

Utilization and Practice of Traditional/Complementary/ Alternative Medicine (T/CAM) in Southeast Asian Nations (ASEAN) Member States

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ABSTRACT The objective of this study was to conduct a systematic review of published and unpublished research investigating the prevalence of Traditional Medicine, Complementary and Alternative Medicine (TCAM) use in the general and clinical population in Association of Southeast Asian Nations (ASEAN). Results found that the use of TCAM was the highest in Malaysia (55.6%), followed by Singapore (among older adults) (42.7%), Philippines (6.3%), Cambodia (5.4%), Vietnam (3.5%), Thailand (2.6%) and Indonesia (2.0%). The prevalence of TCAM use of patients in biomedical health facilities was generally high such as cancer (56%-84.5%), medical patients and/or patients with chronic conditions (22.7%-66.7%), diabetic patients (47.8%-56%), asthmatic patients (27.2%-41%), and HIV patients (31%-78%). TCAM is used by substantial proportions of the general and clinical population, but differences in study design and methodological limitations make it difficult to compare prevalence estimates.

INTRODUCTION

The Association of Southeast Asian Nations (ASEAN) is a collaborative group of 10 countries (Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam) located in South-East Asia (Association of Southeast Asian Nations 2013). It is a populous region with a population of over 604 million and wide variability in socio-economic and development indicators (ASEAN Community in Figures 2013). The ASEAN Declaration aims “To accelerate the economic growth, social progress and cultural development in the region through joint endeavours in the spirit of equality and partnership in order to strengthen the foundation for a prosperous and peaceful community of Southeast Asian Nations” (Association of Southeast Asian Nations 2013:1). The use of traditional medicine in the primary health care system of ASEAN Member States has grown significantly in recent years (Chuthaputti and Boonterm 2010). In 2004, the 7th ASEAN Health Ministers Meeting “welcomed the formulation of an ASEAN+3 Framework of Cooperation on Integrating Traditional Medicine/Complementary and Alternative Med-

icine into the National Healthcare Systems” (Chuthaputti and Boonterm 2010: 2). “In their *Roadmap for an ASEAN Community (2009-2015)*, the ASEAN Member States pledged to facilitate research and cross-country exchange of experience in promoting the integration of safe, effective and quality Traditional Medicine, Complementary and Alternative Medicine into the national health care system, and across other sectors” (Chuthaputti and Boonterm 2010: 2).

Traditional Medicine (TM): “WHO defines traditional medicine as including diverse health practices, approaches, knowledge and beliefs incorporating plant, animal, and/or mineral based medicines, spiritual therapies, manual techniques and exercises applied singularly or in combination to maintain well-being, as well as to treat, diagnose or prevent illness” (WHO 2000: 2).

Complementary and Alternative Medicine (CAM): “The term CAM often refers to a broad set of health-care practices that are not part of a country’s own tradition and are not integrated into the dominant health-care system. Other terms sometimes used to describe these health-care practices include ‘natural medicine’, ‘non-conventional medicine’ and ‘holistic medicine’” (WHO 2000: 3).

“About 80% of the rural population in some Asian and African countries depend on traditional medicine for primary care purposes” (ASEAN Secretariat 2012). The World Health Organization (WHO 2004) developed process indicators, among others, as follows: (1) Estimated prevalence of national Traditional, Complementary and Alternative Medicine (TCAM) use, (2) Estimated prevalence of national herbal medicine use, and (3) Medical determinants of TCAM use. Studies on the utilization of TCAM have been focusing on high income countries, with a use of any CAM between 9.8 to 76 percent (Harris et al. 2012). Although many populations in ASEAN countries are reported as depending heavily on TCAM to help meet their health care needs, precise data are lacking (WHO 2004).

Objectives of the Study

The objective of this study was to conduct a systematic review of published and unpublished research investigating the prevalence of TCAM use in the general and clinical population in ASEAN countries.

METHODOLOGY

The search strategy included search online for published and unpublished studies in Medline, Embase, Central, Google Scholar, Google, from 1988-2013. Key words for the search included: traditional medicine, complementary medicine, alternative medicine, utilization, health-care seeking, Asia, Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam. To qualify for inclusion, a survey had to address the prevalence of TCAM, that is the percentage of people using it. Surveys of sub-populations, such as patients with a named condition, for example diabetes, were also included.

RESULTS

Estimated Prevalence of National and Local TCAM Use

In national population-based surveys the measure of TCAM differed in different countries. According to existing results Malaysia had the highest proportion of TCAM use in the past

12 months (55.6%), followed by Singapore (among older adults) (42.7%), Philippines (6.3%), Cambodia (5.4%), Vietnam (3.5%), Thailand (2.6%) and Indonesia (2.0%). In a few countries, specifically the use of TCAM of diabetes and hypertension was assessed, where the prevalence was the highest in Cambodia (15.3% of hypertension and 26.7% of diabetes), followed by Myanmar (13.4% and 17.8%, respectively) and Laos PDR (2.9% and 1.4%, respectively) (see Table 1).

