

**EFFECT OF YOGA ON THE MENTAL HEALTH AND QUALITY OF
LIFE OF HIV INFECTED PEOPLE.**

TOWARDS

Partial fulfillment of Master degree in Yoga Therapy (M. Sc. YT)

SUBMITTED BY

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CERTIFICATE

This is to certify that **PHURAILATPAM ANNIE** who has got MSc registration with start from August 01, 2017 by **Swami Vivekananda Yoga Anusandhana Samsthana, deemed University**, has successfully completed the required training in acquiring the relevant background knowledge in Yoga Therapy and has completed the M.Sc. course of 2 years to submit this research project entitled **“Effect of yoga on the mental health and quality of life of HIV infected people”** as per the regulations of the University.

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DECLARATION

I hereby declare that the subjected study was conducted by me at **Swami Vivekananda Yoga Anusandhana Samsthana (S-VYASA)**, Bengaluru, under the guidance of **DR. KUNTAL GHOSH**, S-VYASA University Bengaluru.

I also declare that the subject matter of my dissertation entitled “**Effect of yoga on the mental health and quality of life of HIV infected people**” has not previously formed the basis of the award of any degree, diploma, associate-ship, fellowship or similar titles.

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STANDARD INTERNATIONAL TRANSLITERATION CODE USED TO
TRANSLITERATE SANSKRIT WORDS

A = अ	gha = घ	pa = प
ā = आ	ṅa = ङ	pha = फ
ī = इ	ca = च	ba = ब
ī̄ = ई	cha = छ	bha = भ
u = उ	ja = ज	ma = म
ū = ऊ	jha = झ	ya = य
ṛ = ऋ	ṅa = ङ	ra = र
ṝ = ॠ	ṭa = ट	la = ल
e = ए	ṭha = ठ	va = व
ai = ऐ	ḍa = ढ	a = श
o = ओ	ḍha = ढ	ṣa = ष
au = औ	ṇa = ण	sa = स
am = अं	ta = त	ha = ह
aḥ = अः	tha = थ	ḷa = ऌ
ka = क	da = द	kṣa = क्ष
kha = ख	dha = ध	jña = ज्ञ
ga = ग	na = न	

ABSTRACT:-

Background: significant numbers of HIV infected individuals suffer from psychological problems such as anxiety, depression and stress. Presence of psychological problems in HIV infected patients lead to poor sleep quality and poor quality of life .Yoga is well known to reduce anxiety, depression and stress level and help to improve sleep and quality of life.

AIM: To the effect of one month yoga intervention on mental health and quality of life in patients living with HIV.

METHODOLOGY:

40 HIV infected patients from a health centre in Manipur for the HIV/AIDS positive people Rural Service Academy (RUSA) , run by the non-governmental organisation (NGO) were selected for the study and are divided into two groups, Yoga (n=20) and control (n=20). Half of the participant in yoga group did not come regularly during intervention. We found only 10 people in yoga group. Thus finally we got yoga (n=10) and control (n=20) in our study. Yoga group gave IAYT based intervention of one month for 60 minutes six days a week and Control group continued their daily activities. Depression, anxiety and stress scale (DASS 21), Pittsburgh sleep quality index (PSQI) and WHOQOL-HIV BREF questionnaire were used before and after one month in both groups.

RESULTS:-

At the end of this study, we observed decrease in depression, anxiety and stress and improve in sleep and increase their physical, psychological, level of independence, social relation, environment and personal beliefs in yoga group. Overall we observe their improvement in both mental health and quality of life in yoga group .And in control group there was no any improvement in both mental health and quality of life.

CONCLUSION:-

One month IAYT practice of yoga for one hour daily helps in improving the mental health and quality of life of HIV infected person.

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CHAPTER 1

INTRODUCTION

1.1 DEFINITION

Human immune deficiency virus (HIV) infection is a communicable disease leading to significant morbidity, mortality and poor quality of life. Approximately, 2.5 million individuals were found to be infected with HIV-1 infection in the 2009 survey (Aranda-Naranjo, 2004).

HIV infection destroys or decreases production of CD4⁺ T cells. HIV-specific memory CD4⁺ T cells in infected individuals contain more HIV viral DNA than other memory CD4⁺ T cells, at all stages of HIV disease. (Douek et al., 2002)

HIV-positive people with or without a history of mental health problems face a number of life challenges.(Bravo, Edwards, & Rollnick, 2010)

Mood, anxiety, and substance use disorders have been inconsistently associated with more rapid CD4 cell count decline, progression to AIDS, and mortality. These conditions predict a higher likelihood of engaging in unsafe needle-sharing and sexual behaviours that put others at risk for HIV infection.(Pence, Miller, Whetten, Eron, & Gaynes, 2006)

1.2 CO-MORBID DISEASE

The diseases which come along with HIV infection are many. The significant ones are tuberculosis meningitis and CNS lymphoma. . Clinical features of primary CNS lymphoma are nonspecific, and may include lethargy, cognitive changes, headache and focal neurological symptoms from an intracranial mass lesion.(Tan, Smith, von Geldern, Mateen, & McArthur, 2012)

Human immune deficiency virus infected people have Neurological disorders such as distal symmetric polyneuropathy, inflammatory demyelinating polyneuropathy, mononeuropathy, autonomic neuropathy, progressive polyradiculopathy due to cytomegalovirus, herpes zoster, myopathy and other rarer disorders. (Robinson-Papp & Simpson, 2009)

Altered mental status (AMS) generally gets developed in HIV infected patients for numerous. It is due to the immune dysfunction, co morbid psychiatric disorders and complicated medication regimens. Central nervous system (CNS) opportunistic infections (OIs) and complications of complex multisystem disease, immune reconstitution events still develop in the early weeks and months after initiating ART may affect the brain and cause AMS.(Ho & Jay, 2010)

HIV-positive patients who currently smoke have increased mortality and decreased quality of life, also increased HIV-related infectious complications such as oral candidacies, acute bronchitis, bacterial pneumonia and Pneumocystis pneumonia (PCP) as well as increased respiratory symptoms and pulmonary diseases especially COPD and bacterial pneumonia. (Crothers et al., 2005)

Compared to patients with only HIV or diabetes, patients with both diagnoses are at significantly increased risk of progressive chronic kidney disease (CKD). (Medapalli et al., 2012)

1.3 PSYCHOLOGICAL PROBLEM

In spite of ART increases the life span of people living with HIV, still psychological challenges such as alternating feelings of shock, disbelief, panic, fear, guilt, shame, anger, despair, hopelessness and numbness. Supportive counselling and increased access to existing social supports may be sufficient to help individuals cope with these feelings. (Remien & Mellins, 2007)

Mental disorders such as major depressive disorder, generalized anxiety and agoraphobia are commonly found in patients with HIV. Agoraphobia was the only disorder associated with unsuppressed viral load. (Sachem, Önen, Donovan, Rosenburg, & Overton, 2016)

Unemployment, lack of health insurance, low CD4+ cell counts, not having a partner and poor quality of social support are significant contributors for depression in HIV-infected patients. (Bogart et al., 2000)

There is a sound evidence base that depression is associated with HIV infection in the first place and subsequently with disease progression. (Leserman, 2003)

Depression is commonly associated with HIV and AIDS and 90 intervention studies with HIV-infected patients as participants and an outcome of depression were identified. Slightly more than half of the studies directly targeted depression; the other studies targeted other outcomes such as coping, fatigue, cognitive slowing, cocaine-dependence, drug use, smoking cessation, grief, reduction in risk behaviours, HIV symptoms or neuropsychological performance. Most of the studies measured depression along with other non-HIV-related outcomes (e.g. anxiety, coping, quality of life, fatigue, smoking) and/or HIV-related outcomes (e.g. immunologic measures, medication adherence, HIV symptoms, HIV risk behaviours). (Sherr, Clucas, Harding, Sibley, & Catalan, 2011)

Depression may be the consequence of disease progression or negative life and disease events trigger lowered mood reactions. (Pence et al., 2006)

Depression is likely to have critical adverse consequences on people with HIV and AIDS. It strongly predicts quality of life, more so than severity of illness in persons with advanced or late-stage HIV/AIDS. (Kemppainen, 2001)

There are strong gender effects whereby women have higher prevalence, incidence and morbidity risk from depression than men (Piccinelli & Wilkinson, 2000) .

HIV-related fatigue is the most common complaint of HIV infected people. Poor sleep quality, which likely lives on the margins of psychosocial and physiological factors associated with HIV-related fatigue, has also been a consistent correlate of fatigue. (Barroso & Voss, 2013)

The presence of fatigue in HIV-infected patients is most strongly associated with psychological factors and not with more advanced HIV disease or the use of highly active antiretroviral therapy. This highlights the importance of investigation and management of underlying depression and anxiety in patients presenting with fatigue.(Henderson, Safa, Easterbrook, & Hotopf, 2005)

The psychological characteristics that correlated with fatigue were state and trait anxiety, depression and perceived stress. These data indicate that the high prevalence of fatigue in the HIV-infected population is a multi factorial syndrome that includes both physiological and psychological correlates. The results also suggest that stress related factors probably contribute significantly to the fatigue syndrome. (Phillips et al., 2004)

Increases in anxiety, stress and depression were related to increases in HIV-related fatigue in a sample of 38 individuals referred for psychiatric care (Paddison, Fricchione, Gandhi, & Freudenreich, 2009). A high evening fatigue pattern of HIV infected person was associated with anxiety and a high morning pattern was associated with anxiety and depression. The high fatigue in both morning and evening pattern was associated with anxiety, depression and sleep disturbance and fatigue-related distress. (Lerdal, Gay, Aouizerat, Portillo, & Lee, 2011)

Lee and colleagues (2012) reported that HIV-infected individuals who reported greater sleep disturbance had more morning fatigue. (Lee et al., 2012)

Greater insomnia severity has been associated with greater fatigue, and depression may contribute to both insomnia and fatigue. In absence of depression, the treatment of insomnia may emerge as a treatment strategy to help alleviate fatigue.(Low, Preud'homme, Goforth, Omonuwa, & Krystal, 2011)

1.4 QUALITY OF LIFE OF PEOPLE LIVING WITH HIV AND AIDS

Quality of life is looked at as a product of physical, social, emotional and environmental harmony of an individual. A person with a good quality of life is found to cope more effectively with his illness. (Chandra, Deepthivarma, Jairam, & Thomas, 2003)

Reports have shown that HIV/AIDS patients face various psychological problems such as stigma, poverty, depression, substance abuse and cultural beliefs, which can affect their QOL not only from the view of physical health but also from that of mental and social health, which can cause problems that affect important activities and interests of the persons. (Aranda-Naranjo, 2004)

QOL refers the overall feelings of well-being, satisfaction and happiness of the person and it is multifaceted, incorporating physical, material, psychological, social and spiritual well-being. Patients with worse QOL at baseline could have higher proportions of anxiety and depression symptoms as well as worse clinical condition for AIDS and this could negatively affect QOL at follow-up independent of adherence to ART. (Oguntibeju, 2012)

The intake of ART lengthens the longevity of HIV infected person. ART is capable of improving survival, reducing the occurrence of HIV-related opportunistic infections and improving patients QOL. (Burgoyne & Tan, 2008)

Clinical improvement of HIV-infected patients under ART has often been measured by reduction in mortality, opportunistic infection rates or severe AIDS-related symptoms.(Crum et al., 2006)

1.5 YOGA AND HIV

Yoga helps to promote physical and mental health through asana, Pranayama, breathing exercises and meditation. Regular practice of yoga reduces perceive stress and negative thoughts and feelings and that it improves psychological symptoms by lowering the levels of anxiety and anger.(Yoshihara, Hiramoto, Oka, Kubo, & Sudo, 2014)

The link between psychological stress and chronic disease is mediated by the hypothalamic-pituitary adrenocortical axis (HPA) and the sympathetic-adrenal- medullary (SAM) system. Cortisol, release by HPA axis regulates psychological process. Catecholamine's, which are released in response to SAM activation, regulate the autonomic nervous system. Activation of the HPA and SAM systems in a repeated and prolong manner increased risk for physical and psychiatric disorders. Psychological stress might alter immune function through release of HPA and SAM hormones that bind to and alter the functions of immunologically active cells,

or through stress-induced behavioural changes. Stress directly influencing HIV replication via increases in autonomic nervous system activity. (Cohen, Janicki-Deverts, & Miller, 2007) Yoga is proven to be safe and effective in reducing depression and anxiety.(Pilkington, Kirkwood, Rampes, & Richardson, 2005)

Complementary and Alternative Medicine (CAM) is becoming popular and a pillar in the rehabilitative efforts for many living with HIV/AIDS. Complementary and Alternative Medicine (CAM) plays an important role in HIV/AIDS treatment and care. CAM helps to changes physical, social and mental wellbeing. Beneficial impacts of CAM on the health and wellness of people living with HIV/AIDS (PWAs) include: enhanced immune response, reduction in symptoms and side effects from conventional therapies, less emotional stress, increased sense of control and improved QOL. As CAM has become more accepted, a stronger emphasis is being placed on the integration of CAM with conventional medical approaches to better address the mental, emotional and physical aspects of the healing process. (Mulkins, Ibáñez-Carrasco, Boyack, & Verhoef, 2014)

CAM is defined by the National Center for Complementary and Alternative Medicine (NCCAM) as “a group of diverse medical and health care systems, practices and products, that are not currently part of conventional medicine”, that include systems such as homeopathic medicine, naturopathic medicine or traditional Chinese medicine; practices such as mind–body practices, massage and energy therapies that involve the use of energy fields and products such as herbs, foods and vitamins (Mulkins et al., 2014).

