

Usage of and Cost of Complementary/Alternative Medicine in Diabetic Patients

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The purposes of the present survey research in diabetic patients were 1) to determine characteristics of complementary/alternative medicine (CAM) use, 2) to identify factors related to CAM use such as sociodemographic, adverse effects, and quality of life, and 3) to determine differences between patients who used and did not use CAM. The data was collected through developed questionnaires and SF-36 scale Thai version. Samples were 159 diabetes patients over 18 years of age or older who came for treatment at Suppasitthiprasong Hospital, Ubon Ratchathani Province, Thailand.

The results indicated that the prevalence of CAM use was rather high (47.8%). The most common types of CAM used were yoga/exercise (32.8%), unchanged form of herbal medicine (29.9%), and changed form herbal medicine (17.8%). The average expense of CAM use was \$8.58 per person per month. Thus, if the percentage of CAM use and the cost were true for other Thai diabetic patients throughout Thailand, CAM use expenditure for the whole country would be about \$915,250 - 1,545,750 per month, which is quite high for a small country like Thailand.

Most patients (64.4%) who used CAM did not inform their doctors about their CAM use. Results also indicated that government official patients were more likely to use CAM than those of farmer patients significantly (p -value = 0.03, odds ratio = 12.11). In addition, the present study found that patients who had a higher income were more likely to use CAM than those of lower income patients significantly (p - value = 0.04, odds ratio = 1.01). However, other factors such as age, sex, marital status, level of education, health insurance coverage status, duration of time to treat, occurrence of adverse effects, and quality of life were not different between the patients who used CAM and who did not use CAM.

Physicians should pay more attention to the CAM use of patients since they used CAM without informing physicians and some herbal medicines may cause hypoglycemia. However, the study results had some limitations to apply to other Thai populations since the sample were Suppasitthiprasong patients who may be different from other Thai populations in many ways such as their local culture, belief, and CAM use types and cost.

Keywords: Alternative/Complementary medicine, Diabetic patients, Usage, Cost

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Complementary and alternative medicine (CAM) is defined as medical interventions and techniques that have neither been traditionally taught in

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medical schools nor included in residency training and that are not generally used in hospitals⁽¹⁾. Some studies on CAM use showed inconsistent results. Prevalence of CAM use ranges from 34-38% in foreign countries⁽¹⁻⁴⁾. For Thai patients^(5,6), the CAM use was quite high, ranging from 62-77%. In addition, studies have found that the cost of CAM use was very high - \$34.4 billion

in the US⁽⁷⁾. Studies on effects of CAM use on quality of life also showed inconsistent results. Burstein et al (1999)⁽⁸⁾ found that breast cancer patients who used CAM had lower quality of life than those who did not use CAM. However, Antman et al. (2001)⁽⁹⁾ found that cancer patients who used CAM with conventional therapy had a better quality of life than those who did not use it.

Since most of the studies concerning CAM effects and cost were done in other countries and only a few studies were done in Thai patients and the results might not be applied for Thai patients appropriately due to differences in culture, behaviors, socioeconomics and other factors, the authors conducted this research to determine factors associated with the use of CAM, quality of life effects and cost of CAM use in Thai diabetics patients.

Material and Method

The present study was a cross-sectional survey using a self-developed questionnaire and SF-36 scale (Thai version)⁽¹⁰⁾. Samples were diabetic patients who were 18 years old or older who came to follow up and received their medication at Suppasittiprasong Hospital (1000 beds regional hospital) from December 2003 to January 2004. Sample size was calculated to determine difference in scores of quality of life of 10 points with a power of 0.80. Significance was set at 0.05.

After receiving information about the research purposes, procedures and their rights, all participants gave verbal consent before starting the interview by a trained interviewer. The developed questionnaire requested information from participants about gender, age, marital status (single or married), education status (primary school or less, middle school, and bachelor degree or higher), income, health insurance types (insured such as patients who were under the government official benefit scheme, partially insured such as patients who were under the Universal care coverage (UC) with some limitations to health care treatment, and out of pocket payment), duration of diabetic treatment, types of use (from a checklist), reasons for using the CAM (from a checklist), compliance, occurrence of adverse effects and quality of life. Patients were classified as using CAM if they used at least one type of CAM during the past three months. Cost of CAM use was calculated for one month and only for direct CAM treatment cost and did not include indirect cost such as transportation cost or wage loss cost. The cost was changed from Thai currency to US dollars later based on the exchange rate of 40 baht equal to one US dollar.

The SF-36 scale had overall Cronbach's alpha of 0.92 and the Cronbach's alpha of each domain was larger than 0.60.

