

# Attitudes among Elderly towards Complementary and Alternative Medicine use as a Suicide Prevention Program in Korea: A Preliminary Study

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## Abstract

**Introduction:** Suicide among Korean elderly persons continues to be a major issue, with most suicides being in the over 65 years old demographic population. It has the highest suicide rate of all Organization for Economic Cooperation and Development (OECD) member countries and ranking 31<sup>st</sup> out of 38 member nations in terms of overall life satisfaction. It is well known that depression is the psychiatric diagnosis most strongly associated with suicide; therefore, the aim of this research was to explore how to address depression using Complementary and Alternative Medicine (CAM) among senior citizens.

**Methods:** A cross-sectional study was conducted among 326 subjects aged 65 years and over, attending senior citizen halls located in Seoul, Korea. The survey instrument was designed to explore whether CAM is a good adjuvant in suicide prevention programs within senior citizen halls. Data entry was done by using Excel and exported to SPSS version 21.0 software package for analysis.

**Results:** Among 326 participants, 93.3% reported using one or more CAM modalities for depression-related outcomes. Prayer, traditional Korean medicine, sports, diet, medicinal herbs and fungi were the leading complementary and alternative therapies used to improve mood disorders. Almost half of respondents, 49.7% used some complementary health therapy while receiving conventional depressive treatment.

**Conclusion:** The findings support the urgent need to resolve the social problem of suicide among elderly population, especially isolated elders. CAM appears to be widely accepted and used by a high percentage of Korean elderly people to improve mood disorders. Most herbs were self-prescribed and undisclosed to health care providers. This result highlights the need of in-depth study into Complementary Health approaches and their potential effects as adjunctive treatment for elders at risk of suicide.

**Keywords:** Depression; Suicide; Prevention; Elderly; South Korea; Complementary and Alternative Medicine (CAM)

## Introduction

Despite South Korea's economic success over the past several decades, the generation of elderly responsible for its economic miracle has been poorly rewarded. South Korea has received the nickname as "suicide capital of the world" partly because so many of its elders end their own lives and due to the rise of suicides rates, to date the problem persists [1]. Despite policies to reduce this number, it has the highest suicide rate of all Organization for Economic Cooperation and Development (OECD) member countries (28.1 per 100,000 in 2012, while the average rate for all of the OECD countries was 12.1), topping all other nations for more than a decade [2].

Rising poverty among the elderly correlates with an increase in their suicide rate from 34 per 100 thousand persons in 2000 to 72 in 2010, far above the OECD average of 22 deaths per 100,000 populations. One-half of Korea's population aged 65 and over lives in relative poverty, nearly four times higher than the OECD average of 13% [3]. The high elderly poverty rate reflects the decline in family support before other private and public sources of old-age income have matured. Korea ranks last in supporting its elderly population and is the least prepared to care for its rapidly aging population among the OECD countries. Many elderly assumed that their children would care for them, thus making it unnecessary to prepare financially. The increase in the number of elderly living alone—from 0.54 million in 2000 to 1.25 million (a quarter of the elderly) in 2010—also indicates declining family support. South Korea has the fastest aging population among the advanced economies

and the factors shown to lead elderly to commit suicide are economic hardship, unemployment, psychological despair, physical pain and family problems. In the near future, when 30-year-old Koreans become 65, the country's employment rate for the elderly is expected to top 40%, with more than 7.3 million elders aged 65 years and older participating in economic activities. The rise in the elderly employment rate comes as life expectancy increases, as most retirees are unprepared for a longer life after retirement. Korea's life expectancy was around 77 years in 2002, but it is expected to rise to 82.5 years in 2020 [3,4].

