

Research Paper

## Perceived Stress among Diabetic and Hypertensive Individuals: An Exploration in Respect of Gender

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### ABSTRACT

Perceived stress in patients with diabetes and hypertension is an essential part to measure, because high level of stress could aggravate the symptoms of prevailing problems, making it more difficult to manage and maintain control over their health. The aim of the current study was to compare the level of perceived stress among hypertensives, diabetics and healthy individuals, and in respect of their gender. Perceived stress scale developed by Jaiswal (2021) was administered on 150 participants randomly selected from Kumaon region of Uttarakhand. The sample comprised of 50 individuals (25 male and 25 female) in each of three different groups that are hypertensives, diabetics, and a healthy group. For statistical analysis of data Two-way Anova was used. The findings revealed that there were significant differences were found among three groups of hypertensives, diabetics, and a healthy group. Hypertensives reported significantly higher level of uncontrollable perceived stress. Furthermore, patients suffering from hypertension experienced significantly high level of overall perceived stress in comparison to diabetics, and healthy individuals. Additionally, no significant differences were revealed on all dimensions of perceived stress in reference to gender.

**Keywords:** *Uncontrollable Perceived Stress, Hypertensives and Diabetics*

Today, some of the most serious health challenges don't come from viruses or bacteria, but from within our own bodies. Non-communicable diseases (NCDs) are chronic conditions that are not transmitted from person to person. They typically progress slowly and last for long periods, often leading to serious health complications and premature death (WHO, 2024). NCDs were responsible for approximately 43 million deaths in 2021, accounting for 75% of all non-pandemic-related mortalities worldwide. Notably, around 18 million individuals died from NCDs before reaching the age of 70, with 82% of these premature deaths occurring in low and middle-income countries. Overall, 73% of all NCD-related deaths are in low and middle-income countries (WHO, 2024). The most common NCDs include cardiovascular diseases like hypertension, diabetes, chronic respiratory diseases, and cancers (Sharma et al., 2024).

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Hypertension and diabetes mellitus are highly prevalent chronic diseases worldwide, contributing significantly to the global burden of morbidity and mortality, particularly in both low- and high-income countries (Negussie & Abebe, 2025). According to the International Diabetes Federation (IDF), about 537 million people globally were living with diabetes in 2021, and the associated healthcare costs amounted to \$966 billion (Hossain & Islam, 2024). Hypertension, another leading non-communicable disease, defined as persistently elevated blood pressure, affects nearly 1.39 billion individuals globally and is responsible for more than 10.8 million deaths each year (Luo et al., 2024). Patients with these chronic conditions, often experience significant stress due to the long-term need for medication adherence and the lifestyle changes required, including dietary modifications and regular physical activity ((Pellmar et al., 2002; Tol et al., 2014).

Stress is an inherent part of the human experience, often arising from the demands and challenges of daily life. Lazarus & Folkman (1984), defined perceived stress as “a particular relationship between the person and the environment that is appraised by the person as exceeding his or her resources and endangering his or her well-being.” It’s not necessarily about the actual stressors themselves but how a person perceives their ability to cope with or manage those stressors. High levels of perceived stress have been associated with a range of negative outcomes, including increased risk for depression, and impaired immune function (Dar et al., 2019). Emerging evidence indicates that chronic exposure to psychological stress plays a central role in the pathophysiology of hypertension and cardiovascular diseases (Everson-Rose, & Lewis, 2005). Similarly, stress has been identified as the etiological link as well as an outcome of diabetes mellitus (Falco et al., 2015).

Interestingly, the way individuals perceive and respond to stress can vary significantly based on factors like gender. Understanding how gender influences the perception of stress in individuals with hypertension, diabetes, and in healthy populations is crucial for designing more effective interventions and healthcare strategies. This study seeks to explore the perceived stress among hypertensive, diabetic, and healthy individuals, with a focus on how gender differences impact stress perception and coping strategies. By examining these dynamics, the research aims to provide insights that can inform personalized approaches to stress management and improve the overall quality of care for these diverse groups. The aims of the current study were: to assess the different dimensions of perceived stress level among hypertensives, diabetics and healthy individuals, to compare all dimension of perceived stress level among hypertensives, diabetics and healthy individuals, and in respect of their gender and lastly, to find out significant interaction between status of disease and gender for different dimensions of perceived stress.

### *Hypotheses*

1. There would be significant difference between hypertensives, diabetics and healthy individuals on all the dimension of perceived stress level.
2. There would be significant difference between male and female on all the dimension of perceived stress level.
3. Status of disease and gender would interact significantly for all the dimension of perceived stress level.

### *Sample*

In the current 3x2 factorial research design with a total sample of 150 adults age range from 40-70 years was randomly selected. Data was collected through simple random sampling

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method from three districts namely Pithoragarh, Almora and Nainital out of six districts from Kumaon region of Uttarakhand. The sample comprised of 50 individuals (25 male and 25 female) in each of three different groups that are hypertensives, diabetics, and a healthy group. Only individuals who did not report taking medication for physiological or psychological problem, other than hypertension and diabetes were included in the groups. The hypertensives and diabetics participants were diagnosed for their physiological condition by the medical practitioners and were under medication for the same for at least past five year. Additionally, all participants had completed at least secondary education.