Statistical analyses were done using the SPSS program. T-test was used for the comparison of continuous variables. Chi-square test was used for categorical variables. In addition, logistic regression odds ratio and 95% CI were used to determine association of CAM use and risk with interesting variables. A p-value of less than 0.05 was considered statistically significant.

Results

One hundred and sixty two diabetic patients who were 18 years old or older were asked to participate in the survey; however, only 159 patients were willing to participate. Most of them were female (78.6%), mean age of 57.1 years old, married (81.8%), finished primary school (79.1%), farmers (79.9%), mean income of \$93.8 per month, treated as diabetics patients for not more than 5 years (42.1%) (Table 1).

Seventy six (47.8%) patients had used at least one type of CAM during the past 3 months. There was no significant difference between the CAM users and non CAM users on gender, marital status, education status, career, income, health insurance status, age, and duration of diabetic treatment (Table 1).

Yoga/exercise (46.0%), unchanged form of herbal medicine (42.1%), and changed form of herbal medicine (25.0%) were the most common types of CAM used (Table 2).

On average, yoga/exercise had the highest frequency of CAM use per month (27 times/month) without any cost. Unchanged form of herbal medicine was 23 times per month with the expense of \$2.77 per month. Changed form of herbal medicine was 27 times per month with the cost of \$13.45 per month. On average for all types of CAM use, patients spent \$8.59 per month for CAM use (Table 3).

Most of the patients taking CAM was due to receiving advice or information from other persons, media, or physicians and wanted supplement therapy. No patient used CAM because of dissatisfaction with conventional therapy or occurrence of adverse reaction of conventional medicines (Table 4).

Most of the patients (60.5%) used CAM concomitant with conventional therapy and did not inform their physicians about it. About 32 percent of the sample using CAM informed their physicians and only a few reduced the dose of conventional medicine or even used only CAM without informing their physicians (Table 5).

Table 1. Characteristics of patients and comparisons of characteristics of CAM users and non CAM users

Characteristics	All patients (N = 159) No. (%)	CAM users (N = 76) No. (%)	Non CAM users (N = 83) No. (%)	p-value
Gender				0.49
Male	34 (21.4)	18 (23.7)	16 (19.3)	
Female	125 (78.6)	58 (76.3)	67 (80.7)	
Marital status				0.64
Single	29 (18.2)	15 (19.7)	14 (16.9)	
Married	130 (81.8)	61 (80.3)	69 (83.1)	
Education status				0.72
Primary school or less	127 (79.9)	60 (78.9)	67 (80.7)	
Middle school	22 (13.8)	10 (13.2)	12 (14.4)	
Bachelor degree or higher	10 (6.3)	6 (7.9)	4 (4.8)	
Career			0.17	
Farmer	127 (79.9)	56 (73.7)	71 (85.5)	
Business	14 (8.8)	11 (14.5)	6 (7.2)	
Government official	18 (11.3)	9 (11.8)	6 (7.2)	
Health insurance type				0.29
Partially insured (UC)	129 (81.1)	60 (78.9)	69 (83.1)	
Fully Insured	22 (13.8)	10 (13.2)	12 (14.4)	
Out of pocket	8 (5.0)	6 (7.9)	2 (2.4)	
Mean age (std) (years)	57.1 (10.8)	57.1 (10.3)	57.1 (11.2)	0.98
Mean income per month (std) (\$US)	93.8 (172.3)	89.3 (126.0)	98.0 (206.5)	0.75
Mean duration of treatment (std) (years)	7.8 (8.6)	6.8 (7.2)	8.7 (9.6)	0.17

Table 2. Types of CAM used for CAM users (N = 76)*

Type of CAM	No. (%)
Yoga/Exercise	35 (46.0)
Unchanged form of herbal medicine	32 (42.1)
Changed form of herbal medicine	19 (25.0)
Acupuncture/Acupressure	8 (10.5)
Mental therapy	6 (7.9)
Diet supplementary	4 (5.3)
Oil massage	2 (2.6)
Others	1 (1.3)

*A patient may use more than one type of CAM

When asked about compliance with conventional therapy, the proportion of patients who forgot to take medication sometimes during the past week in both CAM users and non CAM users was not significantly different (p-value = 0.11) (Table 6).

Results found that the quality of life of CAM users and non CAM users was not significantly different in every domain of the SF-36 scale (Table 7).

