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The Effects of Practicing Yoga on Quality of Life in HIV/AIDS Patients

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Abstract

The purpose of this study was to examine the effects of practicing yoga on the quality of life in HIV/AIDS patients. This quasi-experimental research was conducted using 50 subjects who were diagnosed as HIV/AIDS patients at the Infection and Immunological Clinic of the Outpatient Department, Siriraj Hospital, Bangkok, Thailand. The samples who were volunteers were divided into two groups, 25 subjects each. These two groups –the control group and the experimental one – were practically identical in terms of characteristics such as sex and age. For eight weeks, the control group was given routine care and treatment only while the experimental one practiced yoga in addition to receiving routine care and treatment. The quality of life was measured with the Thai version of the SF- 36. An analysis of covariance was used to compare differences between the experimental and the control groups. The results indicated that the experimental group's overall score for its quality of life was higher than that of the control one. For the experimental group, the scores of five out of eight health dimensions, including PF, BP, GH, VT ,and MH, were significantly higher than those in the control group. The conclusion to be drawn from this is obvious. HIV/AIDS patients who practiced yoga in addition to receiving their normal treatment improved their mental and physical well-being; therefore, yoga should be promoted accordingly to improve HIV/AIDS patients' quality of life.

Keywords**:** *HIV/AIDS, Yoga, Quality of Life, SF-36*

1. Introduction

UNAIDS reported in 2017 that the estimated number of people currently living with HIV in 2016 was 36.7 million worldwide. The annual number of new HIV infections globally discovered in that year was estimated at 1.8 million. Out of Thailand's population of more than 60 million in 2016, it was estimated that 450,000 people were living with HIV (UNAIDS, 2017). Human immunodeficiency virus (HIV) infection or Acquired Immune Deficiency Syndrome (AIDS) is a communicable disease leading to significant morbidity, mortality, and a poor quality of life. Combination antiretroviral therapy (ART) has changed HIV from a terminal disease to a chronic condition in regions where treatment is widely available. With appropriate treatment, people with HIV can now have a near-normal life-expectancy (Nakagawa et al., 2012). However, they continue to have substantially lower quality of life than the general population, even where the majority of those living with HIV have virological control and are immunologically stable (Miners et al., 2014). In addition to the underlying infection, evidence suggests that social circumstances, relationship issues, and comorbidities may impact on their quality of life (Drewes, Gusy, & Von, 2013). Many individuals newly infected with HIV struggle with psychosocial influences, such as poverty, social stigma, depression, substance abuse, domestic violence and cultural beliefs which can affect their quality of life (Aranda-Naranjo, 2004). Improving quality of life is central to care and support of people with HIV. Evaluations of new treatments and interventions to improve healthcare require the measurement of quality of life as well as clinical endpoints (CD4 count, viral load, progression to AIDS) (Cooper, Clatworthy, Harding, Whetham, & Emerge, 2017; Tate et al., 2003).

Individuals with HIV/AIDS sometimes try non-traditional approaches, such as medicinal herbs or untested medications in an effort to alleviate a specific symptom or in the hope of slowing down the progression

