

The effect of clinical sequence of yogapathy on Type 2 diabetes mellitus

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Abstract

"Yog swa sadhana hei, samuhik sadhna nahi", Yoga is self practice, no mass practice. Based this research studied to shown spritu-psycho-somatic approach "*(Aatm mno kayik abhigam)*" of yoga and proven efficacy of clinical sequence postulated as P.A.C.E {PURIFICATION (*shodhana*) >ADAPTATION (*anukulana*) > CUREATION (*rogo upasamna*)> ELIMINATION (*rogonmulana*)} theory of yogapathy formulated and developed by ARYA INDIA. In this research study ninety patients (male & female) age (21-60) of T2DM has been selected using Kota sampling method. Further 90 samples divided into two group's control (45) and experimental (45), by control-experimental group design applied for experiment. Diabetes mellitu2 is dependent variable and clinical sequence of Yogapathy is Independent variable. On the basis of Pilot study, Directional hypothesis formulated for testing the experiment. Data were collected on certain parameters i.e. Body Weight (kg.), Body Mass Index (BMI), Guna score by Vedic Inventory Scale (*sattvic, Rajasic, Tamasic*), Triceps Skin Folding(TSF), FBG & HbA1c were taken as pre-test for measuring the efficacy of clinical sequence of Yogapathy. Clinical sequence of Yogapathy sessions includes 18 lectures on spritu-psycho-somatic approach of yoga and supervised session physiology, etiologic, pathology, treat mental protocol & process and how to manage diabetes & its complications by power point presentation spread over four month. Collected data analyzed using t-test and correlation-r and show a significant reduction with 0.01 level of significance and correlation is 0.97 that shows strong correlation in given yogapathy and diabetes mellitus2 parameters. No adverse effects were noted during study period. So Yogapathy gives significant effect on diabetes mellitus2 patient.

Keywords: T2DM, Clinical sequence of Yogapathy, Spiritu-psycho-somatic approach

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Introduction:

“Metabolic cum vascular disorder”¹ are really perfect words to explain diabetes and its related complications. ‘It is a chronic non-communicable disease which generally starts insidiously (over a period of long time), and even in the absence of symptoms (hence called as silent killer of mankind)². It is characterized by high blood glucose level due to insulin deficiency & resistance to insulin⁴. Insulin is a pancreatic hormone produced by beta cells of islets of Langerhans. It is required for transport of glucose into cell.³ In the insufficiency and resistance of insulin body cannot metabolize glucose properly hence it cannot be utilized in cellular respiration for ATP production to body functions leading to state of chronic hyperglycemia. If this hyperglycemia is not treated in due time it can lead to poor cellular metabolism, glycosylation of hemoglobin, endothelium dysfunction, These are the major causes of DKA, CHD, Diabesity, Diabetic neuropathy, nephropathy, retinopathy, gastropathy, osteopathy and oatearthropathy, sexual dysfunction. So in this research paper researcher has presented the current scenario of diabetes, research gap and presented the statistical analysis of the effect of clinical sequence of yogapathy on diabetes mellitus 2.

Current scenario of Diabetes worldwide and in India:

The prevalence of DM is expected to raise from 285 million in 2010 to 438 million cases of diabetes in 2030. WHO projects that DM will be a 7th leading causes of death in 2030². WHO has recently announced that the upcoming world health day theme on 7th April 2016 will be on “Diabetes Mellitus” because the DM epidemic is rapidly increasing in many countries², India is the “Diabetes Capital of the World” with over 60 million diabetics in the country, which is projected to at least double by 2030. (V.Mohan. et. All, 2007).⁵ The high incidence is attributed to a combination of genetic susceptibility plus adoption of a high calorie, low activity by India’s

growing middle class diabetes. (Kleinfield, 2006).⁶

Need of the study (Research Gap):

On the basis of current scenario and review of literature researcher find out the research gap. A majority of diabetics are unable to keep sugars under control despite adequate medication and follow ups. This is because the primary pathology in type 2 diabetics is not insulin deficiency but body’s resistance to insulin. It is a matter of time before the tables are turned and 80 percent diabetic Indian will not be controlled diabetic but also have freedom from daily injections or consuming tablets for control.⁷. So researcher has formulated a research objective.

