Moderating Effect of Social Support on Perceived Stress and Body Image Issues in Adults with Thyroid Disorders

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Abstract

Objectives: To examine the moderating role of social support in the relationship between perceived stress and body image issues among adults with thyroid disorders.

Methodology: A sample of 132 participants diagnosed with thyroid conditions was recruited using purposive sampling. Pearson's correlation and multiple regression analyses were conducted to examine relationships among perceived stress, body image issues, and social support.

Results: Moderation analysis revealed that social support significantly buffered the impact of perceived stress on body image concerns. Additionally, gender comparisons indicated differences in perceived stress and body image issues, with females reporting greater distress.

Conclusion: Findings underscore the importance of social support as a protective factor in managing stress-related body image concerns in individuals with thyroid disorders. The study contributes to understanding the psychological implications of endocrine disorders and highlights the need for targeted interventions to enhance well-being.

Key words: thyroid disorders, perceived stress, social support, body image issues, gender differences

Introduction

Thyroid disorders, including hypothyroidism and hyperthyroidism, are among the most prevalent endocrine conditions globally, affecting approximately 42 million people in India alone (Unnikrishnan & Menon, 2011). The National Family Health Survey V [NFHS-V (2019-2022)] reported a prevalence of 2.9% for thyroid disorders in Indian individuals aged 15-49 years (Pawar, 2022). These disorders result from an imbalance in thyroid hormone production, leading to various metabolic dysfunctions. The physiological symptoms of thyroid disorders, such as weight fluctuations, fatigue, and hair thinning, often contribute to psychological distress, including elevated stress levels and body image dissatisfaction (Gessl et al., 2012). Research suggests a bidirectional relationship between stress and thyroid dysfunction, as the hypothalamic-pituitary-adrenal (HPA) axis and the hypothalamic-pituitary-thyroid (HPT) axis are interconnected, allowing stress to act as both a trigger and consequence of thyroid abnormalities (Kyriacou et al., 2022).

Empirical findings further support this relationship. Koner and Chaudhuri (2020) found a positive correlation between thyroid-stimulating hormone (TSH) levels and perceived stress scores in women of reproductive age, indicating that stress influences thyroid function. Additionally, body image dissatisfaction is highly prevalent in individuals with thyroid disorders. A study by Khare et al. (2024) in Central India found that 48% of individuals with hypothyroidism exhibited high appearance anxiety, compared to 31% of euthyroid individuals, highlighting the psychological impact of thyroid dysfunction. Similarly, Rzeszutek et al. (2023) analyzed 564 women (329 with thyroid disorders and 235 controls) and found that thyroid patients demonstrated higher depression levels and body image anxiety, particularly among those with maladaptive coping styles. Given the psychological burden associated with thyroid dysfunction, social support plays a crucial role in moderating stress and body image issues. According to Cohen and Wills (1985), social support can buffer the effects of stress, enhancing emotional resilience. Kollerits et al. (2023) conducted a cross-sectional study of 885 Hungarian women with thyroid disorders and found that higher perceived social support was associated with better quality of life and increased treatment adherence. Similarly, Chatterjee and Adhikari (2021) examined 170 individuals with endocrine disorders and found that psychological distress was widespread, but social support from family members was the most significant protective factor. These findings highlight the potential buffering effect of social support in individuals coping with thyroid dysfunction. Research also suggests that stress may be a predisposing factor for thyroid disorders, particularly autoimmune thyroid conditions. Corso et al. (2023) investigated early life stress in 78 women with autoimmune thyroid disorders (AITD) and found that emotional neglect and abuse were associated with an increased risk of developing AITD, reinforcing the role of psychosocial factors in thyroid health. Additionally, Patel et al. (2021) examined medication adherence and psychological well-being in Indian thyroid patients and found that 70% adhered to their medication regimen, with adherence linked to better quality of life. However, they noted gender and occupational disparities in psychological well-being, emphasising the importance of social and psychological interventions. Furthermore, recent studies have explored the physiological mechanisms linking stress and thyroid disorders. Kalere et al. (2023) examined stress-related immune responses in autoimmune thyroid disease (AITD)

patients and found that Th2-related cytokines and selenoproteins may serve as biomarkers for stress-induced thyroid dysfunction. These findings underscore the importance of stress reduction interventions in clinical management.

