

Perceived Stress as a Predictor of Psychosomatic Symptoms Among Adults a Cross-Sectional Study

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Abstract—Stress arising from work, family, finances and social life is common in adulthood. Although it is psychological in origin, it is often accompanied by bodily complaints such as headache, poor sleep, dizziness and palpitations. This study examined whether perceived stress predicts psychosomatic symptoms in adults from the general population of Karnataka, India. A cross-sectional correlational design was used. Adults aged 18–60 years were recruited by convenience sampling through an anonymous online form. Of 100 consenting respondents, 5 were older than 60 years and were excluded, leaving 95 eligible participants. Perceived stress was measured with the 10-item Perceived Stress Scale (PSS-10) and physical symptoms with a seven-item checklist (range 0–14). Analyses used descriptive statistics, Pearson's correlation and multiple linear regression. Mean age was 42.25 years (SD = 10.18). The mean PSS-10 score was 19.67 (SD = 2.69, $n = 88$) and the mean symptom score was 4.14 (SD = 2.71, $n = 94$). Perceived stress correlated positively with symptom scores ($r = .419$, $p < .001$, $n = 87$). In the regression, perceived stress remained a significant predictor after adjustment for demographic variables ($B = 0.406$, $p < .001$). The model was significant, $F(8, 78) = 2.799$, $p = .009$, $R^2 = .223$ (adjusted $R^2 = .143$). Higher perceived stress was therefore associated with a greater physical symptom burden. Because the design is cross-sectional, the results show association, not causation. Routine assessment of physical complaints should consider psychological stress.

Index Terms—perceived stress; psychosomatic symptoms; PSS-10; adults; cross-sectional study; India

I. INTRODUCTION

Adults deal with a continuous flow of demands from employment, caregiving, money and relationships.

Moderate demands can promote adaptation, but prolonged or excessive stress is linked to poorer psychological and physical health. Stress also depends on appraisal: two people facing the same event may react very differently. In the transactional model, stress arises when a person judges that environmental demands exceed their coping resources (Lazarus & Folkman, 1984). Perceived stress captures this judgement, meaning how unpredictable, uncontrollable and overloaded a person finds life. It is commonly measured with the Perceived Stress Scale (Cohen et al., 1983).

Stress affects the body through the autonomic nervous system and the hypothalamic–pituitary–adrenal axis, which alter heart rate, muscle tension, gut function, sleep and pain sensitivity. When these responses are repeatedly triggered, the cumulative physiological cost is described as allostatic load (McEwen, 1998). Stress also acts through behavior, including sleep, diet, activity and substance use (Cohen et al., 2007). The resulting complaints include headache, fatigue, abdominal discomfort, dizziness, disturbed sleep and palpitations. Calling such symptoms psychosomatic does not mean they are imagined. Psychological factors can shape how they arise, are noticed and persist. People often seek care for physical complaints before they recognize any psychological strain. Clinicians who attend only to the physical picture may therefore miss an important contributor. This study asked whether perceived stress predicts psychosomatic symptoms among adults in the general population, after accounting for selected demographic characteristics.

Objectives. (1) To measure perceived stress in adults; (2) to assess the frequency of psychosomatic

symptoms; (3) to examine the relationship between the two; and (4) to test whether perceived stress predicts symptoms after controlling for demographic variables.

Hypotheses. H1: Perceived stress is positively correlated with psychosomatic symptoms. H2: Perceived stress significantly predicts psychosomatic symptoms after controlling for demographic variables. Operational definitions. Perceived stress is the PSS-10 total score. Psychosomatic symptoms are the total score on the seven-item symptom checklist. Predictor is used in the statistical sense and implies no causation.

II. REVIEW OF LITERATURE

Several studies link perceived stress with bodily symptoms. In 604 adult psychosomatic outpatients, Nakao and Takeuchi (2018) found that perceived psychosocial stress was positively associated with the number of somatic symptoms, even after anxiety, depression and other factors were considered. Alexithymia and somatosensory amplification partly explained this link, which suggests that stressed people may attend more closely to bodily sensations. Witzel et al. (2021, 2022) followed 103 older adults in a 100-day daily diary study. People with higher average stress reported more symptoms, and everyone reported more symptoms on days when their stress exceeded their own usual level. Positive self-perceptions of aging weakened this association.

Yu and colleagues (2019) studied Chinese adults with sleep problems. They found that stress was significantly related to somatic and depressive symptoms, and that self-compassion helped explain the stress-symptom link. The cross-sectional design limited causal inference. Petersen et al. (2023), in the DanFunD population study, reported that functional somatic disorders were associated with higher perceived stress and lower self-efficacy.

Mechanistic work supports these findings. Stress can increase muscle tension and alter pain processing, which contributes to headache. It affects gut motility and sensitivity, and it disrupts sleep. Poor sleep in turn lowers coping capacity and raises perceived stress, so the relationship runs in both directions. Transient rises in heart rate and blood pressure may be felt as palpitations, although cardiac symptoms should never be assumed to be stress-related without clinical assessment. Conceptual framework. The study draws on the transactional model. Perceived stress is the

independent variable and psychosomatic symptom burden is the dependent variable.