In local population-based surveys high proportions for TCAM use were in some way confirmed from the national surveys in Malaysia (33.9% and 52.1%) and Singapore (25.3% and 76%). On the other hand, compared to national surveys in the local surveys a higher prevalence of TCAM use was found in Thailand (20%, 28.6% and 97.4%), Laos PDR (77%) and Cambodia (34%). This difference may partially be explained by the different reference period (ever used versus past year use) in the different surveys. In addition, it was found that 21.1 percent of hospital visitors in Brunei Darussalam were TCAM users in the past 12 months. The specific TCAM modalities used across the different local studies included vitamins/mineral supplements, herbal medicines, sauna, massage, acupuncture, aromatherapy, yoga, chiropractic medicine, traditional dental treatment (see Table 2).

TCAM Use of Patients in Biomedical Health Care Facilities

The prevalence of TCAM use of patients in biomedical health facilities was mainly assessed for various chronic conditions such as cancer, diabetes, hypertension, asthma, HIV and mental illness, and the prevalence of TCAM use was generally high, for example, 25 percent to 86 percent of cancer patients in Malaysia, Singapore and Thailand. The main TCAM types used for cancer included dietary supplements, mind-body practices, Chinese traditional medicine, herbal medicines, and exercises (see Table 3). For medical patients and/or patients with chronic conditions in general a prevalence of more than 60 percent was found in two studies in Malaysia and 22.7 percent in Singapore. Regarding other specific chronic conditions TCAM use for diabetic patients was found to be 47.8 percent in Thailand and 56 percent in Malaysia, for asthmatic patients 41 percent in Malaysia

Table 1: Prevalence of TCAM use in national population-based surveys

<i>Survey</i>	<i>Sample</i>	<i>Health facility uses as a result of an illness or injury</i>	<i>TCAM use (%)*</i>
Cambodia (NIS 2011)	Demographic and Health Survey (DHS)	Ill or injured in the past 30 days (Non-medical sector: Shop/market, Kru Khmer/magician)	5.4
Cambodia (UHS and MoH 2010)	STEPS survey	Among diagnosed hypertensive (seen THP) Among diagnosed diabetes (seen THP)	15.3 26.7
Indonesia (MaPH 2010)	National Socio-Economic Survey	Outpatient in past month	2.0
Laos PDR (MoH and WHO 2010)	STEPS survey (Capital City)	Among diagnosed hypertensive (seen THP) Among diagnosed diabetes (seen THP)	2.9 1.4
Malaysia (Siti et al. 2009)	Nationally representative survey	TCAM use in the past 12 months	55.6
Myanmar (WHO 2011)	STEPS survey	Among diagnosed hypertensive (seen THP) Among diagnosed diabetes (seen THP)	13.4 17.8
Philippines (NSO and ICF Macro 2009)	DHS	Household population that visited a health facility or sought advice or treatment in the 30 days preceding the survey (Alternative medical and non-medical)	6.3
Singapore (Feng et al. 2010)	Nationally representative survey of older adults (60 and older)	Overall CAM use in the past 12 months	42.7
Thailand (NSO 2011)	Health and Welfare Survey	Past month before the date of interview by type of the last treatment Traditional or Herbal medicine Visit local / Traditional carer	5.4 2.6 3.5
Vietnam (Trivedi 2002)	Vietnam Living Standards Survey	Annualized health service contact rates (traditional provider)	

*Proportion of all who consulted a health care provider in the reference period

NIS (National Institute of Statistics, Directorate General for Health, and ICF Macro 2011)

UHS and MoH (University of Health Sciences and Ministry of Health, Kingdom of Cambodia 2010)

MaPH (Ministry of Public Health, Republic of Indonesia Jakarta 2012)

MoH and WHO (Ministry of Health and World Health Organization 2010)

NSO and ICF Macro (National Statistics Office [Philippines] and ICF Macro 2009).

NSO (National Statistical Office of Thailand 2011)

and 27.2 percent in Singapore, among HIV patients 31 percent to 78 percent in Thailand and in Cambodia 56.7 percent began the treatment of schizophrenia with traditional medicine in Cambodia (see Table 4). For the different chronic conditions other than cancer a range of TCAM types was used, ranging from herbal treatment, Chinese traditional medicine, spiritual treatment, dietary supplements, vegetable diet, ginseng, acupuncture, yoga, homoeopathy, reflexology and massage (see Table 4).

