care outcomes. Revalidation is a process to ensure standard of practicing medical professionals. Sri Lanka currently does not have a proper CPD process or a revalidation system for medical professionals.

In this descriptive cross sectional study, medical professionals were surveyed on perception to introducing CPD program. In addition, it is also surveyed on knowledge of revalidation and perception to introducing a revalidation process. A self-administered questionnaire was given to 422 medical professionals from teaching hospital in central province and full time general practitioners in the province. In addition, in-depth interviews with key stakeholder (SLMC, SLMA, GMOA, Ministry of Health, Professional colleges) were also held.

On analysis, it was found that medical professional have very good perception on CPD program with average score of 85.95. Knowledge on revalidation programs were 64.24. However, perception to introducing a revalidation programs were comparatively low with a mean of 49.64.

Significant differences on average scores observed among different categories of medical professionals. However, there were no significant differences based on other demographic characteristics.

Based on the results, we recommend starting a formal CPD program in the country with collaboration of stakeholders. However, there is no place for revalidation at present context. Revalidation process should only be introduced only after establishment of sustainable CPD program in entire country.

Index Terms- CPD, Revalidation, Medical Professionals

I. INTRODUCTION

Introduction to Medical Systems

There are more than 100 different healing systems in the world (Leslie, 1980). Western medicine or allopathic system is also termed as conventional medicine and all others are termed as complementary andalternative medical (CAM) systems. Some complementary and alternative therapies such as Ayurveda and traditional Chinese medicine have non-western origin. They are entirely different from conventional system as they use theoretical basis, diagnostic systems and therapeutic practices (Institute of Medicine, US National Academics, 2012).

Asiahave more healing systems than any other continent. India, China and Middle East countries have number of different healing systems with merging boundaries of systems (Hsu & Barrett, 2008).

Sri Lanka also have different healing systems and includes western medicine, Ayurveda, Siddha, Unani. Western medical system remains as first choice among most Sri Lankans. However, there is significant utilization of alternative medical systems in the country (Weerasinghe & Fernando, 2010).

Introduction to Western Medical System

Before the 19th century, heroic medicine was dominant in Europe and North America. Heroic medicine comprises of dangerous and unproven practices. However, this system is almost replaced by western medicine (Singh & Ernst, 2008). Hippocrates is considered as father of western medicine and history is dated back to 460 BC (Grammaticos & Diamantis, 2008). Western medical system has now the most dominant healing system in the world.

Medical Education, Training& Registration

A typical medicine course at university is 5 – 6 years. At the completion of program Bachelor of Medicine and Bachelor of Surgery is awarded. There are regulatory bodies to regulate medical registration and medical education. For example, General Medical Council (GMC), is the statutory body responsible for medical registration in UK, needs further two years of foundation training before full registration as a medical professional (General Medical Council, 2009). Most countries around the world have similarprograms and processes.

In Sri Lanka, medical undergraduate program takes about 5-6 years and one-year supervised internship is required before obtaining full registration as a medical practitioner. Foreign university graduates requires passing of EPRM test and one year supervised internship (Nonis & Herath, 2011).

Diversity and Dynamicity of Medical Profession

Medical professional are practiced in very diverse condition. Provision of medical care can be at primary, secondary or tertiary care levels. Further, some medical professionals are involved in public health, while majority in

curative health. In addition, there are number of specialities and subspecialties of medicine.

Current practice of western medicine is evidence based. It is defined as the careful, explicit and judicious use of current best evidence when making decisions about the care of individual patients (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). Thus, updating knowledge and skills should be a continuous process and should not be stopped until the individual doctor is retired from practice.

Introduction to Revalidation

Revalidation is defined as the process by which licensed Medical Professionals demonstrate, on a regular basis, their knowledge is up to date and they are fit to practise. Medical revalidation improves confidence placed on them by patients knowing that their medical professional is regularly checked by their regulators (GMC, Revalidation, 2013).

United Kingdom, United States of America, Canada and Australia have made it a legal requirement to revalidate medical licenses from time to time. Asian countries such as Singapore and Thailand has also followed the same path.(Epa, 2003). In India, the proposals for revalidation system has already put forward (Mudur, 2005).

Justification

Allopathic health care system in Sri Lanka has been established and developed from during the British colonial period and is similar to that of United Kingdom. Although, a revalidation system is not available Sri Lanka at present.

In the United Kingdom, GMC started the revalidation process in December 2012 and they plan to revalidate most of the licensed medical professionals by March 2016 (GMC, GMP Framework for appraisal and revalidation, 2013). Revalidation process of GMC has three main aims (Cheshire, 2009).

1. To confirm that licensed medical professionals practice in accordance with the GMC's generic standards
2. To confirm that they meet the standards appropriate to their specialty
3. To identify, investigate, and remedy, poor practice

However, development of revalidation at GMC took more than 10 years, which included series of research studies and number of white papers(Cheshire, 2009). GMC also recognized the diversity of settings that medical professionals practice. Thus, they identified a number of key principles that are relevant (GMC, 2011).

The Sri Lanka Medical Council (SLMC) is the statutory body established for protecting health care seekers by ensuring the maintenance of academic and professional standards, discipline and ethical practice by health professionals. The Medical (Amendment) Act No. 40 of 1998 established the SLMC (SLMC, 2013).

There are clear rules and regulations guiding registration of medical practitioners in Sri Lanka. All medical practitioners need to renew their licences every five years.However, it does not scrutinize ability to practice by medical professionals.

In addition, there is no revalidation system or formal continuous professional development (CPD) program for medical professionals in the country (Sri Lanka Medical Association, 2010). Since, medicine is changing rapidly with new knowledge added every day, there are serious concerns on knowledge and practices of Sri Lankan medical professionals. A medical professional qualified in his late 20's can practice medicine more than three decades later without updating his knowledge.

In addition, globally revalidation systems are being implemented which are consisting of CPD programs and performance appraisals. Therefore, Sri Lankan medical professionals who need to work overseas may have to provide revalidation status in the future (Epa, 2003). Therefore, revalidation will help in career development in addition to maintaining medical standards and patient safety.

SLMChas recognized the need of revalidation and CPD program and have obtained the support from Ministry of Health and professional colleges to develop such a system. In fact, they formed a revalidation committee in 2003. However, resistance from various groups have obstructed its establishment (Epa, 2003).

However, there has been no formal assessment carried out to measure knowledge of medical professionals and their perception with regard to revalidation and CPD programs in Sri Lanka. Thus, an assessment could provide an understanding of their views on CPD program and revalidation of medical licence. This could help to develop and implement a sustainable revalidation and CPD programs suitable to Sri Lanka.