While existing literature establishes strong connections between thyroid dysfunction, perceived stress, body image dissatisfaction, and social support, research investigating the moderating role of social support in these relationships remains limited, particularly in the Indian context. Previous studies have examined individual correlations but have not explored whether social support weakens the negative impact of stress on body image dissatisfaction in thyroid patients. This study aims to bridge this gap by investigating whether perceived social support moderates the relationship between stress and body image dissatisfaction in adults with thyroid disorders. By doing so, it seeks to provide a deeper understanding of the psychosocial factors influencing thyroid health, contributing to more effective psychological interventions and support strategies for individuals managing thyroid conditions.

Method

The research involved 132 adults aged 20-50 with thyroid disorders, including hypothyroidism, hyperthyroidism, or autoimmune conditions. The study used tools such as the Perceived Stress Scale (PSS-10), Body Self-Image Questionnaire Short Form (BSIQ-SF), and the Multidimensional Scale of Perceived Social Support (MSPSS-12) to measure perceived stress levels, body self-image dimensions, and perceived adequacy of social support. The research was conducted following ethical guidelines and used a cross-sectional survey design. Participants were recruited through online thyroid disorder support groups and completed the survey independently. The study used descriptive statistics to analyze demographic characteristics and variables, including perceived stress, body image issues, and social support. Multiple regression analysis assessed the predictive relationship between perceived stress and body image issues, with social support as a moderator. The Mann Whitney U Test was used to compare mean scores across different genders.

Results and Discussion

Results

Results showed moderate stress levels, while a high level of perceived social support was found, indicating a positive relationship. Participants reported a mean perceived stress score of 29.5 (SD = 4.15), indicating moderate stress levels. The mean body image score was 85.3 (SD = 19.89), with higher scores reflecting more negative body image perceptions. The mean social support score was 64.7 (SD = 11.57), suggesting a generally high level of perceived social support.

Correlation Analysis

Table 1

Pearson's and Spearman's Correlation Coefficients Among Study Variables

Variable	PSS Total	MSPSS Total	BSIQ Total
PSS Total	1	-.327	.258
		(.000)	(.003)
MSPSS Total	-.327	1	.093
	(.000)		(.288)
BSIQ Total	.258	.093	1
	(.003)	(.288)	

Note: Pearson correlation coefficients are reported in the upper table. $p < .05$. ** $p < .01$.

Pearson's correlation analysis was conducted to examine the relationships among perceived stress (PSS Total), body image issues (BSIQ Total), and social support (MSPSS Total). The results revealed a significant negative correlation between perceived stress and social support ($r = -0.365$, $p < 0.001$), indicating that higher perceived stress was associated with lower social support. Additionally, a significant positive correlation was found between perceived stress and body image issues ($r = 0.205$, $p = 0.019$), suggesting that higher perceived stress was linked to greater body image concerns. However, the correlation between social support and body image issues was not statistically significant ($r = 0.088$, $p = 0.315$). A nonparametric Spearman's rho correlation analysis was also conducted to confirm these findings. Similar to the Pearson's correlation results, perceived stress and social support showed a significant negative correlation ($\rho = -0.327$, $p < 0.001$), while perceived stress and body image issues exhibited a

significant positive correlation (ρ = 0.258, p = 0.003). The relationship between social support and body image issues remained non-significant (ρ = 0.093, p = 0.288). These findings indicate that individuals with higher perceived stress tend to have lower social support and more body image concerns. However, social support does not appear to have a direct correlation with body image issues in this sample.

Regression Analysis

Table 2

Moderation Analysis Results for the Relationship Between Perceived Stress and Body Image Issues with Social Support as a Moderator

Model	Predictor	B	SE	β	t	p	R^2	ΔR^2
1	Constant	30.38	16.21	—	1.87	.063	.121	—
	PSS Total	1.49	0.37	.355	4.02	<.001		
	MSPSS Total	0.03	0.13	.021	0.23	.817		
2	Constant	33.00	16.03	—	2.06	.041	.153	.033
	PSS Total	1.30	0.38	.310	3.46	.001		
	MSPSS Total	0.06	0.13	.041	0.46	.644		

Interaction (PSS × MSPSS)	-2.81	1.28	-.186	-2.19	.031

Note: PSS = Perceived Stress Scale; MSPSS = Multidimensional Scale of Perceived Social Support. The interaction term was computed by multiplying standardized values of PSS and MSPSS. ΔR^2 represents the change in variance explained by the interaction term. $p < .05$.