DISCUSSION

The data presented about the prevalence of TCAM use in ASEAN countries show a fairly wide variation in its use and lack of data about the TCAM use among the general population. The wide variation in reported prevalence may

reflect differences in research or sample design, definitions of TCAM (practitioner and/or self-prescribed treatment), or measurements of TCAM use (for example lifetime use or use over the previous 12 months or 1 month) employed by different research surveys. In special surveys on CAM use high prevalence rates were found in Malaysia and Singapore (55.6% and 42.7%, respectively). However, in general national population health surveys which assessed also in one module recent health care utilization, the prevalence of TCAM use seemed to be low, ranging from 6.3 percent in the Philippines, 5.4 percent in Cambodia, 3.5 percent in Vietnam, 2.6 percent in Thailand and 2.0 percent in Indonesia. Other studies (for example, Peltzer 2009) also found similar low utilization rates of TCAM in population health surveys in South Africa. Cooper et al. (2013) found in a review of 27 national

Table 2: Prevalence of TCAM use in local population-based surveys

<i>Country and Author(s)</i>	<i>Sample</i>	<i>Variable</i>	<i>TCAM use (%)</i>	<i>TCAM type</i>
Brunei Darussalam (Chong et al. 2008)	N=568 Visitors to medical wards (randomly approached)	CAM use in the last 12 months	21.1	Traditional remedies (35.8%), vitamins/mineral supplements (19.2%), non-vitamins/non-minerals supplements (30%) and herbal remedies (3.3%)
Cambodia (Todd and Durward (1994)	N=548 Community survey	Previous dental attendance	34	Traditional dentist
Laos (Sydara et al. 2005)	N=600 Households	Households stated the ever use of traditional medicine	77	Herbal medicines, sauna, massage and acupuncture
Malaysia (Aziz and Tey 2009)	N=1601 Convenience sample of adults from four towns	Use of herbal medicines in the previous 12 months	33.9	
Malaysia (Wong et al. 2008)	N=380 Experiencing erectile problems street interception and face-to-face interview in Men	TCAM use	52.1	
Singapore (Ng et al. 2004)	N=2010 Community residents ≥ 65 years	Chinese herbal medicine use	25.3	Herbal medicine
Singapore (Lim et al. 2005)	N=468 Housing estate	CAM use in past 12 months	76	Most CAM users (66%) self-medicated Traditional Chinese Medicine (88%), Traditional Malay (Jamu) Medicine (8%) and Traditional Indian (Ayurvedic) Medicine (3%); 1.7% aromatherapy, yoga, or chiropractic medicine, etc.
Thailand (Achananuparp et al. 1989)	N=268 Hypertension in village survey	TCAM use among currently treated hypertensive patients	20	Local quacks, traditional healers and drug stores
Thailand (Satyapan et al. 2010)	N=631 Thai population in Bangkok	Herbal medicine treatment	28.6	
Thailand (Sumngern et al. 2011)	N=419 Systematic stratified sampling; People between 60-96 years	Herbal medicine consumption	97.4	They believed that herbals could reduce expenses (51%), cure diseases (41.9%), relieve symptoms (35.4%), and provide good health (33.6%).
Thailand (Tangkiatkumjai et al. 2014)	N=400 Intercept survey; 15 years and above	Herbal and dietary supplement use	52.0	Herb use to treat illnesses (58%), dietary supplements to promote well-being (65%)

surveys in high income countries, among adults a median past 12 months TCAM use of 12.3 percent. The researchers' findings seem to be in contrast to "About 80 percent of the rural popu-

lation in some Asian and African countries depend on traditional medicine for primary care purposes." (ASEAN Secretariat 2012).

Table 3: Prevalence of TCAM use of local biomedical health facility-based surveys (cancer)