Logistic regression analyses showed that, after controlling for other variables, income and career were the only two variables that were associated with the likelihood of using CAM. Patients who had a

Table 3. Frequency of CAM use and cost (N = 76)

CAM type	Average/Frequency/month No. (std)	Cost/month (\$)
Acupuncture/Acupressure	1.8 (2.5)	13.60
Oil massage	2.5 (0.7)	1.25
Yoga/Exercise	26.6 (5.8)	0.00
Diet supplementary	22.8 (14.5)	29.86
Mental Therapy	21.0 (14)	0.00
Changed form of herbal medicine	27.2 (8.4)	2.77
Unchanged form of herbal medicine	23.4 (9.7)	13.45
Others	1.0 (0.0)	3.75
Average spending/person/month		8.59

Table 4. Reasons for using CAM (N = 76)

Reasons	No. of patients (%)
My friends, media and/or relatives advised me to take CAM	44 (57.9)
I believe CAM complements conventional medicine for the treatment of my health status	10 (13.2)
My physician advised me to take CAM	22 (28.9)
Dissatisfaction with conventional therapy	0 (0.0)
Occurrence of adverse reaction of conventional medicines	0 (0.0)

Table 5. Characteristics of CAM use with conventional therapy (N = 76)

Characteristics of CAM use	No. (%)
Used only CAM and physicians were informed	0 (0.0)
Used only CAM and physicians were not informed	2 (2.6)
Used CAM with conventional therapy and physicians were informed	25 (32.9)
Used CAM with conventional therapy and physicians were not informed	46 (60.5)
Used CAM with a reduced dose of conventional therapy and physicians were informed	2 (2.6)
Used CAM with a reduced dose of conventional medicines and physicians were not informed	1 (1.3)

Table 6. Compliance with conventional therapy during the past week (N = 159)

Compliance	CAM users (N = 76) No. (%)	Non CAM users (N = 83) No. (%)	p-value
- Forgot to take medication sometimes	26 (34.2)	19 (22.9)	0.11
- Did not forget to take medication	50 (65.8)	64 (77.1)	

Table 7. SF-36 Quality of life comparisons between CAM users and Non CAM users (N = 159)

SF-36 domains	CAM users (N = 76) Mean (SD)	Non CAM users (N = 83) Mean (SD)	p-value
General health	51.5 (23.3)	50.6 (21.5)	0.80
Physical function	74.9 (28.5)	72.0 (26.8)	0.52
Role physical	45.7 (46.3)	38.6 (43.7)	0.32
Role emotional	41.2 (43.5)	44.2 (40.7)	0.66
Social functioning	83.4 (29.1)	76.9 (34.2)	0.21
Vitality	63.2 (19.5)	62.1 (18.9)	0.73
Mental health	70.4 (20.8)	71.5 (19.9)	0.73
Bodily pain	59.3 (24.5)	59.8 (24.2)	0.90

higher income were more likely to use CAM than those patients who had a lower income (OR = 1.01, p = 0.04). In addition, patients who were government officials were 12 times more likely to use CAM than those who were farmers (OR = 12.11, p = 0.03) (Table 8).

Discussion

The present study showed that 47.8% of

diabetic patients who came to follow up at a regional hospital had used at least one type of CAM during the past three months. The prevalence was higher than that was found by Eisenberg et al (1993)⁽¹⁾ which found that 34.0% of US patients used CAM. However, this prevalence was lower than that found in other studies. Moolasarn et al. (2003)⁽⁶⁾ found in Thai cancer patients that 77% of them used CAM. In addition, Sollner et al

Table 8. Logistic regression of factors associated with CAM use (N = 159)

Variables	p-value	odds ratio	95.0%CI	
			Lower	Upper
Age	0.90	1.00	0.96	1.04
Gender	0.74	1.18	0.44	3.20
Marital status (Single/Married)	0.43	0.68	0.26	1.78
Education status				
- Middle school/primary school	0.90	0.39	0.09	1.70
- Bachelor degree/primary school	0.94	0.89	0.04	19.58
Income	0.04	1.01	1.00	1.01
Duration of treatment	0.19	0.96	0.91	1.02
Health insurance type				
- Insured/Partially insured	0.91	0.93	0.25	3.46
- Out of pocket/Partially insured	0.17	3.90	0.56	26.99
Career				
- Business/Farmer	0.10	3.16	0.80	12.44
- Government official/Farmer	0.03	12.11	1.27	115.67
Adverse effects occurred				
Quality of life	0.81	0.90	0.37	2.16
- General health	0.91	0.99	0.98	1.02
- Physical function	0.39	0.99	0.97	1.01
- Role physical	0.13	1.01	0.99	1.02
- Role emotional	0.32	0.99	0.98	1.01
- Social functioning	0.12	1.01	0.99	1.03
- Vitality	0.77	0.99	0.97	1.02
- Mental health	0.64	0.99	0.97	1.02
- Bodily pain	0.53	0.99	0.98	1.01

(1997)⁽²⁾ and Boon et al (2000)⁽¹¹⁾ found that 60% and 66.7%, respectively, of the cancer patients used CAM. Difference in types of disease, culture, socioeconomic status, or other factors may be the explanation of the contradictory results.