Yoga is an ancient technique use for promoting both physical and mental health through asana, Pranayama, yogic breathing and meditation technique. Regular yoga practices help to reduce perceive stress and negative thoughts and feelings and improve psychological symptoms by lowering the levels of anxiety and anger(Yoshihara et al., 2014).

Traditional yoga is a complex intervention that comprises advice for ethical lifestyle, spiritual practice, physical activity, breathing exercises and meditation. Yoga has become a popular means to promote both physical and mental well-being. Mind–body medical interventions, i.e. interventions that focus on the interactions among the brain, the rest of the body, the mind and behaviour are commonly used to cope with a wide range of depression severity and yoga is one of the most commonly used mind–body interventions(Cramer, Lauche, Langhorst, & Dobos, 2013).

Participants gained skills to manage the physical and emotional issues related to their HIV status in more positive ways. They also gained awareness and acceptance of themselves, others and their illness and awareness of the mind/body connection. The greater self-

awareness experienced by the participants may have included greater awareness of change and stress in life, physical pain, discomfort and social issues. Instead of refusing to face the problems, the participants accepted and embraced the experiences. (Brazier, Mulkins, & Verhoef, 2006)

Generally PLWH have high degrees of emotional distress, pain and anxiety which may negatively affect their QOL. In order to tolerate these symptoms, some PLWH increasingly use and abuse illicit substances and become addicted. The use of substances significantly decreases adherence to ART, leading to unsuccessful viral suppression, increasing clinical progression of the disease and development to ART drug resistance, further deteriorating patients QOL. Mindfulness-based stress reduction techniques, including Yoga can improve symptoms of stress, anxiety, depression, pain, QOL and alter disease progression. (Agarwal, Kumar, & Lewis, 2015)

1.6 PREVALENCE

In India the first HIV infection were detected in 1986 among female sex workers in Chennai. In the beginning of the epidemic, four southern states of India, Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, north eastern states of Manipur and Nagaland were classified as high-prevalence states (antenatal woman >1% HIV positive). (Armstrong, Medhi, Mahanta, Paranjape, & Kermode, 2015)

The majority of infections were in the age group of 15–49 years and overall 39% of the totals were women. As per latest estimates of the National AIDS Control Organisation, there are 2.12 million persons infected with HIV in India. (NACO 2012)

In India There is a steady decline in the number of PLHIV since the 2.23 million figure reported in 2007. Currently, children for 6.54% and women for 40.5% infected with HIV. The adult HIV prevalence at national level is decreasing from 0.38% in 2001–2003 through 0.34% in 2007 and 0.28% in 2012 to 0.26% in 2015. (Paranjape & Challacombe, 2016)

1.7 NEED FOR THE STUDY

It is fact that despite the presence of new antiretroviral treatments, living with HIV infection presents many emotional and physical challenges. (Brazier et al., 2006)

To relieve adverse effects of ART and physical and psychological symptoms of HIV, some PLWH turn to other means , including complementary and alternative medicine (CAM). (Agarwal et al., 2015)

The practice of Yoga and Meditation generates a more relaxed, calmer mental state and allows individuals to cope with symptoms of anxiety, depression and stressful situations, common problems faced by PLWH. Yoga is the most commonly used mind–body intervention. (Cramer et al., 2013)

It is cost-effective and easy to implement and offers benefit for emotional, psychological, and physical health. (Shapiro et al., 2007)

Many studies demonstrated the broad positive impact of yoga in health and many disease conditions. (Cheema, Marshall, Chang, Colagiuri, & MacHliss, 2011)

Yoga can augment current treatment modalities of HIV infection. (LA et al., 2010)

Yoga helps in many psychological conditions such as anxiety, depression and stress and improves overall well-being and quality of life. (Arora, Bhattacharjee, Gopal, Mondal & Gandhi, 2011) Yoga helped reduction of blood pressure in pre-hypertensive HIV-1 infection. (Cade et al., 2010)

CHAPTER 2

REVIEW OF ANCIENT LITERATURE/SCRIPTURES

2.1 CONCEPT OF OJAS ACCORDING TO AYURVEDA

The essence of the seven dhatus is called ojas, the concept of which is very subtle and fundamental. It is the extreme apex power of all the dhatus and is responsible for biological strength, vitality and immunity against disease. The ojas is the main determinant of bala and vyadhiksamatva or resistance against disease. The ojas predominantly contains the water element it is greasy, white, cool, steady, expandible, clear, soft and moist and is the important seat of life. All parts of the human body are pervaded by it and the body's organs degenerate in its absence. All rasayana remedies described in Ayurveda are considered as promoters of ojas. (Amruthesh, 2007)

From Ayurvedic texts : *Sapta dhātus* refer to the seven body tissues, namely, the *rasa* (basic body fluids), *rakta* (blood), *māmsa* (muscles), *medas* (fats and lipids), *asti* (bones), *majje* (bone marrow), and *śukra* (semen). The last of the *sapta dhātus*, the semen is the highest state of matter of all *sapta dhātus*, that is, a matter with highest quantum of energy which is the key material for production of *ojas*. *Ojas* is principally responsible for the immunity. *Ojas* determines the capacity of an individual to combat diseases and also resists virulence of a disease. If *ojas* is affected, it leads to a condition called *ojas dushti*, leading to pathogenesis, which is further divided into three stages, namely, *ojas-vistramsa*, *ojas-vyapat*, and *ojas-kshaya*. *Ojas vistramsa* results in fatigue, weakness in the body and results in disease can easily get lodged in the body. *Ojas vyapat* results in fluctuation of immunity leading to autoimmune disorders, hypersensitivity, and allergic disorders. The last stage, the *ojas-kshaya* which refers largely to the loss, absence or deficiency of *ojas*, causes wasting, decay, degeneration, delirium, apoptosis, and thus destruction of the body. Depletion of *ojas* shows up through symptoms such as fear complex, constant weakness, worry, affliction of sense organs with pain, loss of complexion, cheerlessness, roughness, and emaciation and thus leads to diabetes (*ojomeha/madhumeha*), anaemia (*pāndu roga*), tuberculosis (*rajayakshma*), loss of immunity, weight loss, and death. Similar conditions are also seen with reference to HIV/AIDS as explained in the modern literature. (Harichandra, Ramesh, & Nagendra, 2019)

2.2 IMMUNITY FROM ANCIENT TEXT

2.2.1 Definition of ojas

ओजः प्रसादो धतुनम् ।

ojaḥ prasādo dhatunam|(ca.3p161)

ojas is the essence of all the seven dhatus but as it sustains life, it mentioned separate from dhatus.

2.2.2 Qualities of ojas

स्त्रिगंधं सोमात्मकं शुद्धमिपल्लोहितपितकम् ॥३७ ॥

strigdhariṁ somātmakam śudhamipallohitapitakam||37||*(ah.su.11/37)*

यन्नाशे नियतं नाशो यस्मिस्तिष्ठति तिष्ठति निष्पद्यन्ते यतो भाचा विधिधा

देहसंश्रयाः ।३८ ।

*yannāśe niyatarṁ nāśo yasmistiṣṭhati tiṣṭhati niṣpadyante yato bhācā vighidhā
dehasamśrayāḥ*|38|*(ah.su.11/38)*

It is viscus (unctuous, greasy) , somatmaka (preponderant in aap bhuta or watery principle), clear (transparent), slight reddish yellow in color; by its loss (destruction , absence) the loss of the body (even of life). Is sure to happen and by its presence the body (and life) are sure to survive ; from it are brought about the different stetes (condition , activities etc.) concern with (related to, residing in) the body .

देहः सावयवस्तेन व्याप्तो भवति देहिनाम् ।

तदभावाच्चशीर्यन्ते शरीराणि शरीणाम् ॥२७ ॥

*dehaḥ sāvayavastena vyāpto bhavati dehinām
tadabhāvāccaśīryante śarīrāṇi śarīṇām*||27||*(su.su.15/27)*

It is further soft and shiny and is possessed of the most efficacious virtue and should be regarded as the most important elements (seat) of vitality . The whole body it's in its limbs and members are permeated with ojas and a loss or discrimination in its natural quality leads to the gradual emaciation and ultimate dissolution of organism.

ओजोवुद्धौ हि देहस्य तुष्टिबलोदयः ॥४१॥

ojovuddhau hi dehasya tuṣṭibalodayaḥ||41|| (ah.11/41)

Increase of ojas makes for contentment , nourishment of the body and increase of strength.

2.2.3 Function of ojas and its important

तत्र बलेन स्थिरोपचितमांसत सर्वचेष्टास्वप्राप्ति घातः

स्वरवर्णप्रसादो बाह्यनमभ्यन्तराणां च करणानामात्मकार्यप्रतिपत्तिर्भवति ॥२५॥

*tatra balena sthiropacitamāmsata sarvaceṣṭāsvaprāṭi ghātaḥ
svaravarṇaprasādo bāhyanamabhyantarāṇāṇāṃ ca
karaṇānāmātmakāryapratipattirbhavati||25|| (su.su.15/25)*

Ojas lends strength and radiance to the body. Being the essence of all the dhatus, its decline in the body it leads to a corresponding decline in the ability of the dhatus to support the body, even when they are in balance. It keeps all dhatus steady and nourished. All physical, mental, sensory and motor function are made possible by ojas. In time of joy and sorrow it is also the source of will power, determination, patience and enthusiasm. It refines speech and complexion and strengthens immunity. It is the foundation of a health and happiness .

येनौजसा वर्तयन्ति प्रिणिताः सर्वदेहिनः ।

यहते सर्वभुतानः जिवितं नावतिष्ठते ॥१॥

*yenaujasā vartayanti priṇitāḥ sarvadehinaḥ|
yahate sarvabhutānaḥ jivitaṃ nāvatiṣṭhate||1|| (ca.su.30/9)*

यत् सारमादौ गर्भस्य यत्तद्गर्भरसाद्रसः ।

संवर्तमानं हृदयं समविशति यत् पुर ॥१०॥

*yat saramādau garbhasya yattadgarbharasādrasaḥ|
samvartamānaṃ hadayaṃ samaviśati yat pura||10|| (ca.su.30/10)*

यस्य नाशात्तु नाशोऽस्ति धारि यद्धदयाश्रितम् ।

यच्छरीररसस्नेहः प्रणा यत्र प्रतिष्ठिताः ॥११ ॥

*yasya nāsāttu nāśo'sti dhāri yaddhadayāśritam |
yaccharīrarasasnehaḥ pranā yatra pratiṣṭhitāḥ ||11|| (ca.su.30/11)*

It is the ojas which keep the whole living being refreshed. There will be no life without ojas. Ojas marked the beginning of the formation of the embryo. It is the nourishing fluid from the embryo. It enter the heart right at the stage of the latter's initial formation. Losses of ojas amount decrease the life itself. It sustains the life and is located in the heart. It constitutes the essence of all the tissue elements. All this action of ojas manifests itself in different ways, only with the help of this vessel. So, this vessel play an important role in the maintenance of the health.

2.2.4 Causes of decrease of ojas

अभिघातात् क्षयात् कोपाच्छोकद्वयानाच्छमात् क्षुधः

ओजोः सङ्क्षीयते ह्योभ्यो धातुग्रहणनिःसतम् ।

तेजः समिरितं तस्माद्विस्त्रंसयत् देहिनः ॥२८ ॥

*abhighātāt kṣayāt kopācchokaddhayānācchamāt kṣudhaḥ
ojoh saṅkṣīyate hyobhyo dhātugrahaṇaniḥsatam |
tejaḥ samiritaṅ tasmādvistrānsayat dehinaḥ ||28|| (su.su.15/28)*

Anger, worrying, fear, sorrow and other psychological excitement ; decline in the amount of dhatus, dosas or malas ; excessive fasting or inadequate diet ; eating and drinking too many rough , dry and harsh foods; over work , insomnia, excessive secretion of kapha , mala, blood and semen, ematiation due to sickness and external all can leads to a decline in ojas.