Research Methodology:

Objective: To see the effect of clinical sequence of yogapathy on diabetes mellitus 2.

Variable: clinical sequence of yogapathy (IV) and diabetes mellitus 2(DV)

Clinical Sequence of Yogapathy: “*ya kriya viyadhiharni sa chikitsa nigdhate*” wo kriya jiske dwara rog nivarti hoti he chikitsa kehlati he. Yoga is a surest way to cure disease and infirmity; Spirtu_psycho_somatic approach of yoga proves as modern medical science which never provides pigeon-hole treatment of diseases, so it should be called Yogapathy. A systematic design process and treatment protocol is the essential units of any medico legal science, so researcher postulated clinical sequence of yogapathy as P.A.C.E. {PURIFICATION (shodhana) >ADAPTATION (anukulana) > CUREATION (rogo upasamna)> ELIMINATION (rogo unmulana)} theory and applied in diabetes mellitus 2 to see the efficacy of yogapathy .

Diabetes Mellitus 2: It also called non insulin dependent diabetes mellitus .it is usually begins in middle life or later. The pathophysiological basis is a combination of impaired beta cell function, marked increase in peripheral insulin resistance with glycosylation of hemoglobin and endothelial disfunction.¹ symptoms begin

gradually. The relationship between obesity and type 2 diabetes is well established .³⁰

Targeted Population: This research study was conducted for four month (May -August 2016) at the 'Charotar Pradesh Yoga Sansthan, Anand' technically supported by 'Arya Sri Yoganusandhan Sansthan Anand, Gujarat and supported by ARYA INDIA under the campaign "Madhumeh Mukta Manav". (Jurisdiction: Anand, Gujarat, India). We recruited more than hundreds patients with T2DM and its related complications through Krishna Medical College Karmshad, Anand, Sarthi Advanced Diabetes

Care and Research Centre, Anand , Zydus Hospital , Anand and the local media.

Sampling Method: Kota sampling method has been used in this research

Sample Size: 90 samples have been selected from the targeted population. The patient's status was exclusive of having T2DM and its related complications.

Age group: 21-60 year (Male and female) no classification has been done on gender)

Categorization of Sample: 45 sample for control group and 45 sample experimental groups.

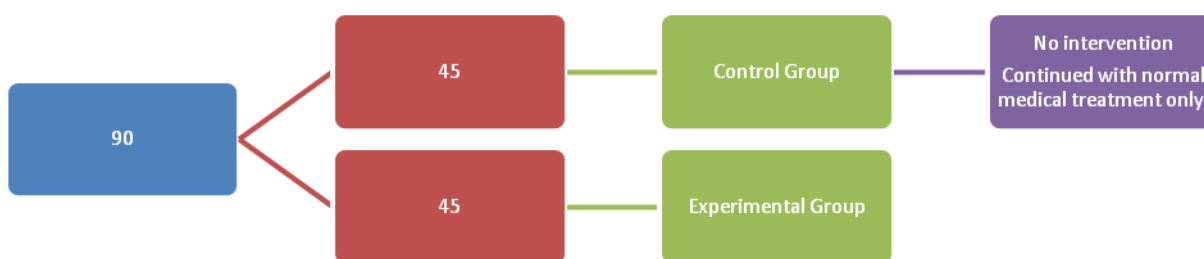


Figure 01: Categorization of samples

Research Design: Control- Experimental Group Design

Research study parameter: Body Weight (kg.), Body Mass Index (BMI), Guna Score (Sattvic,Rajasic,Tamasic), Triceps Skin Folding (TSF), FBG and HbA1c were taken as pre -test for measuring the efficacy of clinical sequence of yogapathy

Data collections tools: Vedic Inventory Scale (Guna Score), online standard BMI Calculator (BMI), Body Fat Caliper (TSF), fully automated Biochemistry Analyzer for FBG and HbA1c.

Work flow of the research: figure 02 is shows the pictorial representation of entire research study workflow.

