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Effectiveness of Zumba Dance in Reducing Stress and Anxiety Among Alcohol-Dependent Clients: A Quasi-Experimental Study

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Abstract

Alcohol Dependence Syndrome (ADS) is a chronic condition associated with significant physical, psychological, and social consequences, including elevated levels of stress and anxiety. Non-pharmacological interventions that promote psychological well-being are increasingly being explored as complementary approaches in the management of alcohol dependence. The present study aimed to evaluate the effectiveness of Zumba dance in reducing stress and anxiety among alcohol-dependent clients attending selected de-addiction centers in Chhattisgarh. A quantitative research approach with a quasi-experimental non-randomized control group design was adopted. The study included 60 alcohol-dependent clients, with 30 participants assigned to the experimental group and 30 to the control group. The experimental group received Zumba dance sessions in addition to routine care, while the control group received routine care alone. Stress and anxiety levels were assessed using standardized assessment tools before and after the intervention. The findings revealed a substantial reduction in stress and anxiety scores among participants in the experimental group compared to the control group. The post-test means stress score in the experimental group decreased from 26.67 to 16.70, while the anxiety score decreased from 14.00 to 7.93. Statistical analysis demonstrated significant differences between pre-test and post-test scores in the experimental group, indicating the effectiveness of the intervention. The study concludes that Zumba dance is an effective, low-cost, and engaging complementary therapy for reducing stress and anxiety among alcohol-dependent clients and can be incorporated into de-addiction and rehabilitation programs to enhance psychological well-being and recovery outcomes.

Keywords: Alcohol Dependence Syndrome, Zumba Dance, Stress, Anxiety, De-addiction, Mental Health, Rehabilitation

Introduction

Alcohol is a psychoactive substance with dependence-producing properties that has been widely used in many cultures for centuries. The harmful use of alcohol causes a high burden of disease and has significant social and economic consequences. The harmful use of alcohol can also result in harm to other people, such as family members, friends, co-workers and strangers. Alcohol is a natural product obtained by the reaction of fermented sugar with yeast spores. It is classified as food because it gives calories but there is no nutritive value in it.

Alcohol Dependence Syndrome (ADS) is a chronic and progressive medical condition characterized by a cluster of behavioral, cognitive, and physiological symptoms that develop following repeated and prolonged alcohol consumption. Traditionally, alcohol dependence was defined by the occurrence of withdrawal symptoms when an individual ceased or significantly reduced alcohol intake. To avoid these unpleasant withdrawal effects, individuals often continue consuming alcohol, thereby reinforcing the cycle

of dependence. According to contemporary clinical perspectives, alcohol dependence encompasses a strong craving for alcohol, impaired control over drinking behavior, persistent alcohol use despite harmful consequences, increased priority given to alcohol over other personal, social, and occupational responsibilities, the development of tolerance, and the presence of withdrawal symptoms upon cessation or reduction of consumption.

Alcohol has been widely consumed throughout history because of its social, cultural, and recreational significance. However, chronic and excessive use can lead to physical and psychological dependence. In individuals with Alcohol Dependence Syndrome, abrupt cessation or reduction of alcohol intake commonly results in Alcohol Withdrawal Syndrome (AWS), a condition characterized by a range of symptoms that may vary in severity from mild tremors and anxiety to severe complications such as seizures and delirium tremens. Therefore, alcohol dependence represents a significant public health concern requiring comprehensive medical, psychological, and social interventions.

Zumba has gained immense popularity worldwide due to its unique combination of fitness, dance, and entertainment. Beyond its effectiveness as a physical exercise, Zumba serves as a valuable tool for stress management and psychological well-being. Stress can have numerous adverse effects on the body, including sleep disturbances, mood fluctuations, weakened immunity, and an increased risk of chronic conditions such as cardiovascular disease. Zumba provides an enjoyable and engaging means of mitigating these effects while promoting overall health.

