



Effect of Bhramari Pranayama on Mental Health of Orphans

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Abstract

The mental health of orphaned adolescents remains an underexplored yet critical area of concern, particularly in developing nations like India. This study investigates the impact of Bhramari Pranayama, a traditional yogic breathing technique, on depression levels and behavioral patterns among orphan adolescent girls aged 11 to 18 years in the Almora district. Using a quasi-experimental design, 90 participants were divided into two groups: an experimental group (n=50) that underwent a 40-day daily practice of Bhramari Pranayama, and a control group (n=40) with no intervention.

Assessment tools included the Children's Depression Inventory (CDI) and the Student Behavior Survey (SBS), with pre- and post-intervention data analyzed using paired samples, t-tests and descriptive statistics. The results revealed a statistically significant reduction in depression scores (mean difference = 21.75, $p < 0.001$) and a notable improvement in behavior (mean difference = -19.26, $p < 0.001$) in the experimental group. In contrast, the control group exhibited no significant change in either variable ($p > 0.05$), validating the effectiveness of the intervention.

The study conclusively rejects the null hypotheses H01 and H03, supporting the effectiveness of Bhramari Pranayama in enhancing the psychological well-being of orphaned girls. The findings underscore the transformative potential of integrating Bhramari Pranayama into institutional care settings, offering a culturally appropriate, non-pharmacological, and cost-effective method to improve emotional resilience, self-regulation, and mental clarity among vulnerable adolescents. This research adds meaningful evidence to the growing field of yoga-based mental health interventions and advocates for their wider implementation in educational and rehabilitative frameworks.

Introduction

Mental health is a foundational component of overall well-being, especially during the formative years of childhood and adolescence. Among the most vulnerable groups, orphans face profound



psychological challenges due to the loss of parental care, emotional deprivation, and social



instability. Studies have consistently shown that orphaned children are at a higher risk of developing mental health issues such as anxiety, depression, low self-esteem, and social withdrawal. Despite efforts by institutions to provide shelter and education, the mental health needs of orphans often remain overlooked, particularly in India and other developing nations. In recent years, there has been a growing global interest in integrating traditional, non-pharmacological practices into mental healthcare. One such method is Bhramari Pranayama, a yogic breathing technique that mimics the humming sound of a bee and is known for its calming effect on the nervous system. Research has linked Bhramari Pranayama to stress reduction, emotional regulation, improved concentration, and enhanced mood. However, despite its increasing use in wellness and educational settings, there exists a significant research gap regarding its therapeutic application among marginalized children, especially orphans. Most existing studies have focused on adults, school children with family support, or clinical populations, leaving the unique psychological needs of orphaned children largely unaddressed. Therefore, there is a pressing need to explore simple, cost-effective, and culturally rooted mental health interventions such as Bhramari Pranayama for orphaned populations who may benefit immensely from such practices.

Objectives of the Study:

- To examine the impact of Bhramari Pranayama on depression levels among orphaned children.
- To evaluate the effect of Bhramari Pranayama on the behavioral patterns of orphans.

Hypotheses:

H01: There is no significant impact of Bhramari Pranayama on the depression levels of orphan adolescent girls in the experimental group.

H02: There is no significant difference in depression levels in the control group before and after the period without Bhramari Pranayama intervention.

H03: There is no significant improvement in the behavior of orphan adolescent girls in the experimental group as a result of Bhramari Pranayama.

H04: There is no significant difference in behavior scores in the control group before and after the period without Bhramari Pranayama

Methodology:

A quasi-experimental design was employed with pre- and post-intervention assessments using



experimental and control groups. The intervention spanned 40 days, during which the experimental group practiced a Bhramari Pranayama routine.