Objectives

General Objective

To determine the perceptions on introducing a CPD program and to determine knowledge and perception on introducing a revalidation program for medical licensing in Sri Lanka

Specific Objectives

- To describe perception on CPD Programs among medical professionals
- To describe the knowledge on medical license revalidation program among medical professionals
- To describetheir perception introducing amedical license revalidation process
- To determine differences in knowledge and perception on revalidation among different categories of medical professionals
- To recommend a method on developing and introducing a medical license revalidation process

II. REVIEW OF LITERATURE

All medical professionals who practices western medicine are usually takes Hippocrates oath or its derivatives as recommended by world medical association. The current medical declaration is adopted at the 173rd world medical assembly in 2006 in France (World Medical Association, 2006). However, there is a continuous debate on appropriateness of acts of individual doctors as well as professional organizations. The public is now increasingly question about competency of their doctors. Is study carried out in USA revealed that nearly 5% of

patients had complains of medical malpractices (Chandra, Durand, & Dickens, 2009). In addition, there are number of famous cases against unethical and illegal actions of doctors. In a study carried out in Birmingham, United Kingdom has revealed that the public wants the doctors to be charged with manslaughter in some case of malpractice (Kay, Green, McDowell, & Ferner, 2008 Oct).

Professor Carlo Fonseka has published an article on five medical errors that he has made during his career as a physician and in fact, there were no lawsuits against him (Fonseka, 1996 December). Professor Ravindra Fernando has discussed a famous medical negligence case in Sri Lanka describes how public and media perception on negligence by doctors (Fernando, 2002 Dec).Therefore, minimizing medical negligence and improved patient safety is very important in current medical practice.

Continuing medical education (CME) is a specific form of continuing education that helps professionals in the medical field to maintain competence and learn new developing areas of their field. CME activities take place in different formats, such as live events, written publications, online programs and electronic media. CME content is developed, reviewed, and delivered by experts in their individual clinical areas (Ahmed & Ashrafian, 2009). CPDis very similar to CMEbut encompass broader perspective. However, critics of CME complains that pharmaceutical firms often use financial aid to bias CME towards marketing their products (Lewis, Julie, & Taitsman, 2009).

A study conducted by World Health Organization (WHO) revealed that educational meetings alonecould result in small to moderate increases in the adoption by health-care professionals of desired behaviors. WHO further concluded that there were only few studies on this topic from low- and middle-income countries and therefore, it is difficult to interpret the significance of the findings (Smith, Brown, & Khanna, 2013).

Problem based learning is a method of interactive learning, said to be more effective than traditional methods in terms learning skills, and is more pleasurable (Dolmans & Schmidt, 1996). However, Cochrane review concluded that there is limited evidence that problem based learning increased doctors' knowledge, performance, and patients' health more than no educational intervention at all (Smits, Verbeek, & Buisonjé, 2002).

Another Cochrane study shows that interactive CME activities shows evidence of performance improvement while traditional didactic lectures do not improve the performance (Davis, et al., 1999). Further, it is shown that broadly defined CME interventions using practice-enabling or reinforcing strategies consistently improve physician performance and health care outcomes (David, Davis, Thomson, Oxman, & Haynes, 1992).

CPD is becoming a popular mode of learning worldwide. Professional activity helps to maintain, develop or increase knowledge, problem solving, technical skills and professional performance standards with the aim that physicians can provide better healthcare. Research studies conducted in different settings have shown that locally designed pay for performance systems can have better results (Kristensen, McDonald, & Sutton, 2013). In a study conducted in India has shown that CPD programs helps improve healthcare outcomes and patient safety. (Beshyah, Saadi, & Sherif, 2012).

Many professional organizations in Sri Lanka have started professional development programs for their members to uplift the standard of their profession. Institute of certified management accountants has published guideline on CPD program for their members (Institute of Certified Management Accountants, 2009). The Institute of Engineers Sri Lanka also formed a CPD committee and introduced an online CPD program for their members (IESL, 2013).

SLMChas recognized the need of CPD program and have obtained the support from Ministry of Health and professional colleges to develop such a system. In fact, they formed a revalidation committee in 2003 (Epa, 2003). However, due to many reasons the committee could not establish a sustainable CPD program in the country.

A study conducted among dental professional in Sri Lanka has revealed the need of CPD program and Sri Lanka dental association has taken initiatives to develop CPD program for dental doctors (Dissanayake, 2008). A study conducted in western, central and northern provinces of Sri Lanka has examined different type of factors affecting professional development of medical profession and the ways of their behavior in relation to development opportunities in government hospitals (Udugama, 2008).

Another study in Sri Lanka has examined the feasibility of introducing web based online CPD program and has identified web based CPD programs will fulfil the educational requirements of health professionals in the peripheral parts of Sri Lanka (Kulatunga, Marasingha, Karunathilake, & W, 2012).

Further, lack of career development and continuous education was identified as a reason for migration of medical professionals. A study carried out has revealed out of 1,915 post graduate trainees who left Sri Lanka for training, 215 (11%) have not returned or have left the country without completing the government specified bond period (De Silva, et al., 2013).

Revalidation is the process of regular assessing fitness to practice of licensed medical professionals. Revalidation expected to give extra confidence to patients on their doctor knowledge and skill. Licensed doctors in United Kingdom have to revalidate, usually every five years, by having regular appraisals with their employer. Patients can help medical professionals to improve by providing them with regular feedback about the service (GMC, Revalidation, 2013). There are six types of supporting information a medical professional is expected to provide and discuss at appraisal at least once in each five year cycle (GMC, 2011). They include

1. Continuing professional development
2. Quality improvement activity
3. Significant events
4. Feedback from colleagues
5. Feedback from patients
6. Review of complaints and compliments

Appraisal/ individual performance review (IPR) is frequently used in human resources management in the public and commercial sectors to evaluate the performance of an employee. It measures performance against agreed organizational expectations and objectives. The results are used in development

and effective management of employees. A study in UK has revealed that traditional IPR per se is not suitable for assessing hospital doctors (Trebble, et al., 2013).

Multisource feedback (MSF), or 360^0 employee evaluation, is a questionnaire-based assessment in which rates are evaluated by peers, patients, and coworkers on key performance of an employee. This system is widely used in industrial settings to assess performance. MSF is gaining recognition as a quality improvement method in health systems. A research has identified the key aspects of MSF including program design. It also discusses limitations of MSF in health care (Lockyer, 2003). Another research carried out in similar setting have outlines tips for developing multisource feedback forms (Wood, Hassell, Whitehouse, Bullock, & Wall, 2006).