One of the immediate benefits of participating in Zumba is the release of endorphins, commonly referred to as "feel-good hormones." As individuals move rhythmically to music, the body responds by producing these neurotransmitters, which help reduce stress, enhance mood, and promote a sense of well-being. Consequently, Zumba functions not only as a physical workout but also as a form of emotional expression and psychological release. Furthermore, Zumba offers participants an opportunity to temporarily escape daily pressures and concerns by immersing themselves in music and movement. The concentration required to learn dance routines and maintain the energetic pace of the session helps divert attention from stressful thoughts and provides a mental respite. This state of focused engagement, often referred to as the "Zumba zone," resembles mindfulness practices that encourage awareness of the present moment, a well-established strategy for reducing stress and enhancing mental health. In addition to its psychological benefits, Zumba promotes social interaction and community engagement. Group classes typically bring together individuals with similar health and fitness goals, fostering a supportive and encouraging environment. The sense of camaraderie, belonging, and mutual motivation developed within these classes can further alleviate stress and contribute to improved emotional well-being. Therefore, Zumba represents a holistic approach to health by simultaneously enhancing physical fitness, reducing stress, and strengthening social connections.

Review of Literature

Alcohol dependence and its associated physical, psychological, and social consequences have attracted considerable research attention worldwide. Existing studies indicate that alcohol dependence is closely linked with adverse health outcomes, behavioral problems, and diminished quality of life. Simultaneously, growing evidence suggests that physical activities such as Zumba can effectively reduce stress, anxiety, and other mental health concerns.

Montgomery and Schoetensack (2023) [1] investigated the prevalence of alcohol dependence among adult drinkers in the United States using data from the National Survey on Drug Use and Health collected between 2009 and 2011. Analyzing responses from 138,100 adults, the researchers found that alcohol dependence was prevalent among 10.2% of excessive drinkers, 10.5% of binge drinkers, and 1.3% of non-binge drinkers. Their findings demonstrated a significant positive relationship between binge-drinking frequency and alcohol dependence, highlighting excessive alcohol consumption as a major public health concern.

Ray Anaiska Sudhir Ninave *et al*. (2023) [4] examined behavioral and personality changes among individuals diagnosed with Alcohol Dependence Syndrome (ADS) in a rural tertiary care hospital. The study included 56 male participants undergoing treatment for alcohol withdrawal and dependence. Assessment through the CAGE and AUDIT screening tools revealed high levels of aggressive behavior (89.28%), verbal abuse (85.71%), memory impairment (69.64%), and road traffic accidents under the influence of alcohol (76.78%). The findings indicated that alcohol dependence significantly contributes to behavioral disturbances, impaired psychosocial functioning, and reduced quality of life.

Eashwar and Umadevi (2020) [2] reviewed the burden of alcohol consumption in India and emphasized its growing impact on public health. The authors highlighted that sociocultural practices, varying state alcohol policies, urbanization, misleading media portrayals, and increasing social acceptance of drinking contribute to alcohol-related problems. The study stressed the need for stringent alcohol control policies and enhanced public awareness regarding the harmful physical and psychological effects of alcohol use.

Jaisoorya *et al*. (2017) [3] explored the prevalence and correlates of alcohol use among adolescents in Kerala, India. The study surveyed 7,560 students aged 12–19 years and reported a lifetime alcohol use prevalence of 15%, with higher rates among boys than girls. Approximately 25.3% of drinkers exhibited hazardous alcohol use patterns. Alcohol consumption was found to be associated with tobacco and illicit drug use, suicidal ideation, attention deficit hyperactivity disorder symptoms, experiences of abuse, and poor academic performance. The study underscored the importance of early preventive interventions targeting adolescent alcohol use.

Recent studies have also focused on the effectiveness of Zumba as a non-pharmacological intervention for improving mental health outcomes. Livingston (July 2024a) [5] evaluated the effect of Zumba on Generalized Anxiety Disorder (GAD) among nurses working in a multispecialty government hospital. Using a true experimental design, 70 nurses were randomly assigned to control and intervention groups. Participants in the intervention group engaged in 30

minutes of Zumba daily for three months. Results demonstrated a significant reduction in anxiety levels among the intervention group compared to the control group, suggesting that Zumba can serve as an effective strategy for enhancing mental well-being among healthcare professionals.