of the disease. Some people, however, embrace complementary therapies as a means of bringing about meaningful lifestyle changes, in an attempt to better integrate mind, body, and spirit (Zwolski, 2001). Complementary and alternative medicine (CAM) is becoming popular as rehabilitation measures in patients living with HIV/AIDS (Mulkin, Ibanez-Carrasco, Boyack, & Verhoef, 2014). Recent studies estimate that 47-74% of HIV infected individuals in the United States have used some forms of CAM to improve their general health and well-being (Cho,Ye, Dobs, & Cofrancesco, 2006). One potentially safe, effective, low-cost and popular behavioral intervention is the practice of yoga (Cade et al., 2010). The most significant benefit of yoga for a person with Acquired Immune Deficiency (PWAs) may be stress reduction. While limited research available in the United States suggests yoga improves the health and quality of life for PWAs, studies in Spain, India, Germany, and Africa show yoga can slow disease progression, improve mental health, body image, and even help prevent the spread of the virus, encouraging a more proactive approach to care and treatment (Stukin, 2001). Yoga helps in many psychological conditions such as anxiety, depression, and schizophrenia. It improves overall well-being and quality of life in many chronic medical illnesses. Earlier studies reported the potential role of yoga in resisting the impairment of cellular immunity (Gopal, Mondal, Gandhi, Arora, & Bhattacharjee, 2011). Yoga is based on an ancient system of breathing exercises (pranayama), postures (asana), stretches and meditations found in Ayurvedic medicine and Indian philosophy and religion, and it is believed to help detoxify the body, mitigate chronic fatigue, enhance endurance, and improve organ and immune functions (Raub, 2002).The researchers were interested in the effects of yoga practice on quality of life among HIV/AIDS patients. It was anticipated that practicing yoga would be complementary to increase quality of life among HIV positive individuals in order to maintain their hopefulness and well-being in the long run.

2. Objectives

The present study aimed to investigate the effects of practicing yoga on quality of life among individuals with HIV/AIDS.

3. Materials and methods

A quasi-experimental research design was used to test the effects of yoga practice.

3.1 Population and sampling

The target population in this study were HIV/AIDS patients having been diagnosed and having been attending the Infection and Immunological Clinic, Outpatient Department, Siriraj Hospital, Bangkok, Thailand. 50 patients were recruited through the purposive sampling method. The patients were then randomly assigned to either the experimental or the control group. The control group was provided with usual care, whereas the experimental group was conducted with the same usual care as its counterpart but plus yoga. Inclusion criteria were: (1) age of more than 18 years; (2) absence of symptoms of AIDS such as severe diarrhoea or opportunistic infection; (3) CD4 count of more than 250 cells/μL; (4) ability to communicate in Thai; (5) having no physical limitations on the practice of yoga, such as acute musculoskeletal diseases and pregnancy; and (6) voluntary participation in the program**.**

3.2 Research instrumentation

Research instruments were composed of two parts:

3.2.1 Instruments for collection of data

Two sets of data collection tools were used in this study: 1) demographic data including gender, age, duration of illness, and co-morbidity and 2) the quality of life (QoL) among HIV-infected patients measured by SF-36, a standardized generic questionnaire developed by a medical outcome survey team. The SF-36 comprised 36 items aggregated into 8 scales: Physical functioning, Role physical, Bodily pain, General health, Vitality, Social functioning, Role emotional; and Mental health. The scores were then transformed into a score on a 0-100 scale, where 0 and 100 were the lowest and highest possible scores, respectively. A higher score on the SF-36 indicates better QoL (Ware & Sherbourne, 1992). The SF-36 questionnaire has been translated into Thai with permission. The internal reliability, confirmed by Conbach's alpha coefficient, was 0.7 in all dimensions (Leurmarnkul & Meetam, 2000).

3.2.2 Intervention instrument

The practice of yoga was composed of three primary types: (1) asana, (2) pranayama (breath- control), and (3) meditation. Yoga practices in this study were modified from basic yoga practices and from reviews of textbooks, journals, research papers, and selected training courses. Asanas covered basic positions of standing, sitting, forward bends, twists, inversions, backbends, and lying down. This study included 15 basic yoga asana poses: Cobra pose, Half locus pose, Bow pose, Crocodile pose, Half plough pose, Mountain pose, Yoga mudra pose, Boat pose, Back stretching pose, Spinal twist pose, Adapted wheel pose, Tree pose, Lord brahma pose, Thunderbolt pose, and Corpse pose. Pranayama included two basic forms: breath of victory (Ujjayi pranayama) and alternate nostril pranayama (Anuloma viloma). Meditation was practiced with a breath awareness technique.

