Original Article

Perceived Stress, Loneliness, and Quality of Life Among Transgenders in South India: A Cross-Sectional Study

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Abstract

Background: Transgender individuals face widespread stigma, discrimination, and social exclusion, contributing to elevated levels of psychological stress, loneliness, and reduced quality of life (QOL). These challenges are particularly pronounced in South India, where culturally contextualized data on the psychosocial well-being of transgender populations remain limited. Understanding the interplay between stress, loneliness, and QOL is essential to inform inclusive, rights-based mental health and public health interventions. Additionally, complex intra-community dynamics and lack of emotional maturity may further compound psychological distress despite the presence of social contacts.

Methods: A cross-sectional study was conducted among 50 self-identified transgender individuals aged 18–45 years residing in the urban field practice area of Katuri Medical College and Hospital, Guntur, Andhra Pradesh. Participants were recruited using purposive sampling with the support of community leaders and NGOs to ensure diverse representation (trans women, trans men, non-binary individuals). Data were collected using validated instruments—the Perceived Stress Scale (PSS-14), UCLA Loneliness Scale (Version 3), and WHOQOL-BREF—translated and culturally adapted into Telugu. Face-to-face interviews were conducted in private settings, with the option for anonymous self-administered responses. Descriptive statistics and Pearson correlation analyses were performed using SPSS version 20.0 to examine relationships between perceived stress, loneliness, and QOL across physical, psychological, social, and environmental domains.

Conclusion: A high prevalence of perceived stress was observed: 76% reported moderate stress and 24% high stress. None had low stress levels. Perceived stress and loneliness were significantly and negatively correlated with overall QOL ($r = -0.643$ and $r = -0.421$; $p < 0.001$). Stress had the strongest negative association with social relationships ($r = -0.748$), while loneliness showed the strongest inverse correlation with mental health ($r = -0.684$). An unexpected positive correlation was noted between loneliness and social relationships ($r = 0.645$), suggesting that quantity of social interactions may not equate to quality or emotional connectedness. These findings highlight

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the urgent need for gender-affirmative mental health services, emotionally supportive community frameworks, and inclusive public health policies tailored to transgender populations in South India.

Keywords: Transgender health; Perceived stress; Loneliness; Quality of life; Urban South India; Mental health disparities

Introduction

Transgender individuals in India, often identified as hijra, aravani, or other regional identities, face profound social, economic, and health disparities that contribute to elevated perceived stress, loneliness, and reduced quality of life (QOL).[1-4] These challenges are rooted in societal stigma and historical marginalization, exemplified by Section 377 of the Indian Penal Code, repealed in 2018, which criminalized non-normative gender and sexual identities, perpetuating discrimination in public and private spheres.[5] This marginalization manifests as family rejection, workplace exclusion, and structural violence, such as police harassment, leading to psychological distress and social isolation, particularly among kothi-identified individuals in South India.[6] The lack of resilience-building frameworks and anti-discrimination policies exacerbates these issues, limiting access to mental health support and community belonging.[7]

Economically, transgender individuals encounter significant barriers. A study in Andhra Pradesh reported a 43.1% illiteracy rate and high unemployment, with many resorting to informal economies like sex work or begging due to exclusion from formal sectors.[8] In contrast, India's overall unemployment rate was 7.2% in the October–December 2022 quarter, highlighting the disproportionate economic marginalization of transgender populations.[9] Perceived stress, a response to such external pressures, adversely impacts mental and physical health, increasing risks of depression and anxiety.[11, 12] Social support systems, crucial for mitigating stress, are often absent, as family rejection forces reliance on chosen families within transgender communities, which may lack emotional or financial stability due to internal hierarchies.[10] Loneliness, driven by social isolation and rejection, further compounds these challenges, with studies showing it predicts negative health outcomes in marginalized gender minorities.[10, 13]