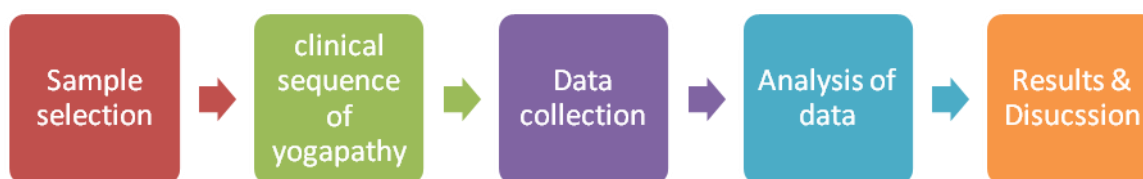


Figure 02: work flow of the study

Procedure of Intervention (Yogapathy):

After the selection of samples we have categorized sample into two group control (intervention not applied) and experimental (applied intervention). Intervention has been given for four month (May -August 2016) to the experimental group at the 'Charotar Pradesh

Yoga Sansthan, Anand'. In this research **Yogapathy is** used as an intervention.

Clinical sequence of yogapathy sessions includes 18 lectures on spritu_ psycho _somatic approach of yoga and supervised session physiology, etiologic, pathology, treat mental protocol & process and how to manage diabetes & its

complications by power point presentation spread over four month.

In procedure of yogapathy first of all, the subjects of yogapathy group underwent one to one for diagnose with selected following parameters, i.e.-Measured body weight and height for body mass index which decided constitutional types of body i.e ectomorphic, mesomorphic, endomorphic.

- Attempted questioner of Vedic Inventory scale for to knowing Sattvic, Rajasik, Tamasic guna .these were reflected the nature and mental status of patient.

- Measured triceps skin fold by body fat clipper, which indicate anthropometry, and glucose tolerance.

-Fasting Blood Glucose (FBG) and Glycated Hemoglobin (HbA1c) ¹⁰ assayed before as pre-test and after as post-test for statistical analysis. Most of subjects of yogapathy group attended six sessions in a weak. The sixty to ninety minutes utilized a selected standard sequence of postural, breathing, relaxation and meditation exercises taking appropriate precautions.

In next procedure we have followed by yogapathy schedule i.e.

Purification yoga schedule (shodhana charana anusuchi): Yogapathy purification schedule based on Yoganuroopa Roganuroopa and included aachamn, samarpan evam prathana mantra, yogdandasana, kapalbhati nimn aavarti, pran, apan mudra ke sath, pranayama nadishodhan kumbhak rahit bharprama,(1/3of body weight=minutes) bhramri 10 aavarti, sinhasana 5times, twarit vishram vidhi,1minutes each titaliasana , vajrasana ,vakrasna, tadasna, kati chakrasna ,markatasna, ek pad uttanpadasna, setubandhasana, ek pad sulabhasana, bhungasana, balasana,, tathata dhyan osho rachit, evum aayush prapti mantra mantra, shivsankalpmastu mantra.

- Kunjal, Nasapan (twice in a weak)
- laghu shankprakchalana, jal neti (once in a weak)

After completed the Purification Phase of Yogapathy, FBG measured collected data for analysis.

Result Analysis & Interpretation for purification phase:

Table: 01	Mean	Std. Deviation	Std. Error mean	t-value	Significance
Pre -data _Yogapathy after purification phase	25.444	12.033	1.794	14.185	.000

Interpretation: Pre data have been collected before starting the intervention procedure and after application of purification techniques post test data collected. And researcher performed analysis on the pre-post data of purification. Analysis has been done using SPSS software. Result table 01 shows mean 25.44, std. deviation 12.033 and t-value 14.185 that shows significant effect of purification phase on samples. And this result is significant at 0.01 levels.

Adaptation yoga schedule (anukulana charana anusuchi): Yogapathy adaptation schedule based on Yoganuroopa Roganuroopa and included

aachamn, samarpan evam prathana mantra, yogdandasana, kapalbhati madhyam aavarti evam pran,apan,vyan mudra ke sath, Pranayama nadishodhana anthakumbh yathasakti ke sath-bharapramana, bhramri pranayama 10 aavarti, shitali pranayama 5aavarti, Sinhasana 5 times , twarit vishram vidhi, 1minutes each kandrasana moolbandh ke sath,sashankasana, gomukhasana ,tadasana, konasana, katichakrasana, pawanmuktasana, setubandhasana, markatasan, vipritkarni mudra, bhujangasana, sulbhasana, dhuruvasana, balasana, dhyan kaya sithirum,

swasopaswas avalokan, evum aayush prapti mantra mantra, shivsankalpmastu mantra.