3.3 Ethical issues

The study was approved by Siriraj Institutional Review Board, Faculty of Medicine, Siriraj Hospital, Mahidol University. This is to certify that Siriraj Institutional Review Board is in full compliance with International Guidelines for Human Research Protection such as the Declaration of Helsinki, the Belmont Report, CIOMS Guidelines and the International Conference on Harmonization in Good Clinical Practice (ICH-GCP). The ethical issues were concerned with the participants' autonomy, confidentiality, and anonymity during the study period and study's publication. The participants were informed of the purpose and the design of the study as well as the voluntary nature of their participation. They were explained clearly that the data would be used only for this study. Informed consent was obtained from the participants who agreed to be involved in the study.

3.4 Data collection

After obtaining informed consent, the participants were asked to complete a questionnaire as a pretest.

3.4.1 Control group

The participants received care as usual. The post-test was conducted in the eighth week. The researchers offered the participants opportunities to clarify any unclear issues and expressed gratitude to the participants.

3.4.2 Experimental group intervention

The participants were asked to attend the program which comprised two sessions: 1) a three-day yoga camp in the first week (3 hours a day) consisted of the study of the yoga concept and practice and 2) yoga practice (3 days a week/1.5 hours a day) in the second till the eighth week. A certified yoga instructor was assigned to lead all classes. Each yoga practice session consisted of 60-minute asanas (yoga postures), 15-minute pranayama, and 15-minute meditation. On the last day of the eighth week, the participants were asked to complete a questionnaire as a posttest.

3.5 Data analysis

The data were analyzed with the statistical package SPSS/FW. Descriptive statistical analysis was conducted to describe the general characteristics of the subjects. Chi-square tests was conducted to test for differences between the two groups for nominal data such as gender, and co-morbidity while t-tests were done to test between group differences for age and duration of illness. The pretest and posttest scores of quality of life (SF-36) were calculated for means and standard deviations (SD). ANCOVA was conducted to compare the experimental and the control groups. The predetermined level of statistical significance was .05.

4. Results

During the recruitment period, 50 participants were enrolled in the study. 47 out of 50 participants completed the study (25 in the control group and 22 in the experimental group). Three participants of the experimental group were withdrawn because of getting a new job and moving from the area, lack of time available to participate, and personal discomfort. There were no significant differences at the baseline in the

parameters of gender, age, duration of illness, and co-morbidity between the experimental group and the control one (p>.05).The descriptive statistics for participants at baseline are presented in Table 1.

Table 1 Descriptive Statistics for Participants at Baseline

Characteristics	Group		p-value
	Control (n = 25)	Yoga (n = 22)	
Gender			
Male	7(28%)	9(40.9%)	0.306[a]
Female	18(72%)	13(59.1%)	
Total	25(100%)	22(100%)	
Age (years)	41.40 ± 8.25 (24-61 yrs.)	41.86 ± 8.29 (29-57 yrs.)	0.732[b]
Duration of illness	8.46 ± 4.80 (1-18 yrs.)	10.45 ± 6.16 (1-20 yrs.)	0.230[b]
Co-morbidity			
No	19(76%)	16(72.7%)	0.738[a]
Have	6(24%)	6(27.3%)	

Note. Statistic: [a] Chi-square test
[b] Student's t-test

In the control group, within-group comparison showed no significant increase in the quality of life scores, the total score, and all the domains (Figure 1).

In the yoga group, within-group comparison showed a significant increase in the total score of QOL (p<0.001) and the scores of four domains, including Bodily pain (p=0.005), General health (p<0.001), Vitality (p<0.001), and Mental health (p<0.001). No significant changes were observed in other domains (Figure 2).