Age, gender, marital status and education are covariates.

Research gap. Most earlier studies used clinical, older or specialized samples. Evidence from general adult community samples in Karnataka, using the PSS-10 with demographic adjustment, is limited.

III. METHODOLOGY

Design and setting. A quantitative, cross-sectional, correlational design was used. Data were collected once, through an anonymous online form, from adults living in Karnataka.

Participants and sampling. The target population was adults aged 18–60 years. Convenience sampling was used. Inclusion criteria were age 18–60 years and informed consent. Respondents were excluded if they were outside this age range or had not consented.

Instruments.

- Demographic section: age, gender, marital status, occupation and education.
- PSS-10 (Cohen et al., 1983): 10 items rated 0 (never) to 4 (very often). Items 4, 5, 7 and 8 are reverse-scored.

Total scores range from 0 to 40, and higher scores mean greater perceived stress.

- Psychosomatic symptom checklist: seven symptoms (headache, abdominal pain, dizziness, difficulty sleeping, chest tightness/palpitations, raised blood pressure, other). Each is rated 0 (not bothered), 1 (bothered a little) or 2 (bothered a lot).
- Total scores range from 0 to 14, and higher scores mean a greater symptom burden. [Add reliability (Cronbach's α) for your sample.]

Procedure and data cleaning. After ethical approval, participants read the study information, gave consent and completed the three sections. Responses were exported to Excel and screened for consent, age eligibility and completeness of PSS-10 items. No imputation was done.

Analysis. Descriptive statistics (mean, SD, frequency, percentage) addressed objectives 1 and 2. Pearson's

correlation addressed objective 3 and multiple linear regression addressed objective 4. Significance was set at $p < .05$. Ethics. Participation was voluntary, consent was obtained, and responses were anonymous and analyzed in aggregate. Participants could withdraw without penalty. [State the ethics committee name and approval number.]

IV. RESULTS

Table 1. Data screening and eligibility

Stage	n
Consenting respondents	100
Excluded (age > 60)	5
Eligible participants	95
Complete PSS-10/88	
Complete symptom score	94
Complete cases for correlation/regression	87

Table 2. Demographic characteristics (N = 95)

Mean age = 42.25 years (SD = 10.18). [Insert frequency and % for gender, marital status, education and occupation.]

Table 3. Descriptive statistics

Variable	n	Mean	SD	Possible range
Perceived stress (PSS-10)	88	19.67	2.69	0–40
Psychosomatic symptoms	94	4.14	2.71	0–14

Table 4. Frequency of individual symptoms [Insert n and % for each of the seven symptoms, by severity.]

Table 5. Pearson correlation

Variables	n	r	p
Perceived stress × psychosomatic symptoms	87	.419	< .001

There was a moderate positive correlation. Participants with higher perceived stress reported more symptoms, so H1 was supported.

Table 6. Multiple regression summary

Model	R ²	Adj. R ²	F (8, 78)p
Demographics + PSS-10	.223	.143	2.799
	.009		

With the other variables held constant, each one-point increase in PSS-10 score was associated with a 0.406-point increase in symptom score. H2 was supported.

Table 8. Hypothesis testing

Hypothesis	Result	Decision
H1	$r = .419, p < .001$	Supported
H2	$B = 0.406, p < .001$	Supported

Figure 1. Age distribution of respondents. [Insert the chart, with the caption below it.]

V. DISCUSSION

The main finding is a moderate positive association between perceived stress and psychosomatic symptoms ($r = .419$). The association held after demographic adjustment ($B = 0.406$). This agrees with earlier work in clinical, community and daily-diary samples (Nakao & Takeuchi, 2018; Petersen et al., 2023; Witzel et al., 2022). It also fits the transactional view that appraisal of demands and coping capacity shapes health outcomes.

Several routes could explain the pattern: sympathetic activation, muscle tension, disturbed sleep, altered gut function and heightened attention to bodily sensations. The model explained 22.3% of the variance, which leaves most of the variation in symptoms unexplained. Other factors that were not measured, including medical conditions, coping style, social support and lifestyle, are likely to contribute.

The mean PSS-10 score of 19.67 indicates a moderate level of perceived stress in this sample. The narrow spread (SD = 2.69) may limit the ability to detect associations, so it should be checked.

Implications. Clinicians, nurses and counsellors who see adults with recurrent, nonspecific complaints could add brief questions about stress, sleep, workload and support. This should complement physical assessment and not replace it. Community programmed could include stress-management education, workplace wellness, sleep hygiene and accessible psychological support.

Limitations. The cross-sectional design prevents conclusions about temporal order, and reverse causation is plausible, since distressing symptoms can themselves raise stress. Convenience sampling and self-report limit generalizability. Missing data reduced the analyzable sample to 87, and the symptom checklist is a brief, non-standardized measure.

VI. CONCLUSION

Higher perceived stress was significantly associated with, and statistically predicted, greater psychosomatic symptom burden among adults in this sample. Stress should be considered part of a holistic assessment of physical complaints, without assuming that symptoms are purely psychological. Longitudinal studies with larger, probability-based samples are needed to establish temporal order and mechanisms.

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