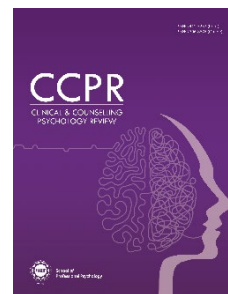
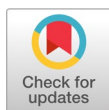


Clinical & Counselling Psychology Review (CCPR)

Volume 8 Issue 1, Spring 2026

ISSN(P): 2412-5253, ISSN(E): 2706-8676

Homepage: <https://journals.umt.edu.pk/index.php/CCPR>



- Title:** **Examining Sexual Orientation Subtypes and Their Moderating Effects Among Transgender Individuals in Pakistan**
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- DOI:** <https://doi.org/10.32350/ccpr.81.01>
- History** Received: January 29, 2026, Revised: April 28, 2026, Accepted: May 20, 2026, Published: June 30, 2026
- Citation:** Fatima, A., Jami, H., & Ilyas, U. (2026). Examining sexual orientation subtypes and their moderating effects among transgender individuals in Pakistan. *Clinical and Counselling Psychology Review*, 8(1), 1–34.
<https://doi.org/10.32350/ccpr.81.01>
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- Conflict of Interest:** Author(s) declared no conflict of interest



A publication of
School of Professional Psychology
University of Management and Technology, Lahore, Pakistan

Examining Sexual Orientation Subtypes and Their Moderating Effects Among Transgender Individuals in Pakistan

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Abstract

The purpose of the study was to examine gender nonconforming (GNC) individuals in Pakistan with regards to their mental health outcomes while exploring the moderating role of sexual orientation within the gender minority stress and resilience (GMSR) framework. A total of 420 individuals made up the sample including 205 female gender nonconforming (FGNC) individuals ($M=25.93$, $SD = 6.31$), and 215 male gender nonconforming (MGNC) individuals ($M = 22.68$, $SD= 5.40$). Higher levels of gender dysphoria and childhood non-conforming behavior was reported by FGNC participants as compared to their MGNC peers. Sex assigned at birth demarcated sexual orientation, wherein FGNC participants were mostly labelled as heterosexual or asexual, while MGNC participants were generally identified as bisexual or homosexual. Moderation analyses highlighted that the negative impacts of gender dysphoria on mental health outcomes are often shielded by heterosexual orientation, whereas asexual orientation was linked with better quality of life and reduced anxiety across both groups. Homosexual and bisexual orientations, however, in contrast, were associated with greater vulnerability, exhibiting the compounding effects of multiple minority stressors. These findings highlight the interplay of gender identity and sexual orientation in forming psychosocial outcomes among GNC populations. The results emphasize the value of culturally tailored assessment tools and interventions which cater for both distal and proximal minority stressors. Augmenting resilience through individual, family, and community-level backing can enhance quality of life and mental health for gender nonconforming individuals. Recognizing sexual orientation as a key moderator within the minority stress process is critical for developing inclusive, evidence-based frameworks that are attuned to Pakistan's sociocultural context.

Keywords: gender dysphoria, gender nonconforming, mental health

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outcomes, minority stress, sexual orientation

Introduction

Globally, one of most substantial transgender communities is hosted in Asian geographical region (Hossain & Ferdous, [2020](#)). In the context of Pakistan, the historical existence of *KhawajaSira* community, which include individuals with indigenous transfeminine identities, has resulted in a prevailing perception within the public sphere and legal framework that mostly associates transgender individuals with transgender women (Najafipour & Najafipour, [2018](#)). Consequently, there has been a significant exclusion of gender nonconforming (GNC) persons and transgender men from debates pertaining to trans rights legislation and its possible ramifications on health (Fazeel et al., [2024](#)). Limited research is available on the real-life experiences of transgender people among the general population, particularly about transgender men (Irshad et al., [2020](#)). This reflects a broader gap in quantitative research examining psychosocial and mental health outcomes among gender nonconforming populations in Pakistan.

