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A study to assess the effectiveness of Jacobson's progressive muscle relaxation technique on blood pressure and stress among hypertensive clients at selected hospital in Indore

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Abstract

The concept of research design refers to the comprehensive strategy employed to tackle a research question, which includes guidelines aimed at bolstering the study's validity (Polit and Beck, 2004). Hypertension is often referred to as a silent killer, akin to an ice floe, and it constitutes a significant risk factor for cardiovascular diseases. A quasi-experimental study was carried out to evaluate the effectiveness of Jacobson's progressive muscle relaxation therapy in lowering blood pressure among patients with hypertension. This research was conducted at Index Medical College, where a sample of 100 hypertensive patients was selected using a non-probability purposive sampling technique. Subsequently, 25 patients were randomly assigned to either the experimental or control group. The initial assessment was conducted using a sphygmomanometer on the first day of the study. Subsequently, participants were assigned to Jacobson's Progressive Muscle Relaxation therapy, which was administered once daily for a duration of seven days. The final blood pressure measurements were taken on the seventh day of the study. To evaluate the differences in blood pressure levels between the experimental and control groups, the Wilcoxon test was employed. The mean systolic blood pressure score recorded post-intervention was 129.12, which is a reduction from the pretest score of 143.92. Similarly, the mean diastolic blood pressure score post-intervention was 86.48, lower than the pretest diastolic blood pressure of 98.16 in the experimental group. The results of the "u" test for systolic blood pressure ($u = 0.50000$, $p < 0.05$) indicated a highly significant difference between pretest and post-test systolic blood pressure measurements. Similarly, the "u" test for diastolic blood pressure ($u = 2.00000$, $p < 0.05$) also revealed a highly significant difference between pretest and post-test diastolic blood pressure values. These findings strongly suggest that Jacobson's progressive muscle relaxation therapy is effective in lowering blood pressure.

Keywords: Research design, hypertension, cardiovascular diseases, quasi-experimental study

Introduction

Hypertension is a prevalent condition of significant clinical and public health relevance. It serves as a strong independent indicator of early mortality and disability. Often referred to as the "silent killer," hypertension frequently presents without symptoms in affected individuals. This condition is a major chronic lifestyle disease and poses a critical public health challenge globally.

High blood pressure (HBP), or hypertension, refers to elevated pressure within the arteries. It is important to note that this does not pertain to excessive emotional stress; however, such stress can lead to temporary increases in blood pressure. A normal blood pressure reading is considered to be below 120/80 mm Hg, while readings ranging from 120/80 mm Hg to 139/89 mm Hg are classified as "pre-hypertension." Blood pressure readings of 140/90 mm Hg or higher are deemed high.

Hypertension is characterized by a significant prevalence, incidence, and severity. In developed nations, approximately 25% of adults are affected by hypertension, while similar rates have been reported in developing countries, ranging from 10% to 20%. Various blood pressure levels can lead to a range of structural changes within the body, resulting in serious health complications such as stroke, heart disease, renal failure, and others. Consequently, hypertension is regarded as a major health concern among adults. The non-modifiable risk factors associated with hypertension include genetics, age, and gender.

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Conversely, modifiable risk factors encompass dietary habits, physical activity levels, obesity, and excessive alcohol consumption (Park K, 2005) [11].

Hypertension is a widespread health condition that, if not effectively managed, can lead to significant complications. It is responsible for 62% of cerebrovascular diseases and 49% of the burden associated with cardiovascular diseases. In the year 2000, over a quarter of the adult population globally was affected by hypertension, with projections indicating an increase to 29% (approximately 972 million individuals) by 2025. The prevalence of hypertension is similar among men and women, with a consistent rise in incidence as age increases.

