



**A STUDY TO EVALUATE THE EFFECTIVENESS OF KAPALBATHI PRANAYAMA
ON THE BLOOD SUGAR LEVEL AMONG THE DIABETIC PATIENTS ADMITTED
AT NMCH, BIHAR**

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JAMUHAR, ROHTAS, BIHAR**

ABSTRACT

Background And Purpose Of The Study: Diabetes mellitus is a chronic metabolic disorder characterized by elevated blood glucose levels, leading to serious health complications if not properly managed. Complementary therapies such as yogic practices have gained attention for their potential role in glycemic control. Among these, Kapalbhathi Pranayama, a breathing technique in yoga, is believed to improve Metabolic functions and pancreatic activity. The main purpose of the study is to maintain the blood sugar level among diabetic patients.

Objectives: 1) To assess and compare the pre-test and post-test level of blood sugar regarding Kapalbhathi pranayama among the patients with Diabetes Mellitus between the study and Control group.

2) To determine the effectiveness of kapalbhathi pranayama on blood sugar level among the Diabetic patients.

3) To associate the pre-test and post-test level of blood sugar among the patient with Diabetes Mellitus with their demographical variables in study and control group.

Design : True experimental design was selected for this study. **Subjects:** The participants were 30 diabetic patients in NMCH, Bihar. **Sampling method:** A simple random technique was used to select the sample of the study. **Data collection Tool:** Structured interview & Physiological Measurement tool was used to collect the data from the sample.

Data Analysis: The obtained data were analyzed by descriptive and inferential statistics and interpret in the term of objective and hypothesis of the study. **Result:** In the pre-test mean score for study group 3.3 with SD 0.44 and for Control group 1.9 with SD 0.25 with the calculated independent t-test value was 2.16 and in post-test the score was reduce for study group. A



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significant association found with age group, gender, education status, religion, occupation, duration of Diabetes, type of treatment, dietary pattern and Physical activity status.

Conclusion : These findings indicate that regular practice of Kapalbhathi Pranayama can be an effective, low-cost, and non-pharmacological intervention to help control blood sugar levels among diabetic patients.

KEYWORDS: Diabetes Mellitus, Blood sugar level, Kapalbathi Pranayama, Non pharmacological therapy, Nursing interventions

INTRODUCTION

Diabetes is a serious ailment affecting humankind, it was first recognized by the Egyptians in the manuscripts of Ebers papyrus dating from 1550 BC, was found in a grave in Thebes region south of Egypt in 1862, and named after the Egyptologist Geary Ebers. Diabetes is a chronic metabolic disease that occurs either when pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces (Shaw, Sicree, & Zimmet, 2010). More than 400 million people live with diabetes having increased blood glucose level which may lead to severe damage to the heart, blood vessels, eyes, kidneys, and nerves (Joint WHO, FAO Expert Consultation, 2003). Type 2 diabetes is most common in adults and usually occurs when the body develops resistance to insulin or fails to produce sufficient insulin. Type 1 diabetes, once known as juvenile diabetes or insulin-dependent diabetes, is a chronic condition in which the pancreas produces little or no insulin by itself. For people living with diabetes, access to affordable treatment, including insulin, is critical to their survival.¹

The first WHO Global report on diabetes demonstrates that the number of adults living with diabetes has almost quadrupled since 1980 to 422 million adults. This dramatic rise is largely due to the rise in type 2 diabetes and factors driving it include overweight and obesity. In 2012 alone diabetes caused 1.5 million deaths. Its complications can lead to heart attack, stroke, blindness, kidney failure and lower limb amputation.²

The word pranayama is derived from two Sanskrit words—Prana (life force) and Ayama (control), in simple words pranayama is the art of controlled breathing. However there are variations in different types of pranayama. Pranayama in general is thought to harmonize the activity of reticular activating system and skeletal muscle control. It is thought to influence the autonomic centers, limbic system and pineal gland beneficially and re-establish proper



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functioning of target organ systems. Thus different types of pranayama are expected to improve regulation of blood glucose metabolism in diabetes mellitus, altered glucose tolerance (which may be subclinical) and also normal blood glucose values.³

PROBLEM STATEMENT

A study to evaluate the effectiveness of kapalbhati pranayama on the blood sugar level among the diabetic patients admitted at NMCH, Bihar .