Results indicated that herbal medicine (67.1%) and yoga/exercise (46.0%) were the two CAMs that were the most common types of CAM used by diabetic patients. This finding was consistent with other studies^(5,6). However, the finding was inconsistent with other studies^(7,12) which found that chiropractic, relaxation technique and relaxation/medication were the most common types of CAM used respectively.

The finding that patients took CAM because they received advice or information from other persons, media, or even physicians and wanted more supplementary treatment in addition to conventional therapy was consistent with other studies^(9,12,13). It is interesting to mention that patients did not use CAM because of the dissatisfaction with the conventional therapy which was consistent with the study of Astin (1998)⁽³⁾.

The results that gender, age and educational status were not associated with the use of CAM was inconsistent with other studies^(1,3,14,15). The study of Paltiel et al (2001)⁽¹⁴⁾ found that variables such as female, age between 35-39, higher education were related to CAM use. In addition, Eisenberg et al (1993)⁽¹⁾ found that patients who were 25-49 years old, had a higher education, and higher income were more likely to use CAM.

The present results found that there was no significant difference in compliance between the two groups of patients. The finding can be explained by the fact that the samples were patients who came to receive medication at the hospital. Therefore, these groups of patients usually had good compliance with conventional therapy and they used CAM due to the need for supplementary treatment. Results also found that most of the patients (60.5%) used CAM without informing their physicians. The finding was consistent with other studies^(1,4,16). However, taking CAM concomitant with conventional therapy may cause an adverse reaction such as hypoglycemia in patients

since some herbal medicines have effects on reducing blood sugar⁽¹⁷⁻¹⁹⁾. Therefore, physicians should pay more attention to the use of CAM of their patients.

Cost of CAM use varied based on types of CAM. For yoga/exercise and mental therapy, there was no expense at all. The cost of diet supplementary was the highest cost of CAM use. It was about \$29.86 per patient per month. An average cost of CAM use for diabetic patients was \$8.59 per patient per month. If the prevalence of CAM use and cost were true and prevalence of diabetic patients of 2.5-6.0% of total population, the authors can estimated that CAM cost for all Thai diabetic patients might be between \$915,250-\$1,545,750 per month. The CAM cost was quite high for one disease and for a small country like Thailand. Therefore, organizations that are responsible for health care need to be concerned about the use and cost of CAM. The results were consistent with other studies. Eisenberg et al (1993)⁽¹⁾ found that the cost of CAM use in the USA was about 21.2 billion dollars. In addition, MacLennan et al (1996)⁽²⁰⁾ found that Australians spent 621 million Australian dollars for CAM use in 1993 which was higher than the cost of conventional therapy which was 360 million dollars. Moreover, Moolasarn et al (2003)⁽⁶⁾ found that the CAM cost for Thai cancer patients would be about 2.8 million dollars per month.

The present results showed that quality of life of CAM and non CAM users were not significantly different. The finding was inconsistent with other studies. The study of Bustein et al (1999)⁽⁸⁾ found in cancer patients that the quality of life of new case breast cancer patients who used CAM was lower than those who did not use CAM. However, the finding was consistent with the study of Cassileth et al (1991)⁽²¹⁾ which found that quality of life of cancer patients who used or did not use CAM was not significantly different. However, the finding about quality of life of diabetic patients or findings from other studies could not conclude whether or not using CAM had any effect on quality of life as the research design was not appropriate to make a conclusion.

In conclusion, most diabetic patients used CAM without informing their physicians and the cost of CAM use was quite high. The use of some types of CAM such as herbal medicines may affect the diabetic status of the patients such as causing hypoglycemia; therefore, physicians need to pay more attention to the CAM use of their patients.