2.2.5 Sign of decreased of ojas

ओजः क्षीयेत कोपक्षुद्वथानशोकहृक्श्रमादिभिः ॥३९ ॥

बिभेति दुर्बलोऽभीक्षणं ध्यायति व्यथितेन्द्रियः ।

ojaḥ kṣīyeta kopakṣudvathānaśokahṛkśramādibhiḥ ||39||

bibheti durbalo'bhikṣṇam dhyāyati vyathitendriyaḥ|(ah.su.11/39)

दुःच्छयो दुर्मना रुक्षो भवेत्क्षामश्च तत्क्षये ॥४० ॥

जीवनीयौषघक्षीररसाद्यास्तत्र भेषजम् ।

duḥcchayo durmanā rukṣo bhavetkṣāmaśca tatkṣaye||40||
jīvanīyauṣaghakṣīrarasādyāstatra bheṣajam|(ah.su.11/40)

Ojas undergoes decrease in quality by anger, hunger(starvation) , worry, grief, exertion etc., with such a decrease the person become fretful, worry much again and again (without apparent reason) , feels discomfort in the sense organ, develops bad complexion, bad mentation and dryness; the treatment for it is to use the drugs of jivaniya gana milk, meat, juice etc.

2.2.6 Symptom of derange of ojas

बिभेति दुर्बलऽभीक्षणं ध्यायति व्यथितेन्द्रियः ।

दुश्छायो दुर्मन रुक्षः क्षामश्चैवौजसः क्षये ॥७३ ॥

bibheti durbala'bhikṣṇam dhyāyati vyathitendriyaḥ |
duśchāyo durmana rukṣaḥ kṣāmaśchvaujasah kṣaye||73||(*ca.su.17/73*)

हृदि तिष्ठति यच्छुद्धं रक्तमिषत्सपीतकम् ।

ओजः शरीरे संख्यतं तन्नाशान्ना विनश्यते ॥७४ ॥

hadi tiṣṭhati yacchudgham raktamiṣatsapītakam |
ojaḥ śarīre saṅkhyatam tannāśānnā vinaśyate||74||(*ca.su.17/74*)

भ्रमरैः फलपुष्पेभ्यो यथ संब्रियते मधु ।

तद्वदोजः स्वकर्मभ्यो गुणैः संब्रियते नुणाम् ॥७५ ॥

bhramaraiḥ phalapuṣṣebhyo yatha sambhriyate madhu |
tadvadojaḥ svakarmabhyo guṇaiḥ sambhriyate nuṇām||75||(*ca.su.17/75*)

रथमं जायते ह्यौजः शरीरेऽस्मिञ्छरीरिणाम् ।

सर्पिर्वणं मधुरसं लजगन्धि प्रजयते ॥७६ ॥

*rathamam jāyate hyaujaḥ śarīre' smiñcharīriṇām |
sarpirvaṇam madhurasam lajagandhi prajayate ||76|| (ca.su.17/76)*

When ojas is becomes decreased the person has fear (anxiety), worries always, discomfort in the sense organs, bad shade (complexion) bad mind (feedle mental stamina) , dryness and emaciation of the body. Ojas is the (material) present in the heart is pure, slightly red and yellow in colour and its loss leads to death of the person. Ojas gets formed first in the body of living beings , has the colour of the ghee, sweet taste and odour of taja (fried paddy). Just like a honey is collected by the bee from the fruits and flower . similarly ojas gets formed from the qualities and action of man.

2.2.7 Causes of emaciation

व्यायामोऽनशनं चिन्त रुक्षाल्पप्रमिताशनम् ।

वातातपौ भयं शाको भुतोपघतश्च ग्यातव्याः क्षयहेतवः ॥७६ ॥

*vyāyāmo' naśanam cinta ruṣṣālpapramitāśanam |
vātātapau bhayam śāoko bhutopadhataśca gyaṭavyāḥ kṣayahetavaḥ ||ca.17/76||*

कफशणितशुक्राणं मलनं चतिवर्तनम् ।

कालो भुतोपघातश्च ग्यातव्याः क्षयहेतवः ॥७७ ॥

*kaphaśaouṇitaśukrāṇam malanam cativartanam |
kālo bhutopaghātaśca gyaṭavyāḥ kṣayahetavaḥ ||77|| (ca.17/77)*

Excess of physical exercise, lack of food (fasting) , worry, partaking foods which are dry (moisture less) and pramitasana (consuming food of one taste only) , exposure to heavy breeze or sunlight , fear, grief, drinking strong wine , keeping awake at night, more elimination of kapha , sont (blood) , sukra (semen), and mala (waste products such as urine , faces) time such asadana and bhutopagata (invasion/ assault by bhutas – demons and bacteria , virus etc) . these are the causes for the decrease of ojas.

2.2.8 Remedies of emaciation

दोषधातुमलक्षीणो बलक्षीणोऽपि वा नरः ।

स्वयोनिवर्धनं यत्तदन्नपानं प्रकाङ्क्षति ॥३४ ॥

*doṣadhātumalakṣiṇo balakṣiṇo' pi vā naraḥ |
svayonivardhanam yattadannapānam prakāṅkṣati ||34|| su.su.15/34*

The person suffering from deficiency of dosa , dhatu , mala or ojas has longing for such food and drinks which increase their source, the wasted person recovers on getting the desired food, nevertheless , if due to wasting of dhatus vayu cause loss of sensation and function and there is extreme debility the case is not amenable to treatment.

2.2.9 Principle for preservation of ojas

तन्महत् ता महामुलास्तच्चौजः परिरक्षता ।

परिहर्या विशेषेण मनसो दुःखहेतवः ॥१३॥

*tanmahat tā mahāmulāstaccāujāḥ parirakṣatā |
pariharyā viśeṣeṇa manaso duḥkhaḥetavaḥ ||13|| (ca.su.30/13)*

हृद्यं यत् स्याद्यदौजस्यं स्रोतसां यत् प्रसादनम् ।

तत्तत् सेव्यं प्रयत्नेन प्रशमो ज्ञानमेव च ॥१४॥

*hadharī yat syādyadāujasyaṁ srotasāṁ yat prasādanam |
tattat sevyaṁ prayatnena praśamo jñānameva ca ||14|| (ca.su.30/14)*

Those who want to preserve ojas and maintain heart and the vessels attached to it in good condition should avoid such of the factor as may lead to unhappiness (mental worries) . Diets and drugs which are conductive to the heart, ojas and the channels of the circulation should be taken. Tranquility and wisdom should be following meticulously for this purpose.

2.3 CONCLUSION

According to Ayurveda, a key element in maintaining harmony and preventing disease, is cultivating and balancing ojas, an energetic material found within the physical body and the mental body. Ojas is responsible for maintaining immunity, strength in the immune system and resistance to disease and for the span of a person's life. If the body is weak and the immune system is suppressed, disease has the ability to enter the body and create illness. It is the power of ojas that works against the power of disease. It is the quality of ojas within the body that will either defend, or allow, disease to enter the body. If ojas is strong then the body will resist the disease. If ojas is low, and the body is weak and met with a virus or bacteria, then the body may develop an illness. Ojas is depleted by sadness ,anxiety, anger, stress, depression, envy, physical and emotional trauma, excessive physical exertion

excessive alcohol, fever, ejaculation, overwork, undernourishment . The depletion of ojas at any level is harmful to the body and to the mind. Yoga asana, Pranayama or breathing practices, meditation, times in nature, gentle exercise, stress reduction, self nourishment and positive living will enhance ojas to build both physical and mental ojas. Those who want to preserve ojas and maintain heart and the vessels attached to it in good condition should follow diets and drugs which are conducive to the heart and the channels of the circulation and also tranquility and wisdom meticulously .

CHAPTER 3

SCIENTIFIC LITERATURE REVIEW

Some scientific articles have been given bellow:

<i>SL .N O</i>	<i>TITLE</i>	<i>AUTHOR AND YEAR</i>	<i>SAMPLE DETAIL</i>	<i>TYPE OF INTERVENTION AND DURATION</i>	<i>ASSESSMENT</i>	<i>RESULT</i>	<i>CONCLUSION</i>
1	Effect of comprehensive yoga based lifestyle modification program on lipid peroxidation.(Yadav, Ray, Vempati, & Bijlani, 2005)	YadavRK, RayRB, vempatiR, bijlaniRL. 2005	104subjects Between19-71 years old.	1hour yoga practice, stress management, meditation, relaxation technique, individual counselling. 9 days	(TBARS)blood test(measure the concentration of thiobarbituric acid reactive substances in blood as an indicator of oxidative stress)	The serum concentration of TBARS decreased significantly.	The research suggest that a brief low cost lifestyle intervention based on yoga reduces oxidative stress
2	Effects of naturopathy and yoga intervention on CD4 count of the individuals receiving antiretroviral therapy-report from a human immunodeficiency virus sanatorium, Pune.(Joseph, Nair, & Nanda, 2015)	<u>Joseph B, Nair PM, Nanda A.</u> 2015	96 patients received 1-180 days. Four groups (G1: 1-7 days, G2: 8-15 days, G3: 16-30 days, G4: >30 days) based on duration of stay	Naturopathy and yoga intervention on CD4 counts of HIV patients.	CD4 count and naturopathy and yoga	Significant increase in the CD4 count was observed in two out of the four groups (G2 and G4 respectively).	An increasing trend in the CD4 count was observed that was proportional to the length of the stay of participants at the HIV sanatorium.
3	Effect of 12 weeks of yoga training on the somatisation, psychological symptom, and stress-related biomarkers of healthy women.(Yoshihara et al., 2014)	Yoshilhara K, Hiramoto T, oka T, Kubo C, Sudo N. 2014	24 healthy women who have no experience with yoga.	12 weeks of yoga training.	Profile of mood state (POMS) and symptom checklist-90-Revised (SCL90-R) questionnaires. Biopyrrin and cortisol levels	After 12 weeks of yoga training, all negative subscale scores from the POMS and somatisation, anxiety, depression, and hostility from the	Yoga training has the potential to reduce the somatisation score and the score related to mental health indication, such as anxiety, depression, anger, and fatigue.

					were measured as stress related biomarkers.	SCL-90-R were significantly decreased.	
4	Effect of integrated yoga (IT) on psychological stats and CD4 counts of HIV-1 infected patients : a randomized controlled pilot study(Naoroibam, Metri, Bhargav, Nagaratna, & Nagendra, 2016)	Naoroibam R, Metri KG, Bhargav H, Nagaratna R, Nagendra HR, nagaratna R. 2016	44 HIV infected individuals .yoga (n=22) and control(n=22)	Integrated yoga (IY) sessions were given 60 min/day, 6 days a week for 1 month. Control group followed daily routine during this period.	Hospital anxiety and depression scale was used to assess anxiety and depressions, CD4 were measured by flow cytometry before and after intervention.	Within group reduce depression and anxiety scores and CD4 count. Between group significant reduction in depression scores in the yoga group as compared to control group.	One month practice of YI may reduce depression and improve immunity in HIV-1 infected adult.
5	Yoga lifestyle intervention reduces blood pressure in HIV-infected adults with cardiovascular disease risk factors (Cade et al., 2010)	WT Cade, DN Reeds, KE Mondy, ET Overton, J Grassino, S Tucker, C Bopp, E Laciny, S Hubert, S Lassa-Claxton I	Sixty HIV-infected adults with mild–moderate CVD risk	20 weeks of supervised Yoga practice.	CD4 T-cell count and plasma HIV RNA, and the Medical Outcomes Study Short Form (SF)-36 health-related QOL inventory.	Resting systolic and diastolic blood pressures improved more in the yoga group than in the standard of care group. However, there was no greater reduction in body weight, improvements in glucose tolerance or overall QOL after yoga.	yoga is a low-cost, simple to administer, Non pharmacological, popular behavioural intervention that can lower blood pressure in pre-hypertensive HIV-infected adults with mild–moderate CVD risk factors.