<i>Country and Author(s)</i>	<i>Sample</i>	<i>Variable</i>	<i>TCAM use (%)</i>	<i>TCAM type</i>
Malaysia (Hamidah et al. 2009)	N=97 Parents of children with cancer; Paediatric oncology center	Use of complementary and alternative medicine by children with cancer	84.5	Water therapy (78%), spirulina (33%), vitamin C (27%), multivitamin (23%), traditional healers (22%), sea cucumber (<i>Stichopus horrens</i>) (15%), Chinese traditional medicine (12%).
Malaysia (Shaharudin et al. 2011)	N=116 Breast cancer survivors Aged 21 to 67 years who were 2 years post diagnosis	Use of complementary and alternative medicine	64	Dietary supplements (multivitamins, spirulina, vitamin C, evening primrose oil, herbal products), prayer and Malay traditional medicine
Malaysia (Chui et al. 2014)	N=546 Breast cancer patients during chemotherapy	CAM use	70.7	Mind-body practices (88.6%), natural products (77.5%) and traditional medicine (33.4%)
Malaysia (Dhanoa et al. 2014)	N =274 Orthopaedic oncology patients	CAM use	61.3	Biological-based therapies (90.5%), mind-body techniques (40.5%)
Malaysia (Knight et al. 2015)	N=100 Breast cancer patients	CAM use	25	Nutrition supplements (16%), herbal products (8%), traditional healer (4%), homeopathy (1%)
Singapore (Shih et al. 2009)61.3	N=403 Adult cancer patients treated at the Ambulatory Treatment Unit	Use of complementary and alternative medicine	56	Traditional Chinese Medicine, bird's nest and special diet.
Singapore (Wong et al. 2010)	N=65 Patients in oncology department	Use of complementary and alternative (TCM) medicine	86	Spiritual practices (48%) and traditional Chinese medicine (37%)
Thailand (Puataweepong et al. 2009)	N=248 Cancer patients attending outpatient radiotherapy unit	Use of complementary and alternative medicine	60.9	Dietary/vitamin supplements
Thailand (Supoken et al. 2009)	N=100. 50 admitted and 50 walk-in gynecologic cancer patients 1 month after diagnosis	Use of complementary and alternative medicine	67	Buddhist praying (62/67, 92.5%)Herbal medicines (27/67, 40.3%)Exercises (25/67, 37.3%).

Generally, population-based and health facility-based surveys seem to indicate that TCAM use still plays an important role in health care delivery in ASEAN countries, in particular for chronic conditions such as cancer, diabetes, hypertension, asthma, HIV and mental illness. The study found eight studies on the TCAM use in cancer patients, with a range of TCAM use prevalence of 56 percent to 84.5 percent. Ernst and Cassileth (1998) found in a systematic review that the prevalence of CAM use in cancer, adult populations ranged from 7 percent to 64 percent, with an average prevalence across all adult studies of 31.4 percent. In one study in

Malaysia a high prevalence of TCAM use among paediatric cancer patients was found (84.5%). Bishop et al. (2010) found in a systematic review that the prevalence of any CAM use (since cancer diagnosis) in paediatric cancer patients ranged from 6 percent to 91 percent. Pan et al. (2015) found in a systematic review that “the current evidence demonstrates that yoga practice could be effective in enhancing health and managing some treatment-related side effects for patients recovering from breast cancer.”

Two studies use the TCAM use in diabetic patients found a prevalence of over 47 percent, which seem in the middle of 17 percent to 73

Table 4: Prevalence of TCAM use in local biomedical health facility-based surveys (other than cancer)

<i>Country and Author(s)</i>	<i>Sample</i>	<i>Variable</i>	<i>TCAM use (%)</i>	<i>TCAM type</i>
Cambodia Coton et al. (2008)	N=104 Schizophrenic patients and their caregivers who consulted for the first time in psychiatric departments	Health seeking behaviour for schizophrenic episode	76.9	56.7% began with traditional medicine 20.2% began with religious medicine
Malaysia (Remli and Chan 2003)	N=43 Diabetic patients	CAM use	56	Herbal therapy, homoeopathy and reflexology
Malaysia (Mahfudz and Chan 2005)	N=120 Hypertensive patients	TCAM use	27	Mostly herbal medicine
Malaysia (Mokhtar and Chan 2006)	N=88 Asthmatic patients	CAM use	41	Nutritional supplements, herbs, yoga, homeopathy, reflexology and massage.
Malaysia (Saw et al. 2006)	N=250 Medical patients	Herbal use	67.9	
Malaysia (Hasan et al. 2009)	N=321 Patients with chronic diseases	TCAM use	63.9	Vitamin supplements (48.2%), herbal medicines (26.4%), ginseng (4.7%) and traditional Chinese medicine (4.0%)
Malaysia (Lua 2011)	N=39 Hospice-based palliative patients	TCAM use	38.5	Dried medicinal roots, herbs and sea cucumber products (53.3%)
Philippines (Cagayan and Oras 2010)	N=52 Women with gestational trophoblastic diseases	CAM use	96.0	Most commonly mental healing, vegetable diet, and multivitamins
Singapore (Ng et al. 2003)	N=802 Adult patients with asthma Primary care clinic	CAM use	27.2	Animal food products (12.3%), herbs (10.3%), herbal-based proprietary medicines (3.2%), and acupuncture or reflexology (1%).
Singapore (Lee et al. 2004)	N=488 Adult patients with chronic diseases	12 months CAM use	22.7	
Singapore (Tan et al. 2006)	N=159 Patients with Parkinson's disease	CAM use	61	Traditional medicine, acupuncture, and vitamins/health supplements
Thailand (Wiwanitkit 2003)	N=160 HIV-seropositive patients	CAM use	78	
Thailand (Vanlandingham et al. 2006)	N=412 Persons living with HIV and AIDS	Ever herbal treatment	31	
Thailand (Moolasarn et al. 2005)	N=159 Diabetes patients	CAM use	47.8	Yoga/exercise (32.8%), unchanged form of herbal medicine (29.9%), and changed form herbal medicine (17.8%).