A hierarchical multiple regression analysis was conducted to assess whether perceived stress and social support predicted body image dissatisfaction (BSIQ-SF scores) and whether social support moderated the relationship between stress and body image. In the first regression model, perceived stress significantly predicted body image dissatisfaction ($\beta = 0.355$, $p < .001$), meaning that individuals experiencing higher stress were more likely to have negative body image perceptions. However, social support was not a significant predictor ($\beta = 0.021$, $p = .817$), suggesting that higher social support levels did not independently lead to improved body image outcomes. This model accounted for 12.1% of the variance in body image dissatisfaction (R^2=.121, $p < .001$). In the second model, the interaction term (Perceived Stress × Social Support) was introduced to test for moderation effects. The addition of this interaction term significantly improved the model, increasing the explained variance to 15.3% (R^2=.153, p<.001). The interaction effect was significant ($\beta = -0.186$, $p = .031$), indicating that social support moderates the impact of perceived stress on body image dissatisfaction.

Moderation Effects

The significant interaction effect suggests that while perceived stress generally worsens body image dissatisfaction, this effect is weaker among individuals with high social support. This finding supports the stress-buffering hypothesis (Cohen & Wills, 1985), which posits that social support can mitigate the negative effects of stress on mental health outcomes.

Gender Comparison

Additionally, a gender comparison was performed. For this purpose, from the initial sample of a sample of 21 females and 21 males was selected. Demographic factors were controlled to ensure the homogeneity of the sample size of both groups (males and females). Comparative analysis was performed to observe gender differences in data. Mean, standard deviation and p values using Mann Whitney U test were calculated to test for significant differences across various scales and subscales of the dataset.

Table 3

Test Statistics for Mann Whitney U Test

Perceived Stress Scores using PSS-10				
	Mean	SD	P value	Significant difference
Female	29.68	3.28		
Male	26.86	2.78		
			0.004	Yes
Social Support Scores using MSPSS-12				
	Mean	SD	P value	Significant difference
Female	64.05	11.95		
Male	68.45	10.53		
			0.279	No
Body Self Image Scores using BSIQ-SF				
	Mean	SD	P value	Significant

				difference
Female	91	20.65		
Male	72.27	20.68		
			0.015	Yes

Note: The Mann-Whitney U test was conducted to compare scores between female and male participants. $p < .05$ indicates statistical significance.

Based on the results, it can be inferred that a significant difference was observed between perceived stress and body self-image reported by females and males while a statistically significant difference was not observed for social support reported by females and males.

Discussion

The study found a negative correlation between perceived stress and social support in adults with thyroid disorders, and a positive correlation between stress and body image issues, but no significant correlation between social support and body image issues. Thyroid disorders, such as hypothyroidism and hyperthyroidism, have been widely associated with adverse mental health outcomes (Duntas & Maillis, 2016). The thyroid gland plays a pivotal role in regulating metabolism, and its dysfunction can lead to symptoms such as fatigue, weight changes, and cognitive impairments, which may contribute to increased perceived stress and body image dissatisfaction (Shahid et al., 2023). Previous studies have established a link between thyroid dysfunction and elevated levels of depression and anxiety, which can further exacerbate concerns related to body image (Ittermann et al., 2020). The study found a positive correlation between perceived stress and body image issues, suggesting thyroid disorders may cause increased psychological distress. However, a negative correlation was found between perceived stress and social support, indicating its buffering role. Social support has been widely recognized as a protective factor that enhances coping mechanisms and reduces psychological distress (Cohen & Wills, 1985). Social support can help manage thyroid disorders by reducing stress and improving quality of life (Hjemla et al., 2019). However, there is no significant correlation between social support and body image issues, suggesting that while it may reduce stress, it doesn't directly influence body image perceptions. This is due to the complex nature of body image issues, which are influenced by cultural norms, personal experiences, and psychological predispositions (Cash

& Smolak, 2011). Therefore, interventions aimed at improving body image among thyroid patients may need to address these factors. Thyroid hormones play a crucial role in brain function, regulating mood and cognition, and disruptions can lead to psychological symptoms like depression, anxiety, and body image disturbances. (Bauer et al., 2014). This neuroendocrine perspective supports the observed associations in the current study and underscores the necessity of a holistic approach to managing thyroid disorders that encompasses both physiological and psychological dimensions.