		and KE Yarasheski, 2010					
6	Effects of an integrated yoga program on mood, perceived stress, quality of life and immune measures in HIV patients.(Rao et al., 2012)	R Rao1, U Deb2, N Raghuram, N Hongasandra Rama Rao, A Burke, F Hecht 18 May 2012	a yoga Intervention (N = 36) or serve as wait-list controls (N =34).	the yoga group received an integrated set of one hour daily yoga therapy sessions for 3 months, the waitlist control group Received only education and counselling during clinic visits.	Anxiety and Depression Scale, Perceived Stress Scale, the HIV WHOQOL BREF, the Positive and Negative Affect Schedule;CD4, CD8 counts were measured using flow cytometry and viral load using RT PCR.	Significant decrease in perceive stress and an increase in positive affect in the yoga group Compared to waitlist controls on ANCOVA with the respective baseline measure as a covariate. Decrease in self-report anxiety, depression in the yoga group alone on paired t-test.	The results suggest benefit with yoga in reducing psychological distress and improving quality of life in HIV Seropositive patients.
7	Evaluating a yogic breathing and meditation intervention for individual living with HIV/AIDS.(Brazier et al., 2006)	Alison Brazier, PhD; Andrea Mulkins, MSc; MarjaVerhoeef, PhD 2006	20 participants in the intervention group and 27participants in the control group	The program components include breathing techniques, meditation, Duration 6 week	Standardized measures used were the Mental Health Index (MHI), the MOS-HIV Health Survey (MOS), and the Daily Stress Inventory (DSI),	Positive changes in well being on the MHI and the MOS, The DSI indicated an increase in experience. Alternatively, the qualitative interviews described positive	There were significant interactions between groups across time on the overall MHI summary as well as two other subscales: positive effect And psychological

					Along with qualitative interviews.	changes.	well-being.
8	Sudarshan Kriya yoga improves quality of life in healthy people living with HIV (PLHIV): results from an open label randomized clinical trial.(Mawar et al., 2015)	MawarN, Katendra T , Bagul R, Bembalkar S, Vedamurt hacharA,T ripathy S, Srinivas K, Mandar K, Kumar N, gupte N. 2015	61 adult were enrolled. Those with HIV, cardiac disease, jaundice, tuberculosis.	Sudarshan Kriya yoga (SKY)	A validated 31-item WHOQOL-HIVBREF questionnaire.	An overall 6 per cent improvement of QOL scores was observed, 12 per cent for physical, and 9 per cent level of independence domain.	Improvement in QOL scores. This low cost strategy improved physical and psychological state of PLHIV with effective monitoring for sustainability of quality of life.
9	A Pilot Feasibility and Acceptability Study of Yoga/ Meditation on the Quality of Life and Markers of Stress in Persons Living with HIV Who Also Use Crack Cocaine.(Agarwal et al., 2015)	Ram P. Agarwal, PhD,1,2 Adarsh Kumar, PhD	24 HIV infected individuals, yoga (n = 12) and control (n = 12)	60-minute, twice-per-week sessions of Yoga Module for 2 months	(1) the Short Form (SF)-36 Health Survey, (2) the Perceived Stress Scale (PSS), and (3) The Impact of Events Scale (IES).	YM improves on QOL. The PSS total score and the IES intrusion score improved significantly, but cortisol did not change.	YM a simple, safe, and inexpensive format improve QOL in a population that has many medical difficulties and extenuating Stressors.

10	Effects of Yoga on Sleep Quality and Depression in Elders in Assisted Living Facilities. (Chen et al., 2010)	Chen, Kuei-Min; Chen, Ming-Hsien; Lin, Mei-Hui; Fan, Jue-Ting; Lin, Huey-Shyan; Li, Chun-Huw. 2010	69yoga exercise ($n = 38$) and control group ($n = 31$)	Three times per week at 70 min per practice session for 24 weeks.	Pittsburgh Sleep Quality Index and depression state Taiwanese Depression Questionnaire	overall sleep quality had significantly improved, whereas depression, sleep disturbances, and daytime dysfunction had decreased significantly	Yoga exercise be incorporated as an activity program in assisted living facilities or in other long-term care facilities to improve sleep quality and decrease depression in institutionalized elders.
11	Effects of Yoga on Psychological Health in Older Adults. (Bonura & Tenenbaum, 2014)	Kimberlee Bethany Bonura_ , Gershon Tenenbaum_2014	98 older adults, ages 65 to 92	chair yoga, chair exercise, and control groups 1-month	State Anger Expression Inventory, Geriatric Depression Scale, Lawton's PGC Morale Scale, General Self-Efficacy Scale, Chronic Disease Self-Efficacy Scales, and Self-Control Schedule.	Yoga participants improved more than both exercise and control participants in anger, anxiety, depression, well-being, general self-efficacy, and self-efficacy for daily living. Changes in psychological health.	Over a 6-week period, our findings indicate yoga's potential for improving psychological health in older adults.

12	Effects of yoga on depression and anxiety of women. (Javnbakht, Hejazi Kenari, & Ghasemi, 2009)	M_Javnbakht, R_HejaziKenari, M_Ghasemi. 2009	Control group ($n = 31$) yoga group ($n = 34$) twice weekly yoga classes of 90 min duration for 2 months.	Yoga intervention	personal information questionnaire as well as Beck and Spielberger tests	Women who participated in yoga classes showed a significant decrease in state anxiety and trait anxiety.	Participation in a two-month yoga class can lead to significant reduction in perceived levels of anxiety in women who suffer from anxiety disorders.
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Conclusion:

Yoga helped reduction of blood pressure in pre-hypertensive HIV-1 infection. Yoga reduces mental health indication, such as anxiety, depression, anger, psychological distress and improves Sleep quality, immunity and quality of life in HIV positive patients. Sudarshan Kriya, Yogic breathing and meditation intervention for individual living with HIV/AIDS, were positive effect on psychological well-being. This low cost strategy improved physical and psychological state and Improvement in QOL.

CHAPTER4

AIM AND OBJECTIVES

4.1 AIM

To study the effect of yoga on the mental health and quality of life of HIV infected people.

4.2 OBJECTIVE

To assets the psychological changes in patients with HIV infection after the practice of yoga.

To study quality of life (QOL) in HIV- infected person.

4.3 RESEARCH QUESTION

Is yoga improves the mental health and quality of life of HIV infected people.

4.4 HYPOTHESIS

H_A = Yoga may improves the mental health in patients with HIV infection after the practice of yoga.

H_A = Yoga may improves the quality of life (QOL) in HIV-infected person.

4.5 NULL HYPOTHESIS

H_0 = Yoga may not improves the mental health in patient with HIV infection after the practice of yoga.

H_0 = Yoga may not improves the quality of life (QOL) in HIV-infected person.

CHAPTER 5

METHODS

5.1 SOURCE OF SUBJECTS

Rural Service Academy (RUSA) a centre in Manipur for the HIV/AIDS positive people runs by the non-governmental organisation (NGO).

5.2 SAMPLE SIZE

40 HIV infected people in a health centre in Manipur were normally assigned in 2 groups

- a) Yoga group - 20
- b) Control group -20.

5.3 INCLUSION CRITERIA

- a. HIV/AIDS positive
- b. Willing to participate in the study
- c. Both the genders
- d. Having no previous exposure to yoga

5.4 EXCLUSION CRITERIA

- a. Those have physical disability.
- b. Active respiratory infections
- c. Not willing to participate in the study

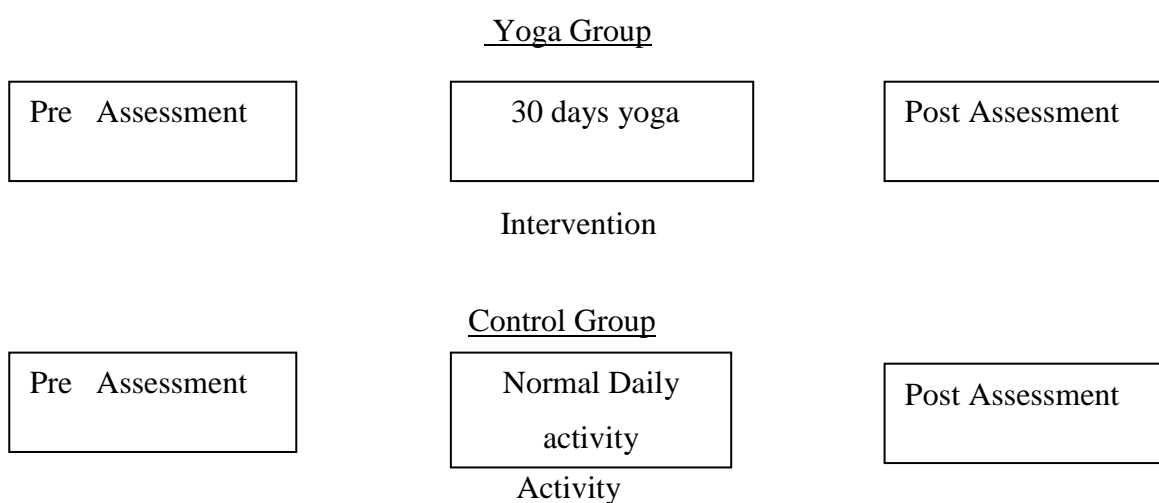
5.5 ETHICAL CONSIDERATION

All data collecting procedures reviewed and to be accepted by Institutional Ethical Committee (IEC) appointed by SVYASA University. Before the beginning of study period, Signed informed consent obtained from the Rural Service Academy (RUSA) a health centre in Manipur for the HIV/AIDS positive people run by the non-governmental organisation (NGO). They read the proposal that involves non-invasive data collection methods and risks free intervention. Participants explained in detail about the nature of study and the voluntary nature of participation and participants did not provided with any incentives for their participation.

5.6 CONSENT OF THE STUDY

- a) Informed consent of the respondents was collected
- b) The participants in the study were explained in detail about the nature of the study and the voluntary nature of the participant.
- c) Confidentiality of each participant was assured as part of the research process.

5.7 DESIGN OF THE STUDY:



5.8 ASSESSMENT TOOLS

1. WHOQOL-HIV BREF

WHOQOL-HIV BREF is a self-rating questionnaire. It is composed by 31 questions, related group of questions made a domain. WHOQOL-HIV BREF contains six domains including physical, psychological, level of independence, social relationships, environment and spiritual/religion/personal beliefs.

The WHOQOL-HIV-BREF syntax's textual transcription presents the following configuration:

- verification of all those 31 questions completed with values between 1 and 5;
- Q3, Q 4, Q 5, Q 8, Q 9, Q 10, Q 31 reverse scoring has been done on these questions ;

-Score of domains are calculated by the sum of the scores of “n” questions that compound each area, divided by the number of the domain questions. The result is multiplied by four, being represented in a scale of 4 to 20. (Canavarro, Pereira, Simões, & Pintassilgo, 2011)

2. DEPRESSION, ANXIETY AND STRESS SCALE (DASS21)

The DASS21 is a self report questionnaire designed to assess the severity of the core symptoms of Depression, Anxiety and stress. It contain 21 items, depression, anxiety and stress contain 7 items each. In completing the DASS, the individual is required to indicate the presence of a symptom over the previous week. Each item is scored from 0 to 3.

0 - did not apply to me at all – NEVER

1- Applied to me to a considerable degree, or a good part of time – SOMETIME

2- Applied to me to a considerable degree, or a good part of time – OFTEN

3- Applied to me very much, or most of the time - ALMOST ALWAYS.

(Norton, 2007)

3. THE PITTSBURGH SLEEP QUALITY INDEX (PSQI)

The Pittsburgh Sleep Quality index (PSQI) is an effective instrument used to measure the quality and patterns of sleep. It differentiates “poor” from “good” sleep by measuring seven domains: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication and daytime dysfunction over the last month. The client self rates each of these seven areas of sleep. Scoring of the answers is based on 0 to 3 scales, whereby 3 reflect the negative extreme on the likert scale. A global sum of “5” or greater indicates a “poor” sleeper. (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989)

5.9 INTERVENTION

All the subjects in experimental group underwent yoga practice daily one hour, six days a week for one month.

Table 1: List of the practices given to the yoga group

Loosening practices	Joint loosening practices for hands, legs, neck and head	5 minutes
Surya namaskar	12 counts	5 minutes
Breathing practices	Hands in and out breathing, hand stretch breathing, ankle stretch breathing, sectional breathing, tiger breathing and bridge posture breathing	15 minutes
Yogic postures	Tadasana, ardhakaticakrasana, ardhachakrasana, padahastasana, trikonasana, vajrasana, vakrasana, paschimotanasana, sukhasana, baddha konasana, pavana muktasana, suryanamaskar	20 minutes
Relaxation techniques	Instant relaxation technique, quick relaxation technique, deep relaxation technique.	5 minutes
Pranayama (yogic breathing)	Nadisuddhi, sitali and bhramari	10 minutes

CHAPTER 6

DATA EXTRACTION AND ANALYSIS

6.1 DATA COLLECTION

Data collection carried out with the help the staff of Rural Service Academy (RUSA). DASS21, PSQI, WHOQOL-HIV BREF questionnaires were used for collecting data. We collect data twice i.e. before and after the intervention.