percent, as found in a systematic review of the prevalence of CAM use among people living with diabetes (Chang et al. 2007). In a study in Sri Lanka 76 percent of diabetic patients admitted to the use of a CAM to reduce blood glucose and the incidence of hypoglycaemia in CAM users was 21 percent compared to 16.6

percent in non-users (Medagama et al. 2014), while the ingestion of one of the CAM (Crepe ginger) was associated with higher incidence of hypoglycaemia (Medagama et al. 2014). Some of the most common therapies listed for diabetes were herbal therapy, homoeopathy, reflexology and Yoga/exercise, while Chang et al. (2007) found

in their review that nutritional supplements, herbal medicines, nutritional advice, spiritual healing, and relaxation techniques are the most widely consumed CAM therapies among diabetic populations.

In population surveys in several ASEAN countries the use of TCAM for hypertension ranged from 1.9 percent in Laos to 13.4 percent in Myanmar and 15.3 percent in Cambodia and 20 percent in a village survey in Thailand as well as in a clinical hypertension sample in Malaysia 27 percent (Mahfudz and Chan 2005). Similarly, Tsai et al. (2014) found from a large sample of primary hypertensive patients in the National Health Insurance Research Database in Taiwan that 12.1 percent had used TCAM for the treatment of hypertension. A study in India also found a high prevalence of CAM use in hypertensive patients, of a tertiary care centre (Shafiq et al. 2003). In a review, Xiong et al. (2015) found that specific traditional Chinese patient medicine may have a beneficial effect on essential hypertension.

Two studies in Malaysia and Singapore reported the prevalence of CAM use in asthma patients between 27.2 percent and 41 percent. In a systematic review Slader et al. (2006) reported the level of CAM use in asthma patients for adults ranged from 4 percent to 79 percent, and for children from 33 percent to 89 percent. Also in a more recent study analysing beneficiaries from the National Health Insurance Research Database in Taiwan a high proportion (85.7%) of asthma patients had used TCAM (Wang et al. 2014). Despite the high TCAM use for asthma, only a few patents on herbal medicine for asthma have been evaluated and therapeutic efficacy is not yet sufficiently documented (Hon et al. 2015). The most common forms of CAM use for asthma patients in Malaysia and Singapore included nutritional supplements, herbs, yoga, homoeopathy, reflexology, massage and animal food products, while in the review by Slader et al. (2006), the most commonly used CAMs included breathing techniques, herbal products, homoeopathy and acupuncture.

Further, this review found two studies on CAM use in HIV patients in Thailand, with a prevalence of its use ranging from 31 percent to 78 percent. Littlewood and Vanable (2008) confirm from a systematic review that a high proportion of HIV-positive individuals report CAM use (M=60%). In a community survey in Cambodia a

high rate of use of traditional dentists was found. Durward et al. (1994: 111) found in a survey of the training, practice and dental health knowledge of traditional dentists practising in Phnom Penh, Cambodia, that “the majority had been trained as an apprentice of either their father or a relative. The most frequently undertaken treatment procedures were tooth coloured fillings, and cast, preformed metal or acrylic crowns and bridges. Knowledge of dental pathology was poor.” One study in Singapore (Tan et al. 2006) found high CAM use in patients with Parkinson’s disease. In a review, Bega and Zadikoff (2014) found that mind-body interventions are generally effective forms of physical activity that are likely to foster good adherence and may reduce disability associated with Parkinson’s disease.

CONCLUSION

TCAM is used by substantial proportions of the general and clinical population. The investigations included in the review differed markedly in their methodologies, origins and results. Some surveys were aimed at determining lifetime prevalence of TCAM use, while other investigators used one-year, six months, or one month prevalence data. The utilization of the different types of TCAM were in a number of studies not elicited. Not enough is known about the circumstances in which TCAM is used by people in ASEAN.

RECOMMENDATIONS

Future surveys should include the utilization of different types of TCAM therapies rather than TCAM in general, be based on samples representative of general populations, assess point and one-year prevalence, and be based on adequate response rates. Periodic surveys of general populations are important to monitor changing patterns in TCAM use. Research into differences regarding ASEAN citizens’ attitudes and needs towards TCAM should also be investigated and addressed in the future TCAM research.