The issue of "suicide and depression" has had an economic impact on the nation. The costs derived from suicides and depression increased 42% between 2007 and 2011 to 10.4 trillion won (10.2 billion dollars). About two-thirds of that comes from lost potential income and nearly a third from the consequent fall in productivity [5]. By the

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year 2020, depression is projected to show the second greatest increase in morbidity after cardiovascular disease, inducing a significant socioeconomic burden [6]. Depression in the elderly increases the risk for medical illness and is often missed and untreated, resulting in fatal consequences [7]. Some studies report a low degree of willingness to express suicidal thoughts by the elderly, while others suggest that the absence of treatment in those elderly with depression is associated with the occurrence of suicide attempts [8]. It is well known that depression is a leading factor linked to self-destruction; therefore, addressing clinical depression and improving psychological well-being of the elderly may be beneficial in preventing suicidal ideation and reduce suicide risk by implementing community-based prevention [9].

To date, research related to suicide prevention and intervention strategies using Complementary and Alternative Medicine (CAM) has been limited to programs conducted for veterans, military personnel and prisoners. However, no research has been undertaken to assess the attitudes and perceptions toward use of CAM as a strategy to prevent suicides among elderly people. This paper describes the quantitative evaluation of the perceptions and attitudes among the elderly population regarding the use of CAM, whether its use could be implemented as a strategy within senior citizen halls to prevent suicides and for increasing their quality of life. The study aims were to evaluate the current knowledge, prevalence and preference of CAM use in a sample of Korean elderly aged 65 years and over that use the senior citizen halls, the application of CAM as an adjuvant in suicide prevention programs within senior citizen halls, and its relationship with social demographic characteristics.

## Methods

### Research design

This research was a cross-sectional and descriptive study collecting quantitative survey data. The questionnaire consisted of Closed-Ended and Open-Ended Questions written in Korean.

### Research area

This study was carried out in Seoul, South Korea from January to August 2016 among 326 elders, attending Senior Citizen Halls (SCH), in Korean “경로당”. Seoul city has 25 districts, with a total of 3338 facilities at the time of the study. Although there are existing Suicide Prevention Programs running for the last several years at Elderly Welfare Centers, many elderly that attend the neighborhood Senior Citizen Halls do not attend Elderly Welfare Centers due to many factors including distance, convenience, economic factors and attraction to the environment of the facility. From the available Senior Citizen Halls, four were selected from the official data of the [Korean CDC], three from among the districts with the highest suicide rates, and one from amongst the districts with the lowest suicide rates.

### Study population

The study population was apparently healthy elderly aged 65 years and over, being free from any terminal illness, willing to participate in the survey and living in the selected districts. Sample size was calculated using the single population proportion formula as follows:  $n = z^2 \cdot p \cdot q / e^2$  [10].

### Sampling method

The survey was divided into two stages, the first one was cluster sampling, a total of forty-eight senior citizen halls were selected. Second, the number of participants per Senior Citizen Halls was proportionately

determined based on the total number of SCHs and total members per hall in each selected district.

### Data collection

Elders who met the criteria received the information in verbal form about the research and those persons willing to participate in the survey gave consent and filled out the questionnaires. Participants were interviewed by the principal investigator, three Korean teachers and eight Korean interviewers with previous experience in interviewing elders, who were trained to administer the questionnaire and taught on CAM as defined in the questionnaire. Participants were offered two options for completing the survey: either independently completing the survey, or being interviewed and asked each question by the interviewer.

### Quality control

The questionnaire was pre-tested among twenty elders over 65 years old, workers from Hanyang, Korea, Seoul and Hangeul Universities to check ambiguity, incomprehensible and leading questions. Following the pilot-test's feedback, the survey instrument was rewritten and restructured six times; the translation was made and reviewed by two Korean students of English language and a Korean English teacher.

### Data analysis

The closed-ended questions from the questionnaires were initially coded using Microsoft Office Excel and transferred to the Statistical Package for the Social Science (SPSS) v.21 for analysis. Chi square test for single variance, P-values, and logistic regression's tests for comparison of variables were used to compare categorical groups. Quantitative data was summarized and analyzed with descriptive statistics and results was expressed as percentage, organized and presented using frequency tables.