6.2 DATA SCORING

DEPRESSION, ANXIETY AND STRESS SCALE (DASS-21)

The scale to which each item belongs is indicated by the letters D (Depression), A (Anxiety) and S (Stress). For each scale (D, A & S) sum the score for identified items. Because the DASS-21 is a short form of version of the DASS (the long form has 42 items), the final score of each item groups (depression, anxiety and stress) need to be multiplied by two.

THE PITTSBURGH SLEEP QUALITY INDEX (PSQI)

The PSQI was composed of seven subscales:

- (a) Subjective sleep quality (1 item): overall sleep quality of the respondent;
- (b) Sleep latency (2 items): time spent trying to fall asleep each night;
- (c) Sleep duration (1 item): hours of actual sleep each night;
- (d) Habitual sleep efficiency (2 items): number of hours slept divided by number of hours spent in bed multiplied by 100;
- (e) Sleep disturbances (9 items): frequency of trouble sleeping caused by certain events, such as coughing or snoring loudly, feeling chilly, or having bad dreams;
- (f) Use of sleeping medications (1 item): frequency of taking medicine to help sleeping; and
- (g) daytime dysfunction (2 items): difficulties to stay awake while doing daily activities.

Total possible scores range from 0 to 21, with higher scores indicating more severe complaints and worse sleep quality. A score of 5 and above on the PSQI total scale, computed as a sum of the seven subscales, was associated with clinically significant sleep disruptions, including insomnia and major mood disorders.

WHOQOL-HIV BREF

Scoring for WHOQOL- HIV BREF scale was obtained by the sum of the scores of “n” questions that compound each area, divided by the number of the domain questions. The result is multiplied by four, being represented in a scale of 4 to 20.

6.3 DATA ANALYSIS

Data analysis was done using excel and statistical analysis done using software called “R”. The quantitative data analyzed by using statistical test, descriptive statistics (Mean, SD). Missing value, outlier’s were analyzed and handled. Reverse scoring was done for the positive items.

The data are presented as the mean \pm SD. The entire variables were checked for normality. Both parametric and non parametric test were use for within group and between group analyses.

CHAPTER 7

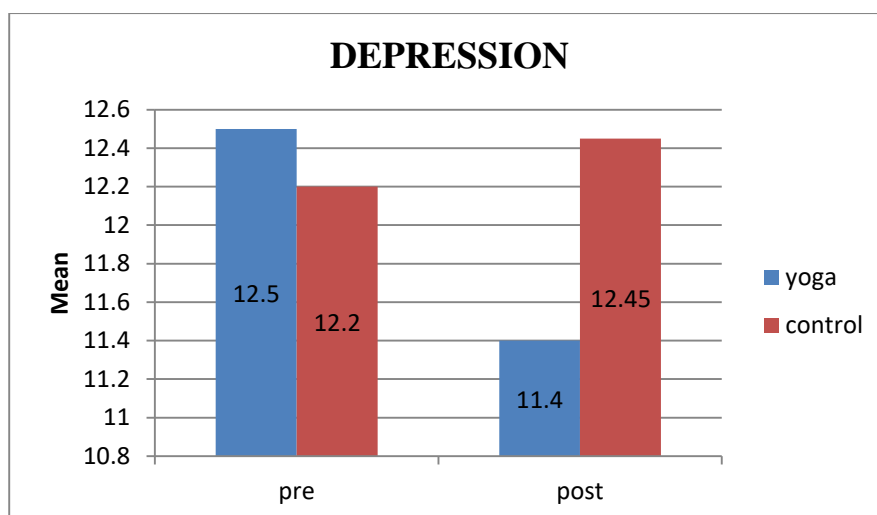
RESEARCH RESULTS

7.1 PRE AND POST RESULT

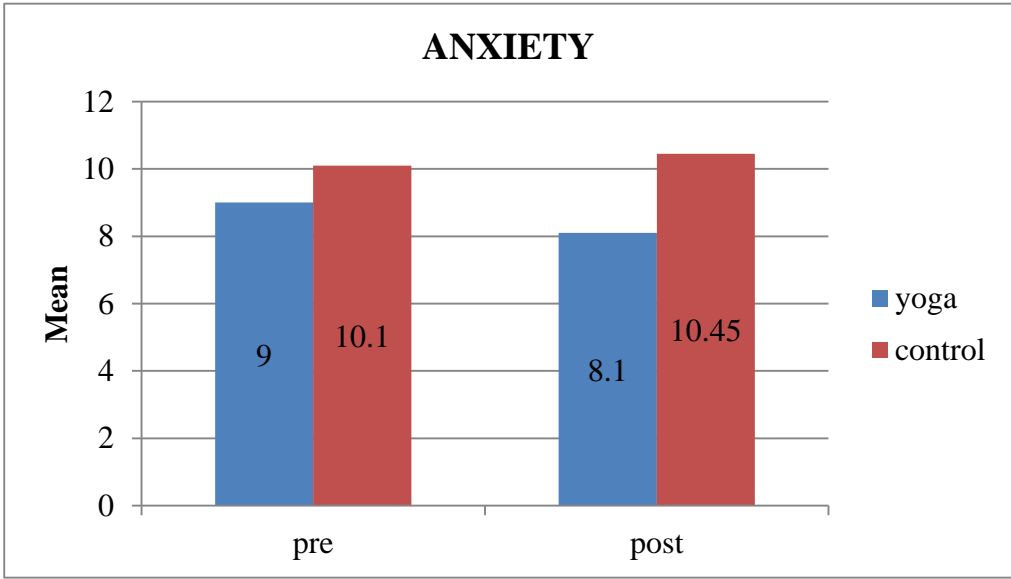
Table 2: Mean and standard deviation of depression, anxiety and stress and within group, between group analysis after one month IAYT intervention.

Depression , anxiety and stress scale (DASS21)						
Variable	Group	Mean and SD		Within Group p-value	Between group p-value	% Change
		PRE	POST			
Depression	yoga	12.5 ± 2.07	11.4 ± 1.26	.05	.043	8.8
	control	12.2 ± 1.40	12.45 ± 1.19	.09		-2.049
Anxiety	yoga	9 ± 1.63	8.1 ± 0.88	.10	.001	10
	control	10.1 ± 2.20	10.45 ± 2.06	.28		-3.465
Stress	yoga	14.2 ± 2.15	13.2 ± 1.69	0.05	.035	7.04
	control	14.65 ± 2.58	14.85 ± 2.30	0.35		-1.365

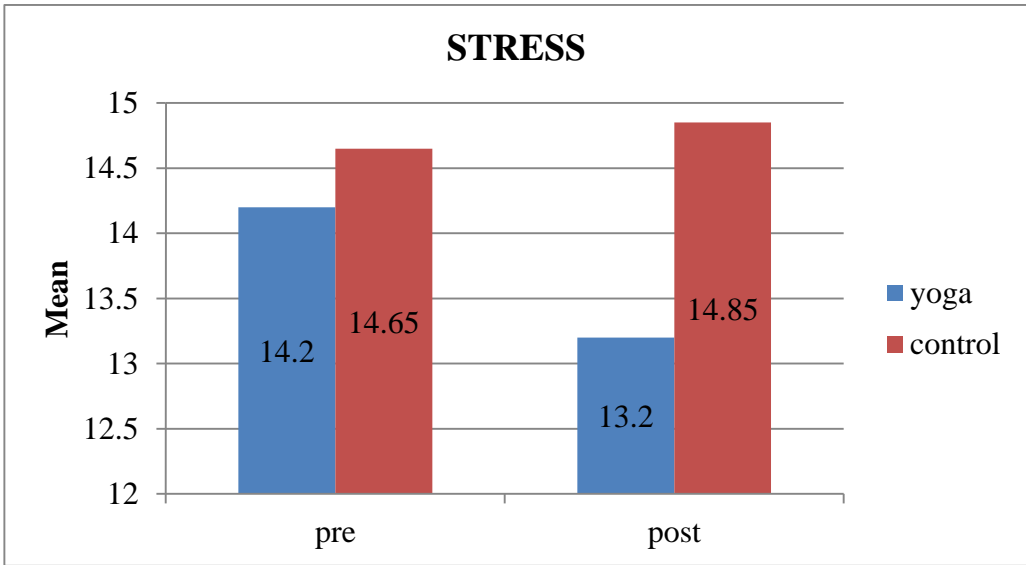
7.2 GRAPH OF THE RESULTS



Graph 1: Pre- Post depression mean score in yoga and control group.



Graph 2: Pre - Post Anxiety mean score in yoga and control group.

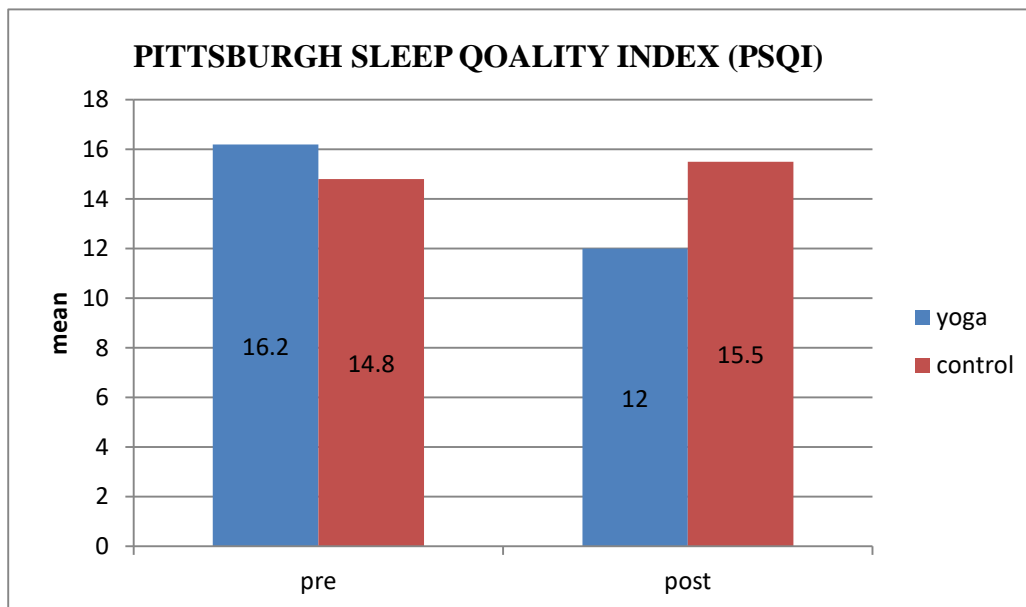


Graph 3: Pre - Post Stress mean in yoga and control group.

Table 3: Pre – Post mean of sleep quality and within group and between group analysis after one month IAYT

PITTSBURGH SLEEP QUALITY INDEX (PSQI)					
Group	MEAN and SD		Within group	Between group analysis p-value	% change
	PRE	POST			
YOGA	16.2 ± 1.32	12 ± 1.41	9.56***	2.74***	25.925
CONTROL	14.8 ± 2.61	15.5 ± 2.08	0.1536		-4.729