REFERENCES

- Achananuparp S, Suriyawongpaisal P, Suebwonglee S, Sakdisawasdi O, Nanna P, Khumthong N, Limsuwan A 1989. Prevalence, detection and control of hy-

- pertension in Thai population of a central rural community. *J Med Assoc Thai*, 72(Suppl) 1: 66-75.
- ASEAN Community in Figures 2013. *ACIF 2012*. Jakarta: ASEAN Secretariat.
- ASEAN Secretariat 2012. Towards Harmonization of Traditional Medicine Practices. e-Health Bulletin, 2, 1-8. From <www.asean.org/.../asean-e-health-bulletin-towards-harmonisation-of-traditional-medicine-practices> (Retrieved on 10 October 2013).
- Association of Southeast Asian Nations 2013. ASEAN Member States. From <http://www.aseansec.org/> (Retrieved on 10 July 2013).
- Aziz Z, Tey NP 2009. Herbal medicines: Prevalence and predictors of use among Malaysian adults. *Complement Ther Med*, 17(1): 44-50.
- Bega D, Zadikoff C 2014. Complementary and alternative management of Parkinson's disease: An evidence-based review of eastern influenced practices. *J Mov Disord*, 7(2): 57-66.
- Bishop FL, Prescott P, Chan YK, Saville J, von Elm E, et al. 2010. Prevalence of complementary medicine use in pediatric cancer: A systematic review. *Pediatrics*, 125(4): 768-776.
- Cagayan MS, Oras CM 2010. Use of complementary and alternative medicines among women with gestational trophoblastic diseases: A survey at the Philippine General Hospital. *J Reprod Med*, 55(7-8): 327-332.
- Chang HY, Wallis M, Tiralongo E 2007. Use of complementary and alternative medicine among people living with diabetes: Literature review. *J Adv Nurs*, 58(4): 307-319.
- Chong VH, Rajendran N, Wint Z 2008. Prevalence and predictive factors for complementary and alternative medicine use in Brunei Darussalam. *Singapore Med J*, 49(12): 1012-1016.
- Chui PL, Abdullah KL, Wong LP, Taib NA 2014. Prayer-for-health and complementary alternative medicine use among Malaysian breast cancer patients during chemotherapy. *BMC Complement Altern Med*, 14: 425. doi: 10.1186/1472-6882-14-425.
- Chuthaputti A, Boonterm B 2010. *Traditional Medicine in ASEAN*. Bangkok: Medical Publisher.
- Cooper KL, Harris PE, Relton C, Thomas KJ 2013. Prevalence of visits to five types of complementary and alternative medicine practitioners by the general population: A systematic review. *Complement Ther Clin Pract*, 19(4): 214-220.
- Coton X, Poly S, Hoyois P, Sophal C, Dubois V 2008. The healthcare-seeking behaviour of schizophrenic patients in Cambodia. *Int J Soc Psychiatry*, 54(4): 328-337.
- Dhanoa A, Yong TL, Yeap SJ, Lee IS, Singh VA 2014. Complementary and alternative medicine use amongst Malaysian orthopaedic oncology patients. *BMC Complement Altern Med*, 14: 404. doi: 10.1186/1472-6882-14-404.
- Durward C, Todd R, So PK, Phlok S 1994. A survey of the training, practice and dental health knowledge of traditional dentists practising in Phnom Penh, Cambodia. *Community Dent Health*, 11(2): 111-113.
- Ernst E 2000. Prevalence of use of complementary/alternative medicine: A systematic review. *Bull World Health Org*, 78(2): 252-257.
- Ernst E, Cassileth BR 1998. The prevalence of complementary/alternative medicine in cancer: A systematic review. *Cancer*, 83(4): 777-782.
- Feng L, Chiam PC, Kua EH, Ng TP 2010. Use of complementary and alternative medicines and mental disorders in community-living Asian older adults. *Arch Gerontol Geriatr*, 50(3): 243-249.
- Hamidah A, Rustam ZA, Tamil AM, Zarina LA, Zulkipli ZS et al. 2009. Prevalence and parental perceptions of complementary and alternative medicine use by children with cancer in a multi-ethnic South-east Asian population. *Pediatr Blood Cancer*, 52(1): 70-74.
- Harris PE, Cooper KL, Relton C, Thomas KJ 2012. Prevalence of complementary and alternative medicine (CAM) use by the general population: A systematic review and update. *Int J Clin Pract*, 66(10): 924-939.
- Hasan SS, Ahmed SI, Bukhari NI, Loon WC 2009. Use of complementary and alternative medicine among patients with chronic diseases at outpatient clinics. *Complement Ther Clin Pract*, 15(3): 152-157.
- Hon K, Fung CK, Leung AK, Leung TN, Daniel NK 2015. Complementary and alternative medicine for childhood asthma: An overview of evidence and patents. *Recent Pat Inflamm Allergy Drug Discov*, 9(1): 66-79.
- Knight A, Hwa YS, Hashim H 2015. Complementary alternative medicine use amongst breast cancer patients in the northern region of peninsular Malaysia. *Asian Pac J Cancer Prev*, 16(8): 3125-3130.
- Lee GB, Charn TC, Chew ZH, Ng TP 2004. Complementary and alternative medicine use in patients with chronic diseases in primary care is associated with perceived quality of care and cultural beliefs. *Fam Pract*, 21(6): 654-660.
- Lim MK, Sadarangani P, Chan HL, Heng JY 2005. Complementary and alternative medicine use in multiracial Singapore. *Complement Ther Med*, 13(1): 16-24.
- Littlewood RA, Vanable PA 2008. Complementary and alternative medicine use among HIV-positive people: Research synthesis and implications for HIV care. *AIDS Care*, 20(8): 1002-1018.
- Lua PL 2011. The role of complementary indigenous Malay therapies: Perspectives from palliative care patients. *J Complement Integr Med*, 8(1): (April 2011). doi: 10.2202/1553-3840.1369.
- Mahfudz AS, Chan SC 2005. Use of complementary medicine amongst hypertensive patients in a public primary care clinic in Ipoh. *Med J Malaysia*, 60(4): 454-459.
- Medagama AB, Bandara R, Abeysekera RA, Imbulpitiya B, Pushpakumari T 2014. Use of Complementary and Alternative Medicines (CAMs) among type 2 diabetes patients in Sri Lanka: A cross sectional survey. *BMC Complement Altern Med*, 14: 374. doi: 10.1186/1472-6882-14-374.
- Ministry of Health and World Health Organization 2010. *Report on STEPS Survey on Non Communicable Diseases Risk Factors in Vientiane Capital City, Lao PDR*. Vientiane: Ministry of Health.
- Ministry of Public Health, Republic of Indonesia Jakarta 2010. *Indonesia Health Profile 2008*. Jakarta: Ministry of Public Health.
- Mokhtar N, Chan SC 2006. Use of complementary medicine amongst asthmatic patients in primary care. *Med J Malaysia*, 61(1): 125-127.