### Ethical considerations

Ethical approval was obtained from the Institutional Review Board on Human Subjects Research and Ethics Committees, Hanyang University and the additional permissions were requested to each Senior Citizen Hall selected. The survey was conducted under privacy, confidentiality and the questionnaires were anonymous. To ensure voluntary participation from each participant, an informed consent form signed was obtained from them.

## Results

### Socio-demographic characteristics

The population included in the analysis for this study was 326 subjects between 65-96 years old from Senior Citizen Halls (SCH). No participant was discarded because the survey was not self-administered; the research was conducted one by one (interviewer-respondent) (Table 1).

### Prevalence

Overall, 93.3% (n=304) of the participants that reported depressive feelings or those diagnosed with depression have used one or more complementary therapies as a personal treatment.

### Preference

The most commonly used alternative or complementary therapies by elders were prayer 22% (n=67), traditional Korean medicine 16.4% (n=50) sports 12.9% (n=39), diet 8.9% (n=27) and medicinal herbs and fungi 8.3% (n=25). Although the findings indicate a broad selection

Variable	Classification	Senior Citizen Hall	
		Frequency (N=326)	Percentage (100%)
Gender	Female	265	81.20%
	Male	61	18.80%
Age	The "Young Old" 65-74	69	21.10%
	The "Old" 75-84	161	49.40%
	The "Oldest-Old" 85+	96	29.50%
Religion	Roman Catholic	33	10.10%
	Christian	86	26.30%
	Protestant	9	2.80%
	Buddhist	105	32.20%
	Muslim	0	0%
	No religion	93	28.60%
	Others	0	0%
	Marital Status	Married	153
Marital Status	Separated	14	4.20%
	Divorced	28	8.60%
	Widowed	131	40.10%
	Single/Never Married	0	0%
Accompanier of residence	Alone	94	28.90%
	With Spouse	108	33.10%
	With Spouse and Family	89	27.30%
	Relatives	35	10.70%
Level of Education	Illiterate	107	32.90%
	Elementary School	97	29.70%
	Middle School	49	15.00%
	High School	50	15.30%
	College	4	1.20%
	Bachelor's Degree	15	4.60%
	Master's Degree	0	0%
	Doctorate's Degree	1	0.30%
Occupation	Other	3	1.00%
	Employed	3	0.90%
	Self-Employed	6	1.90%
	Housewife	95	29.10%
	Retired	48	14.80%
	Out of work and looking for work	10	3.00%
	Out of work but not currently looking for work	10	3.00%
Unable to work	152	46.70%	
Average monthly income	Others	2	0.60%
	Less than 1 million won	74	22.70%
	1 million-2.5 million won	52	16.00%
	2.5 million-5 million won	12	3.60%
	More than 5 million won	1	0.30%
Health insurance	No Income	187	57.40%
	National Health Insurance	166	51.00%
	National Health Insurance+Individual Health Insurance	79	24.20%
	Medical Care	9	2.80%
	None	72	22%

Table 1: Social demographic characteristics.

of CAM practices, for the majority of the participants the perceived efficacy of their preferred CAM modality was positive (Table 2).

### Distance between participant home and welfare facility

The majority of users 98.5% (n=321) responded that the most convenient facility in terms of distance from home and comfort was the Senior Citizen Hall. The results showed that 43% (n=140) of participants have used the services of SCH for a period of five to ten years, 31.9% (n=104) one to five years, followed by periods of less than 1 year 15% (n=49) and more than ten years 10.1% (n=33) respectively. Elders most

commonly use the SCH facility daily 34% (n=111), followed by 3 weeks in the month 32% (n=104), and 2 weeks per month 23% (n=75), and averaged spending from 4 to 10 h per day there 60% (n=198). The rest of the population was spread out between less than 4 h per day or more than 10 h per day.