At present, there are multiple formats for assessment of different specialties in medicine. However, researches have shown that these forms do have drawbacks. In one study, participants appreciated multisource feedback as portion of formative assessment. However, some concerns about certain elements of multisource feedback methodology undermines its credibility for identifying poor performance (Hill, Asprey, Richards, & Campbell, 2012). Research on general practitioners in UK have shown that the general practitioner believe the revalidation is beneficial for patients as well as for themselves (Mugweni, Kibble, & Conlon, 2011). However, study conducted in West Lincolnshire Primary Care Trust have revealed a better understanding of knowledge, beliefs and attitudes towards appraisal is required to foster positive attitudes. Further, it emphasizes the need of clarification on relationship between appraisal and revalidation (Siriwardena & Middlemass, 2003).

In USA and Canada, the processes for ensuring that physicians maintain their competence depend on the independent and heterogeneous regulatory decisions of each provincial College of Physicians and Surgeons. The means is usually by attending mandatory CME activities. However, research have shown it lacks consistency (Levinson, 2008).

A qualitative study conducted In USA on perception on has revalidation shown the need for frequent changes and standardization. It identifies necessity of revalidation. However, concern was expressed on the reliability and validity of existing and proposed systems (Francis & Cuschieri, 2001).

A study has shown that Australasia (Australia, New Zealand and Singapore) is in the process of developing tools for revalidation. However, there is no uniform structure for revalidation in these countries. Responsibility of revalidation lies with professional colleges (Newble, N, & Mclaren, 1999).

In a study conducted in South East Asia, it has identified that need for changes in present postgraduate medical education. It has suggested including performance appraisal system for the region (Mendis, Adkoli, Adhikari, Hug, & Qureshi, 2004). However, there are no published studies on knowledge on revalidation in South East Asian region.

Sri Lanka, there had being a debate on revalidation since 2003. An article on Ceylon Medical Journal discusses possibility of introducing a revalidation system in Sri Lanka. It was based on discussion by revalidation committee of SLMC. Further, it discusses how to face resistance from various groups including medical professionals and their trade unions (Epa, 2003). However, knowledge and perception on revalidation was not assesses formally in Sri Lanka.

III. MATERIALS AND METHODS

Study Design

The study is a descriptive cross sectional study.

Study Setting

The study has focused on government hospital medical professionals as well as the general practitioners. The study on government hospital medical professionals will be carried out in the four teaching hospitals situated in Central Province namely General Hospital - Kandy, General Hospital - Peradeniya, SirimavoBandaranayake Specialized Hospital for Children and Base Hospital - Gampola. All full time general practitioners in central province, who are registered with Private Health Regulation Council (PHRC), were also included in the study.

In addition, a key informant survey was conducted to suggest a CPD program and revalidation program for the country.

Study Population

Study population consisted of all the medical professionalscurrently working in the four selected teaching hospitals in the central province. All the general practitioners in central province who were registered with PHRC.

Inclusion Criteria

1. Medical professionals with full SLMC registration and working in selected hospitals
2. All PHRC registered full time general practitioners in central province

Exclusion Criteria

1. Intern medical professionals
2. Administrative grade medical professionals
3. Medical professionals on maternity leave, foreign leave during the study period
4. Part time general practitioners

Study Period

Data collections was carried out during August to October 2013 at relevant hospitals and places of convenience among general practitioners.

Sample Size Calculation

The sample size was calculated using following formula.

$$n = \frac{Z^2\, p(1-p)}{d^2}$$

n = Sample size
Z = 1.96 critical value
p = Probable estimate of proportion
d = 5% absolute error

$$Sample\ Size = \frac{1.96^2 * 0.5(1-0.5)}{0.05^2}$$

$$Sample\ Size = 384$$

Further 10% was added to calculated sample size to compensate non-respondents and it yielded total sample of 422 subjects.

Sampling Technique

Stratified random sampling technique was used and following procedure is adopted.

1. Names of medical professionals and their grades were obtained from the hospitals
2. Names of general practitioners were obtained from PHRC
3. Total population was calculated and respective percentage each category obtained
4. Number of required sample size was calculated proportionately for each hospital and each category
5. Samples of each category obtained using random number method

Postgraduate trainees were included in the category of postgraduate trainees despite his ministerial grade. There were 1396 eligible medical professionals in the population.

Table 1summarizes the distribution of sample, which was selected proportionately from each category and each hospital.

Table 1: Distribution of Sample

Hospital	Consultants	Graded1	Graded 2	Preliminary grade	Postgraduate Trainees	General practitioners	Total
THK	27	16	190	32	22		287
THP	3	3	42	8	9		65
SBSCH	4	2	16	5	0		27
BH	4	1	13	9	0		27
GP						16	16
Total	38	22	261	54	31	16	422

Study Instrument

The study instrument was a self-administered questionnaire.

Questionnaire development

On extensive literature search, researcher has not found an existing scale to measure knowledge and perception on either CPD programs or revalidation. Therefore, the principle investigator chose to develop a new instrument. A new questionnaire was developed.

A panel consisting of experts that include a community physician, a sociologist, two medical administrators and a statistician scrutinized selected questions.

Final questionnaire comprises of 36closed-ended question. Careful attention was paid in phrasing question to create clear, complete and concise statements. However, last questions was kept as open-ended questions to get suggestions on developing a CPD program and revalidation system. The questions were arranged in three logical parts.Modified Likert scale with six responses used in most occasion to avoid centralization of responses.

Basic socio-demographic data

There are twelve questions to collect socio-demographic information. The questions includes date of birth, sex, religion, ethnicity, marital status , number of children, year of graduation, place of graduation, country of graduation , place of work and current grade in profession. Age and service experience were calculated from collected data

Knowledge and perception on CPD

Researcher has prepared arating scale using basic principles from various sources (Jamieson, 2004). There are thirteenquestionsto assess the knowledge and perception on CPD program.Out of them, nine questions are on six-point Likert scale and directly assess the knowledge directly. A rating scale was prepared using nine questions mentioned above. Each question was assigned from 0 – 5 marks, 0 being negative perception towards CPD whereas 5 being strongly positive perception. Final marks were transformed to get out of 100. The domains used in preparation of rating scale are as follows

1. Medical Professionals perception on the importance of updating their knowledge in recent advances
2. View on requirement of formal CPD (CPD) program for Medical Professionals
3. View on important of assessing medical officers regular intervals
4. Areas that are need to assess, whether we should assess only the knowledge or should it be a multiple domain assessment
5. View on benefits to profession and their customers

In addition, data collected on their view on responsible government and non-governmental bodies who should take responsibility. Further, suggestion on frequency of assessment of medical professionals were obtained to propose a system of CPD.