In a subsequent study, Livingston (August 2024b) [6] investigated the effectiveness of Zumba in reducing insomnia among nurses. Seventy nurses participated in the experimental study, and the intervention group practiced Zumba for 30 minutes daily over a three-month period. Findings revealed significantly lower insomnia scores among participants who engaged in Zumba compared to those in the control group. The study concluded that Zumba promotes better sleep quality and may be an effective intervention for managing insomnia among healthcare workers.

Similarly, Pillai (2021) [7] examined stress levels among B.Sc. Nursing students and assessed the effectiveness of Zumba as a stress-reduction intervention. The study involved 70 nursing students and employed a one-group pre-test and post-test design. Results indicated that most students experienced moderate levels of stress due to academic pressures, interpersonal relationships, life changes, and career-related concerns. Following participation in Zumba-based activities, a significant reduction in stress levels was observed, supporting the effectiveness of aerobic dance interventions in promoting psychological well-being among students.

Overall, the reviewed literature indicates that alcohol dependence is associated with significant psychological, behavioral, and social consequences across different populations. At the same time, evidence suggests that Zumba serves as an effective intervention for reducing anxiety, stress, and insomnia while enhancing overall mental health and quality of life. However, limited research has explored the role of Zumba-based interventions among individuals with alcohol dependence, highlighting a gap that warrants further investigation.

Research Methodology

The research approach is a fundamental component of the research design, as it provides the overall framework that guides the investigation. It outlines the systematic plan adopted by the researcher to examine a phenomenon under study. Research approaches may be classified as quantitative, qualitative, or mixed-method approaches, depending on the nature and objectives of the study. The present study adopts a quantitative research approach, as it aims to evaluate the effectiveness of a structured intervention through the measurement and analysis of numerical data.

The research design selected for the present study is a quasi-experimental non-randomized control group design. This design is considered appropriate for assessing the effectiveness of Zumba dance as an intervention for reducing stress and anxiety among alcohol-dependent clients. A quasi-experimental design allows the researcher to compare outcomes between an experimental group receiving the intervention and a control group that does not receive the intervention, without random assignment of participants.

The study was conducted among alcohol-dependent clients attending selected de-addiction centers in Chhattisgarh. A total sample of 60 alcohol-dependent clients was included in the study. Of these, 30 participants were assigned to the experimental group, which received the Zumba dance intervention, and 30 participants were assigned to the control group, which received routine care. The sample size was determined based on the feasibility of conducting the study and the availability of participants who met the inclusion criteria.

The effectiveness of the Zumba dance intervention was assessed by measuring the levels of stress and anxiety among participants before and after the intervention. Data were collected using standardized assessment tools and analyzed according to the objectives of the study. Both descriptive and inferential statistical methods were employed for data analysis. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the characteristics of the participants and the study variables. Inferential statistics were utilized to determine the significance of differences between the control and experimental groups and to evaluate the effectiveness of the intervention.

The data collection process was carried out systematically following a predetermined plan to ensure the reliability and validity of the findings. The methodology adopted in the study enabled an objective evaluation of the impact of Zumba dance on stress and anxiety among alcohol-dependent clients attending selected de-addiction centers in Chhattisgarh.