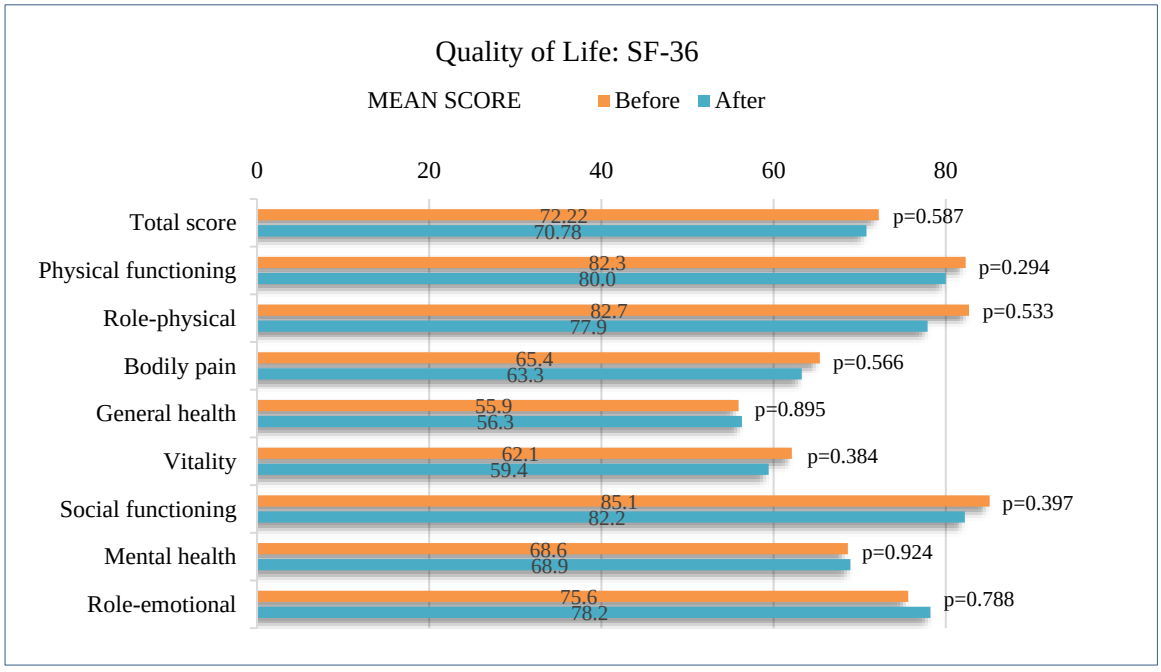

Figure 1 Quality of life of patients in the control group

Figure 2 Quality of life of patients in the yoga group

The results of yoga effects on quality of life showed that, after participation in the yoga program, the quality of life statistically significant increased. The total score of quality of life among experimental group was higher than that of the control group (p<0.001). The scores of five domains including Physical functioning (p=0.018), Bodily pain (p<0.001), General health (p<0.001), Vitality (p<0.001), and Mental health (p<0.001) were also higher as shown in Table 2.

Table 2 Comparison of quality of life between the control group and the experiment group

Scale	Group		Mean difference	p-value
	Control (n = 25)	Yoga (n = 22)		
Physical component scale				
Physical functioning	80.00 ± 14.42	87.95 ± 14.11	-7.95	0.018
Role-physical	77.88 ± 35.59	92.05 ± 23.64	-14.17	0.165
Bodily pain	63.27 ± 18.15	82.45 ± 14.40	-19.18	<0.001
General health	56.31 ± 19.34	78.73 ± 16.94	-22.42	<0.001
Mental component scale				
Vitality	59.42 ± 13.37	76.82 ± 14.52	-17.4	<0.001
Social functioning	82.21 ± 18.43	87.50 ± 17.25	-5.29	0.128
Mental health	68.92 ± 15.28	80.55 ± 11.53	-11.63	<0.001
Role-emotional	78.21 ± 39.94	87.88 ± 28.26	-9.67	0.373
Total score, SF-36	**70.78 ± 16.42**	**84.24 ± 13.15**	**-13.46**	**<0.001**