Knowledge and perception on medical license revalidation

Part 3 of the questionnaire consists of twelve questions and assesse both knowledge and perception on medical revalidation. Last question was anopen-ended question to collect

suggestion on developing a sustainable CPD program and a revalidation system.

Knowledge on revalidation was assessed by five questions comprising of whether the respondents aware of the presence of concept of revalidation of medical license. In addition, knowledge was assessed on countries with revalidation, legal need for revalidation. Further, two questions assess the methods of assessment and responsible bodies on revalidation. Questions are of different types including dichotomous, open ended and multiple choice. Arating scale was prepared allocating equal marks for each question. All correct answers were given five marks while wrong answers carry no marks. Then marks out of 100 was calculated.

Perception on revalidation was assessed using four 6-point Likert scale and marks allocated from zero to five for responses. A rating scale was prepared and marks were calculated out of 100.

Pretest

The questionnaire was pre tested at District hospital – Kadugannawa and at training center Kadugannawa. All the problems and difficulties arose during procedure were discussed and remedial actions were taken.

In-depth Interviews

The in-depth interview was comprises set of open-ended questions and brief outline. Questions and outline helps to keep focus on the subject., However, respondent were allow to be discursive on the issues within the guided framework.Data obtained from in-depth interviews were not formally analyzedbut used in suggesting a formal, sustainable CPD program and revalidation system.

Data Analysis

Data analysis was done using the IBM®SPSS® 22 statistical software.

Ethical and Administrative Consideration

Ethical clearance was obtained from the ethical review committee of Faculty of Medicine, University of Peradeniya. Consent forms were prepared in all three languages and informed written consent was obtained prior to administering the questionnaire.

Permission from Directors/ Medical Superintends of respective institutions were obtained prior to data collection.

Confidentiality of data

All the questionnaires were collected on the same day as distribution of questionnaires and only principal investigator was involved in collection of data. All completed questionnaires are at the custody of principal investigator. No personal data was collected.

IV. RESULTS

The sample of medical officers from teaching hospital of central province and from full time medical practitioners was obtained from stratified sampling techniques. There was 93% responded rate and final size of the sample was 396.

Socio-demographic Characteristics

Distribution by Age

Age of the sample ranges from 27 years to 67 years with mean of 36.57 years (Table 2).

Table 2: Age distribution of the sample

Age Statistics	
Mean	36.57
Median	34.50
Std. Deviation	7.143
Range	40
Minimum	27
Maximum	67

Once categorized into age groups, 30 – 40 age group dominates the sample with 68.9% of the sample (Table 3).

Table 3: Distribution of Sample by Age Categories

Age Categories	Frequency	Percent
21-30	47	11.9
31-40	273	68.9
41-50	54	13.6
51-60	12	3.0
61-70	10	2.5
Total	396	100.0

Distribution by Sex

Males dominates the sample with relative percentage of 59.1% and distribution by sex is illustrated in Table 4.

Table 4: Distribution by Sex

Sex	Frequency	Percent
Male	234	59.1
Female	162	40.9
Total	396	100.0

Distribution of Sample by Ethnicity & Religion

Sinhalese and Buddhist comprises bulk of the sample in line with provincial population statistics. However, proportion of Indian Tamils in the sample is lower than that of general population (Table 5&Table 6).

Table 5: Distribution by Ethnicity

Ethnicity	Frequency	Percent
Sinhala	350	88.4
SL Tamil	25	6.3
Indian Tamil	2	.5
SL Moor	19	4.8
Total	396	100.0

Table 6: Distribution by Religion

Religion	Frequency	Percent
Buddhist	339	85.6
Hindu	27	6.8
Islam	19	4.8
Christian	11	2.8
Total	396	100.0

Distribution of Sample by Marital Status

88% of the medical professionals included in the sample are married and only one widowed in status (Table 7).

Table 7: Distribution by Marital Status

Marital Status	Frequency	Percent
Single	45	11.4
Married	350	88.4
Widowed	1	.3
Total	396	100.0

Distribution of Sample by Place of Qualification

Only 15 medical professional were foreign qualified while others were from local universities (Table 8).

Table 8: Distribution by Place of Graduation

University	Frequency	Percent
Peradeniya	241	60.9
Colombo	50	12.6
Jafna	16	4.0
Ruhuna	23	5.8
Ragama	26	6.6
Jayawardanapura	25	6.3
Foreign	15	3.8
Total	396	100.0

Distribution of Sample by Service Experience

Most of the medical professionals in the study belongs to experience of 0 -10 years category and comprises 76% of the sample (Table 9&Figure 1).

Table 9: Distribution by Service Experience

Experience	Frequency	Percent
1 -5	163	41.2
6-10	138	34.8
11-15	44	11.1
16-20	18	4.5
21-25	12	3.0
26-30	11	2.8
31-35	7	1.8
36-40	3	.8
Total	396	100.0

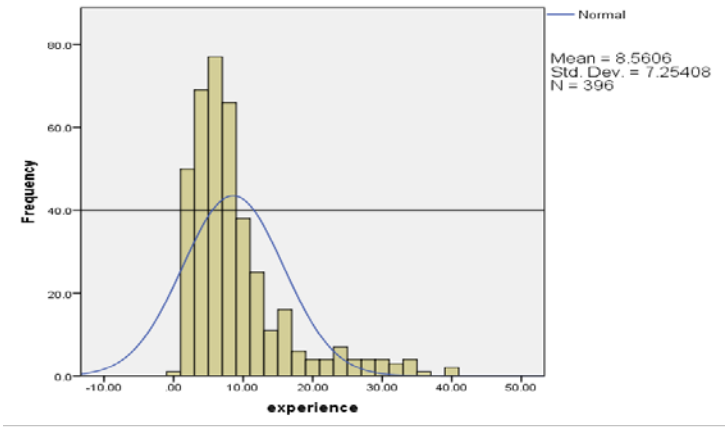

Figure 1: Service Experience

Distribution of Sample by Professional Grade

Grade 2 medical officers has the highest proportion of 70.7% of the sample while general practitioner proportion was 4.0% (table 10).

Table 10: Distribution by Grade

Present Grade	Frequency	Percent
Consultant	28	7.1
Grade 1	21	5.3
Grade 2	231	58.3
Preliminary	54	13.6
PG Trainee	46	11.6
P.Practitioner	16	4.0
Total	396	100.0

Perception on CPD Program

According to the perception scale on CPD, medical professionals have mean score of 85.95 with standard deviation of 7.39. Minimum score was 53.33 while the highest score was 100 (Table 11).