Need of the study

In India, the incidence of hypertension is rapidly escalating in urban regions, with this trend gradually extending to rural areas. A recent comprehensive analysis of various epidemiological studies in India indicates that hypertension affects 25% of adults in urban settings and 10% in rural areas. This study estimated that approximately 66 million individuals in India are hypertensive, comprising 32 million in rural areas and 34 million in urban areas. The weighted prevalence of hypertension, derived from multiple studies, was found to be 164.18 per 1,000 adults in urban areas and 157.44 per 1,000 adults in rural areas. Notably, 70% of the population in India lives in poverty, with the majority residing in rural regions. A significant number of individuals with hypertension remain unaware of their condition.

Statement of the problem

A Study to Assess the Effectiveness of Jacobson's Progressive Muscle Relaxation Technique on Blood Pressure and Stress among Hypertensive Clients At selected hospital in Indore.

Objectives

- To assess the level of blood pressure and stress in both experimental and control group.
- To provide Jacobson's progressive muscle relaxation technique to experimental group.
- To reassess the level of blood pressure and stress in both experimental and control group.
- To compare the level of blood pressure and stress in both experimental and control group.
- To assess the effectiveness of Jacobson's muscle relaxation technique in experimental group.
- To associate the findings with the selected demographic variables.

Review of Literature

A cross-sectional study was conducted to assess the prevalence of hypertension and its associated risk factors in a rural region of Tamil Nadu, involving a sample of 406 individuals aged 45 to 60 years, selected through a cluster systematic random sampling method. The analysis utilized the Chi-square test and multiple logistic regression techniques. The findings revealed an overall hypertension prevalence of 33%, with a higher incidence of 41% among sedentary individuals. In the bivariate analysis, several

independent variables were found to correlate with hypertension; however, in the multivariate analysis, only body mass index, family history, and age were identified as significant factors.

A cross-sectional study was conducted to evaluate the prevalence of hypertension and its relationship with various socioeconomic factors in the Bavi district of Vietnam. A representative sample of 2,000 adults aged 25 to 64 years was randomly selected and surveyed in 2002. The socioeconomic status of the participants was assessed based on their educational, occupational, and economic conditions. The study found a hypertension prevalence of 14.1%, with only 17.4% of participants aware of their hypertensive condition. The data indicated that men exhibited a higher prevalence of hypertension compared to women, and age was positively correlated with hypertension. Among men, those with lower educational and occupational status, as well as those from wealthier socioeconomic backgrounds, were more likely to be hypertensive. Additionally, a greater number of women with lower socioeconomic status were found to be hypertensive.

A cross-sectional study was performed to analyze the multifactorial influences on blood pressure variations within a rural community in West Bengal, focusing on adult individuals. The study examined variables such as age, education, family assets, and both systolic and diastolic blood pressure. The individual contributions of these factors were analyzed, revealing that age was the most significant factor, accounting for approximately 16.57% of the variations in systolic blood pressure and 7.9% in diastolic blood pressure. Occupation contributed 3.18% and 0.66%, education contributed 0.21% and 0.02%, while family assets showed no significant impact. The research concluded that age and occupation are two critical factors that significantly influence systolic blood pressure variations.

Results

The table presented illustrates the systolic blood pressure levels within the experimental group, where 85% of clients exhibited mild hypertension, 10% demonstrated moderate hypertension, and 5% were classified with severe hypertension during the pretest. In the posttest, 15% of clients achieved a normal level of systolic blood pressure, 25% were categorized as having high normal levels, while 50% maintained mild hypertension, and 5% each were noted with moderate and severe hypertension.

In the control group, the pretest results indicated that 85% of clients had mild hypertension, 10% had moderate hypertension, and 5% had severe hypertension. Following the posttest, 5% of clients were found to have high normal levels of systolic blood pressure, 75% continued to exhibit mild hypertension, and 20% were identified with moderate hypertension.

The table also reflects the diastolic blood pressure levels in the experimental group, where 70% of clients had mild hypertension, 15% had moderate hypertension, and 15% had severe hypertension in the pretest. In the posttest, 20% of clients achieved normal diastolic blood pressure levels, 15% were classified as having high normal levels, while 50% maintained mild hypertension, and 15% were noted with moderate hypertension.