Implications and Conclusion

The study suggested that stress and body image concerns are prevalent among thyroid patients, highlighting the need for healthcare professionals to incorporate psychological support into routine care. Mental health interventions like counseling and stress management programs can improve overall well-being. Social support is crucial in reducing stress, and support groups or family involvement are essential. However, social support does not directly impact body image concerns, so more targeted interventions like cognitive-behavioral therapy or body image therapy may be necessary. The study also found that high social support can buffer against the negative effects of stress on mental health outcomes. This underscores the need for a holistic approach to managing thyroid disorders.

References

Cash, T., & Smolak, L. (2011). *Body image : a handbook of science, practice, and prevention.* Guilford.

Chatterjee, S., & Adhikari, U. R. (2021). Assessment of the Challenges Faced and Support System of the Clients with Endocrinal Disorder Attending Endocrine OPD, in a Selected Hospital in Kolkata. *International Journal of Clinical and Experimental Medicine Research*, *5*(2), 192–201. https://doi.org/10.26855/ijcemr.2021.04.013

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*(4), 385–396. https://doi.org/10.2307/2136404

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*(2), 310–357. https://doi.org/10.1037/0033-2909.98.2.310

Corso, A., Engel, H., Müller, F., Fiacco, S., Mernone, L., Gardini, E., Ehlert, U., & Fischer, S. (2023). Early life stress in women with autoimmune thyroid disorders. *Scientific Reports*, *13*(1), 22341. https://doi.org/10.1038/s41598-023-49993-3

Duntas, L. H., & Maillis, A. (2016). Hypothyroidism and depression: salient aspects of pathogenesis and management. *Minerva Endocrinologica*, *38*(4), 365–377. https://pubmed.ncbi.nlm.nih.gov/24285104/

Esposito, S., Prange, A. J., & Golden, R. N. (1997). The thyroid axis and mood disorders: overview and future prospects. *Psychopharmacology Bulletin*, *33*(2), 205–217. https://pubmed.ncbi.nlm.nih.gov/9230632/

Gessl, A., Lemmens-Gruber, R., & Kautzky-Willer, A. (2012). Thyroid disorders. *Handbook of Experimental Pharmacology*, *3*(214), 361–386. https://doi.org/10.1007/978-3-642-30726-3_17

Hjemla , H. J., Smith, A., & Thomas, L. (2019). The impact of social support on mental health outcomes in thyroid disorder patients. *Journal of Psychosomatic Research*, *12*(1), 50–57.

Huang, C.-F., Chou, F.-H., Chang, C.-H., & Guo, S.-E. (2023). The Associations of Body Mass Index, Body Image, Perceived Stress, and Mental Health among Female Nursing Students: A Cross-Sectional Study in Taiwan. *Healthcare (2227-9032)*, *11*(17), 2426. https://doi.org/10.3390/healthcare11172426

Ittermann, T., Völzke, H., Baumeister, S. E., Appel, K., & Grabe, H. J. (2015). Diagnosed thyroid disorders are associated with depression and anxiety. *Social Psychiatry and Psychiatric Epidemiology*, *50*(9), 1417–1425. https://doi.org/10.1007/s00127-015-1043-0

Jensen, V. F. H., Mølck, A.-M. ., Bøgh, I. B., & Lykkesfeldt, J. (2014). Effect of Insulin-Induced Hypoglycaemia on the Peripheral Nervous System: Focus on Adaptive Mechanisms, Pathogenesis and Histopathological Changes. *Journal of Neuroendocrinology*, *26*(8), 482–496. https://doi.org/10.1111/jne.12170