Note. Statistic ANCOVA

5. Discussion

The aim of this study was to observe the effects of yoga practice on quality of life among individuals with HIV/AIDS infection. The results indicated that the yoga group's overall score for quality of life was higher than that of the control one. For the yoga group, the scores of Physical component scales including Physical functioning, Bodily pain, and General health and Mental component scales including Vitality and Mental health were significantly higher than those in the control group. The higher score on the Physical component scale in the present study is congruent with the study of Pargaonkar and Bera (2002) who studied the effects of selected yoga practices in health-related physical fitness of girls aged 18-20 years. The results inferred that the experimental group could exhibit bigger gains than the control one in cardiorespiratory endurance, strength and endurance of abdominal muscle and flexibility. Similarly, the study by Tran et al. (2001) reported the effects of Hatha yoga practice on health-related aspects of physical fitness of ten healthy, untrained volunteers, ranging in age from 18-27 years, were required to practice supervised sessions of pranayamas, warm-up exercises, and yoga postures four times a week for 8 weeks. The results of this investigation indicate that Hatha yoga practice can significantly improve multiple health-related aspects of physical fitness in young, healthy, predominantly female subjects. Yoga training can increase muscular strength and endurance, flexibility, and cardiorespiratory endurance. The study in patients with osteoarthritis of hands who were randomly assigned to receive either yoga techniques, supervised by the same instructor once a week for 8weeks, or no therapy (control group) revealed that the yoga-treated group improved more significantly than the control group in pain during activity, tenderness, and finger range of motion. Other improvement trends also favored the yoga techniques, thus providing relief in hand osteoarthritis (Garfinkel, Schumacher, Husain, Levy, & Reshetar, 1994) A similar yoga-based treatment regimen was assessed by Garfinkel et al. (1998) for relieving symptoms of carpal-tunnel syndrome.

Regarding mental health component, this study showed that the patients in the yoga group had a significantly better quality of life on Vitality and Mental health than those in the control group. This can be explained that yoga could help patients become physically and mentally calmer. The yoga instructor in this study provided instructions accurately and observed each patient closely. The instructor led the patients to focus on the control of mind, using little strength and no force and minimizing physical efforts. Yoga should be performed naturally, depending on each person's capacity. The body parts should be relaxed while one is practicing yoga. The improvement of physical health will increase life energy which is a part of self-confidence resulting in better mental health. Asanas are significant for maintenance of physical and mental health as preparatory for pranayama. Asanas comprise steady postures affording pleasure. While in a yogic asana, one should experience both physical and mental pleasure. When the mind merges with the infinite one, the efforts are minimized and because of this relaxation, stability of body and mind is achieved while performing in an asana. The cumulative effect of all these is Sukhanubhav (i.e. a pleasurable feeling). According to the yogic science, equilibrium of the opposite forces in the body is achieved by practicing asanas. Also, it is stated that the practice of asanas drives away laziness. In Hathapradeenpika, it is claimed that owing to the practice of asanas, one gets stability, healthiness, and flexibility. According to the principle of Hatha yoga, the practice of pranayama eliminates all diseases (Nimbalkar, 2003). The alleviation of pain is, even today, one of the main reasons for the journey into yoga for most people. In yoga asanas, specific parts of the body could soothe and relax the mind as well. Inverted asanas, for instance, simultaneously calms and stimulates the brain. These asanas activate glands and vital organs by supplying fresh blood to the brain, making it alert but relaxed (Iyengar, 2001). This study is consistent with the study of Mawar et al. (2015) who assessed the effect of Sudarshan Kriya yoga, a comprehensive component of the controlled yogic breathing technique which is an established standardized technique simple to administer and a non-invasive, non-pharmacological, and behavioral intervention that can be used by healthy people living with HIV (PLHV) without any fear of stigma when making follow up visits. The improvements in the quality of life scores in the intervention group as compared to the control group indicate an efficacy of Sudarshan Kriya yoga intervention. Significant improvement was observed from the overall scores, physical and psychological conditions, and level of independence domains. The impact of yoga is never purely physical. Asanas, if correctly practiced, bridge the divide between the physical and the mental spheres. Yoga stems the feelings of pain, fatigue, doubt, confusion, indifference, laziness, self-delusion, and despair that assail us from time to time. The yogic mind simply refuses to accept such negative emotions and seeks to overcome these turbulent currents on the voyage to the total

liberation of the self. Once we become sincere practitioners of yoga, we cease to be tormented by these unhappy and discouraging states of mind. Yoga illuminates an individual's life. If one practices it sincerely, with seriousness and honesty, its light will spread to all aspects of one's life. Regular practice will bring you to look at yourself and your goals in a new light. It will help remove obstacles and brings good health and stable emotions. In this way, yoga will help you achieve emancipation and self-realization, which is the ultimate goal of every person's life. (Iyengar, 2001).