OBJECTIVES OF THE STUDY

- To assess and compare the pre-test and post-tests level of blood sugar regarding kapalbhati pranayama among the patients with Diabetes Mellitus between the study and control group.
- To determine the effectiveness of kapalbhati pranayama on blood sugar level among the Diabetic patients in study group.
- To associate the pre-test and post-test level of blood sugar among the patient with Diabetes Mellitus with their demographical variables in study and control group.

OPERATIONAL DEFINITION

Evaluate:-In this study, it refers to a form of systemic enquiry that is carried out to arrive at an assessment of a program.

Effectiveness:-In this study, it refers to the actual impact or outcome of a treatment or intervention.

Kapalbhati:- In this study, Kapalbhati refers to a yogic breathing exercise involving forceful exhalation and passive inhalation.

Pranayama:- In this study, it refers the practice of controlling and regulating the breath to improve physical, mental, and emotional well-being.

Blood sugar level:-In this study, it refers the amount of glucose present in the blood at a given time.

Diabetic patients:-In this study, Diabetic patients refers to those individuals who suffer from diabetes Mellitus ,a chronic metabolic disorder characterized by persistently high blood sugar(glucose) levels.



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ASSUMPTIONS

The study assumes that:

- Kapalbhathi pranayama helps in reducing blood glucose levels among diabetic patients.
- It is assumed that regular practice of Kapalbhathi improves insulin sensitivity and supports better glucose utilization.
- Kapalbhathi pranayama can be used as a supportive therapy along with medical treatment, not as a replacement.

HYPOTHESIS

(H1): There is a significant difference between the pre-test and post-test blood sugar levels among diabetic patients after the practice of Kapalbhathi Pranayama .

(H2): There is a association between the practice of kapalbhathi Pranayama among diabetic patients with their selected socio-demographic variables.

DELIMITATIONS

The study has limited to :

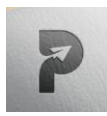
1. The study is only limited to diabetic patients admitted in ward.
2. The study is confined to those who are willing to participate in the study.
3. The data collection period is limited to Two weeks.
4. Only Kapalbhathi pranayama is used as the interventions .

CONCEPTUALFRAMEWORK

The conceptual framework of the present study is based on Roy's Adaptation Model, which found suitable to evaluating the effectiveness of kapalbhathi pranayama on the blood sugar level among patients with Diabetes Mellitus.

Research Approach: An Quantitative research approach was used.

Research design: True experimental design was used . Its include Randomization, control and manipulation.



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The Schematic Presentation Of Research Design

GROUP	Pre- Test	Interventions	Post – Test
Study group	O1	X	O2
Control group	O1	-	O2

KEYWORDS:

S: Study group.

C: Control group.

O1:Pre-test to assess the level of Blood Sugar level among patients with Diabetes Mellitus in study and control group.

X:Administration of kapalbhati Pranayama in experimental Group among Diabetic patients.

O2:Post-test to assess the level of Blood Sugar level regarding kapalbhati pranayama among the patients with Diabetes Mellitus between the study and control group.

Variables :

Dependent variables : In this study, it refers to Blood sugar level. This variable represents the outcome being Measured to determine the effect of the intervention

Random Blood sugar level.

Independent Variables: In this study, it refers to kapalbhati pranayama , which is the intervention used to observe its effect on blood sugar level.

Socio Demographic Variables: In this study demographic variables are age , gender, religion, educational status, Occupation , duration of diabetes , type of treatment, dietary pattern , physical activity status .

Settings of the study:



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The study was conducted in Narayan Medical College and hospital which is located 10 kms away from Sasaram in the Jamuhar, District of Bihar. It was established in the year 2008 and It is affiliated with the Veer Kunwar Singh University, Bihar and approved by the National Medical Commission. The Medical College building has more than 1150 bed hospital which offers the best medical care and attention to each and every category of patients

Population: The study population consist of :

Target population: In this study target population consist of Diabetic patients admitted in NMCH.

Accessible population: In this study, the accessible populations are Diabetic patients admitted in Narayan Medical College and Hospital, available at the time of data collection who meet inclusive criteria.

Sample: In the present study, sample is 30 Diabetic patients admitted at Narayan Medical College and Hospital, Jamuhar who fulfils the inclusion criteria.

Sampling technique: In this study, Probability sampling: simple random sampling technique (lottery Method) was been used.

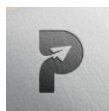
Sampling Criteria:

Inclusion criteria

- Diabetic Patients who are admitted at Narayan Medical College and Hospital.
- Both male and female Patients are included who are admitted in IPD.
- Patients who are willing to participate in the study

Exclusion criteria

- Patients who are unable to perform Kapalbhathi Pranayama due to physical or medical limitations.