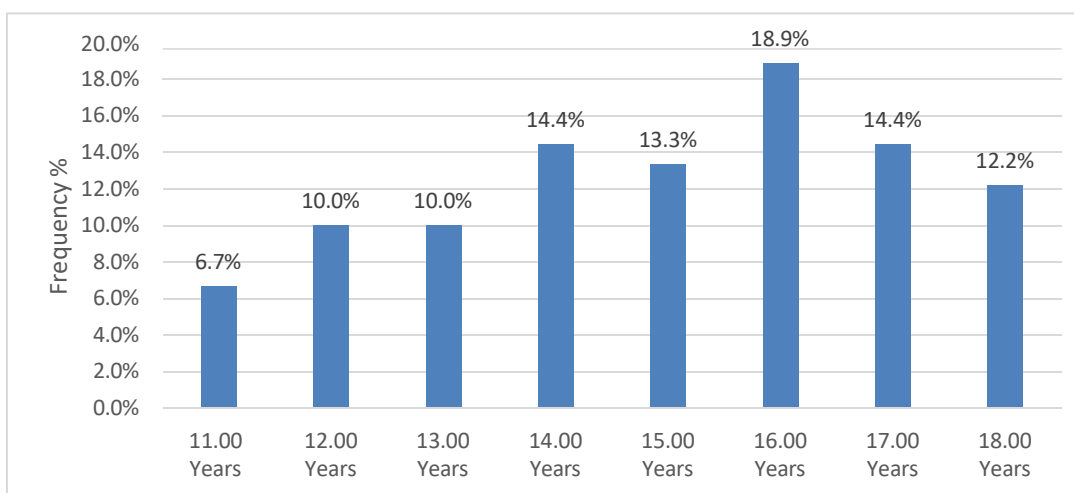
Sample: 90 orphan adolescent girls aged 11–18 years from Almora district are sample of the research.

Groups: There are samples of the research divided into two groups.

- **Experimental group:** 50 orphan adolescent girls (ages 11–18) practicing Bhramari Pranayama daily.
- **Control group:** 40 orphan girls with no intervention.

Demographic Information of Orphan teenagers: All participants were female, enrolled in grades 4 to 12 in an orphanage school setting.

Age	Frequency	Percent
11.00 Years	6	6.7%
12.00 Years	9	10.0%
13.00 Years	9	10.0%
14.00 Years	13	14.4%
15.00 Years	12	13.3%
16.00 Years	17	18.9%
17.00 Years	13	14.4%
18.00 Years	11	12.2%



Tools Used:

- The Children's Depression Inventory (CDI) was used to assess the depression levels, and



the results are categorized into four classifications: Very Elevated, Elevated, High Average, and Average or Lower.



- Student Behavior Survey (SBS) for measuring behavioral tendencies.

Intervention: Daily Bhramari Pranayama practice for 40 days.

Data Collection and Analysis: Pre- and post-intervention data were analyzed using descriptive statistics, paired sample t-tests, and ANOVA for age group comparison. Statistical significance is set at $p < 0.05$.

T-Test Table for Student Behavior Scores (SBS):

- Descriptive Statistics for Student Behavior Scores (SBS):

Group	Stage	N	Mean	Std. Deviation	Variance
Experimental	Pre	50	47.70	4.02	16.13
Experimental	Post	50	66.96	5.55	30.77
Control	Pre	40	45.65	2.02	4.08
Control	Post	40	45.69	2.07	4.28

- Paired Samples T-Test Results for Student Behavior Scores (SBS):

Group	Test	Mean	t-value	df	p-value	Interpretation
Experimental Group	Paired t-test	-19.26	-18.348	49	< 0.001	Significant improvement in behavior
Control Group	Paired t-test	-0.04	-1.026	39	0.311	No significant change in behavior

The analysis of the Student Behavior Survey (SBS) demonstrates a significant improvement in behavior among orphaned adolescent girls who participated in the Bhramari Pranayama practice intervention. In the experimental group, the mean behavior score increased notably from 47.70 before the intervention to 66.96 after the completion of the yoga program. The paired samples t-test yielded a t-value of -18.348 with a p-value of less than .001, indicating a highly statistically significant improvement in behavioral outcomes. This supports the alternative hypothesis that yoga practices, particularly Bhramari Pranayama positively influence the behavioral patterns of orphaned adolescents. The results suggest that regular participation in yoga enhances self-regulation, focus, emotional control, and social conduct, all of which are essential for healthy psychological development. In contrast, the control group, which did not undergo any Bhramari Pranayama practice intervention, showed virtually no change in behavior. The mean behavior



score changed only slightly from 45.65 to 45.69, with a t-value of -1.026 and a p-value of 0.311, which is not statistically significant. As a result, the null hypothesis is accepted for the control



group, indicating that there was no genuine behavioral improvement in the absence of structured intervention. In conclusion, the findings clearly show that the yoga-based intervention led to significant and measurable behavioral improvements in the experimental group. This highlights the potential of yoga, especially practices like Bhramari Pranayama, as an effective tool for promoting mental and emotional stability among orphaned adolescents.