Sexual orientation refers to the gender to whom an individual is attracted. According to DSM-5 TR, Sexual orientation refers to the pattern of romantic or sexual attraction toward others and exists on a continuum, and commonly includes heterosexual, homosexual, bisexual, asexual attraction (American Psychiatric Association [APA], [2022](#)). According to DSM-5-TR and recent literature, many gender nonconforming individuals identify as homosexual or bisexual (APA, [2022](#); Zucker, [2018](#)). Sexual orientation is therefore considered in this study as a moderating variable in the relationship between gender dysphoria and mental health outcomes within minority stress processes. Variations in sexual orientation among gender nonconforming individuals may be relevant in shaping differential exposure to minority stress; however, in this study, its role is examined specifically as a statistical moderator rather than a diagnostic or developmental factor. Studies have shown a high incidence of sexual attraction to those of the individual's birth-assigned gender, regardless of the trajectory of the prepubescent child's gender dysphoria. For individuals whose gender dysphoria continues into adolescence and beyond, most self-identify as heterosexual (APA, [2022](#)). Homosexual transgender individuals face greater stigma, increased mental health challenges and higher likelihood of concealment. Homosexual orientation can intensify the

negative impact of gender-related discrimination. Heterosexual orientation may offer relative protection, slightly reducing the impact of negative experiences. Heterosexual orientation can serve as a moderator for gender non-conformity. According to APA ([2022](#)), sexual orientation has no discernible effect on how gender incongruence and gender dysphoria are diagnosed or treated. Instead, over time, transition-related therapies can be beneficial to transgender people of all sexual orientations (Coleman et al., [2022](#)).

Transgender persons in Pakistan have diverse sexual orientations, such as heterosexual, homosexual, bisexual or asexual orientations. However, they may face difficulties in expressing their sexual preferences and forming intimate relationships due to social and legal barriers (United Nations, [2020](#)). There is no provision in law for the marriage of GNC and transgender individuals (Redding, [2019](#)). Making judgments about identity disclosure for transgender people is complicated further by the interplay between sexual orientation and gender identity. Sexual orientation remains an important contextual variable in minority stress processes, but in the present study it is operationalized strictly as a moderating factor. In this study, sexual orientation is conceptualized as a moderating variable that may influence the strength of association between gender dysphoria and mental health outcomes. It outlines societal reactions, stigma and discrimination levels, contributing to changes in the intensity of psychological consequences among gender nonconforming and transgender individuals (Zucker, [2018](#)).

In Pakistan, research remains limited on transgender and GNC individuals, in particular the intersection of gender identity and sexual orientation. A robust framework is provided by gender minority stress theory for understanding how distal stressors (such as discrimination and victimization) and proximal stressors (like internalized transphobia, concealment and hypervigilance) form antagonistic mental health consequences among gender minorities (Testa et al., [2015](#)). Moderate to higher associations are found through empirical applications of the Gender Minority Stress and Resilience Measure (GMSR) among stressors (distal and proximal) and symptoms of depression, anxiety and maladaptive coping (Wilson et al., [2024](#)). *KhawajaSira* (transfeminine) identities in the Pakistani society remain more visible as compared to transgender men and GNC individuals (Fatima & Jami, [2025](#)). In this backdrop, explanatory

power is offered by distal–proximal stress framework for comprehending how structural invisibility, legal erasure and social exclusion interpret into internalized stigma, concealment and mental health vulnerability (Dennis & Davis, [2026](#)).

Quality of life is a multidimensional construct encompassing individuals' subjective evaluation of their physical, psychological, social, and environmental well-being in relation to their goals, expectations, and cultural context (World Health Organization [WHO], [1998](#)). Evidence consistently shows that transgender and GNC individuals report significantly lower quality of life compared to cisgender populations, particularly prior to gender-affirming interventions, due to heightened exposure to discrimination, stigma, mental health difficulties, and limited social support (Bouman et al., [2017](#)). Within the framework of gender minority stress theory (Meyer, [2015](#)), these quality of life disparities are understood as the downstream outcome of cumulative distal stressors (e.g., discrimination, victimization) and proximal stressors (e.g., internalized stigma, concealment), which collectively undermine psychological functioning and adaptive coping. Quality of life is influenced by gender minority stress processes, and in this study, it is examined as a key outcome variable alongside anxiety. Individuals occupying dual minority positions (e.g., transgender and sexual minority status) are particularly vulnerable to reduced quality of life due to compounded stigma and minority stress processes, which intensify psychological distress and reduce overall life satisfaction (Fine et al., [2025](#)). In this way, quality of life can be conceptualized as a broader outcome variable that reflects the cumulative impact of gender minority stress processes and may be indirectly shaped by sexual orientation through its moderating role in stress–distress pathways. The presence of quality of life as a psychosocial outcome underscores the need to examine how minority stress and sexual orientation jointly influence overall well-being, particularly in under-researched contexts such as Pakistan.