### Decision to use the Senior Citizen Hall (SCH)

Elders reported the following reasons for using the SCH, in descending percentages: loneliness (51.5%), meeting new friends (13.8%), boredom (11.7%), engage in activity for enjoyment (10.7%),

others (8%) and for learning (4.3%) respectively. They report feeling the following benefits from visiting the SCH: “I am not alone and I have friends” (95.4%), followed by “I forget my problems when I stay in SCH” (89.9%), “I can trust and express my feelings and thoughts” (54%).

### Attitudes

In the surveyed population, nearly half (49.8%) report that they believe programs and activities that teach and promote CAM at the SCH would be helpful to improve the quality of life and help learn how to deal with problems that lead to depression. Only (14.3%) of the respondents disagree with this statement (Table 3).

### Discussion

This research provides a first estimate of the prevalence of use and knowledge toward use of CAM treating depression among Korean elderly, as well as, the attitudes for developing suicide prevention programs using CAM in Senior Citizen Halls.

The World Health Organization (WHO) recognizes “suicide” as a public health priority accounting for more than half of the world’s 1.5 million violent deaths annually [11]. In 2013, the 66<sup>th</sup> World Health Assembly, with 194 Member States, adopted the WHO’s Comprehensive Mental Health Action Plan 2013–2020, the first in its history. The plan sets a central role for provision of community based care and emphasis on human rights, and in addition, promotes moving away from a purely medical model to address various social factors including income, education, housing, and other social service, that impact on mental health as a more comprehensive [12]. South Korea has implemented Strategies to Prevent Suicide (STOPS), a program of “initiatives aimed at increasing public awareness, improving media reporting of suicide, restricting access to means, screening and improving treatment for persons at high risk of suicide.” This program includes national guidelines for media coverage to focus more on warning signs and possibilities of treatment, rather than factors that lead to suicide [13]. Various CAM modalities can provide social and non-traditional interventions in relation to these programs.

The use of alternative medicine modalities as an isolated therapy is uncommon because most people use non-mainstream approaches along with conventional medicine, which is more accurately defined as complementary medicine. Alternative medicine would be defined as treatments that replace conventional medical care *in toto* [14]. Evidence-based data that suggest CAM therapies are effective adjuvants for treating mental health disorders. Evidence-based integrative complementary medicine treatment models, such as ALPS (Antidepressant-Lifestyle-Psychological-Social) [15] have been previously used to treat clinical depression (characterized by psychophysiological changes in energy, sleep, appetite, low mood, feelings of worthlessness or guilt, loss of pleasure and/or suicidal thoughts) [16]. Other studies show physical therapies such as Tai Chi and physical exercises have a positive effect on maintaining elders’ mobility and thus are beneficial to maintaining mental health [17-19]. Research of Korean senior citizen halls found that community programs for better quality of life and improved physical and mental health are satisfactory and successful if the population served participates in their selection and planning [20-23].

Globally, the use of CAM therapy for various kinds of diseases is continuing to increase across many cultures, social backgrounds, and across all ages for multiple and diverse reasons, so it is important to know the prevalence of use and current knowledge on CAM to address

Division	Senior Citizen Hall	
	Frequency (N=304)	Percentage (100%)
Harmful	0	0%
Not at all effective	10	3.30%
Neutral	61	20.10%
Effective	212	69.70%
very effective	21	6.90%

Table 2: CAM use satisfaction.

Do you think that CAM could help to treat mental illness and prevent suicides?		
Division	Senior Citizen Hall	
	Frequency (N=326)	Percentage (100%)
Yes	211	64.80%
No	115	35.20%
If you know someone desiring to die would you recommend the use of CAM?		
Yes	210	64.40%
No	116	35.60%

Table 3: Attitudes regarding to use of CAM to treat mental illness and preventing suicide.

the epidemic of depression and suicide among the elderly. It is especially important to document the use of CAM that is occurring alongside allopathic medicine, to know the efficacy of the various therapies and prevent negative effects that could come from the unreported combining of therapies.