- kunjla, nasapan, jaladhra bandha, uddiyan bandha, trataka (twice in a weak)
- surya namaskar, 5aavarti madhagati evam matnro ke sath (once in a weak)

- Madhyam shankhprakhchhalana (Once in a month)

After completed the Adaptation Phase of Yogapathy, FBG measured and data collected for analysis. FBG of Purification Phase used as pre-test of Adaptation Phase.

Result Analysis & Interpretation for purification & adaptation phase:

Table: 02	Mean	Std. Deviation	Std. Error mean	t-value	Significance
Purification phase - Adaptation Phase	22.756	14.716	2.194	10.373	.000

Interpretation: In the second phase analysis post data of purification have been used as Pre data and after application of adaptation techniques post test data collected. And researcher performed analysis on the pre-post data. Analysis has been done using SPSS software. Result table 02 shows mean 22.75, std. deviation 14.716 and t-value 10.37 that shows significant effect of adaptation phase on samples. And this result is significant at 0.01 levels.

Curation yoga schedule (rogo-upasamana charana anusuchi): Yogapathy curation schedule based on Yoganuroopa Roganuroopa and included aachamn, samarpan evam prathana mantra, yogdandasan, kapalbhati pran, mritsanjivini, mudra tivra gati ke sath, pranayama bhastrika madhyam gati 3avarti, nadishodhana pranayama antha- bhaya kumbhak jaladhra bandha ke sath, 9aavarti. bhramri with khechhari mudra 9aavarti, shitali 5 avarti,

shitakari 5 aavarti, sinhasana 5 aavarti, 1minuts each mandukasan, gomukhasana, ardhymatasyendrasana,, pacchimottanasana, dhurvasana, utkattasan, sankatasana, pawanmuktasana, sarvangasana, matsyasana, dhanurasana, marjarasana, dhyan kaya sithirum, swasopaswas avalokan, chida aakash dharna evum aayush prapti mantra, shivsankalpmastu mantra.

- kunjla, nasapan, trataka, agnisar 3 aavarti (Twice in a weak)
- surya namaskar, 5aavarti madhagati evam matnro ke sath. Sambhavi mudra (Once in a weak)
- Virhat shankhprakhchhalana, jalneti (Once in a month)

After completed the Curation Phase of Yogapathy, FBG measured and data collected for the analysis. FBG of Adaptation Phase used as pre-test of Curation Phase.

Result Analysis & Interpretation for adaptation & curation phase:

Table: 03	Mean	Std. Deviation	Std. Error mean	t-value	Significance
Adaptation Phase - Curation Phase	15.889	16.763	2.499	6.358	.000

Interpretation: In the third phase analysis post data of adaptation have been used as Pre data and after application of curation techniques

post test data collected. And researcher performed analysis on the pre-post data. Analysis has been done using SPSS software.

Result table 03 shows mean 15.88, std. deviation 16.76 and t-value 6.35 that shows significant effect of cureation techniques on samples. And this result is significant at 0.01 levels.

Elimination yoga schedule (rogo- unmulana charana anusuchi): Yogapathy Elimination schedule based on Yoganuroopa Roganuroopa and included aachamn, samarpan evam prathana mantra, yogdandasan, kapalbhathi tivra gati 3aavarti, bhastrika tivra gati 3aavarti, nadishodhana 9 aavarti madyabhaya kumbhak ke sath agnisar kriya,bhramri khechhari mudra ke sath. Ujjai 5 aavarti, shitali evam shitakari 5 aavarti, sinhasana, twarit vishram vidhi,1minuts each kandrasana mool bandha ke sath, mandukasana, janusirasana ustrasana, ardhamatasyendra , virbhadradasana,

sarvangasana,matsyasana, dhanurasana,mayrasana, viyaghrasana, dhyan kaya sithirum, swasopaswas avalokan,chida aakash dharna evum manthro ucchhar aayush prapti mantra , shivsankalpmastu mantra.