- Moolasarn S, Sripa S, Kuessirikiet V, Sutawee K, Huarary J et al. 2005. Usage of and cost of complementary/alternative medicine in diabetic patients. *J Med Assoc Thai*, 88(11): 1630-1637.
- National Institute of Statistics, Directorate General for Health, and ICF Macro 2011. *Cambodia Demographic and Health Survey 2010*. Phnom Penh, Cambodia and Calverton, Maryland, USA: National Institute of Statistics, Directorate General for Health, and ICF Macro.
- National Statistics Office (NSO) [Philippines], and ICF Macro 2009. *National Demographic and Health Survey 2008*. Calverton, Maryland: National Statistics Office and ICF Macro.
- National Statistical Office of Thailand 2011. *Health and Welfare Survey, 2011, Thailand*. Bangkok: National Statistical Office.
- Ng TP, Tan CH, Kua EH 2004. Singapore Chinese longitudinal aging study the use of Chinese herbal medicines and their correlates in Chinese older adults: The Singapore Chinese Longitudinal Aging Study. *Age Ageing*, 33(2): 135-142.
- Ng TP, Wong ML, Hong CY, Koh KT, Goh LG 2003. The use of complementary and alternative medicine by asthma patients. *QJM*, 96(10): 747-754.
- Pan Y, Yang K, Wang Y, Zhang L, Liang H 2015. Could yoga practice improve treatment-related side effects and quality of life for women with breast cancer? A systematic review and meta-analysis. *Asia Pac J Clin Oncol*, Jan 6. doi: 10.1111/ajco.12329.
- Peltzer K 2009. Utilization and practice of traditional/complementary/alternative medicine (TM/CAM) in South Africa. *Afr J Tradit Complement Altern Med*, 6(2): 175-185.
- Puataweepong P, Sutheechet N, Ratanamongkol P 2012. A survey of complementary and alternative medicine use in cancer patients treated with radiotherapy in Thailand. *Evid Based Complement Alternat Med*, 2012: 670408. doi: 10.1155/2012/670408.
- Remli R, Chan SC 2003. Use of complementary medicine amongst diabetic patients in a public primary care clinic in Ipoh. *Med J Malaysia*, 58(5): 688-693.
- Satyapan N, Patarakitvanit S, Temboonkiet S, Vudhironarit T, Tankanitlert J 2010. Herbal medicine: Affecting factors and prevalence of use among Thai population in Bangkok. *J Med Assoc Thai*, 93 (Suppl) 6: S139-144.
- Saw JT, Bahari MB, Ang HH, Lim YH 2006. Herbal use amongst multiethnic medical patients in Penang Hospital: Pattern and perceptions. *Med J Malaysia*, 61(4): 422-432.
- Shafiq N, Gupta M, Kumari S, Pandhi P 2003. Prevalence and pattern of use of complementary and alternative medicine (CAM) in hypertensive patients of a tertiary care center in India. *Int J Clin Pharmacol Ther*, 41(7): 294-298.
- Shaharudin SH, Sulaiman S, Emran NA, Shahril MR, Hussain SN 2011. The use of complementary and alternative medicine among Malay breast cancer survivors. *Altern Ther Health Med*, 17(1): 50-56.
- Shih V, Chiang JY, Chan A 2009. Complementary and alternative medicine (CAM) usage in Singaporean adult cancer patients. *Ann Oncol*, 20(4): 752-757.
- Siti ZM, Tahir A, Farah AI, Fazlin SM, Sondi S, et al. 2009. Use of traditional and complementary medicine in Malaysia: A baseline study. *Complement Ther Med*, 17(5-6): 292-299.
- Slader CA, Reddel HK, Jenkins CR, Armour CL, Bosnic-Anticevich SZ 2006. Complementary and alternative medicine use in asthma: Who is using what? *Respirology*, 11(4): 373-387.