The results of our research show a high prevalence of CAM use (93.3%), alongside a surprisingly low level of knowledge (36.9%) concerning their use by healthcare providers. In addition (49.7%) of CAM users were taking concurrent prescription medication, a high percentage compared to another study showing that 13% of participants were taking herbs along with allopathic medicine, obtaining as a presumed result higher depression and anxiety scores than other herb users [24]. This imbalance between use and knowledge will seriously affect the health of those elderly who use CAM to treat their symptoms of depression caused by problems other than mental illness. Ventegodt and Merrick have suggested that even for patients with serious mental and physical disorders, nondrug CAM therapies appear to be safe [25]. The use of CAM is likely not the problem, instead it is the low level of knowledge towards what they are using, especially the use of phyto-therapeutics that is not communicated to their doctors; it is a dangerous combination. This finding is in agreement with a previous study, suggesting that the prevention of negative herbal-medicinal interactions requires training healthcare personnel to obtain more detailed patient information regarding CAM usage, especially oral and other physical therapies [26].

Mind/Body Interventions Therapies (44.1%) to treat symptoms of depression were the preferred CAM treatment among elderly people in our study; these include prayer (22%), sports (12.9%), humor therapy (4.3%), and dance and music therapy (3.6%). Other studies support the findings in this research, indicating that mind and body practices relieve the symptoms of depression and provide benefits in mood alterations [27-31]. The second most used group of CAM modalities were Biologically Based Therapies (28.4%), which includes diet (8.9%), medicinal herbs and fungi (8.3%), dietary supplements (6.9%), and megavitamin therapy (3.3%); these therapies, including dietary changes, belong to the natural product therapies. These results are in agreement with a previous study, showing that 34% of patients used

herbal medicines to treat mood disorders, that most of these patients self-prescribed the herbal remedies and their use was undisclosed to their healthcare providers [24]. Significantly, Traditional Korean Medicine (16.4%) was the most used alternative medical system, which is within the group of other approaches (16.7%). These results provide compelling evidence for the integration of CAM into Evidence-Based Clinical Practice.

Information about CAM use was commonly obtained from family (21.5%), advertising on TV, streets, buildings, etc. (17.8%), others (traditional market) (14.7%), oriental medicine healthcare workers (13.5%) and friends (11%); similar results have been reported from a National Survey in 2006 in a general population in South Korea [32]. Regarding reasons for CAM use, the main cause was: "dissatisfaction toward allopathic medicine and/or treatments were not available for a specific illness" (39.8%), "traditional background, belief in the alternative system and individual philosophical viewpoint" (16.9%), "others" (in case of hearing good comments on certain alternative therapy or personal experience of positive side effects) (16.3%), and "a hope for fewer side effects" (14.4%). A lower but significant percentage were motivated by economic factors believing that "alternative medicine is cheaper than allopathic medicine" (4.6%), others began complementary therapies out of curiosity (4.6%) or by recommendation from a medical doctor (3.4%). These reports suggest that the use of CAM may be positively influenced by culture, background, family, friends, environment and oriental medicine healthcare workers. These results found are similar to other studies done [33,34].

Our research clearly shows that the elderly perceive CAM as a helpful adjunct to help treat mental illness and prevent suicide (64.8%), and would recommend the use of CAM (64.4%) to someone with suicidal thoughts. The factors statistically associated with perceptions toward use of CAM for suicide prevention were predicted by previous attitudes when treating symptoms of depression using alternative therapies, age, and marital status, accompanier of residence, income and health insurance. Regarding to attitudes: Age, income, health insurance and their perceived effectiveness of complementary and alternative treatments for mental health, were the independent predictors. In this respect, the strongest predictors were an average monthly income between 2.5-5 million won ( $p$ -value  $\leq 0.001$ ) perceived effectiveness ( $p$ -value  $\leq 0.001$ ) and previous attitudes ( $p$ -value  $\leq 0.001$ ) toward using CAM for mental health. Our observations are in agreement with findings of the WHO traditional medicine strategy 2002-2005, where it is mentioned that in most developed countries the use of CAM appears to be related to factors other than cost and tradition, because the traditional medicine use is quite different from country to country and region to region [35].