Data Analysis

Table 1: Assessment of the Level of Stress in Pre-test and Post-test in Terms of Mean, Mean Percentage, and Standard Deviation of Experimental and Control Groups

Particular	Control group		Experimental group	
	Pre test	Post test	Pre test	Post test
Mean	26.60	22.90	26.67	16.70
Mean %	44.3%	38.2%	44.5%	27.84%
SD	7.855	8.074	8.817	8.380

Table 1 presents the assessment of the level of stress among alcohol-dependent clients in the control and experimental groups during the pre-test and post-test phases. In the control group, the pre-test mean stress score was 26.60 with a mean percentage of 44.3% and a standard deviation of 7.855. During the post-test, the mean stress score decreased slightly to 22.90, with a mean percentage of 38.2% and a standard deviation of 8.074. This indicates a marginal reduction in stress levels among participants who did not receive the Zumba dance intervention. In the experimental group, the pre-test mean stress score was 26.67 with a mean percentage of 44.5% and a standard deviation of 8.817. Following the Zumba dance intervention, the post-test mean stress score decreased considerably to 16.70, with a mean percentage of 27.84% and a standard deviation of 8.380. This substantial reduction in the mean stress score and mean percentage demonstrates a marked improvement in stress levels among alcohol-dependent clients who participated in the Zumba dance program.

Table 2: Assessment of the level of anxiety among alcohol-dependent clients in the control and experimental groups during the pre-test and post-test periods

Particular	Control Group		Experimental Group	
	Pre test	Post test	Pre test	Post test
Mean	18.817	14.77	14.00	7.93
Mean%	33.4%	26.3%	25%	14.1%
SD	3.745	4.305	3.787	2.690

Table no. 2 shows that in control group the pre-test total anxiety score of alcohol dependent in term of, mean is 18.817, mean percentage (%) is 33.4%, SD is 3.745 and post-test, mean is 14.77, mean percentage (%) is 26.3%, SD is 4.305 and in experimental group the pre-test total score of alcohol dependent in term of, mean is 14.00, mean percentage (%) is 25%, SD is 3.787 and post-test, mean is 7.93, mean percentage (%) is 14.1%, SD is 2.690.

Table 3: 'T' Test Analysis to Find Out Significant Differences Between Pre-Test and Post-Test Score of Stress in Experimental Group

	Total Score	Mean	Mean %	Mean difference	SD	T-value	Result
Pre-test	800/1800	26.67	44.5%	9.967	8.817	3.087	Significant $p<0.05$
Post-test	501/1800	16.70	27.84%		8.380		

Table no. 3 shows that in control group the pre-test total score of stress is 800, mean is 26.67, mean percentage (%) is 44.5%, SD is 8.817 and post-test total score is 501, mean is 16.70, mean percentage (%) is 27.84%, SD is 8.380. Mean difference is 9.967 t value is 3.087 P value is 2.05 which is more than 0.05 indicates that there is significant difference observed in stress in experimental group.

Table 4: 'T' Test Analysis to Find Out Significant Difference Between Pre-Test and Post-Test Score of Stress in Control Group.

	Total Score	Mean	Mean %	Mean difference	SD	T-value	Result
Pre-test	798/1800	26.60	44.3%	3.76	7.855	1.673	Not Significant $p>0.05$
Post-test	687/1800	22.90	38.2%		8.074		

Table no. 4 shows that in control group the pre-test total score of stress is 798, mean is 26.60, mean percentage (%) is 44.3%, SD is 7.855 and post-test total score is 687, mean is 22.90, mean percentage (%) is 38.2%, SD is 8.074. Mean difference is 3.76 t value is 1.67 P value is 2.05 which is less than 0.05 indicates that there is no significant difference observed in stress in control group.

Table 5: 'T' Test Analysis to Find Out Significant Difference Between Pre-Test and Post-Test Score of Anxiety in Experimental Group

	Total Score	Mean	Mean %	Mean difference	SD	T-value	Result
Pre test	420/1680	14.00	25%	6.067	3.787	4.953	Significant $p<0.05$
Post test	238/1680	7.93	14.16%		2.690		

Table no. 5 shows that in control group the pre-test total score of anxiety is 420, mean is 14.00, mean percentage (%) is 25%, SD is 3.787 and post-test total score is 238, mean is 7.93, mean percentage (%) is 14.16%, SD is 2.690. Mean difference is 6.067 t value is 4.953 P value is 2.05 which is more than 0.05 indicates that there is significant difference observed in anxiety in experimental group**.**