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- Patients who have respiratory disorders that limit forceful breathing .
- Patients who are not available during the study.
- Patients who don't cooperate at the time of study.

Instrument Of Data Collection: The tool consists of two section.

Section A: It consist of demographic profile like age , gender, religion , educational status, Occupation , duration of diabetes , type of treatment, dietary pattern , physical activity status.

Section B: It consist of Physiological Measurement. Blood sugar level was measured using Glucometer .The parameters measured included Random blood sugar level.

INTERPRETATION:- BLOOD

GLUCOSE CHART:-

Mg/dl	Parameter of Random Blood Sugar level
NORMAL	70 – 140 Mg / dl
PRE-DIABETES	140 – 199 Mg / dl
DIABETIC	200 Mg / dl or above

Content validity: There was 100 % agreement on most of the items.

Reliability: Reliability was established using Test–Retest method and Cohen's Kappa coefficient was found to be $K = 0.80$, indicating good reliability.

Pilot study: The investigator selected 6 samples by simple random Technique and divided them in two group experimental and control group. The researcher has not found any difficulties during the time of Study.

Data Collection Procedure:

The researcher obtained permission from the hospital authorities for Conducting the study. The data collection period was 15 days as the Convenience of the respondents. Diabetic patients between the age of 30-60 years were properly informed about the purpose of the study and regarding Kapalbhathi Pranayama Exercises. Consent was taken from all the patients.



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The data was collected in the following phases:

Phase 1 : In this phase, pre-test was conducted every day, per day from 4 patients and divided them 2 in Study group and 2 in control group by using Physiological Measurement tool.

Phase 2: In this phase, For Study group, Kapalbathi Pranayama exercises was used and in control group, there is no manipulation samples was in daily routine.

Phase 3: In this phase, the post test was conducted for both control and Study group, after administration of kapalbhati pranayama exercises to study group.

Plan For Data Analysis:

The data was analyzed by using both descriptive and inferential Statistics based on the on the objectives and hypothesis of the study.

Ethical Consideration:

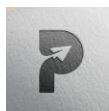
Written permission from the authorities of the hospital and informed consent from the subjects were obtained before conducting the study. No ethical issues confronted while conducting the study.

RESULT

Table 1:- Frequency and percentage distribution information of Socio demographic .

N=30

SOCIO DEMOGRAPHIC	FREQUENCY & PERCENTAGE	FREQUENCY & PERCENTAGE
	For Experimental group	For Control group



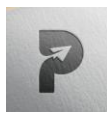
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1. Age		
21-30 years	2 (13.3%)	1(6.6%)
31-40 years	4. (26.7%)	5(33.3%)
41-50 years	4 (26.7%)	4(26.7%)
> 50 years	5 (33.3%)	5(33.3%)
2. Gender		
Male	7 (46.7%)	6(40%)
Female	8 (53.3%)	9(60%)
3. Religion Hindu		
Muslim	15 (100%)	15(100%)
Christian	0 (0%)	0 (0%)
Others	0 (0%)	0 (0%)
	0 (0%)	0 (0%)
4. Educational Status		
No formal Education	5 (33.3%)	2(13.3%)
High & Higher School	4 (26.7%)	5(33.3%)
Primary Schooling	3 (20%)	4(26.7%)
Diploma , Graduation &above	3 (20%)	4(26.7%)



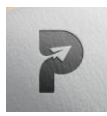
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5. Occupation		
Farmer	4 (26.7%)	5(33.3%)
Labour	0 (0%)	1(6.6%)
Homemaker	8 (53.3%)	7(46.7%)
Business	3 (20%)	2(13.3%)
6. Duration of Diabetes		
1-5 years	5 (33.3%)	6(40%)
6-10 years	2 (13.3%)	4(26.7%)
11-15 years	6 (40%)	4(26.7%)
>20 years	2 (13.3%)	2(13.3%)
7. Type of Treatment		
Medication	9 (60%)	7(46.7%)
Insulin	4 (26.7%)	5(33.3%)
Both	2 (13.3%)	3(20%)
None	0 (0%)	0(0%)
8. Dietary Pattern		
Vegetarian	7 (46.7%)	7(46.7%)
Non-Vegetarian	5 (33.3%)	3(20%)
Mixed	3 (20%)	5(33.3%)



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9. Physical Activity Pattern		
Regular	8 (53.3%)	9(60%)
Irregular	7 (46.7%)	6(40%)
None	0 (0%)	0 (0%)

Table 2:- Comparison of the Mean and Standard Deviation of Pre-Test Blood sugar level between Study and Control Group.