Despite South Korea's status as a developed country, there are people with "low income, no income nor health insurance" and that population turns to alternative medicine for the most common reasons: necessity, affordability and accessibility. This is also in agreement with the WHO traditional medicine strategy 2014-2023, wherein factors such as low income, inadequate education, poor health and inequality (found in high proportions in developing countries), force the populace to use alternative therapies because they are cheap, available and accessible [36]. This suggests that regardless of whether individuals are lower or higher income and education, with or without health insurance, young or old, in search of "just health" or "a good human life with quality," people are using CAM to achieve that purpose. Therefore, we conclude our hypothesis that perceptions and attitudes among Korean elderly people toward use of CAM as an adjuvant in suicide prevention

programs within senior citizen halls to help to decrease suicide rates was found positive.

## Limitations

Three districts studied have the highest elderly' suicide rate in Seoul (2010-2014), and one district among the lowest suicide rate, but not nationally. Therefore, the results do not represent the whole aging society of South Korea.

## Conclusion

The study gave a perspective of knowledge, use, attitudes and perceptions towards use of CAM as a preventive strategy in senior citizen halls to help to reduce suicide risk. It may be helpful for the understanding of elders' concerns, expectations and anxieties about the research question. This information may be helpful in assisting to know how to decrease the older people's suicide rate through CAM program research conducted within senior citizen halls. Notwithstanding their limitations, this pilot study may generate new information or ideas as a contribution to the appropriate authorities, focusing on CAM use as a tactic for preventing suicides in senior citizen halls and the outcomes of this study may be helpful as a reference for future related studies.

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## Authors' Contribution

Rojas BY wrote the proposal, participated in data collection, analyzed the data and drafted the paper. Richardson E and Ahn Dong-Hyun approved the proposal, participated in data analysis, revised subsequent drafts of the paper and approved the final manuscript.

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## References

1. Kwon JW, Chun HR, Cho SI (2009) A closer look at the increase in suicide rates in South Korea from 1986-2005. *BMC Public Health* 9: 72.
2. World Health Organization (WHO) (2012) Suicide rates by country. Global Health Observatory Data Repository.
3. Jones RS, Urasawa S (2014) Reducing the high rate of poverty among the elderly in Korea. OECD Economics Department Working Papers.
4. Jackson R, Howe N, Nakashima K (2010) The global aging preparedness index. Center for Strategic and International Studies.
5. Hyun KR (2015) Analysis of Social-economic Cost on Major Illnesses to Set Priority of Health Security Policies. Health Insurance Policy Research Institute. National Health Insurance Service.
6. World Health Organization (WHO) (2011) World Health Organization. Mental health: Depression.
7. NAMI National Alliance on Mental Illness (NAMI) (2014) Depression in Older Persons Fact Sheet.
8. Kim SM, Ha JH, Yu JH, Park DH, Ryu SH (2014) Path analysis of suicide ideation in older people. *International Psychogeriatrics* 26: 509-515.