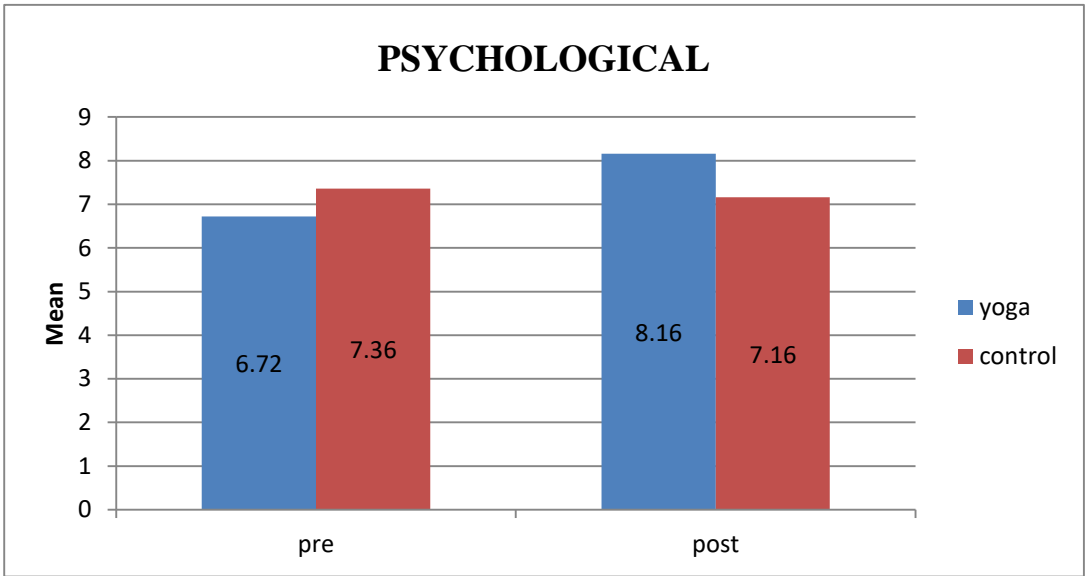
Note: ***p< .001



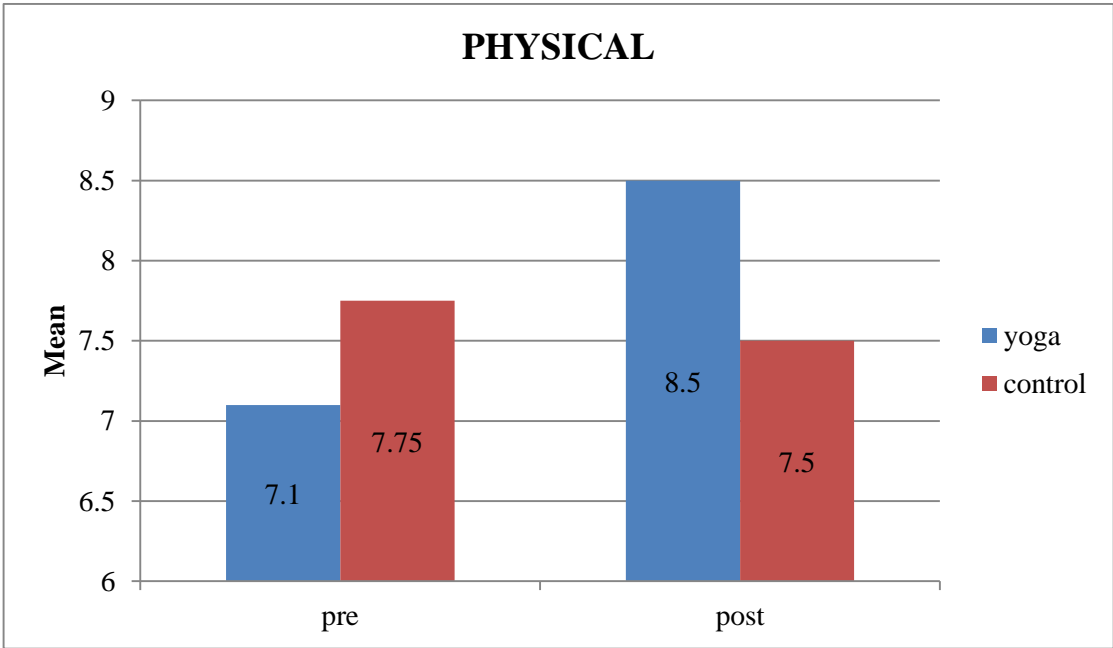
Graph 4: Pre- Post mean of sleep disturbance in yoga and control group.

Table 4:- Mean and standard deviation of quality of life and within group, between group comparisons after one month IAYT intervention.

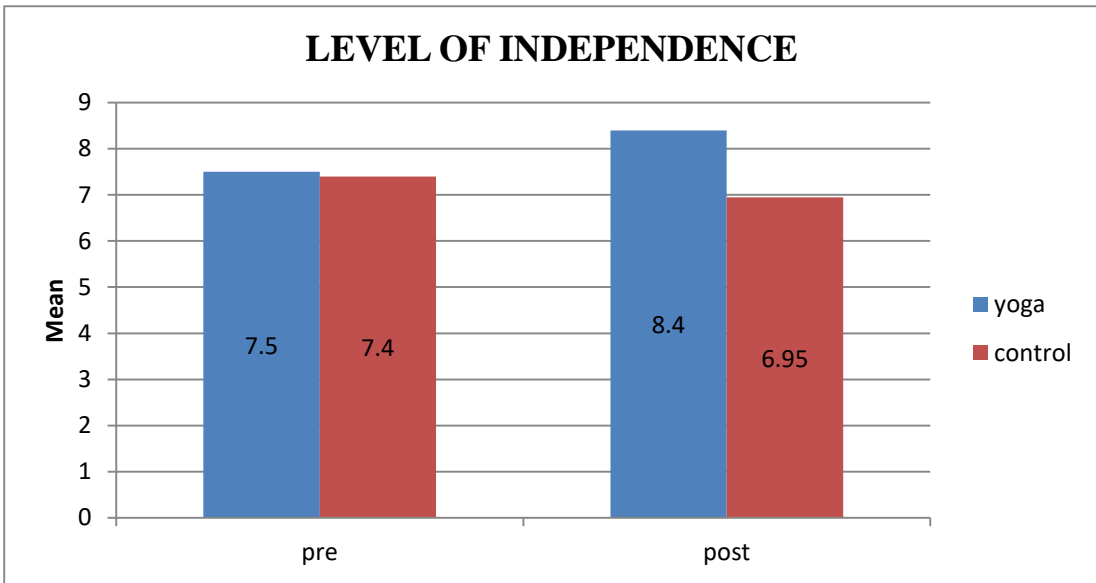
WHOQOL-HIV BREF questionnaire.	Group	Mean and SD		Between group p-value	% change
		PRE	POST		
Physical	yoga	7.1 ± 1.73	8.5 ± 0.97	0.03	-19.718
	control	7.75 ± 1.55	7.5 ± 1.43		3.225
psychological	yoga	6.72 ± 1.08	8.16 ± 1.05	0.08	-21.428
	control	7.36 ± 2.30	7.16 ± 1.95		2.717
level of independence	yoga	7.5 ± 1.27	8.4 ± 1.43	0.03	-12
	control	7.4 ± 1.98	6.95 ± 1.96		6.081
Social relations	yoga	8.2 ± 2.15	8.7 ± 2.11	0.12	-6.097
	control	7.45 ± 2.24	7.35 ± 2.08		1.342
Environment	yoga	8.3 ± 1.14	8.75 ± 1.14	0.04	-5.421
	control	7.88 ± 1.30	7.75 ± 1.31		1.649
Spiritual/religion/personal beliefs	yoga	7 ± 1.63	8.2 ± 1.14	0.08	-17.142
	control	7.2 ± 2.78	6.95 ± 2.63		3.472



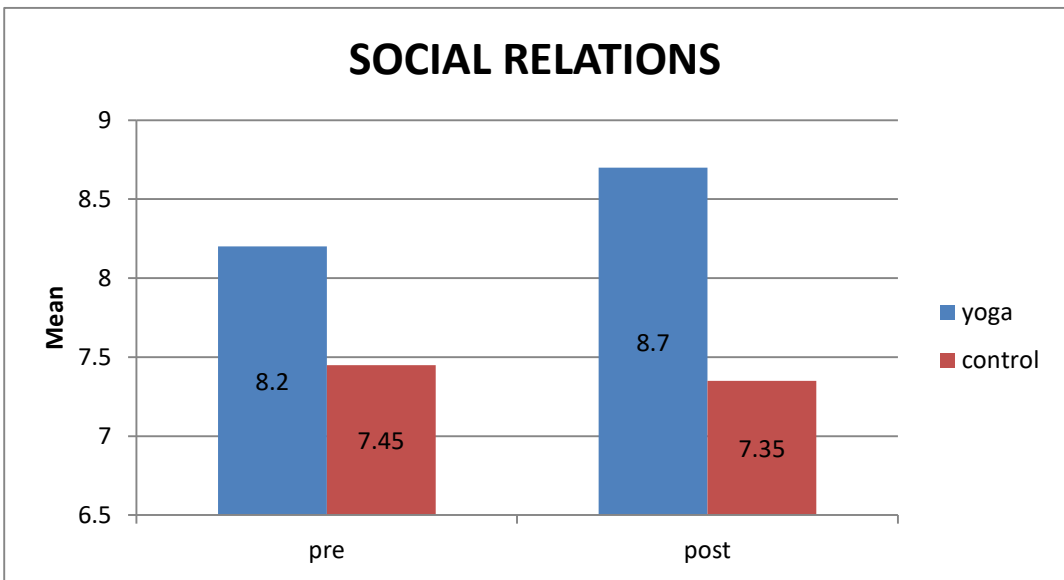
Graph 6: Pre - Post mean of psychological changes in yoga and control group.



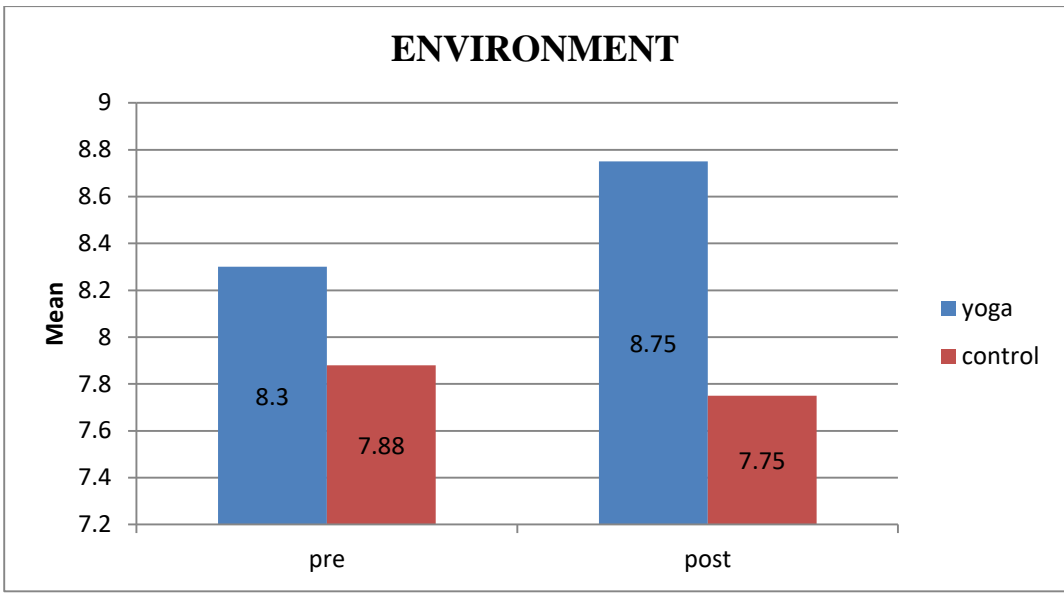
Graph 5: Pre - Post mean of physical changes in yoga and control group.



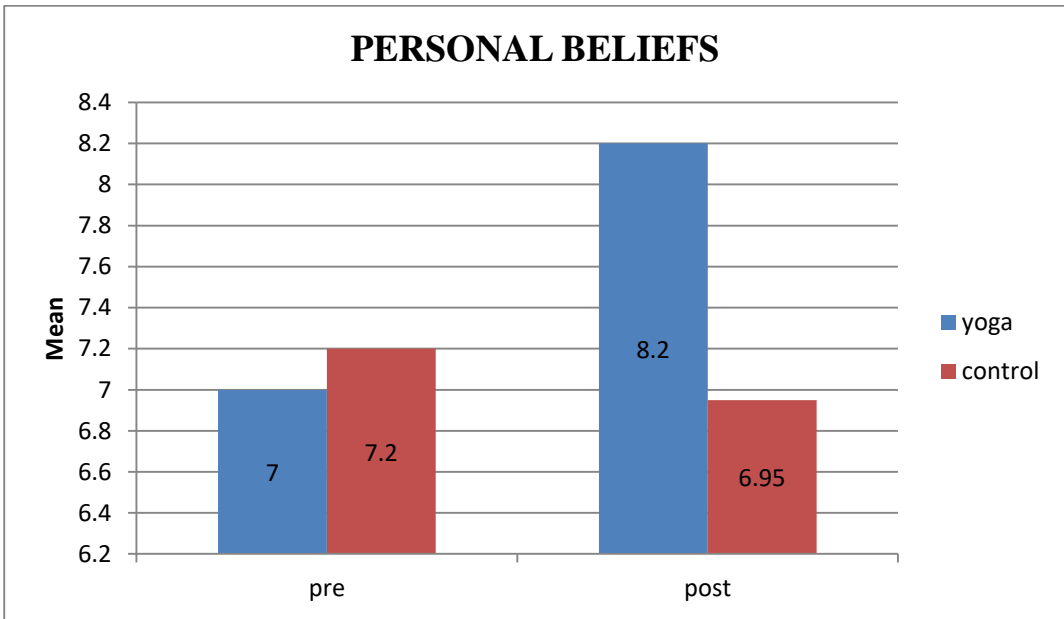
Graph 7: Pre and Post mean of level of independence in yoga and control group.



Graph 8: Pre - Post mean of social relation in yoga and control group.