Table 11: Distribution of CPD Scores

CPD SCORE	
Mean	85.9540
Median	86.6667

Std. Deviation	7.39506
Range	46.67

The CPD score distribution shows normal distribution (Figure 2).

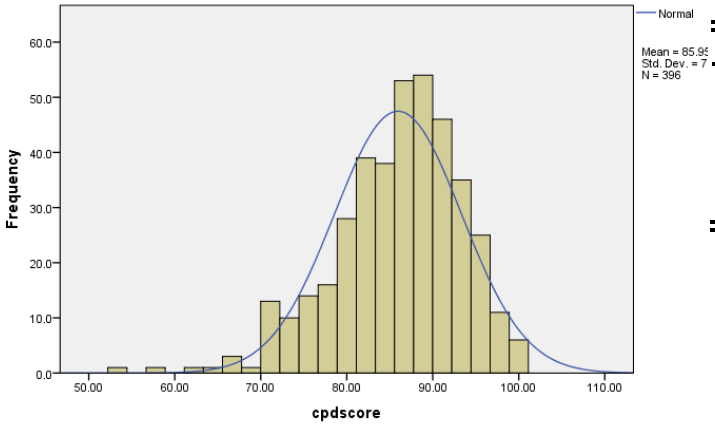

Figure 2: CPD score histogram

One way ANNOVA test is performed to see any difference of CPD score based on grade of medical officers and Table 12summarizes the results.

Table 12: Professional Grade vs CPD Score

ANOVA				
CPD score	Sum of Squares	df	Mean Square	
Between Groups	1902.46	5	380.493	
Within Groups	19698.86	390	50.510	
Total	21601.33	395		

There was a statistically significant difference between groups as determined by one-way ANOVA (F = 7.533, p = .000). A Tukey post-hoc test revealed that the CPD score was statistically significantly higher among consultants compared to the others(Table 13). However, there were no statistically significant differences observed among other groups.

Table 13: Tukey's HSD for CPD Score Difference

CPD score - Tukey HSD			
Present Grade	N	Subset for alpha = 0.05	
		1	2
Grade 1	21	82.4339	
Grade 2	231	84.9062	
Preliminary	54	86.9959	
Private Practitioner	16	87.0833	
PG Trainee	46	87.1498	
Consultant	28		92.6190
Sig.		.092	1.000

There were no significant differences observed on CPD score based on other studied characteristics of the sample.

Most of the medical officers believe that implementing a CPD program is a responsibility of more than one organization (Table 14).

Table 14: Responsibility of CPD Program

Organization	Percentage
SLMC	41.7
SLMA	65.4
Ministry of Health	59.1
Professional Colleges	65.2
GMOA	16.4
Consultants	2.3

More than 50% medical professional believe that operationalization of formal CPD program is a responsibility of SLMA, Ministry of Health and Professional colleges. 16.4% medical professional believe that GMOA have a responsibility on implementing formal CPD program. 2.3% medical professional in the study believe that respective consultant should look after CPD program on his subordinate officers.

In addition, nearly 77.8% medical professional believe that medical professionals' knowledge is not up to date (Table 15).

Table 15: Perception on Up To Date Knowledge

Knowledge up to date	Frequency	Percent
Strongly Agree	6	1.5
Agree	42	10.6
Slightly Agree	40	10.1
Slightly Disagree	71	17.9
Disagree	220	55.6
Strongly Disagree	17	4.3
Total	396	100.0

Knowledge on Revalidation Program

According to the knowledge-scale on revalidation programs, medical professionals have mean score of 64.24 with

standard deviation of 31.18 Minimum score was 0.0 while the highest score was 100 (Table 16).

Table 16: Knowledge on Revalidation

	Mean	N	Std. Deviation	Std. Error Mean
Knowledge on revalidation	64.2424	396	31.18230	1.56697

However, the knowledge on revalidation has not shown the normal distribution (Figure 3).

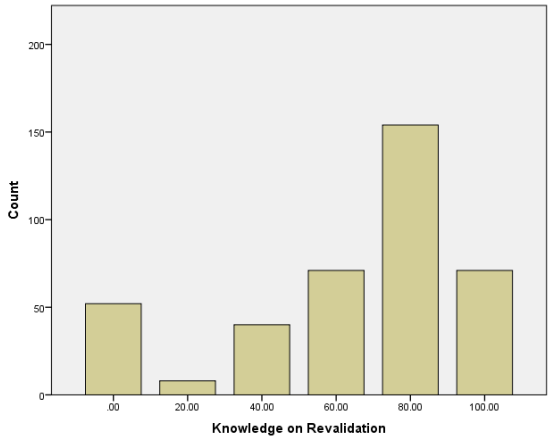

Figure 3: Distribution of Knowledge on Revalidation

Therefore, Kruskal-Wallis non-parametric ANOVA was performed to identify differences on knowledge on revalidation among different categories of medical officers (Table 17: Kruskal Wallis Test - Statistics).

Table 17: Kruskal Wallis Test – Statistics

Kruskal Wallis Test - Statistics	
	Knowledge on revalidation
Chi-Square	94.473
df	5
Asymp. Sig.(p value)	.000

Since our p value is less than 0.05 criterion of statistical significance, we can conclude that there are significant differences on knowledge on revalidation among different categories of medical professionals.When we analyse this further it is clear that 77.8% of study population accept that Sri Lankan medical professionals' knowledge is not up to date (Table 18).

Table 18: Stats on Medical Knowledge

Medical officers knowledge not up to date		
	Frequency	Percent
Yes	308	77.8
No	88	22.2
Total	396	100.0

Kruskal-Wallis test shows that there is significant difference on the perception on this matter depending on present grade of medical officers. However, due to non-parametric nature we did not analyze this further (Table 19&Table 20).

Table 19:Kruskal-Wallis Test1

Ranks		
Present Grade	N	Mean Rank
Consultant	28	154.50
Grade 1	21	220.50
Grade 2	231	190.50
Preliminary	54	257.17
PG Trainee	46	171.72
P.Practitioner	16	241.13
Total	396	

Table20:Kruskal-Wallis Test 2

Test Statistics	
	Up to Date Yes/NO
Chi-Square	48.148
df	5
Asymp. Sig.	.000

Perception on Revalidation Program

Scale on medical professionals' perception to introducing a revalidation program for Sri Lanka has shown a normal distribution (Figure 4: Distribution of Revalidation Score).