	Group	N	Mean	Std. deviation	P value	t	df	f
Pre-test	Experimental	15	3.3	0.44	<0.14	2.16	1	2.16
	Control	15	1.9	0.25				

Significant (p <0.05) & “NS” Non-Significant (p > 0.05)

Table 3:-Comparison of the Mean and Standard Deviation of Post-Test Blood sugar level between Study and Control Group

	Group	N	Mean	Std. deviation	P value	t	df	f
PostTest	Experimental	15	1.3	0.34	< 0.001	5.78	28	33.41



	Control	15	1.93	0.25			
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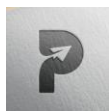
Since, Significant ($p < 0.05$) & “NS” Non-Significant ($p > 0.05$)

Table 4:-Comparison of the Mean and Standard Deviation Pre-Test and Post-tests blood sugar Levels in Patients with Diabetes in the Study Group Based on the Effectiveness of kapalbathi pranayama.

Paired Sample Statistics					Paired Sample Test		
	n	Mean difference	Mean	Std. Deviation	t	df	P value
Pretest	15	2.0	3.3	0.266	13.8	14	< 0.001
Posttest	15		1.3	0.867			

This table depicts mean pre-test score was 3.3[SD = 0.266] and the mean post score significantly reduced to 1.3 [SD = 0.867], indicated and improvement in blood sugar level after the therapy. The mean difference between pre and post test was 2.0The paired sample t- test yielded a t-value of 13.8 with 14 degrees of freedom additionally. The correlation is[r=14.30]

Hence, H1 is accepted



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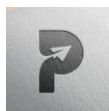
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Table-5:- Association of Pretest Between Demographic Characteristics and blood sugar levels among the patient with Diabetes in Study group and control group

Demographical variables	Study Group				Control Group			
	F	Mean	SD	X ² /P Value /df	F	Mean	SD	X ² /P Value /df
Age				P				
21-30 years	2	212.5	18.38		1	218.00	0.00	
31-40 years	4	224.25	21.17		5	226.40	19.24	
41-50 years	4	231.75	16.92		4	233.25	18.16	
>50 years	5	239.20	20.05		5	241.60	17.83	
Gender				0.84/ 0.657/1				0.76/ 0.684/1
Male	7	228.57	19.81		6	231.50	18.42	
Female	8	233.88	20.44		9	236.22	17.96	
Others	0	0	0		0	0	0	
Religion								
Hindu	15	231.40	20.02		15	234.33	18.11	



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Muslim	0	0	0	N/A	0	0	0	N/A
Christian	0	0	0		0	0	0	
Others	0	0	0		0	0	0	
Education								
No Formal Education	5	240.20	18.56		2	244.50	16.26	
High and Higher School	4	230.75	17.28	4.12/ 0.249/1	5	233.80	19.14	3.84/ 0.279/3
Primary Schooling	3	225.33	15.50		4	228.50	16.21	
Diploma, Graduation & Above	3	220.67	14.82		4	223.75	15.83	
Occupation				3.56/ 0.313/3				2.94/ 0.401/3
Farmer	4	236.25	17.69		5	238.60	18,37	
Labour	0	0	0		1	241.00	0.00	
Homemaker	8	229.50	20.88		7	233.14	18.66	
Business	3	227.33	16.44		2	230.50	17.68	



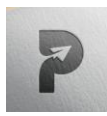
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Duration of Diabetes								
1-5 years	5	221.40	16.73	6.28/	6	224.83	15.62	5.74/
6-10 years	2	229.00	14.14		4	231.75	16.32	
11-15 years	6	239.17	18.21		4	241.25	17.40	
>20 years	2	247.50	17.68	0.099/3	2	249.00	15.56	0.125/3
Type of treatment								
Medication	9	226.89	18.44	5.03 / 0.169 /2	7	229.71	17.62	4.66 / 0.198 /2
Insulin	4	238.25	16.58		5	240.80	18.13	
Both	2	248.00	14.14		3	286.67	16.44	
None	0	0	0		0	0	0	
Dietary pattern								
Vegetarian	7	226.14	17.96	3.92 / 0.141 /2	7	228.86	16.82	2.88/ 0.236/2
Non-Vegetarian	5	235.60	19.43		3	239.33	17.50	
Mixed	3	241.33	15.04		5	242.80	18.05	