### *Instruments*

1. **Personal Data Schedule (PDS):** It was developed by the researcher to take the sociodemographic details, preliminary information regarding the hypertension & diabetes status, and consent of the subject.
2. **Perceived Stress Scale (PSS):** It was developed by Jaiswal et al. (2021). This self-reporting scale consists of 10 items measuring the perceived stress in adults aged ranging from 19 and above. It consists of 2 subscales: controllable perceived stress and uncontrollable perceived stress. The split half reliability of controllable perceived stress is 0.785 and 0.783 is for uncontrollable perceived stress and has a good construct validity.

### *Statistical Analysis*

To analyse the differences among Diabetics, hypertensive and healthy group, mean, SD and two-way Anova were used.

**Result:** The results of the present study are outlined below:

**Table 1 Perceived Stress Level in Hypertensive, Diabetics and Healthy Group**

Dimension of Perceived Stress	Hypertensive (N=50)	Diabetics (N=50)	Healthy Group (N=50)
	Mean (SD)	Mean (SD)	Mean (SD)
Controllable Perceived Stress	8.42 (1.60)	6.30 (1.65)	6.76 (2.74)
Uncontrollable Perceived Stress	12.32 (3.06)	8.58 (2.57)	6.76 (2.74)
Overall Perceived Stress	20.74 (2.64)	14.90 (3.01)	14.52 (3.92)

**Table 2 Perceived Stress Level in Hypertensives, Diabetics and Healthy individuals in reference to gender**

Dimension of Perceived Stress	Hypertensives Mean (SD)		Diabetics Mean (SD)		Healthy Group Mean (SD)	
	Male	Female	Male	Female	Male	Female
Controllable Perceived Stress	8.56 (1.32)	8.28 (1.86)	6.07 (1.65)	6.59 (1.65)	7.36 (3.28)	6.16 (1.95)
Uncontrollable Perceived Stress	12.64 (2.59)	12 (3.48)	8.46 (2.50)	8.72 (2.71)	7.72 (4.10)	7.64 (2.97)
Overall Perceived Stress	21.20 (2.38)	20.28 (2.85)	14.53 (2.82)	15.36 (3.25)	15.04 (4.05)	14 (3.79)

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**Table 3 Anova for controllable perceived stress**

Source of variance	Sum of Squares	df	Mean Square	F	Sig at .05 level
Status of Disease (A)	121.20	2	60.60	14.36	<b>Sig.</b>
Gender (B)	3.82	1	3.82	.90	NS
A*B	18.38	2	9.19	2.17	NS
Error	607.49	144	4.21		

After the observation of table 3, shows that there was a significant difference found between diabetics, hypertensives and heathy individuals on the level of controllable perceived stress. More notably, table 1 revealed that mean score of controllable perceived stress was high for hypertensives (8.42) as compared to diabetics (6.30) and heathy groups (6.76). Thus, related hypothesis was accepted.

Furthermore, table 3 also shows that no significant difference found based on gender as well as in interaction for status of disease and gender on the level of controllable perceived stress. Therefore, related hypotheses were rejected.

**Table 4 Anova for uncontrollable perceived stress**

Source of variance	Sum of Squares	df	Mean Square	F	Sig at .05 level
Status of Disease (A)	603.33	2	301.66	31.16	<b>Sig.</b>
Gender (B)	.86	1	.86	.08	<b>NS</b>
A*B	5.16	2	2.58	.26	NS
Error	1393.88	144	9.68		

It is demonstrated from Table 4 that diabetics, hypertensives and heathy individuals differ significantly on the level of uncontrollable perceived stress. Table 1 shows that hypertensives (12.32) experienced significantly high level of uncontrollable perceived stress as compared to other groups. Whereas, diabetics (8.58) also experienced more stress for uncontrollable strain in comparison to healthy individuals (6.76).

In addition, male and female did not differ significantly on uncontrollable perceived stress levels, leading to the rejection of the related hypothesis. Additionally, it donates form table 4 that there was no interaction observed for disease status and gender, resulting in the rejection of the corresponding hypothesis.

**Table 5 Anova for overall perceived stress**

Source of variance	Sum of Squares	df	Mean Square	F	Sig at .05 level
Status of Disease (A)	1204.37	2	602.18	57.42	<b>Sig.</b>
Gender (B)	5.31	1	5.31	.50	NS
A*B	27.06	2	13.53	1.29	NS
Error	1510.05	144	10.48		

It denotes from the table 5, that there was significant difference found between diabetics, hypertensives and heathy individuals on the overall perceived stress level. So, here related hypothesis was accepted. However, no significant difference was found based on gender,

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suggesting that gender does not have a significant impact on overall perceived stress. This leads to the rejection of the related hypothesis. Additionally, the interaction for status of disease and gender was also not significant on overall level of perceived stress. As a result, related hypothesis was rejected.