9. McGirr A, Renaud J, Séguin M, Alda M, Turecki G (2008) Course of major depressive disorder and suicide outcome: A psychological autopsy study. *J Clin Psychiatry* 69: 966-70.
10. Wayne WD, Chad LC (2013) *Biostatistics: A foundation for analysis in the health sciences*. Tenth edition.
11. <http://www.who.int/mediacentre/news/releases/2014/suicide-prevention-report/en/>
12. World Health Organization (WHO) (2013) World Health Organization. WHO's mental health action plan 2013–2020.
13. Hendin H, Xiao S, Li X, Huong TT, Wang H, Hegeel U, Philips MR (2015) *Suicide Prevention in Asia: Future Directions*.
14. <https://nccih.nih.gov/>
15. Sarris J (2011) Clinical Depression: An Evidence-based Integrative Complementary Medicine Treatment Model. *Altern Ther Health Med* 17: 26-37.
16. APA American Psychiatric Association (APA) (2013) *Diagnostic and statistical manual of mental disorders*.
17. Huh MD, Ha CK (2006) Comparative analysis of satisfaction in physical activity of the aged in welfare center and in the hall for the aged. *Korea J Sport Sci* 15: 633-646.
18. Kim SJ (2007) The effect of Tai Chi exercise on the wellness in the elderly who use senior citizen's club. *Journal Korean. Soc Living Environ Sys* 14: 229-238.
19. Chu SK, Lee CY, Yoo JH (2012) The effects of an aerobic exercise program on mobility, fall efficacy, balance, and stress in the elderly at senior centers. *J Korean Acad Commun Health Nurs* 23: 22-30.
20. Rim CS, Kim KH, Kim MS, Lee KH, Lee IS (2006) A study on current status and future aspects of the senior citizen halls in Seoul. *Journal of Welfare for the Aged* 31: 313-343.
21. Min BG (2006) The activate plan and the present status of hall for the old. *Korean Academy of Social Welfare Support* 2: 255-270.
22. Lee HW, Song YH, Lee JS, Choi SY (2005) A comparative study on the facilities type of gyungrodang in urban single housing district and present condition of welfare service of the elderly. *J Korean Hous Assoc* 16: 17-25.
23. Lee JY, Kim EC, Sohn TJ (2005) A study on improving plan and using condition for age hall as leisure facilities in Chung-Ju. *Composition of the Academic Conference of the Korean Architecture Society* 1: 105-110.
24. Edwards D, Heufelder A, Zimmermann A (2012) Therapeutic effects and safety of *Rhodiola rosea* extract WS® 1375 in subjects with life-stress symptoms—results of an open-label study. *Phytother Res* 26: 1220-1225.
25. Ventegodt S, Merrick J (2009) A review of side effects and adverse events of non-drug medicine (nonpharmaceutical complementary and alternative medicine): psychotherapy, mind-body medicine and clinical holistic medicine. *J Complement Integr Med* 6: 16.
26. McCrear CE, Pritchard ME (2011) Concurrent herb-prescription medication use and health care provider disclosure among university students. *Complement Ther Med* 19: 32-36.
27. Yeung AS, Ameal VE, Chuzi SE, Fava M, Mischoulon D (2011) A pilot study of acupuncture augmentation therapy in antidepressant partial and non-responders with major depressive disorder. *J Affect Disord* 130: 285-289.
28. Monti DA, Beitman BD (2010) *Integrative Psychiatry*. Oxford, UK: Oxford University Press.
29. Muskin PR (2000) *Complementary and Alternative Medicine and Psychiatry*. Arlington, VA: American Psychiatric Press Inc.
30. Mischoulon D, Rosenbaum JF (2008) *Natural Medications for Psychiatric Disorders* (2<sup>nd</sup> edn.). Philadelphia, PA: Lippincott Williams & Wilkins.
31. Koch S, Morlinghaus K, Fuchs T (2007) The joy dance: specific effects of a single dance intervention on psychiatric patients with depression. *Arts Psychother* 34: 340-349.
32. Ock SM, Choi JY, Cha YS, Lee J, Chun MS, et al. (2009) The use of complementary and alternative medicine in a general population in South Korea: results from a national survey in 2006. *J Korean Med Sci* 24: 1-6.
33. McFadden KL, Hernández TD, Ito TA (2010) Attitudes Towards Complementary and Alternative Medicine Influence Its Use. *Explore (NY)* 6: 380-388.
34. Da Silva TL, Ravindran LN, Ravindran AV (2009) Yoga in the treatment of mood and anxiety disorders: A review. *Asian J Psychiatr* 2: 6-16.
35. World Health Organization (WHO) (2002) *World Health Organization. Traditional Medicine Strategy 2002-2005*. Geneva.
36. World Health Organization (WHO) (2013) *World Health Organization. Traditional Medicine Strategy 2014-2023*. Geneva.