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ราคาและการใช้การแพทย์ทางเลือกในผู้ป่วยเบาหวาน

สัมมนา มูลสาร, ศักดิ์สิทธิ์ ศรีภา, วิจิตรา เกื้อศิริเกียรติ, เค สุเทวี, จีรศักดิ์ น่วยทราย, ชลันธร ไชยศิลา, น้ำผึ้ง เชื้อชม, เสาวนีย์ แสนคาร

วัตถุประสงค์ของการวิจัยครั้งนี้ คือ 1) เพื่อศึกษาเกี่ยวกับประเภทและลักษณะการใช้การแพทย์ทางเลือก 2) เพื่อประเมินค่าใช้จ่ายที่เกี่ยวข้องกับการใช้การแพทย์ทางเลือก เช่น บำบัดทางเวชศาสตร์บูรณาการทางสังคม อาการข้างเคียงจากการใช้ยาและคุณภาพชีวิต และ 3) เพื่อเปรียบเทียบความแตกต่างของปัจจัยต่าง ๆ ในผู้ใช้และไม่ใช้การแพทย์ทางเลือก ข้อมูลจะเก็บจากแบบสอบถามและแบบประเมินคุณภาพชีวิต SF-36 ฉบับภาษาไทย กลุ่มตัวอย่างเป็นผู้ป่วยเบาหวานจำนวน 159 คนที่มีอายุไม่น้อยกว่า 18 ปี ที่มารับการ รักษาโรคเบาหวานที่โรงพยาบาลสรรพสิทธิประสงค์ จังหวัดอุบลราชธานี

ผลการศึกษาพบว่าอัตราการใช้การแพทย์ทางเลือกของผู้ป่วยเท่ากับ 47.8 เปอร์เซ็นต์ ประเภทของการแพทย์ทางเลือกที่มีการใช้มากที่สุดคือ โยคะ/ออกกำลังกาย (32.8 %) สมุนไพรที่ไม่มีการแปรรูป (29.9%) และสมุนไพรที่มีการแปรรูป (17.8%) นอกจากนี้ยังพบว่า ค่าใช้จ่ายเฉลี่ยในการใช้การแพทย์ทางเลือกจะเท่ากับ 429 บาทต่อคนต่อเดือน ซึ่งถ้าค่าใช้จ่ายนี้เป็นจริงในผู้ป่วยเบาหวานทุกคนในประเทศไทย ค่าใช้จ่ายในการใช้การแพทย์ทางเลือกในผู้ป่วยเบาหวานทั่วประเทศจะอยู่ในช่วง 45,762,500-77,287,500 บาทต่อเดือน ซึ่งถือว่าเป็นค่าใช้จ่ายที่สูงมากสำหรับการใช้การแพทย์ทางเลือกเพียงหนึ่งโรค

ผู้ป่วยส่วนใหญ่ (64.4%) ใช้การแพทย์ทางเลือกโดยไม่ได้แจ้งให้แพทย์ทราบ นอกจากนี้ยังพบว่าสัดส่วนของผู้ที่มีอาชีพรับราชการหรือทำงานในรัฐวิสาหกิจจะมีการใช้การแพทย์ทางเลือกมากกว่าผู้ที่มีอาชีพเกษตรกร อย่างมีนัยสำคัญทางสถิติ (p -value = 0.03, odds ratio = 12.11) และผู้ที่มีรายได้สูงจะมีสัดส่วนที่ใช้การแพทย์ทางเลือกมากกว่าผู้ที่มีรายได้ต่ำอย่างมีนัยสำคัญทางสถิติ (p -value = 0.04, odds ratio = 1.01) ผลการวิจัยพบว่าไม่มีความแตกต่างในปัจจัยต่อไปนี้ คือ อายุ เพศ สถานภาพสมรส ระดับการศึกษา ประเภทของการประกันสุขภาพ ระยะเวลาการป่วยเป็นโรคเบาหวาน การเกิดอาการข้างเคียงจากการใช้ยาแผนปัจจุบัน และคุณภาพชีวิต ของผู้ใช้หรือ ไม่ได้ใช้การแพทย์ทางเลือก

แพทย์ควรให้ความสนใจเกี่ยวกับการใช้การแพทย์ทางเลือกของผู้ป่วยเบาหวานร่วมกับการใช้ยาแผนปัจจุบันเนื่องจากผู้ป่วยมักไม่แจ้งให้แพทย์ทราบและการแพทย์ทางเลือกบางอย่างเช่น สมุนไพรจะมีฤทธิ์ในการลดระดับน้ำตาลและก่อให้เกิดภาวะน้ำตาลในเลือดต่ำได้ อย่างไรก็ตามผลการศึกษานี้ อาจไม่สามารถใช้ได้กับประชากรทั่วไปเนื่องจากข้อจำกัดของคุณลักษณะของกลุ่มตัวอย่าง ลักษณะของการแพทย์ทางเลือก และค่าใช้จ่ายต่าง ๆ