Graph 9: Pre - Post mean of environment relation in yoga and control group.



Graph 9: Pre - Post mean of personal beliefs in yoga and control group.

CHAPTER 8

DISCUSSIONS

The aim of this study was to see the effect of one month yoga intervention on mental health and quality of life in patients living with HIV. After one month IAYT intervention significant reduction in depression, anxiety, stress and improve in sleep and increase their physical, psychological, level of independence, social relation, environment and personal beliefs in yoga group. Overall we observe their improvement in both mental health and quality of life in yoga group as compare to the control group.

In a previous study on effect of integrated yoga on psychological states and CD₄ counts of HIV -1 infected patients, 40 HIV infected people Yoga(n=22) & control(n=22). After 1 month yoga intervention there was an improvement in Depression by 13.4%, anxiety 8.4%. Lower percentage improvement in anxiety and higher percentage in depression in the previous study as compare to that found by us as depression 8.8%, anxiety 10%.

In another study on “A Pilot Feasibility and Acceptability Study of Yoga/Meditation on the Quality of Life and Markers of Stress in Persons Living with HIV Who Also Use Crack Cocaine” 60-minute, twice-per-week sessions of YM for 2 months, Stress level in yoga group 23.32%. In our study stress level in yoga group (7.04%). Higher percentage improvement in stress in the previous study may be due to the meditation technique, our study was only yoga asana, breathing practice, and some relaxation technique like IRT, QRT and DRT not include meditation technique.

In another study on “Effects of Yoga on Sleep Quality and Depression in Elders in Assisted Living Facilities” 69 elder person yoga (n= 38) and control group (n= 31) three times per week at 70 min per practice session for 24 weeks. After intervention we observed improvement in Depression 50.82% and Sleep disturbances 39.19%. Less percentage improvement in our study as depression 8.8% sleep disturbance 25.9% it may be due to longer duration of intervention (6month) than compare to our study(1 month). Thus we observe that longer intervention gives better results. So regular practice of yoga can improve sleep quality and mental health.

In our study, at the base line we observed that depression mean score 12.5, anxiety mean score 9, stress mean score 14.2, which suggests severe condition of depression, anxiety and stress. The PSQI baseline mean score is 16 which suggest sleep disturbance. The QOL baseline mean of 6 domain scores ranges between 6 to 8, which signify poor quality of life

.So overall we observed that people living with HIV have poor mental health, sleep disturbance and poor quality of life.

After one month interventions following changes are found, Depression, anxiety and stress have significantly changes in yoga group as between group analysis p value < 0.05. Post yoga % change Depression (.88%), anxiety (10%), stress (7.04%). The scoring of pittsburgh sleep quality index (PSQI) of yoga group shows significant result as both the p value of between analysis and within analysis are less than 0.05. Post yoga % change of PSQI (25.9 %). Out of 6 domains of WHOQOL-HIV BREF questionnaire score, three are significant: Physical p-value = 0.03, level of independence p-value = .03, Environment p-value = .04, And other three domains are not significantly change: psychological p-value = .08, social independence p-value = .12, Spiritual/religion/ personal beliefs p-value = .08 Post yoga % change – physical(-19.7%), psychological (-21.4%), level of independence (-12%), social independence (-6.1%), environment (-5.4%), spiritual/religion/personal beliefs(-17.14%) Control group doesn't show any significant change in the results of all the three questionnaire i.e. DASS-21, PSQI and WHOQOL-HIV BREF questionnaire.

Psychological stress due to diagnosis of HIV, social stigma, poor health and ART medication are the basic causes of depression, anxiety, stress and further lead to poor sleep quality and finally cause poor quality of life. Stress not only lead progression of HIV, but also suppress the immunity by affecting immune neuroendocrine axis. (Naoroibam, Metri, Bhargava, Nagaratna, & Nagendra, 2016)

Probably, the reduction in depression, anxiety and improvement in sleep quality that we observed in this study is because of reduction in stress level through yoga. Reduction in stress lead to improvement in quality of live in HIV infected person.

The main components of the stress system are the corticotropin-releasing hormone (CRH) and locus ceruleus–norepinephrine (LC/NE)-autonomic systems and their peripheral effectors, the pituitary–adrenal axis, and the limbs of the autonomic system. Activation of the stress system leads to behavioral and peripheral changes that improve the ability of the organism to adjust homeostasis and increase its chances for survival. (Tsigos & Chrousos, 2002) .Yoga decreases the activity or intensity of HPA axis as vegal nerves (a kind of parasympathetic nerves) get activated, heart rate, blood pressure, respiratory rate decrease leading to decrease of stress, anxiety and depression which results in improvement in sleep quality. And finally quality of life is improved.

CHAPTER 9

CONCLUSION

One month intense practice of yoga for one hour daily helps in improving the mental health and quality of life of HIV infected person. The practice of YM generates a more relaxed, calmer mental state and allows individuals to cope with symptoms of anxiety, depression and stressful situations, common problems faced by PLWH. It offers benefit for emotional, psychological and physical health. Yoga helps in many psychological conditions such as anxiety, depression, stress and improves overall well-being and quality of life.

CHAPTER 10

APPRAISAL

10.1 STRENGTH OF THE STUDY

- This study has 2 groups and random controlled trial study
- Participants expressed positive response after end of the practice
- No side and negative effects were reported

10.2 LIMITATIONS OF THE STUDY

Small sample size is limitation of the study

10.3 FUTURE SCOPE

Same studies should be replicated with large sample size in future.

CHAPTER 11 REFERENCE

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CHAPTER 12 APPENDIX

To,

The Programme Manager, TI project,
Rural Service Academy (RUSA),
New Lambulane, Imphal, Manipur,

11th June 2018

Subject: Request for allowing giving of yoga intervention to people who are taking ART (Anti Retroviral Therapy) and IDU (Intravenous Drug Users)

Dear Madam,

We are the students of SVYASA, Bangalore pursuing Master degree in Yoga Therapy (YT). As per this two year course, we have to do a project involving yoga intervention to people who are treated with ART and IDU for at least a month.

Therefore, we request you to help us complete the same mentioned above as this initiative will benefit them towards healthier living extending their life span and improving quality of life and simultaneously completing our project successfully.

Thanking You,

Yours faithfully,

Nongmaithem Jyoti Devi

Phurailatpam Annie

Msc Yoga Therapy

3rd Semester,

SVYASA, Prasanthi Kutiram

M. Jyoti Devi
14/06/18
Programme Manager
TI-Project (RUSA)





TO WHOM IT MAY CONCERN

This is certified that Kumari Nognmaithem Jyoti devi and Phurailatpam Annie student of SVYASA, Bangalore are conducted successfully one month Yoga Intervention for ART patients and IDUs of Targeted Intervention project, RUSA. From the 15th June 2018 to 16th July 2018.

M. Aruna Devi
M. Aruna Devi
Programme Manager, TI project, RUSA.
Programme Manager
TI-Project (RUSA)

WHOQOL-HIV BREF



MENTAL HEALTH: EVIDENCE AND RESEARCH
DEPARTMENT OF MENTAL HEALTH
AND SUBSTANCE DEPENDENCE
WORLD HEALTH ORGANIZATION
GENEVA

		Raw Score	Transformed Score	
Domain 1	(6-Q3) + (6-Q4) + Q14 + Q21 □ + □ + □ + □			
Domain 2	Q6 + Q11 + Q15 + Q24 + (6-Q31) □ + □ + □ + □ + □			
Domain 3	(6-Q5) + Q20 + Q22 + Q23 □ + □ + □ + □			
Domain 4	Q17 + Q25 + Q26 + Q27 □ + □ + □ + □			
Domain 5	Q12 + Q13 + Q16 + Q18 + Q19 + Q28 + Q29 + Q30 □ + □ + □ + □ + □ + □ + □ + □			
Domain 6	Q7 + (6-Q8) + (6-Q9) + (6-Q10) □ + □ + □ + □			

ABOUT YOU

Before you begin we would like to ask you to answer a few general questions about yourself: by circling the correct answer or by filling in the space provided.

- What is your **gender**? Male / Female
- How old are you? _____ (age in years)
- What is the highest **education** you received? None at all / Primary / Secondary / Tertiary
- What is your **marital status**? Single / Married/ Living as married / Separated / Divorced / Widowed
- How is your **health**? Very Poor / Poor / Neither Poor nor Good / Good / Very Good
- Do you consider yourself currently ill? Yes / No

If there is something wrong with you, what do you think it is? _____

Please respond to the following questions if they are applicable to you:

What is your **HIV serostatus**? Asymptomatic / Symptomatic / AIDS converted

In what year did you first **test positive** for HIV? _____

In what year do you think you were infected? _____

How do you believe you were **infected with HIV**? (circle one only):
 Sex with a man / Sex with a woman / Injecting drugs / Blood products / Other (specify) _____

Instructions

This assessment asks how you feel about your quality of life, health, or other areas of your life. **Please answer all the questions.** If you are unsure about which response to give to a question, **please choose the one** that appears most appropriate. This can often be your first response. Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last two weeks.** For example, thinking about the last two weeks, a question might ask:

		Not at all	A little	A moderate amount	Very much	Extremely
11 (F5.3)	How well are you able to concentrate?	1	2	3	4	5

You should circle the number that best fits how well are you able to concentrate over the last two weeks. So you would circle the number 4 if you were able to concentrate very much. You would circle number 1 if you were not able to concentrate at all in the last two weeks.

Please read each question, assess your feelings, and circle the number on the scale for each question that gives the best answer for you.

		Very poor	Poor	Neither poor nor good	Good	Very good
1(G1)	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2(G4)	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last two weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3 (F1.4)	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4 (F50.1)	How much are you bothered by any physical problems related to your HIV infection?	1	2	3	4	5
5 (F11.3)	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
6 (F4.1)	How much do you enjoy life?	1	2	3	4	5
7 (F24.2)	To what extent do you feel your life to be meaningful?	1	2	3	4	5
8 (F52.2)	To what extent are you bothered by people blaming you for your HIV status	1	2	3	4	5
9 (F53.4)	How much do you fear the future?	1	2	3	4	5
10 (F54.1)	How much do you worry about death?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
11 (F5.3)	How well are you able to concentrate?	1	2	3	4	5
12 (F16.1)	How safe do you feel in your daily life?	1	2	3	4	5
13 (F22.1)	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

		Not at all	A little	Moderately	Mostly	Completely
14 (F2.1)	Do you have enough energy for everyday life?	1	2	3	4	5
15 (F7.1)	Are you able to accept your bodily appearance?	1	2	3	4	5
16 (F18.1)	Have you enough money to meet your needs?	1	2	3	4	5
17 (F51.1)	To what extent do you feel accepted by the people you know?	1	2	3	4	5
18 (F20.1)	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5

19 (F21.1)	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5
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		Very poor	Poor	Neither poor nor good	Good	Very good
20 (F9.1)	How well are you able to get around?	1	2	3	4	5

The following questions ask you how **good or satisfied** you have felt about various aspects of your life over the last two weeks.

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
21 (F3.3)	How satisfied are you with your sleep?	1	2	3	4	5
22 (F10.3)	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
23 (F12.4)	How satisfied are you with your capacity for work?	1	2	3	4	5
24 (F6.3)	How satisfied are you with yourself?	1	2	3	4	5
25 (F13.3)	How satisfied are you with your personal relationships?	1	2	3	4	5
26 (F15.3)	How satisfied are you with your sex life?	1	2	3	4	5
27 (F14.4)	How satisfied are you with the support you get from your friends?	1	2	3	4	5
28 (F17.3)	How satisfied are you with the conditions of your living place?	1	2	3	4	5
29 (F19.3)	How satisfied are you with your access to health services?	1	2	3	4	5
30 (F23.3)	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to **how often** you have felt or experienced certain things in the last two weeks.

		Never	Seldom	Quite often	Very often	Always
31 (F8.1)	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5

Did someone help you to fill out this form? _____

How long did it take to fill this form out? _____

Do you have any comments about the assessment? _____

THANK YOU FOR YOUR HELP

The Pittsburgh Sleep Quality Index (PSQI)

Instructions: The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all questions. During the past month,

1. When have you usually gone to bed? _____
2. How long (in minutes) has it taken you to fall asleep each night? _____
3. When have you usually gotten up in the morning? _____
4. How many hours of actual sleep do you get at night? (This may be different than the number of hours you spend in bed) _____

5. During the past month, how often have you had trouble sleeping because you...	Not during the past month (0)	Less than once a week (1)	Once or twice a week (2)	Three or more times a week (3)
a. Cannot get to sleep within 30 minutes				
b. Wake up in the middle of the night or early morning				
c. Have to get up to use the bathroom				
d. Cannot breathe comfortably				
e. Cough or snore loudly				
f. Feel too cold				
g. Feel too hot				
h. Have bad dreams				
i. Have pain				
j. Other reason(s), please describe, including how often you have had trouble sleeping because of this reason(s):				
6. During the past month, how often have you taken medicine (prescribed or "over the counter") to help you sleep?				
7. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?				
8. During the past month, how much of a problem has it been for you to keep up enthusiasm to get things done?				
	Very good (0)	Fairly good (1)	Fairly bad (2)	Very bad (3)
9. During the past month, how would you rate your sleep quality overall?				