Access to transgender-affirming healthcare is severely limited, with few public facilities offering gender-affirming care like hormone therapy or surgeries, and discrimination by providers discourages care-seeking, exacerbating health disparities.[3,5] These barriers contribute to poorer QOL across physical, psychological, social, and environmental domains, as measured by tools like the WHOQOL-BREF.[15, 16] Emotional maturity and social support can mitigate these effects, but urban South India's rapid modernization and social stratification introduce unique stressors, such as heightened visibility and scrutiny, compared to rural settings.[10, 17] The Perceived Stress Scale and UCLA Loneliness Scale, validated tools with high reliability (Cronbach's $\alpha \approx 0.85$ and 0.90–0.94, respectively), are critical for assessing these psychosocial challenges.[12,14] Despite legal advancements like the Transgender Persons (Protection of Rights) Act, 2019, implementation gaps leave psychosocial health needs unaddressed.[7]

Research on transgender psychosocial well-being in South India is scarce, with most studies focusing on HIV/STI prevalence or legal rights, leaving a critical gap in understanding the interplay of perceived stress, loneliness, and QOL.[5,6] This study addresses this gap by examining these factors among transgender individuals in urban South India, using validated tools to inform culturally sensitive mental health interventions and inclusive public health policies to enhance their well-being.

Objectives

1. To assess the perceived stress, loneliness, quality of life, among transgender individuals residing in south India
2. To estimate the correlation between perceived stress, loneliness, quality of life among transgender individuals residing in South India.

Materials and Methods

Study Design

A cross-sectional study was conducted to assess perceived stress, loneliness, and quality of life (QOL) among transgender individuals.

Study Setting

The study was conducted in the urban field practice area of Katuri Medical College and Hospital, a tertiary care teaching hospital in Guntur, Andhra Pradesh, South India.

Study Population

Self-identified transgender individuals aged 18–45 residing in the study area for at least one year.

Study Period

August 1 to August 28, 2024.

Sampling Technique

Purposive sampling was employed to recruit transgender individuals. Community leaders and local NGOs facilitated participant identification to ensure diverse representation (e.g., trans women, trans men, non-binary).

Sample Size

A sample of 50 participants was selected based on a power analysis conducted to detect a moderate correlation (r = 0.4) between perceived stress and quality of life (QOL), with 80% power and a significance level of 0.05 (two-tailed). The power analysis indicated a minimum sample size of 46participants. A sample size of 50 was chosen to account for potential incomplete responses or data quality issues, ensuring robust analysis.

Inclusion Criteria

- Self-identified transgender individuals aged 18–45.
- Residing in the study area for at least one year.
- Willing to provide informed consent.

Exclusion Criteria

- Individuals with severe psychiatric disorders impairing informed consent, assessed via self-report and community health worker consultation.
- Those undergoing major medical treatments (e.g., chemotherapy, major surgery) significantly affecting study variables.

Study Tools

Data were collected using a structured questionnaire incorporating three validated scales:

- **Perceived Stress Scale (PSS)**[12]: A 14-item scale (5-point rating, 0=never to 4=very often) assessing perceived stress. Scores range from 0–56, with higher scores indicating greater stress. Developed by Cohen et al. in 1983, it has high reliability (Cronbach's $\alpha \approx 0.85$).
- **UCLA Loneliness Scale (Version 3)**[14]: A 20-item scale (4-point rating, 1=never to 4=always) measuring subjective loneliness and social isolation. Scores range from 20–80, with higher scores indicating greater loneliness. Developed by Russell in 1996, it has excellent reliability (Cronbach's $\alpha \approx 0.90$–0.94).
- **WHO Quality of Life-BREF (WHOQOL-BREF)**[16]: A 26-item scale (5-point Likert scale) assessing QOL across four domains: physical health, psychological well-being, social relationships, and environment. Scores are transformed to 0–100, with higher scores indicating better QOL. Developed by WHO in 1995, it has good reliability (Cronbach's $\alpha \approx 0.70$–0.90).