T-Test Table for Children's Depression Inventory (CDI):

- Descriptive Statistics for Children Depression Inventory Assessment:**

Variable	N	Mean	Std. Deviation	Variance
experimental group (pre)	50	70.9535	7.34396	53.934
control group (pre)	40	69.0116	12.68851	160.998
experimental group (Post)	50	49.2073	5.04763	25.479
control group(Post)	40	65.6809	6.45432	41.658

- Paired Samples T-Test Results for Children Depression Inventory Assessment:**

Group	Test	Mean	t-value	df	p-value	Interpretation
Experimental Group	Paired t-test	21.74617	17.386	49	.000	Significant decrease in depression.
Control Group	Paired t-test	3.33073	1.893	39	.066	No significant change in depression

The analysis of the Children's Depression Inventory (CDI) reveals a significant impact of Bhramari Pranayama practice intervention on reducing depression among orphaned adolescent girls in the experimental group. The mean depression score in this group decreased substantially from 70.95 before the intervention to 49.21 after the 40-day Bhramari Pranayama practice. The paired samples t-test yielded a t-value of 17.386 with a p-value of less than .001, indicating that the reduction in depression was statistically significant. This result supports the alternative hypothesis that Bhramari Pranayama practice has a positive effect on mental health, particularly in lowering depressive symptoms. The findings suggest that the integration of Bhramari Pranayama played a crucial role in alleviating stress and enhancing emotional well-being.

In contrast, the control group, which did not receive any Bhramari Pranayama practice intervention, showed only a slight change in mean depression scores from 69.01 pre-intervention



to 65.68 post-intervention. The t-test result for this group was $t = 1.893$ with a p-value of .066,



which is not statistically significant. Therefore, the null hypothesis is accepted for the control group, indicating that the observed change in depression levels could be due to chance and not any meaningful factor.

In conclusion, the results clearly demonstrate that yoga practice, particularly involving Bhramari Pranayama, leads to a significant improvement in emotional well-being by reducing depression levels in the experimental group. No such improvement was observed in the control group, emphasizing the effectiveness of structured yoga interventions in managing adolescent depression in institutional settings.

Recommendations:

Based on the findings of this study, which demonstrated the significant positive impact of Bhramari Pranayama on reducing depression and improving behavior among orphan adolescent girls, the following recommendations are proposed:

Integration into Institutional Routines: Institutional care homes and orphanages should incorporate Bhramari Pranayama as a part of the daily schedule to promote mental and emotional well-being among children. A short, structured session can be implemented each morning or evening to ensure consistency and long-term benefit.

Training for Caregivers and Educators: Caregivers, teachers, and staff members in orphanages should receive basic training in Bhramari Pranayama and other simple yogic techniques. This will enable them to effectively guide children through the practices and maintain the quality of intervention.

Longitudinal and Follow-up Studies: Future research should focus on long-term follow-up studies to assess the sustainability of the observed psychological benefits. Evaluating mental health outcomes after several months or years would provide deeper insights into the lasting impact of such interventions.

Inclusion of Diverse Populations: Similar studies should be conducted among male orphans, children in foster care, and in varied cultural or geographical settings to explore the broader applicability and generalizability of the findings.

Policy-Level Adoption: Policymakers in child welfare and education should consider including yoga-based mental health programs in national child development schemes, especially for vulnerable populations, to ensure structured support for psychological well-being.

Conclusion:

The findings of this study provide compelling evidence that yogic practices particularly



Bhramari Pranayama, have a profound positive impact on the psychological well-being of orphan adolescent girls. Through this experimental design and statistical validation, the study



reveals that consistent engagement in Bhramari Pranayama practice significantly reduces depression levels and enhances behavioral outcomes, fostering greater emotional resilience, self-regulation, and mental clarity among participants.

The comparative analysis between the experimental and control groups strongly reinforces this conclusion. While the experimental group exhibited remarkable improvements in both depression and behavior following the Bhramari Pranayama practice intervention, the control group, which did not participate in any such activity, showed no statistically significant change. This distinction validates the effectiveness of Bhramari Pranayama practice as a non-pharmacological, cost-effective, and culturally appropriate mental health intervention for vulnerable populations, particularly orphans.

With regard to the study's hypotheses, the results decisively reject H01 and H03, confirming that Bhramari Pranayama practice meditation has a significant impact on reducing depression and improving behavior in the experimental group. Conversely, H02 and H04 are accepted, highlighting that no meaningful psychological improvement occurred in the control group without yoga.

In essence, this study underscores the transformative potential of Bhramari Pranayama practice as an accessible tool for mental health enhancement in institutional care settings. It opens avenues for integrating structured Bhramari Pranayama practices into the daily routines of orphanages and child care institutions, offering a sustainable and holistic solution to support the emotional and behavioral development of marginalized adolescents. These results not only contribute to the growing body of evidence in favor of yoga-based interventions but also call for wider adoption of such practices in educational and rehabilitative frameworks for youth.

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