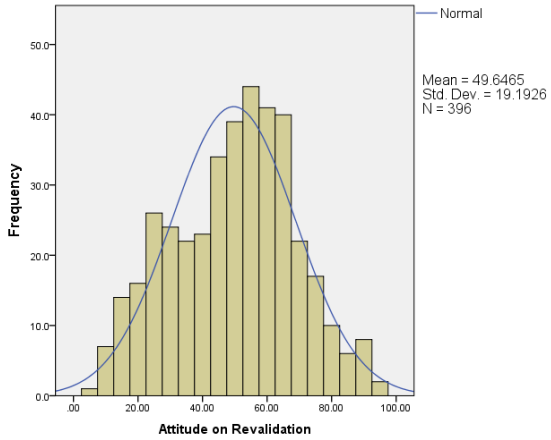

Figure 4: Distribution of Revalidation Score

Mean score on perception to revalidation was 49.64 with a standard deviation of 19.19, widely range from 5 -90 (Table 21).

Table 21: Descriptive statistics on perception to revalidation

Perception on Revalidation	
Mean	49.6465
Median	50.0000
Std. Deviation	19.19260
Range	90.00

Independent sample t test was employed to see difference of scores according to the sex shown that there is no significant difference as significance (2 tailed) is 0.91 which is higher than 0.05 (Table 22).

Table 22: Sex Difference on Perception to Revalidation

	Independent Samples Test						
	t	df	Sig. (2-tailed)	Mean Diff	Std. Error Diff	95% Confidence Interval of the Difference Lower	Upper
Equal variances assumed	1.696	394	.091	3.3190	1.9569	-.52834	7.1665

One way ANOVA is employed to identify any difference on perception with regard to grade of medical professionals (Table 23).

Table 23: ANOVA Results on Perception Score vs. Grade

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	37652.19	5	7530.438	27.231	.000
Within Groups	107848.3	390	276.534		
Total	145500.5	395			

According to the ANOVA test as significance is 0.000 and is smaller than 0.05. Therefore, Tukey post-hoc test was employed and result is shown inTable 24.

Table 24:Tukey HSD for Revalidation vs Grade

Tukey HSD				
Present Grade	N	Subset for alpha = 0.05		
		1	2	3
Grade 1	21	38.0952		
P.Practitioner	16	39.0625		
Grade 2	231	45.4329	45.4329	
Preliminary	54		54.3519	
PG Trainee	46		55.6522	

Consultant	28			80.1786
Sig.		.499	.145	1.000

According to the test results, we can conclude that consultants are significantly different from all other groups on perception to revalidation. In addition, PG trainees and preliminary grade medical professionals have significantly better knowledge than grade1 medical officers and private practitioners.

In the present study, 87.4% of medical officers believe that there will be resistance to introducing a medical license revalidation in Sri Lanka (Table 25).

Table 25: Resistance to Introduce a Revalidation Program in Sri Lanka

SL Resistance	Frequency	Percent
Strongly Agree	89	22.5
Agree	214	54.0
Slightly Agree	43	10.9
Slightly Disagree	15	3.8
Disagree	29	7.3
Strongly Disagree	6	1.5
Total	396	100.0

Almost all medical professional believe that resistance will come either from GMOA or from medical professionals.

V. DISCUSSION

The study subject is timely and required as there is increasing number of complaints against doctors as well as increase in number of court cases on medical negligence (Sri Lanka Medical Council, 2008). Negligence can results from not having up to date knowledge and skills, which may be a results of not having a proper coordinated professional development program. This is further worsen by not having regular assessment of medical professionals' fitness to work. In addition, most develop countries have established good CPD programs and revalidation systems (GMC, Revalidation, 2013). However, there were no studies carried out in Sri Lanka on medical license revalidation at present.

It was decided to carry out the study only in central province due to time and budget constraints. All full time general practitioners and teaching hospitals in central province was selected. The total population size was 1396. Sample size required was 422 and selected using stratified sampling technique. Self-administered questionnaires was selected as the tool because medical professionals are educated professionals and have a similar understanding ability.

Response rate at the present study was 93.8% (396/422) and was a very good response rate. A study conducted in India among medical professionals has shown response rate of 71.6% (Brogen, Rajkumari, Laishram, & Joy, 2009). Another study conducted in teaching hospitals in Kandy District, Sri Lanka has had response rate of 67% (Ranasinghe, 2010). The low response rate was due to non-returning of completed questionnaires.

Good response rate in this study can be attributed to simplicity of questionnaire, collection of the questionnaire on the same day, prior appointments with respondents, approach of respondents at free times. Lowest response rate by consultants, is about 73% (28/38), and may be due to their busy work schedules.

Characteristics of the sample

More than 80% sample was medical professionals younger than 40 years of age and is mainly due to all four teaching hospital have similar proportion medical professionals who are less than 40 years. This is also due to bulk of medical officers belongs to grade 2 category. Sex distribution of sample slightly dominated by males. The sample is dominated by Sinhala, Buddhist.

About 88% of the medical professionals in the sample are married with 84% have at least one child. All the full time general practitioners were retired medical officers from government servant except for one. There ages ranges from 50 - 67 years.

Sample was representative of the study population as it was based on stratified random sampling. The results of the study can be generalized to entire country as

a. medical professional in the country have tight regulations on registration and have minimum requirement fulfilled
b. being in all island service and transferable officers they are regularly transferred from one hospital to another, even for another province
c. experience and categories of medical are same despite the institution and province

Perception on CPD Program

Most medical professionals in the study believe that knowledge of Sri Lankan medical professional are not up to date. In addition, it is clear that there is significant difference on this among different categories of medical officers (X^2: 48.14 and significance > 0.05).

Final score on perception on CPD shows that very good perception towards CPD program in general (mean: 85.95, SD: 7.39). Further, there was no difference based on socio-demographic characteristics except that consultants show better perception than others.

Therefore, it is prudent to develop a good CPD program suitable for Sri Lankan medical professionals. The responsibility should be given to national CPD council. This was highlighted as most medical professionals stated that responsibility should be share among SLMA, Professional colleges and Ministry of Health (Table 14). Ministry of Health should allocate funds to national CPD program and for the CPD council. SLMA needs to take initiative as it has done in the past but need better coordination with key stakeholders including ministry and GMOA. Professional colleges should help SLMA in developing curricula for CPD.

In addition, use of information technology including online web based learning must be employed in delivering CPD materials to medical professionals. This is a very prudent and

useful as most medical officers in peripheral hospital have problem of attending classes regularly. In addition, this will help to minimizes disturbances to patient care services. Role of university in CPD program is limited in present situation. However, they can help in developing curricula and providing resource personals in CPD programs.

One of the main obstacle to implement a sustainable CPD program is that there is no benefits for medical professional participating in CPD. It was highlighted in an interview, payment of CPD allowance for participating medical professionals will improve participation. It is also suggested ministry of health to allocate funds in sustainable manner for CPD program.