- Component 1 #9 Score..... C1 _____
- Component 2 #2 Score (≤ 15 min=0; 16-30 min=1; 31-60 min=2, >60 min=3) + #5a Score
(if sum is equal 0=0; 1-2=1; 3-4=2; 5-6=3) C2 _____
- Component 3 #4 Score ($> 7=0$; 6-7=1; 5-6=2; $< 5=3$) C3 _____
- Component 4 (total # of hours asleep)/(total # of hours in bed) x 100
>85%=0, 75%-84%=1, 65%-74%=2, <65%=3 C4 _____
- Component 5 Sum of Scores #5b to #5j (0=0; 1-9=1; 10-18=2; 19-27=3)..... C5 _____
- Component 6 #6 Score C6 _____
- Component 7 #7 Score + #8 Score (0=0; 1-2=1; 3-4=2; 5-6=3) C7 _____

Add the seven component scores together **Global PSQI Score** _____

Buyse, D.J., Reynolds III, C.F., Monk, T.H., Berman, S.R., & Kupfer, D.J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Journal of Psychiatric Research*, 28(2), 193-213.

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<p style="font-size: small; color: gray;">general assessment series Best Practices in Nursing Care to Older Adults</p>	<p style="font-size: x-small;">A series provided by The Hartford Institute for Geriatric Nursing, New York University, College of Nursing</p> <p style="font-size: x-small;">EMAIL: hartford.ign@nyu.edu HARTFORD INSTITUTE WEBSITE: www.hartfordign.org CLINICAL NURSING WEBSITE: www.ConsultGerIRN.org</p>
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BLACK DOG INSTITUTE

DASS 21 NAME _____ DATE _____

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all - NEVER
- 1 Applied to me to some degree, or some of the time - SOMETIMES
- 2 Applied to me to a considerable degree, or a good part of time - OFTEN
- 3 Applied to me very much, or most of the time - ALMOST ALWAYS

FOR OFFICE USE

	N	S	O	AA	D	A	S
1 I found it hard to wind down	0	1	2	3			
2 I was aware of dryness of my mouth	0	1	2	3			
3 I couldn't seem to experience any positive feeling at all	0	1	2	3			
4 I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3			
5 I found it difficult to work up the initiative to do things	0	1	2	3			
6 I tended to over-react to situations	0	1	2	3			
7 I experienced trembling (eg, in the hands)	0	1	2	3			
8 I felt that I was using a lot of nervous energy	0	1	2	3			
9 I was worried about situations in which I might panic and make a fool of myself	0	1	2	3			
10 I felt that I had nothing to look forward to	0	1	2	3			
11 I found myself getting agitated	0	1	2	3			
12 I found it difficult to relax	0	1	2	3			
13 I felt down-hearted and blue	0	1	2	3			
14 I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3			
15 I felt I was close to panic	0	1	2	3			
16 I was unable to become enthusiastic about anything	0	1	2	3			
17 I felt I wasn't worth much as a person	0	1	2	3			
18 I felt that I was rather touchy	0	1	2	3			
19 I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3			
20 I felt scared without any good reason	0	1	2	3			
21 I felt that life was meaningless	0	1	2	3			
TOTALS							

SL.no	name	gender	age	group	Depress Pre total	Total x 2	depress Preseverity	anxiety Pre total	Total x 2	Anxiety Pre severity	Stress Pre total	Total x 2	Stress Pre severity	psq Pre total	Qol pre domain 1	Qol pre domain 2	Qol pre domain 3	Qol pre domain 4	Qol pre domain 5	Qol pre domain 6
1	Jiten	m	47	yoga	11	22	severe	9	18	severe	14	28	severe	14	6	6.4	6	5	6.5	5
2	Than geen	m	30	yoga	11	22	severe	8	16	severe	16	32	severe	16	9	5.6	6	8	8.5	7
3	Aboy	m	35	yoga	16	32	extremely severe	7	14	moderate	12	24	moderate	18	8	8.8	7	8	7.5	7
4	Roshan	m	25	yoga	10	20	moderate	9	18	severe	16	32	severe	17	10	8	9	8	9.5	9
5	lbomcha	m	35	yoga	13	26	severe	9	18	severe	11	22	moderate	16	6	6.4	7	10	7.5	7
6	Musa	m	37	yoga	12	24	severe	8	16	severe	11	22	moderate	17	6	7.2	8	10	9	8
7	Rone sh	m	49	yoga	15	30	extremely severe	10	20	extremely severe	16	32	severe	16	9	5.6	7	6	9	8
8	Sana tomba	m	29	yoga	10	20	moderate	8	16	severe	16	32	severe	17	6	5.6	10	6	10	4
9	Thabalei	f	55	yoga	14	28	extremely severe	9	18	severe	14	28	severe	17	5	6.4	8	10	8.5	9
10	Ngapan	m	32	yoga	13	26	severe	13	26	extremely severe	16	32	severe	14	6	7.2	7	9	7	6
11	Henary	m	28	cont	11	22	severe	9	18	severe	12	24	moderate	16	10	9.6	7	11	8	11

				rol																
12	Wilson	m	25	control	13	26	severe	9	18	severe	16	32	severe	13	11	9.6	11	10	8	9
13	Romen	m	35	control	11	22	severe	13	26	extremely severe	15	30	severe	15	6	6.4	6	5	5.5	8
14	Santa	m	47	control	11	22	severe	9	18	severe	19	38	extremely severe	14	8	8.8	7	7	9	10
15	Mohen	m	50	control	12	24	severe	8	16	severe	14	28	severe	18	8	4	5	6	7.5	7
16	Amir	m	27	control	13	26	severe	6	12	moderate	12	24	moderate	9	8	5.6	7	6	9	4
17	kh.Br ojen	m	47	control	10	20	moderate	9	18	severe	13	26	severe	17	8	12	9	9	8.5	12
18	Arun	m	24	control	10	20	moderate	12	24	extremely severe	14	28	severe	16	8	5.6	9	7	9	6
19	N. Ajit	m	26	control	12	24	severe	9	18	severe	17	34	extremely severe	19	8	4	9	7	10.5	5
20	Muh arat	m	21	control	12	24	severe	10	20	extremely severe	13	26	severe	16	7	8.8	9	9	6	9
21	Moh ama d phaja rali	m	40	control	13	26	severe	9	18	severe	18	36	extremely severe	15	7	6.4	5	8	6.5	4

22	Sana tomba	m	21	control	15	30	extremely severe	11	22	extremely severe	17	34	extremely severe	15	8	5.6	6	7	7.5	4
23	Sarat	m	35	control	12	24	severe	12	24	extremely severe	11	22	moderate	14	9	7.2	7	6	9	6
24	Akraman	m	23	control	12	24	severe	9	18	severe	13	26	severe	18	5	4.8	4	4	6	4
25	Nanao	m	55	control	12	24	severe	12	24	extremely severe	10	20	moderate	11	8	6.4	6	11	8.5	7
26	Abdul kadir	m	24	control	11	22	severe	16	32	extremely severe	15	30	severe	14	10	10.4	9	11	8	7
27	Jackson	m	30	control	13	26	severe	9	18	severe	13	26	severe	10	8	10.4	11	9	8.5	12
28	Bijoy	m	48	control	12	24	severe	9	18	severe	15	30	severe	14	7	8.8	9	7	8.5	10
29	Roshan	m	30	control	14	28	extremely severe	12	24	extremely severe	18	36	extremely severe	15	6	5.6	6	5	6	4
30	Tomba	m	30	control	15	30	extremely severe	9	18	severe	18	36	extremely severe	17	5	7.2	6	4	8	5

sl.no	name	gender	age	group	Depress Post total	Total x 2	Depress Post severity	Anxiety Post total	Total x 2	anxiety Post severity	Stress Post total	Total x 2	stress Pre severity	psq Post total	Qol post domain 1	Qol post domain 2	Qol post domain 3	Qol post domain 4	Qol post domain 5	Qol post domain 6
1	Jiten	m	47	yoga	11	22	severe	9	18	severe	14	28	severe	10	8	7.2	6	6	7	7
2	Than geen	m	30	yoga	11	22	severe	7	14	moderate	14	28	severe	14	10	6.4	7	8	9.5	9
3	Abo y	m	35	yoga	12	32	extremely severe	7	14	moderate	11	22	moderate	13	9	8.8	8	9	8	8
4	Rosh an	m	25	yoga	10	20	moderate	9	18	severe	13	26	severe	12	10	9.6	10	9	10.5	9
5	Ibo mcha	m	35	yoga	13	26	severe	9	18	severe	11	22	moderate	11	8	8	9	11	8	8
6	Musa	m	37	yoga	12	24	severe	8	16	severe	11	22	moderate	13	8	8	8	10	9	10
7	Ron esh	m	49	yoga	13	30	extremely severe	8	16	severe	14	28	severe	13	9	8	8	6	9.5	8
8	Sana tom ba	m	29	yoga	9	20	moderate	7	14	moderate	14	28	severe	11	8	7.2	11	7	10	6
9	Thab alei	f	55	yoga	12	28	extremely severe	9	18	severe	14	28	severe	13	8	8.8	9	10	8.5	9
10	Nga pan	m	32	yoga	11	26	severe	8	16	severe	16	32	severe	10	7	9.6	8	9	7.5	8
11	Hen ery	m	28	cont	12	22	severe	9	18	severe	12	24	moderate	18	9	9.6	6	11	7.5	11

				rol																
12	Wilson	m	25	control	13	26	severe	9	18	severe	16	32	severe	13	10	8.8	9	9	8	9
13	Romen	m	35	control	11	22	severe	13	26	extremely severe	15	30	severe	16	6	6.4	5	6	5.5	8
14	Santa	m	47	control	13	22	severe	10	20	extremely severe	19	38	extremely severe	13	7	7.2	7	7	8	8
15	Mohen	m	50	control	12	24	severe	8	16	severe	14	28	severe	17	8	4	4	6	7.5	7
16	Amir	m	27	control	13	26	severe	11	22	extremely severe	12	24	moderate	12	8	5.6	6	6	9	4
17	kh.Brojen	m	47	control	11	20	moderate	9	18	severe	13	26	severe	16	7	10.4	8	8	8.5	11
18	Arun	m	24	control	11	20	moderate	12	24	extremely severe	14	28	severe	16	8	5.6	9	7	9	6
19	N. Ajit	m	26	control	12	24	severe	9	18	severe	17	34	extremely severe	19	7	8	8	7	9	5
20	Muharat	m	21	control	12	24	severe	10	20	extremely severe	13	26	severe	16	7	8.8	9	8	6	9
21	Mohamad phajarali	m	40	control	13	26	severe	8	16	severe	18	36	extremely severe	16	7	6.4	5	8	6.5	4

22	Sana tom ba	m	2 1	co nt rol	15	30	extrem ely severe	12	24	extrem ely severe	17	34	extre mely severe	13	9	5.6	6	7	6	4
23	Sara t	m	3 5	co nt rol	12	24	severe	12	24	extrem ely severe	13	26	severe	16	9	6.4	7	6	9	6
24	Akra man	m	2 3	co nt rol	12	24	severe	9	18	severe	13	26	severe	18	5	4	4	4	6	4
25	Nan ao	m	5 5	co nt rol	12	24	severe	12	24	extrem ely severe	12	24	moder ate	15	8	5.6	6	11	8.5	7
26	Abd ulka dir	m	2 4	co nt rol	11	22	severe	16	32	extrem ely severe	15	30	severe	14	10	10.4	9	11	8	7
27	Jacks on	m	3 0	co nt rol	13	26	severe	8	16	severe	13	26	severe	11	7	8.8	11	9	9.5	12
28	Bijoy	m	4 8	co nt rol	12	24	severe	11	22	extrem ely severe	15	30	severe	16	7	8.8	9	7	9.5	9
29	Rosh an	m	3 0	co nt rol	14	28	extrem ely severe	12	24	extrem ely severe	18	36	extre mely severe	15	6	5.6	6	5	6	4
30	Tom ba	m	3 0	co nt rol	15	30	extrem ely severe	9	18	severe	18	36	extre mely severe	16	5	7.2	5	4	8	4