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Physical Activity pattern								
Regular	8	224.63	17.52	7.14 / 0.008* / 1	9	227.44	16.89	1.92/
Irregular	7	239.14	18.68		6	242.17	17.43	0.165/1
None	0	0	0		0	0	0	

The table depicts in experimental group the association between pretest blood sugar level and selected demographic variables among patients with diabetes in the study group showed that most variables such as age, gender, education, occupation, duration of diabetes, type of treatment, and dietary pattern had no statistically significant association with pretest blood sugar level, as the obtained p-values were greater than 0.05. However, physical activity pattern was found to have a statistically significant association with pretest blood sugar level in the study group ($\chi^2 = 7.14$, $p = 0.008$, $df = 1$), indicating that patients with irregular physical activity had comparatively higher blood sugar levels than those with regular physical activity.

In the control group, the association between pretest blood sugar level and selected demographic variables revealed that none of the demographic variables showed a statistically significant association with blood sugar level, since all the p-values were greater than 0.05.

Hence, H2 accepted.

Major findings of the study:

The findings of the study were discussed are as follows :-

Findings of the Sociodemographic Variables



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The demographic profile of participants showed some differences between the study and Control groups. The study group regarding age majority of sample were in > 50 years Category at n=5 (33.3%), followed by 31–40 years and 41–50 years each at n=4 (26.7%), And 21–30 years at n=2 (13.3%). In the control group, majority were in 31–40 years and >50 years categories each at n=5 (33.3%), followed by 41–50 years at n=4(26.7%) and 21–30 years at n=1 (6.6%). Gender composition varied, with the study group being Predominantly female (53.3%), a factor relevant given women's higher rates of impaired Blood sugar level. Religious affiliation was primarily Hindu in both groups. Coming to the Education status in the study group, classify as no formal education (33.3%), as compare To control group (13.3%) it is more in prevalence of Diabetes in the people who have no Formal education, For occupation, in the Study group, majority were homemakers at N=8 (53.3%), followed by farmers a n=4 (26.7%) and business at n=3 (20%). In the control Group, majority were homemakers at n=7(46.7%), followed by farmers at n=5 (33.3%), Business at n=2 (13.3%), and labor at n=1(6.6%). Regarding duration of diabetes, in the Study group, majority had 11–15 years duration at n=6 (40%), followed by 1–5 years At n=5 (33.3%), and 6–10 years and >20 years each at n=2 (13.3%). In the control group, Majority had 1–5 years duration at n=6 (40%), followed by 6–10 years and 11–15 years each At n=4 (26.7%), and >20 years at n=2 (13.3%). For type of treatment, in the Study Group, majority were on medication at n=9 (60%), followed by insulin at n=4 (26.7%) and Both at n=2 (13.3%). In the control group, majority were on medication at n=7 (46.7%), Followed by insulin at n=5(33.3%) both at n=3(20%). Regarding dietary pattern, in the Study group, majority were vegetarian at n=7(46.7%), followed by non-vegetarian at N=5 (33.3%) and mixed diet at n=3 (20%). In the control group, majority were mixed diet at N=5 (33.3%), followed by vegetarian at n=7 (46.7%) and non-vegetarian at n=3 (20%). For Physical activity pattern, in the Study group, majority had regular activity at n=8(53.3%) and irregular at n=7 (46.7%). In the control group, majority had irregular activity at N=9 (60%) and irregular at n=6 (40%)

1. Pretest Comparison Between Study and Control Groups

- The mean pretest score in the Study group was 3.3 and in the control group, it was 1.9
- The independent samples t-test showed no statistically significant difference ($p = <0.14$)
- Interpretation: Both groups started with statistically similar blood sugar level confirming the homogeneity of the sample and ensuring the internal validity of the study.

2. Posttest Comparison Between Study and Control Groups

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- Post-intervention, the Study group's score improved to 1.3, while the control group remained at 1.93.
- The independent samples t-test showed a highly significant difference ($p < 0.001$).
- Interpretation: The kapalbhati Pranayama therapy was significantly effective in improving blood sugar level among the intervention group.

3. Pretest vs Posttest in Study Group

- Within the Study group, the pretest mean was 3.3, and the posttest mean was 1.3.
- The paired t-test showed a highly significant improvement ($p < 0.001$).
- Interpretation: This confirms the efficacy of the kapalbhati Pranayama therapy within the experimental group itself.