On the other hand, CPD certificate/ credit scores can be used as assessment tool in ministerial promotions. However, this cannot implement in near future, as there is no equal opportunity for all medical professionals to access to CPD programs can trigger resistance from medical professional working in periphery. It involves amendment of service minutes and can violate existing hierarchy.

Knowledge and Perception on Revalidation

Knowledge on revalidating scale yield mean of 64.24 with standard deviation of 31.18 (Table 16). There were no difference on knowledge on revalidation based on socio-demographic characteristics except professional grade.

Perception on revalidation shows mean score of 49.64 with a standard deviation of 19.19, widely range from 5 -90. Descriptive statistics on perception to revalidation is shown on Table 21. Similarly, there were no difference on perception on revalidation based on socio-demographic characteristics except professional grade. Consultant had a better perception on introducing a revalidation program. PG trainees and preliminary grade doctors show significantly better perception than the grade 1 medical officers and full time general practitioners (Table 23&Table 24).

It was very clear that most medical professionals perceive CPD as a good move but not so for revalidation. There was a clear difference between perceptions on CPD vs perception on revalidation.

Introducing a revalidation program for medical license is far from the reality as almost all medical professional participated in the study agreed that there would be resistance for revalidation in Sri Lanka. In fact, in 2003 SLMA approach to formal CPD program may have failed as it is linked to revalidation.

As highlighted in an interview, GMOA accepts that revalidation may be needed in future to uplift the standard for patient care. However, they are against the introduction of revalidation program as the groundwork required for such system is not feasible now. SLMC shared the same idea and highlighted any form of revalidation requiresestablishCPD program in the country. Since the patient organization is not powerful in Sri Lanka, request for revalidation needs to come from the industry itself.

VI. CONCLUSIONS AND RECOMMENDATIONS

CPD is very important in medicine as it improves patient safety and other patient care outcomes. Process of revalidation ensures medical professionals are reasonably up to date with their knowledge, skills and other important aspects. Therefore, it is very important to set up a well structured CPD program and suitable revalidation process.

Results of this study has shown that medical professional in central province have very good and favorable perception towards introduction of CPD program for them. Therefore, it is recommend starting a structured and sustainable CPD program.
It is recommended to set up a CPD council represented by Ministry of Health, SLMA, SLMC, GMOA and Professional colleges. Ministry of Health should allocate funds in sustainable manner for this program. GMOA should encourage its members on participating for CPD program and press authorities on allocating a CPD allowance for the doctors. SLMA and professional colleges can take the responsibility of developing contents and delivery of CPD program. It is SLMC's responsibility to act as the regulator in all steps.

Once we form a formal and equitable CPD program, the next step is to inclusion of CPD credits on grade promotions and annual increments. However, this should not be done initially as environment is not conducive as identified in the study.

Present study also revealed that perception on medical license revalidation is low. It was further highlighted during in-depth interviews. Therefore, introducing a revalidation process is not feasible in present context. Further, proposed CPD program should not linked revalidation in any way as it may lead to non-acceptance of CPD program.

Preparation of revalidation program should start only after implanting sustainable and accessible CPD program in entire country. At introduction, revalidation can be made compulsory to medical professionals joining the ministry of health as new recruits. For the present employees this needs to be coupled to a substantial financial benefit.

REFERENCES

[1] Ahmed, K., & Ashrafian, H. (2009). Life-long learning for physicians". 326 (5950): 227. *Science*, *326*(5950), 227.

[2] Beshyah, S. A., Saadi, H. F., & Sherif, I. H. (2012). Continuing Medical Education in the Developing World. *Ibnosina Journal of Medicine and Biomedical Sciences, 4*(1), 1-8.

[3] Brogen, A. S., Rajkumari, B., Laishram, J., & Joy, A. (2009). Knowledge and attitudes of doctors on medical ethics in a teaching hospital, Manipur. *Indian Journal of Medical Ethics, 6*(4), 194-197.

[4] Chandra, A., Durand, R., & Dickens, K. (2009). Healthcare consumers' beliefs about medical malpractice lawsuits. *Hosptal topics, 87*(2), 25-32.

[5] Cheshire, M. (2009). Medical Revaidation. London: RCP Press.

[6] David, A., Davis, M., Thomson, M. A., Oxman, A. D., & Haynes, B. (1992). Evidence for the Effectiveness of CME: A Review of 50 Randomized Controlled Trials. *The Journal of American Medical Association, 268*(9), 1111-1117.

[7] Davis, D., O'Brien, M. A., Freemantle, N., Fredric, M., Mazmanian, P., & Taylor-Vaisey, A. (1999). Impact of Formal Continuing Medical Education. *The Journal of the American Medical Association, 282*(9), 867-874.

[8] De Silva, A. P., Liyanage, S. K., De Silva, T. G., Jayawardana, M. B., Liyanage, C. K., & Karunathilake, I. M. (2013). Migration of Sri Lankan medical specialists. *Human Resource for Health, 11*(21).

[9] Dissanayake, U. B. (2008). Continuing professional development. *Sri Lanka Dental Association, 38*(1), 1-2.

[10] Dolmans, D., & Schmidt, H. (1996). The advantages of problem-based curricula. *Postgraduate Medical Journal, 72*(851), 535-538.

[11] Epa, S. S. (2003). Revalidation of Sri Lankan Doctors. *Ceylon Medical Journal, 48*(3), 65-67.

[12] Fernando, R. (2002 Dec). A landmark case of medical negligence in Sri Lanka. *Ceylon Medical Journal, 47*(4), 128-130.

[13] Fonseka, C. (1996 December). To err was fatal. *British Medical Journal, 313*(7072), 1640-1642.

[14] Francis, N., & Cuschieri, A. (2001). What do master surgeons think of surgical competence and revalidation?1. *The American Journal of Surgery, 182*(2), 110-116.

[15] General Medical Council. (2009). *Tomorrow's Doctors.* LONDON: GMC.

[16] GMC. (2011). The Good Medical Practice: and Framework for appraisal and revalidation. London: General Medical Council.

[17] GMC. (2013). *GMP Framework for appraisal and revalidation*. Retrieved 01 25, 2013, from http://www.gmc-uk.org/doctors/revalidation/revalidation_gmp_framework.asp

[18] GMC. (2013). *Revalidation.* Retrieved 01 25, 2013, from http://www.gmc-uk.org/doctors/revalidation.asp

[19] Grammaticos, P. C., & Diamantis, A. (2008). Useful known and unknown view of father of meodern medicine, Hippocrates and his teacher Democritus. *Hellenic journal of nuclear medicine, 11*(1), 2-4.