### DISCUSSION

It has been reported that individuals with chronic diseases such as hypertension and diabetes are more likely to experience mental disorders, especially stress and depression, compared to healthy individuals (Güneysu & Ayraler, 2023). The findings revealed a significant difference in controllable perceived stress level between hypertensives, diabetics and healthy groups. The possible explanation could likely be attributed to the distinct psychological and physiological challenges posed by each condition. Hypertensives, is often associated with chronic stressors, such as medication adherence, lifestyle changes, and the fear of long-term health complications (Burnier & Egan, 2019). This may result in heightened awareness and coping strategies that contribute to higher perceived stress levels (Spruill, 2010). On the other hand, individuals with diabetes may also face considerable stress due to the lifestyles that involve chronic stress and sedentary behaviour habits contribute to increased weight gain and abnormalities in glucose and lipid metabolism, disrupting the body's normal metabolic functions (Kyrou & Tsigos, 2009). However, the stress levels for diabetics were lower compared to hypertensives, which may indicate that the stressors in diabetes management are perceived differently or less intensively by the participants.

Additionally, no significant differences were observed between male and female on the level of controllable perceived stress. The possible reasons could be that both male and female may experience similar sources of stress, such as work, relationships, and daily responsibilities, and adopt similar coping strategies. Similar to the present findings a direct study by Siddharthan et al. (2021) did not show any difference across gender. Guslov et al. (2024) also found no gender difference among hypertensives, which directly supports the current findings.

The interaction between status of disease and gender was found to be non-significant for the level of controllable perceived stress. Status of disease and gender were affecting controllable stress equally, but not affecting it differently.

The further study findings revealed that diabetics, hypertensives and healthy individuals differ significantly in the experience of uncontrollable perceived stress level. The possible reason could be that people with diabetes or hypertension may face additional stressors related to lifestyle changes, such as dietary restrictions, exercise routines, or regular medical check-ups (Wagner & Austin, 2001). These demands can feel overwhelming and beyond their control, contributing to higher levels of perceived uncontrollable stress. Healthy individuals may not face such constraints, resulting in comparatively lower stress levels. Additionally, individuals with chronic conditions might develop coping mechanisms that are reactive rather than proactive, often due to the ongoing nature of their health concerns. This can sometimes lead to an increased sense of helplessness or lack of control, which fuels the perception of uncontrollable stress.

Furthermore, no differences seen in male and female in the experience of uncontrollable perceived stress. This might be due to the reason that both genders may face similar stressors in today's fast-paced world, such as work-related pressures, financial challenges, family

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responsibilities, and societal expectations. These stressors are not gender-specific and can affect both men and women in comparable ways, leading to similar levels of stress perception. Contrary to the present findings, an indirect study by Graves et al. (2021) revealed a significant difference between males and females, with more females reporting moderate levels of stress compared to their male counterparts.

The interaction between status of disease and gender was found to be non-significant for the level of uncontrollable perceived stress. Status of disease and gender were affecting uncontrollable stress equally, but not affecting it differently.

Additionally, a significant difference was found on overall perceived stress levels among diabetics, hypertensives, and healthy individuals with the overall perceived stress scores being 20.74 for hypertensives, 14.90 for diabetics, and 14.52 for healthy individuals. However, it is important to note that while the stress levels may appear comparable for diabetics and healthy individuals but, the nature of the stress experienced by each group may differ, with diabetics dealing with stress related to health management and healthy individuals facing stressors from other aspects of life. While individuals with diabetes face the ongoing challenge of managing a chronic condition, they may have developed effective coping strategies that help reduce stress levels, such as routine management of their health and seeking support. This adaptation may lead to a sense of control over their condition, ultimately lowering stress levels. On the other hand, healthy individuals, though not burdened by a chronic health condition, may experience stress from various external factors such as work, family, and social pressures. Since both groups encounter common stressors, it is possible that their overall perceived stress levels are relatively similar, despite the different nature of the stress they experience. Eren's (2003) findings revealed that individuals with diabetes experience higher levels of stress and anxiety than healthy individuals, which directly contradicts the study's findings.

However, no significant difference was observed between male and female on overall level of perceived stress. The possible reason could be the evolving nature of societal expectations. Traditionally, gender roles placed different types of stress on men and women, with women often being tasked with caregiving roles and men facing pressures related to work and financial stability. However, in recent years, these traditional roles have shifted, and both genders are now equally balancing work, family, and personal life responsibilities. This shift in roles may result in similar stress levels as both men and women are now managing comparable life demands. A study done by Deatherage et al., 2014 investigated that being a female has been positively associated with perceived stress, which contradicting to the current findings.

The interaction between status of disease and gender was found to be non-significant for the level of overall perceived stress. Status of disease and gender were affecting overall stress equally, but not affecting it differently.

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### **Conflict of Interest**

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