- Sumngern C, Azeredo Z, Subgranon R, Matos E, Kijjoa A 2011. The perception of the benefits of herbal medicine consumption among the Thai elderly. *J Nutr Health Aging*, 15(1): 59-63.
- Supoken A, Chaisrisawatsuk T, Chumworathayi B 2009. Proportion of gynecologic cancer patients using complementary and alternative medicine. *Asian Pac J Cancer Prev*, 10(5): 779-782.
- Sydara K, Gneunphonsavath S, Wahlström R, Freudenthal S, Houamboun K et al. 2005. Use of traditional medicine in Lao PDR. *Complement Ther Med*, 13(3): 199-205.
- Tan LC, Lau PN, Jamora RD, Chan ES 2006. Use of complementary therapies in patients with Parkinson's disease in Singapore. *Mov Disord*, 21(1): 86-89.
- Tangkiatkumjai M, Boardman H, Walker DM 2014. Herbal and dietary supplement use in Bangkok: A survey. *J Complement Integr Med*, 11(3): 203-211.
- Todd R, Durward CS 1994. Utilisation of dental services in Cambodia and the role of traditional dentists. *Community Dent Health*, 11(1): 34-37.
- Trivedi PK 2002. *Patterns of Health Care Utilization in Vietnam: Analysis of 1997-98 Vietnam Living Standards Survey Data*. Washington, DC: World Bank.
- Tsai DS, Chang YS, Li TC, Peng WH 2014. Prescription pattern of Chinese herbal products for hypertension in Taiwan: A population-based study. *J Ethnopharmacol*, 155(3): 1534-1540.
- University of Health Sciences and Ministry of Health, Kingdom of Cambodia 2010. Prevalence of Non-communicable Risk Factors in Cambodia. STEPS Survey, *Country Report, 2010*. Phnom Penh: University of Health Sciences and Ministry of Health.
- Vanlandingham M, Im-Em W, Yokota F 2006. Access to treatment and care associated with HIV infection among members of AIDS support groups in Thailand. *AIDS Care*, 18(7): 637-646.
- Wang HM, Lin SK, Yeh CH, Lai JN 2014. Prescription pattern of Chinese herbal products for adult-onset asthma in Taiwan: A population-based study. *Ann Allergy Asthma Immunol*, 112(5): 465-470.
- Wiwanitkit V 2003. The use of CAM by HIV-positive patients in Thailand. *Complement Ther Med*, 11(1): 39-41.
- World Health Organization (WHO) 2000. *General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine*, WHO/EDM/TRM/2000.1.
- World Health Organization (WHO) 2002. *WHO Traditional Medicine Strategy 2002-2005*. Geneva: WHO.
- World Health Organization (WHO) 2004. *Global Atlas of Traditional Medicine. Proceedings of an International Meeting*, 17-19 June 2003, Kobe, Japan.
- World Health Organization (WHO) 2011. *Non-communicable Disease Risk Factor Survey Myanmar 2009*. New Delhi.
- Wong LC, Chan E, Tay S, Lee KM, Back M 2010. Complementary and alternative medicine practices among Asian radiotherapy patients. *Asia Pac J Clin Oncol*, 6(4): 357-363.

Wong LP, Tan HM, Low WY, Ng CJ 2008. Traditional and complementary medicine (T/CM) in the treatment of erection difficulties- experience from the Asian Men's Attitudes to Life Events and Sexuality (MALES) study. *JMH*, 5(4): 356-365.

Xiong X, Wang P, Zhang Y, Li X 2015. Effects of traditional Chinese patent medicine on essential hypertension: A systematic review. *Medicine (Baltimore)*, 94(5): e442. doi: 10.1097/MD.00000 000000442.