[20] Hill, J. J., Asprey, A., Richards, S. H., & Campbell, J. L. (2012). Multisource feedback questionnaires in appraisal and for revalidation: a qualitative study in UK general practice. *The British Journal of General Practitioners , 62*(598), 314-321.

[21] Hsu, E., & Barrett, R. L. (2008). *Traditional Asian Medical Systems* (1 ed.). London: Elsevier.

[22] IESL. (2013). *Continuing Professional Development Committee.* Retrieved 11 3, 2013, from http://www.iesl.lk/Default.aspx?pageId=1554166

[23] Institute of Certified Management Accountants. (2009). *CMA CPD GUIDE* (1 ed.). Colombo: CMA.

[24] Institute of Medicine, US National Academics. (2012). *Complementary and Alternative Medicine in the United States.* Washington DC: National Academy Press.

[25] Jamieson, S. (2004). Likert scales: how to (ab)use them. *Medical Education, 38*(12), 1217-1218.

[26] Kay, N., Green, A., McDowell, S. E., & Ferner, R. E. (2008 Oct). Should doctors who make clinical errors be charged with manslaughter? A survey of medical professionals and members of the public. *Medicine, Science and the Law, 48*(4), 217-324.

[27] Kristensen, S., McDonald, R., & Sutton, M. (2013). Should pay-for-performance schemes be locally designed? evidence from the commissioning for quality and innovation (CQUIN) framework. *Journal of Health Service Reserches and Policy, 18*(2), 38-49.

[28] Kulatunga, G. G., Marasingha, R. B., Karunathilake, I. M., & W, D. V. (2012). Introduction of Web based Continuous Professional Development to Sri Lanka. *Sri Lanka Journal of Bio-Medical Informatics, 3*(4), 127-131.

[29] Leslie, C. (1980). Medical pluralism in world perspective. *Social Science & Medicine, 14*(4), 191-195.

[30] Levinson, W. (2008). Revalidation of physicians in Canada: Are we passing the test? *CMAJ, 179*(10), 979-980.

[31] Lewis, M., Julie, K., & Taitsman, M. D. (2009). The Agenda for Continuing Medical Education — Limiting Industry's Influence. *The New England Journal of Medicine, 361*(1), 2478-2482.

[32] Lockyer, J. (2003). Multisource feedback in the assessment of physician competencies. *The Journal of Continuing Education in Health Professionals, 23*(1), 4-12.

[33] Mendis, L., Adkoli, B. V., Adhikari, R. K., Hug, M. M., & Qureshi, A. F. (2004). Postgraduate medical education in South Asia. *British Medical Journal, 328*(7443), 779.

[34] Mudur, G. (2005). Indian proposals to revalidate doctors get mixed reception. *BMJ., 330*(7494), 748.

[35] Mugweni, K., Kibble, S., & Conlon, M. (2011). Benefits of appraisal as perceived by general practitioners. *Education for Primary Care, 22*(6), 393-398.

[36] Newble, D., N, P., & Mclaren, M. (1999). Revalidation in Australia and New Zealand: approach of Royal Australasian College of Physicians. *British Medical Journal, 319*(7218), 1185-1188.

[37] Nonis, N. j., & Herath, H. M. (2011). *Sri Lanka Medical Council - Annual Report 2010.* Colombo: SLMC.

[38] Private Health Services Regulatory council. (2013). *Search Results* . Retrieved 11 07, 2013, from http://www.phsrc.lk/index.php

[39] Ranasinghe, P. (2010). Study on Knowledge, Atttude and Pratice of Medical Ethics. Colombo: PGIM.

[40] Sackett, D. L., Rosenberg, W. M., Gray, J. A., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: what it is and what it isn't. *BMJ, 312*(7023), 71-72.

[41] Singh, S., & Ernst, E. (2008). Trick or Treatment: The undeniable facts about Alternative Medicne (1 ed.). London: W. W. Norton.

[42] Siriwardena, A. N., & Middlemass, J. (2003). General practitioners, revalidation and appraisal: a cross sectional survey of attitudes, beliefs and concerns in Lincolnshire. *Medical Education, 37*(9), 778-785.

[43] SLMC. (2013). *SRI LANKA MEDICAL COUNCIL*. Retrieved 11 02, 2013, from http://www.srilankamedicalcouncil.org/

[44] Smith, H., Brown, H., & Khanna, J. (2013). *Continuing education meetings and workshops: effects on professional practice and health-care outcomes*. Retrieved 11 03, 2013, from http://apps.who.int/rhl/effective_practice_and_organizing_care/Cd003030_smithh_com/en/

[45] Smits, P. B., Verbeek, J. H., & Buisonjé, C. D. (2002). Problem based learning in continuing medical education: a review of controlled evaluation studies. *British Medical Journal, 324*(7330), 153-156.

[46] Sri Lanka Medical Association. (2010). *National CPD Certificate.* Colombo: Ananda Press.

[47] Sri Lanka Medical Council. (2008). *Annual Report 2007.* Colombo: SLMC.

[48] Trebble, T., Cruickshank, L., Hockey, P. M., Heyworth, N., Powell, T., & Clarke, N. (2013). Individual performance review in hospital practice: the development of a framework and evaluation of doctors' attitudes to its value and implementation. *BMJ Quality & Safety, 22*(11), 948-55.

[49] Udugama, S. N. (2008). Problems and issues of professional development : the case of medical professionals. Colombo: Sri Lanka Health Repository.

[50] Weerasinghe, M. C., & Fernando, D. N. (2010). Paradox in treatment seeking: An experience from rural Sri Lanka. *Qualitative Health Research, 19*(7), 52-56.

[51] Wood, L., Hassell, A., Whitehouse, A., Bullock, A., & Wall, D. (2006). A literature review of multi-source feedback systems within and without health services, leading to 10 tips for their successful design. *Medical Teacher, 28*(7), 185-191.

[52] World Medical Association. (2006). *WMA Declaration of Geneva*. Retrieved 11 03, 2013, from http://www.wma.net/en/30publications/10policies/g1/index.html

AUTHORS

First Author – Dr. H. K. M. M. B. Kavisekara, MBBS (Peradeniya), MSc – Medical Administration (Colombo), MBA (Cardiff - UK), Medical Director /Doctoral Trainee, Ministry of Health - Sri Lanka/ London Metropolitan University – United Kingdom, kavisekara@gmail.com, HKK0030@my.londenmet.ac.uk

Second Author – Dr W D N Sanjeewani, MBBS (Peradeniya) Medical Officer, Ministry of Health – Sri Lanka, wdnsanjeewani@gmail.com