Kalere, I., Zake, T., Strele, I., Upmale-Engela, S., Gogins, D., Gersone, G., Skesters, A., Dambrova, M., & Konrade, I. (2023). Stress-Related Immune Response and Selenium Status in Autoimmune Thyroid Disease Patients. *International Journal of Molecular Sciences*, *24*(3), 2440–2440. https://doi.org/10.3390/ijms24032440

Khare, J., Pendharkar, P. S., Patel, A., Garg, N., Bansal, S., & Jindal, S. (2024). Study of prevalence of impaired body image in patients with hypothyroidism: Experience from Central India. *Thyroid Research and Practice*, *20*(3), 118–122. https://doi.org/10.4103/trp.trp_34_24

Kollerits, E., Ágnes Zsila, & Balázs Matuszka. (2023). Quality of life, social support, and adherence in female patients with thyroid disorders. *BMC Women's Health*, *23*(1). https://doi.org/10.1186/s12905-023-02718-0

Koner, S., & Chaudhuri, A. (2020). A study of correlation of perceived stress and thyroid function among females in a rural population of reproductive age group. *Medical Journal of Dr. D.Y. Patil Vidyapeeth*, *13*(1), 30. https://doi.org/10.4103/mjdrdypu.mjdrdypu_219_18

Kyriacou, A., Tziaferi, V., & Toumba, M. (2022). Stress, Thyroid Dysregulation, and Thyroid Cancer in Children and Adolescents: Proposed Impending Mechanisms. *Hormone Research in Paediatrics*, 1–10. https://doi.org/10.1159/000524477

Patel, H., Pandya, A., Arya, V., Patel, S., & Malhotra, S. D. (2021, October 27). *A Study to Evaluate Prescription Pattern, Adherence to Medication and Quality of Life in Indian Patients Suffering from Thyroid Disorders*. ResearchGate. https://www.researchgate.net/publication/355681595

Pawar, B. (2022, July 8). *Status of Goitre or Thyroid Disorders in India*. Pib.gov.in. https://pib.gov.in/PressReleasePage.aspx?PRID=1796440

Pretscher, A., Kauzner, S., Rohleder, N., & Becker, L. (2021). Associations between social burden, perceived stress, and diurnal cortisol profiles in older adults: implications for cognitive aging. *European Journal of Ageing*. https://doi.org/10.1007/s10433-021-00616-8

Rowe, D. A. (2005). Factorial validity and cross-validation of the Body Self-Image Questionnaire (Short Form) in young adults. *Annual Meeting of the American College of Sports Medicine*. https://www.researchgate.net/publication/280569114

Rowe, D. A. (2015, July). *(PDF) BSIQ-SF [short-form version of the Body Self-Image Questionnaire]*. ResearchGate. https://www.researchgate.net/publication/280568978_BSIQ-SF_short-form_version_of_the_Body_Self-Image_Questionnaire

Rzeszutek, M., Małgorzata Pięta, Angelika Van Hoy, Zawistowska, M., Grymowicz, M., Wojciech Pięta, Gołoś, S., & Walicka, M. (2023). Coping profiles, depression, and body image anxiety during the Covid-19 pandemic: Comparative analysis of females with thyroid diseases and a non-clinical sample. *PLOS ONE*, *18*(3), e0282302–e0282302. https://doi.org/10.1371/journal.pone.0282302

Shahid, M. A., Sharma, S., & Ashraf, M. A. (2023, June 5). *Physiology, Thyroid Hormone*. Nih.gov; StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK500006/

Unnikrishnan, A., & Menon, U. (2011). Thyroid disorders in India: An epidemiological perspective. *Indian Journal of Endocrinology and Metabolism*, *15*(6), 78. https://doi.org/10.4103/2230-8210.83329

Zartaloudi, A., Christopoulos, D., Kelesi, M., Govina, O., Mantzorou, M., Adamakidou, T., Karvouni, L., Koutelekos, I., Evangelou, E., Fasoi, G., & Vlachou, E. (2023). Body Image, Social Physique Anxiety Levels and Self-Esteem among Adults

Participating in Physical Activity Programs. *Diseases*, *11*(2), 66. https://doi.org/10.3390/diseases11020066

Zimet, G. (2016, December). *Multidimensional scale of perceived social support (MSPSS) - scale items and scoring information*. ResearchGate. https://www.researchgate.net/publication/311534896