Scales were translated into Telugu, back-translated, and pilot-tested (n=10) to ensure cultural and linguistic validity.

Data Collection

Data were collected via face-to-face interviews and the participants could opt for anonymous paper-based questionnaires also in private settings. Interviews occurred in community centers or private spaces, conducted in Telugu.

Ethical Considerations

Ethical clearance was obtained from the Institutional Ethics Committee of Katuri Medical College and Hospital. Written informed consent was secured in participants' preferred language, ensuring confidentiality through anonymized data and secure storage. Participants could withdraw at any time.

Data Analysis

The collected data were entered into a Microsoft Excel spreadsheet and analyzed

using SPSS software version 20.0. Descriptive statistics summarized demographic data and key variables: perceived stress (PSS), loneliness (UCLA Loneliness Scale), and quality of life (WHOQOL-BREF). Chi-square tests and Pearson correlation coefficients were used to assess the relationships between perceived stress, loneliness, quality of life, and emotional maturity.

Results and Discussion

➢ Age Distribution of Participants (n = 50)

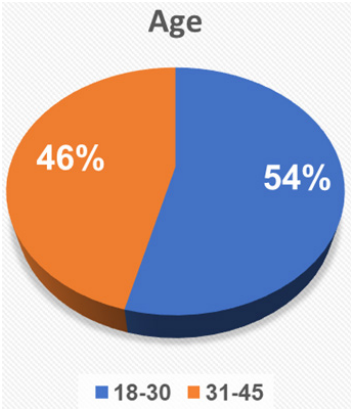

Fig 1: Age distribution of the participants (n=50)

Among the 50 transgender individuals studied, 27 participants (54%) were between 18 and 30 years old, while 23 (46%) were in the 31 to 45 years age group (Fig. 1).

➢ Educational Status of Participants

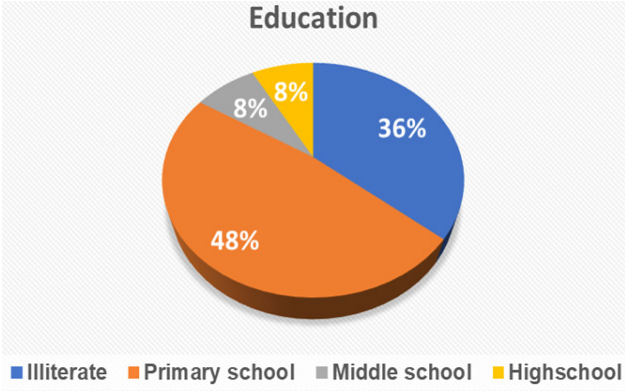

Fig 2: Educational status of the participants (n=50)

Out of 50 participants, 24 (48%) had completed primary school education. A smaller proportion had studied up to high school (4 participants, 8%) and middle school (4 participants, 8%). Notably, 18 individuals (36%) were illiterate (Fig. 2).

➢ Perceived Stress Levels Among Participants

Table 1: Stress levels of the participants:

Stress	Frequency	Percentage
Low Stress	0	0%
Moderate Stress	38	76%
High perceived Stress	12	24%
Total	50	100%

None of the participants reported low levels of stress. The majority, 38 out of 50 (76%), experienced moderate levels of perceived stress, while 12 (24%) reported high stress levels (Table 1).