4. Association with Sociodemographic and Clinical Variables

Chi-square analysis identified the following:

- Physical Activity Pattern had statistically significant associations with Posttest ($p = 0.004$ and $p = 0.143$ respectively).
- Variables such as age, gender, religion, occupation, duration of illness, showed no significant association.
- Interpretation: Socioeconomic factors such as education and occupation potentially enhance treatment responsiveness, perhaps through better understanding, Adherence, or self-care ability.

Supportive Studies are:-

Shende et al. (2013) conducted a study to assess the effect of pranayama on blood glucose levels and reported that participants who practiced pranayama regularly showed a significant reduction in fasting and post-meal blood glucose levels compared to the control group. This study highlighted that pranayama practice has a positive role in regulating blood sugar levels and improving metabolic functions.

Raveendran (2018) discussed the therapeutic role of yoga in type 2 diabetes and reported that yoga helps in improving insulin sensitivity, reducing stress, and improving autonomic functions. The study suggested that pranayama may improve pancreatic



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beta-cell function through abdominal stimulation and help in better glucose utilization.

IMPLICATIONS OF THE STUDY

Nursing Education

- Integrate Kapalbhati Pranayama in the syllabus as part of complementary and alternative therapies.
- Encourage critical thinking about non-pharmacological approaches to symptom management.
- Encourage students to participate in evidence-based practice projects evaluating Kapalbhati Pranayama interventions.

Nursing Practice

- Empower nurses to educate patients about home-based kapalbhati therapy as a selfcarestrategy.
- Encourage individualized care by assessing patient suitability for kapalbhati pranayama therapy (e.g., peripheral neuropathy, vascular issues).
- Improve nurse–patient rapport by engaging in personalized bedtime care interventions.

Nursing Administration

- Develop institutional protocols and policies for safe implementation of kapalbhati pranayama therapy.
- Organize in-service education and continuing education workshops for nursing staff.
- Advocate for non-pharmacological care pathways to reduce hospital costs related to Sedative use and adverse drug reactions.

Nursing Research

- Stimulate interest in experimental and quasi-experimental research.
- Explore patient perspectives and experiences with kapalbhati therapy through qualitative studies.
- Encourages further studies on different types of pranayama and their effects on



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Diabetes.

- Conduct cost-effectiveness analyses comparing pharmacological and nonpharmacological interventions.

LIMITATIONS

- The study utilized a convenience sampling technique, which may have introduced selection bias.
- The sample was drawn from a single setting (NMCH), limiting the generalizability of the findings to other populations and healthcare settings.
- The duration of the intervention was relatively short and may not reflect the long-term effectiveness of kapalbhathi pranayama on blood glucose levels.
- Variations in participants' ability to correctly perform kapalbhathi pranayama may have affected the consistency of the intervention.

RECOMMENDATIONS FOR FUTURE RESEARCH

- Future studies should adopt randomized controlled trial designs to enhance the validity and reliability of findings.
- A larger sample size involving multiple healthcare settings should be considered to improve generalizability.
- Longitudinal studies are recommended to assess the long-term effects of kapalbhathi Pranayama on blood glucose control.
- Comparative studies evaluating different types of pranayama or yoga interventions would provide deeper insights.
- Research should explore the effectiveness of kapalbhathi pranayama among different categories of diabetes (Type 1, Type 2, and gestational diabetes).



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REFERENCES

1. Gordon LA, Morrison EY, McGrowder DA, Young R, Fraser YTP, Zamora EM, et al. The influence of yoga therapy in adults with type 2 diabetes mellitus: A single-center study. *Complement Ther Clin Pract.* 2017;28:100-107.
2. World Health Organization. Global report on diabetes. WHO Official Report. Geneva: World Health Organization; 2016.
3. Shende VS, Waghmare SN, Pawar S, Kashalika SJ. Effect of pranayama on blood glucose level. *Int J Res Health Sci.* 2013;1(3):209-214.
4. Kumari S. Effectiveness of pranayama on blood glucose level among diabetic Patients. MSc Nursing Thesis. Rajiv Gandhi University of Health Sciences; 2018.
5. Devi R. A study to assess the effect of yoga on blood sugar among type 2 diabetes Patients. MSc Nursing Thesis. Baba Farid University; 2017.
6. Sharma P. Effect of breathing exercises on glycemic control among diabetics. MSc Nursing Thesis. AIIMS New Delhi; 2019.
7. Kaur H. Effectiveness of Kapalbhathi pranayama on blood glucose level. MSc Nursing Thesis. PGIMER Chandigarh; 2016.
8. Singh M. Impact of yoga therapy on diabetes management. BSc Nursing Dissertation. Delhi University; 2015.