Table 1: Distribution of level of blood pressure in experimental and control group

S. No.	Level of Blood Pressure (mmHg)		Experimental Group				Control Group			
			Pretest		Posttest		Pretest		Post test	
			No	%	No	%	No	%	No	%
1.	Systolic blood pressure	Normal<130	-	-	8	15	-	-	-	-
		High normal 130-139	-	-	13	25	-	-	2	5
		Mild hypertension 140-159	42	85	25	50	42	85	37	75
		Moderate hypertension 160-179	5	10	3	5	5	10	10	20
		Severe hypertension>180	3	5	2	5	2	5	-	-
2.	Diastolic blood pressure	Normal<85	-	-	10	20	-	-	2	5
		High normal 85-89	-	-	7	15	-	-	-	-
		Mild hypertension 90-99	35	70	25	50	32	65	22	45
		Moderate hypertension 100-109	8	15	8	15	17	35	15	30
		Severe hypertension >110	7	15	-	-	-	-	10	20

Within the control group, the pretest results showed that 65% of clients had mild hypertension, and 35% had moderate hypertension. In the posttest, 5% of clients achieved normal diastolic blood pressure levels, 45% had mild hypertension, 30% had moderate hypertension, and 20% were classified with severe hypertension.

Discussion

The assessment of blood pressure and stress levels in both the experimental and control groups was conducted using a sphygmomanometer and a modified version of Sheldon Cohen's perceived stress scale.

The table presents the post-test systolic blood pressure levels for both groups. In the experimental group, 15% of clients exhibited normal systolic blood pressure, 25% had high normal levels, 50% were classified with mild hypertension, 5% with moderate hypertension, and another 5% with severe hypertension. In contrast, the control group showed that 5% of clients had high normal systolic blood pressure, 75% had mild hypertension, and 20% had moderate hypertension.

Additionally, the table outlines the post-test diastolic blood pressure levels for both groups. Within the experimental group, 20% of clients had normal diastolic blood pressure, 15% had high normal levels, 50% were categorized with mild hypertension, and 15% with moderate hypertension. Conversely, in the control group, 5% of clients had normal diastolic blood pressure, 45% had mild hypertension, 30% had moderate hypertension, and 20% had severe hypertension.

Furthermore, the table details the post-test stress levels in both groups. In the experimental group, 15% of clients reported no stress, 70% experienced mild stress, and 15% faced moderate stress. In comparison, the control group comprised 30% of clients with mild stress, 60% with moderate stress, and 10% with severe stress.

Conclusion

The researcher in this investigation evaluated the efficacy of Jacobson's progressive muscle relaxation technique in alleviating blood pressure and stress levels in hypertensive patients. Participants were chosen using a convenience sampling method, resulting in a total sample size of 40, with 20 individuals in both the experimental and control groups.

A comprehensive literature review, along with professional expertise and insights from community health nursing specialists, informed the development of the study's methodology. The conceptual framework was constructed based on a modified version of Betty Neuman's health care

system model.

The instruments employed in this research included demographic data collection for general information, a sphygmomanometer for blood pressure measurement, and a modified version of Sheldon Cohen's perceived stress scale to evaluate stress levels.

Following the acquisition of content validity from experts, a pilot study was conducted to test the reliability of the instruments. The results of the pilot study confirmed the practicality and feasibility of the methodology, prompting the investigator to advance to the main study. Descriptive statistics were utilized to analyze the frequency, mean, and standard deviation of blood pressure and stress levels, while inferential statistics were employed to explore relationships, associations, and comparisons. The inferential statistical methods included the 'Z' test, paired 't' test, and chi-square test.

The experimental group received Jacobson's progressive muscle relaxation technique over a one-month period, while the control group did not undergo this intervention. The results indicated a significant reduction in both blood pressure and stress levels among participants in the experimental group. The overall experience of conducting this research was rewarding, characterized by strong cooperation from participants, who expressed satisfaction and contentment with the intervention. This study represented a novel experience for the investigator.

Conflict of Interest

Not available

Financial Support

Not available

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