➢ Association of Perceived Stress and Loneliness with Quality-of-Life Domains

Table 2: The correlation analysis between perceived stress, loneliness, and various domains of quality of life (QOL) among the transgender individuals

	Physical Health	Mental Health	Social Relationship	Environment
Stress	r= -0.452 p<0.001	r= -0.652 p<0.0001	r= -0.748 p<0.0001	r= -0.356 p<0.01
Loneliness	r= -0.546 p<0.001	r= -0.684 p<0.001	r= 0.645 p<0.001	r= -0.278 p<0.03

➢ Stress and Quality of Life Domains

- **Physical Health**: Higher stress was associated with lower perceived physical health scores ($r = -0.452$; $p < 0.001$).
- **Mental Health**: A strong inverse relationship was noted ($r = -0.652$; $p < 0.0001$).
- **Social Relationships**: The strongest negative association was with social relationships ($r = -0.748$; $p < 0.0001$).
- **Environmental Conditions**: A moderate negative association was observed ($r = -0.356$; $p < 0.01$).

➢ **Loneliness and Quality of Life Domains**

- **Physical Health**: Loneliness showed a negative association with physical health (r = −0.546; p< 0.001).
- **Mental Health**: Similar to stress, loneliness strongly correlated with poorer mental health (r = −0.684; p< 0.001).
- **Social Relationships**: A notable finding was a positive correlation (r = 0.645; p< 0.001), suggesting complex social dynamics that may require qualitative exploration.
- **Environmental Conditions**: A weak but significant inverse association was noted (r = −0.278; p< 0.03) (Table 2).

➢ **Overall Quality of Life (QOL) and its Association with Stress and Loneliness**

Table 3: Quality of Life (QOL) Correlation Analysis:

QOL	r - value	P - value
Stress	-0.643	<0.001
Loneliness	-0.421	<0.001

- **Perceived Stress**: There was a strong inverse relationship between overall quality of life and stress levels (r = −0.643; p< 0.001), indicating that higher stress is linked with reduced well-being.
- **Loneliness**: Similarly, loneliness negatively correlated with overall QOL (r = −0.421; p< 0.001), suggesting that social disconnection significantly undermines life satisfaction among transgender individuals (Table 3).

Discussion

This study offers critical insights into the psychosocial health of transgender individuals in urban South India, highlighting high levels of perceived stress (76% moderate, 24% high, 0% low), loneliness, and reduced quality of life (QOL) across physical, mental, social, and environmental domains. These findings align with prior research, such as Budge et al., who reported a 48% prevalence of clinical depression and 39% prevalence of anxiety among transgender individuals, linked to low social support and personal loss.[1] Similarly, our study found strong negative correlations between perceived stress and mental health (r = −0.652, p < 0.0001) and loneliness and mental health (r = −0.684, p < 0.001), underscoring the psychological burden in the absence of robust support systems.[2] Bockting et al. reported comparable rates of depressive symptoms (47.2%) and anxiety (41.9%) among transgender individuals in the U.S., primarily due to stigma and lack of community belonging.[2] Our study's strongest negative association was between stress and social relationships (r = −0.748, p < 0.0001), reinforcing the notion that unsupportive social environments severely impair relational and emotional health.

Meyer's Minority Stress Model suggests that chronic exposure to stigma and discrimination elevates mental health risks in sexual and gender minorities.[13] Our data align with this framework, as persistent societal stigma likely contributed to the moderate-to-high stress levels observed. Reisner et al. reviewed global data, noting higher rates of depression (44%), anxiety (39%), and suicidal ideation (48%) among transgender individuals compared to cisgender peers.[3] Similarly, our study found stress significantly correlated with reduced physical health (r = −0.452, p < 0.001) and environmental QOL (r = −0.356, p < 0.01), indicating multidimensional health deterioration due to psychosocial stressors. Chakrapani et al. documented structural violence, police abuse, and social rejection among kothi-identified men who have sex with men in Chennai, contributing to internalized stigma and emotional distress.[6] These experiences likely parallel those of our participants, further explaining elevated stress and reduced QOL.