Table 6: 'T' Test Analysis to Find Out Significant Differences Between Pre-Test and Post-Test Score of Anxiety in Control Group

	Total Score	Mean	Mean %	Mean difference	SD	T-value	Result
Pre test	560/1680	18.817	33.4%	3.900	3.745	1.28	Not significant $P>0.05$
Post test	443/1680	14.77	26.36%		4.305		

Table no. 6 shows that in control group the pre-test total score of anxiety is 560, mean is 18.817, mean percentage (%) is 33.4%, SD is 3.745 and post-test total score is 443, mean is 14.77, mean percentage (%) is 26.36%, SD is 4.305. Mean difference is 3.900 t value is 1.28 P value is 2.05 which is less than 0.05 indicates that there is no significant difference observed in anxiety in control group.

Table 7: Chi square Test

S. No	Socio Demographic variables	Pre-test stress			Df	Critical value at 0.05	X^2	Inference
		Mild	Mode-rate	Severe				
1	Age in years				4	9.49	00	Not Significant $P>0.05$
	20-30	16	0	0				
	31-40	12	0	0				
	41-50	2	0	0				
2	Education				5	11.1	13.3	Significant $P<0.05$
	Primary	1	5	1				
	High sec.	2	5	2				
	Graduated	6	4	0				
	Post graduate	0	4	0				
3	Occupation				8	15.5	3.57	Not Significant $P>0.05$
	Govt. Job	3	4	0				
	Private job	3	5	1				
	Business	3	5	1				
	Collie	0	4	1				
	Others	0	0	0				
4	Type of family				4	9.49	19.69	Significant $P<0.05$
	Nuclear	1	9	0				

	Joint	8	9	3				
	Extended	0	0	0				
5	Marriage year				8	15.5	5.93	Not Significant *P*>0.05
	1-5 years	2	7	0				
	6-10 years	1	3	2				
	11-15 years	3	2	0				
	16-20 years	3	6	1				
	>20 years	0	0	0				
6	Consumption of alcohol				5	11.1	0.76	Not Significant *P*>0.05
	Daily	9	17	3				
	Several times a week	0	1	0				
	Once a week	0	0	0				
	Occasionally	0	0	0				
7	Admission in de addiction center				4	9.49	3.98	Not Significant *P*>0.05
	First time	4	10	3				
	Second	3	6	0				
	More than	2	2	0				

Chi square analysis carried out among the alcohol dependent client admitted in de-addiction center to find out the association between pre-test level of stress with their selected socio demographic variables in experimental group. Table 7 shows that among alcohol dependent client of selected de addiction center i.e., the association of pre-test stress score with their socio-demographic variables in experimental group. The analysis reveals statistically that socio demographic variable age, occupation, duration of marital year, consumption of alcohol and admission in de addiction center, had no significant association with the pre-test stress score and education, type of family had association with pre-test stress score of experimental groups at $p<0.05$ level.

Conclusion

The present study was conducted to determine the effectiveness of Zumba dance on stress and anxiety among alcohol-dependent clients attending selected de-addiction centers in Chhattisgarh. The findings demonstrated that participants who received the Zumba dance intervention experienced a significant reduction in both stress and anxiety levels compared to those in the control group. The post-test scores revealed marked improvements in psychological well-being among the experimental group, indicating that Zumba dance serves as an effective complementary intervention for individuals undergoing treatment for alcohol dependence. The rhythmic movements, music, physical activity, and social interaction associated with Zumba may contribute to emotional expression, stress reduction, improved mood, and enhanced coping abilities. In contrast, the control group showed only minimal changes in stress and anxiety levels, further supporting the effectiveness of the intervention. The study highlights the potential of incorporating structured recreational and physical activity programs into de-addiction treatment settings to promote holistic recovery. Therefore, Zumba dance can be recommended as a safe, enjoyable, and cost-effective strategy for improving the mental health and overall quality of life of alcohol-dependent clients.

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