- kunjai, nasapan, tratata ,agnisar 3 aavarti (twice in a week)
- surya namaskar , 9aavarti madham gati evam matnro ke sath. Sambhavi mudra. Sakirya dhyan oshorachit (once in a weak)
- Virhat shankhaprakchalana, jalneti (once in a month)

After completed the Elimination Phase of Yogapathy, FBG and HbA1c measured and data collected for analysis. FBG of Cureation Phase used as pre-test of Elimination Phase.

Result Analysis & Interpretation for cureation & elimination phase:

Table: 04	Mean	Std. Deviation	Std. Error Mean	t-value	Significance
Cureation Phase - Elimination Phase	9.822	15.225	2.270	4.328	.000

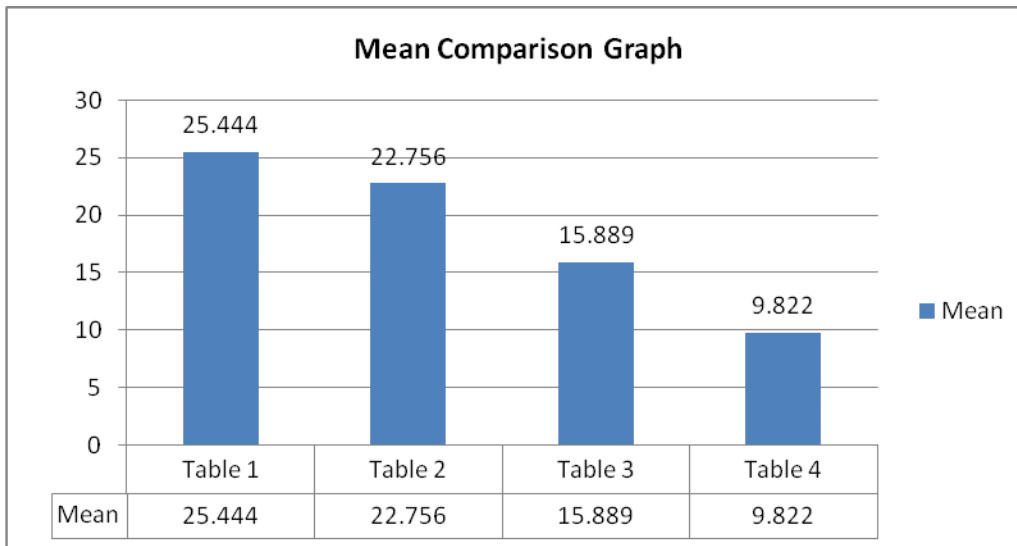
Interpretation: In the fourth phase analysis post data of cureation phase have been used as Pre data and after application of elimination phase post test data collected. And researcher performed analysis on the pre-post data. Analysis has been done using SPSS software. Result table 04 shows mean 9.822, std. deviation 15.22 and t-value 4.32 that shows significant effect of elimination phase on samples. And this result is significant at 0.01 levels.

Result Analysis & Interpretation for Glycated Hemoglobin HbA1c: “The Gold Standard” for assessing and monitoring glyceimic control. HbA1c has assayed as pre-test before purification phase and after completed the Elimination phase of yogapathy, again HbA1c measured which is used as post-test of HbA1c test. And researcher performed analysis on the pre-post data. Analysis has been done using SPSS software.

Table: 05	Mean	Std. Deviation	Std. Error Mean	t-value	Significance
HbA1c before Purification phase - HbA1c after Elimination Phase	2.016	1.074	0.160	12.588	.000

Interpretation: After completed the Elimination Phase of Yogapathy, researcher has done analysis using pre data of HbA1c (before purification) and post data of HbA1c (after elimination).

Table 5 shows the value of analysis i.e. mean 2.06, SD 1.074 and t-value 12.588 that is significant at 0.000. And we can say that effect of yogapathy on HbA1c is significant at 0.01 levels.



Graph 01: Mean value comparison from table 01 to 04

Conclusion: On the basis of above analysis, interpretation and discussion we can conclude that Yogapathy is safe, simple, systematic method (pathy) that giving significantly effect on Diabetes Mellitus 2. And researcher got positive result after the experiment. So if we adopt yogapathy techniques we can get relief from the diabetes melitus2 disease. Yogapathy have no side effect because it's totally natural process that why this is the best techniques. Although in this study we have got good result but this research study have some limitations i.e. small sample size and classification based on gender. Researcher will improve this limitation in future work.

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