A particularly striking and unexpected finding was the positive correlation between loneliness and social relationships (r = 0.645, p < 0.001). Contrary to expectations that social relationships reduce loneliness, this result suggests that transgender individuals in urban South India may experience greater loneliness despite having more social connections. This finding diverges from prior research, such as Yousuf et al., who reported a negative correlation (r = −0.87, p < 0.01) between loneliness and social relations .QOL among transgender individuals in Pakistan, indicating that stronger social relationships typically reduce loneliness.[8] Similarly, Grupp et al.found high loneliness prevalence (83.3%) among transgender individuals in Germany but did not report a positive correlation with social

relationships.[9] This unexpected result may stem from the cultural context of urban South India, where social interactions within transgender communities, such as hijra gharanas, may be hierarchical or non-affirming, failing to provide emotional support. The emotional intelligence model by Salovey and Mayer supports this, suggesting that superficial or non-affirming interactions can exacerbate emotional isolation, a phenomenon termed "loneliness despite contact".[17]

Several factors may explain this novel finding. First, the quality of social relationships may be critical. Transgender individuals may engage in social networks that lack genuine affirmation or include stigmatizing interactions, increasing feelings of loneliness.[10] Second, the WHOQOL-BREF social relationships domain, used in our study, may capture different aspects of social interactions compared to other measures, such as the Lubben Social Network Scale used in other studies.[15, 16] Third, unmeasured variables, such as the degree of gender affirmation or internalized stigma within social settings, may confound this relationship.[5] This finding highlights the complexity of social dynamics for transgender individuals and underscores the need for nuanced interventions that prioritize meaningful, supportive connections over mere social contact.

Our findings also align with Fredriksen-Goldsen et al., who found that transgender older adults in the U.S. scored lower on physical and mental health domains compared to heterosexual peers.[4] In our sample, overall QOL was inversely associated with perceived stress ($r = -0.643$, $p < 0.001$) and loneliness ($r = -0.421$, $p < 0.001$), reinforcing the profound impact of psychosocial stressors. Veesam et al.'s study in Kakinada, Andhra Pradesh, reported a 43.1% illiteracy rate, closely matching our 36%, and a 57.5% rate of gender reassignment surgery, nearly identical to our 57%, suggesting consistent patterns of educational disparities and access to gender-affirming care.[8] Their findings of 100% lifetime STI prevalence and 11.9% past-year STD prevalence reflect psychosocial vulnerabilities and poor health-seeking behaviors, paralleling our cohort's challenges.[8] Additionally, 23.1% of their participants had at least one non-communicable disease (NCD), supporting our observed negative association between stress and physical health ($r = -0.452$, $p < 0.001$).

The methodological strength of this study lies in the use of validated tools—Perceived Stress Scale (PSS),[12] UCLA Loneliness Scale,[14] and WHOQOL-BREF[15, 16]—ensuring reliable and comparable findings. However, limitations include the small sample size (n = 50) and cross-sectional design, which restrict generalizability and causal inference. Intersectional factors such as income, caste, and rural-urban healthcare access were not fully explored, potentially influencing outcomes.[7]

These findings are significant for public health experts, community medicine professionals, mental health workers, and policymakers. They emphasize the need for tailored interventions that reduce stigma, enhance resilience, and foster affirming social support, as advocated by McCann and Brown.[7] Future research should employ longitudinal and mixed-method designs to explore evolving stressors and coping mechanisms, particularly the unexpected positive correlation between loneliness and social relationships, to inform inclusive, rights-based health policies.

Conclusion

This study reveals high perceived stress (76% moderate, 24% high) and loneliness among transgender individuals in urban South India, significantly linked to reduced quality of life across physical, mental, social, and environmental domains. These findings underscore the urgent need for targeted mental health interventions and inclusive policies to enhance well-being. Self-reporting measures may introduce bias. Future research should use larger, diverse samples, longitudinal designs, and qualitative methods to explore evolving stressors and coping mechanisms, particularly the unexpected positive correlation between loneliness and social relationships ($r = 0.645$, $p < 0.001$). Comparative and intervention studies are needed to inform rights-based health policies.

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Declaration of conflicts of interest statement: NIL

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