Yoga breathing while performing postures, especially relaxation postures (e.g. Corpse pose), also has been shown to significantly reverse the physiologic effects of stress (Bera, Gore, & Oak, 1998; Murugesan, Govindarajulu & Bera, 2000). It is likely that the practice of controlling body, mind, and spirit provides useful psychophysiological effects for both healthy people and those compromised by chronic disease. A review study found that yoga is as effective or better than exercise at improving a variety of mental and physical health measures such as stress, quality of life, mood status, heart rate variability, pulmonary function, and so on (Ross & Thomas, 2010). Across multiple randomized controlled trials using varied yoga interventions and diverse study population, yoga typically improved overall symptom scores for anxiety and depression. It produces no reported harmful side effects (Shroff & Asgarpour, 2017).

Spiritual practices and beliefs act as a buffer when individuals are faced with negative life events. Researchers have suggested that most Americans believe that spirituality is an important part of their overall health and can promote recovery from and coping with illness, They have also suggested that patients with HIV, cancer, cardiovascular disease, and other chronic illnesses often turn to spiritual practices to help them cope with those illnesses (Boudreaux, O'Hea & Chasuk, 2002).

Role-physical, Social functional, and Role-emotional of the patients in the yoga group were not significantly higher than the control group. This may be caused by the fact that the HIV/AIDs patients in this group had similar quality of life scores on such dimensions to the control group. In addition, the patients who were infected showed no symptoms/differences when compared to the controls. The results on these three dimensions should be further studied on a larger sample size and a longer period for yoga practice.

SF-36 is a widely used instrument to assess HRQoL. The instrument can evaluate the results of the treatment in the aspect of health status and patient satisfaction. It has been used to assess QoL in patients with chronic diseases and other health conditions, for example, patient asthma, COPD, cancer, etc. In addition, it has been translated for use in many countries. SF-36 was compared with MOS-HIV in one study and found that the SF-36 was not targeted at HIV. SF-36 may preferably be used over the MOS-HIV due to its fewer ceiling effects, availability of national norms, and vast amount of data for other populations in the U.S. (Shahriar, Delate, Hays, & Coons, 2003).

6. Conclusion

This study demonstrates the use of yoga practice as the alternative or supplement treatment in addition to the antiviral drugs treatment which patients normally receive in the standard treatment scheme. As a result, the patients have a better quality of life both physically and mentally. That is, the practice of yoga could contribute to improvement of physical functions as well as general physical and mental health, reduction of discomfort, and an increase in spiritual energy, social functions and roles.

The infectious patients live with pain and complications and have to take care of themselves to avoid or control the opportunistic infection that they can receive from the environment. Yoga makes the body move steadily and maintains the peace of mind and self-awareness along the movement; therefore, continuous yoga practice helps the body and mind stay in healthy homeostasis. The current study could be a guide for those infected with HIV/ AIDS in self-caring and promoting their health and quality of life continuously throughout their life. People living with HIV could live longer with a chronic condition that continuously presents social, physical, and psychological challenges. This study recommends an emphasis on holistic care which covers physical, psychological, social, and spiritual aspects in services and care of those infected with HIV/ AIDS. Furthermore, it encourages all sectors of the health service to consider health promotion for infectious patients with the suitable and effective scheme, at both policy level and the service practice, which leads to happiness, satisfaction, and quality of life of patients as the important goals of patient care.

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