Sexual orientation may further regulate such connections by inducing the strength and nature of minority stress pathways. Individuals falling in multiple minority classes, such as being gender as well as sexual minorities are subjected to intersectional stressors that intensify psychological risk (Meyer, [2015](#)). Evidently, higher levels of anxiety and depression were reported by sexual and gender minority adults identifying with dual-

minority statuses, as compared with single-minority counterparts, with internalized stigma and concealment inducing these effects (Fine et al., [2025](#)). For transgender individuals, identification as gay, lesbian, or bisexual often entails dual stigmatization from both cis-heteronormative society and within gender-diverse communities (Zucker, [2018](#); APA, [2022](#)). Despite the availability of an Urdu-translated GMSR (Fatima et al., [2022](#)), a review of Pakistani research published between 2015 and 2025 found no empirical examination of sexual orientation as a moderator of gender minority stress, highlighting a key research gap.

The need to examine sexual orientation within the framework of GMSR is further highlighted by international findings (van der Star et al., [2024](#)). Although sexual orientation as a demographic variable is incorporated by majority of GMSR-based studies, however, its moderating effects on stress–distress relationships are tested by only a few (Jones et al., [2024](#)). As suggested by mixed-methods research, heightened internalized stigma and even complicated stigma exposure is experienced by transgender and gender-diverse individuals who also identify as sexual minorities as compared to their heterosexual peers (Puckett et al., [2025](#)). Resilience factors such as community connectedness and pride, despite operating across orientation groups, remain inconsistent in buffering the association between distal stressors and psychological distress (Miller-Perusse et al., [2024](#)). These findings imply that sexual orientation may alter patterns of proximal stress such as nondisclosure and internalized stigma even when overall GMSR associations remain stable (Coghlan, [2024](#)). There is a notable lack of quantitative studies investigating sexual orientation as a moderator within the GMSR framework in Pakistan which highlights immediate attention towards culturally grounded research and assessment tools to provide wide-comprehensive and context-sensitive mental health interventions.

Overall, the existing literature suggests that research is needed to study the sexual orientation of GNC individuals in Pakistan, and to devise culturally relevant assessment tools and protocols for identifying types, trajectories, and mental health outcomes. The application of minority stress theory must be explored indigenously to inform mental health interventions that aim to reduce stressors tied to minority status.

The literature on sexual orientation among Pakistani transgender/GNC people is sparse and predominantly qualitative or policy-oriented. A review

of the Pakistani literature published between 2015 and 2025 indicates a lack of empirical studies testing sexual orientation as a moderator of gender minority stress, particularly through moderation analyses involving GMSR subscales. Existing work has focused on lived experiences, barriers to care, and identity-related issues rather than quantitative testing of psychological models. While international research has increasingly examined gender minority stress processes and their associations with mental health outcomes, such empirical testing remains scarce in the Pakistani context, particularly using structured measures and moderation frameworks.

While previous Pakistani studies have examined the mental health experiences of transgender individuals, little attention has been paid to whether sexual orientation influences the relationship between gender minority stress and psychological outcomes. This raises an important conceptual question regarding the potential moderating role of sexual orientation. Additionally, empirical research in this area has been constrained by the limited availability of culturally adapted assessment tools. Research and empirical studies on sexual orientation diversity within transgender groups especially in Pakistan, have relatively greater emphasis on *KhwajaSira* identity and limited focus on gender nonconforming individuals in the general population. Overall, there is a lack of assessment tools, accordingly, the present study aims to quantitatively examine the moderating role of sexual orientation subtypes in the relationship between gender minority stress and mental health outcomes among transgender/GNC individuals in Pakistan. The present study tests a moderated model in which gender dysphoria predicts anxiety and quality of life, while sexual orientation functions as a moderating variable within the gender minority stress framework. Childhood gender identity is included as a descriptive variable and is not part of the primary analytical model.

Hypotheses

Based on prior literature emphasizing that sexual orientation can moderate the psychological impact of gender dysphoria and minority stress (Testa et al., [2015](#); Zucker, [2018](#)), the following hypotheses were formulated:

H1: Male gender nonconforming (MGNC) and female gender nonconforming (FGNC) individuals will differ in levels of gender dysphoria and childhood gender nonconforming behaviors.

H2: MGNC individuals are more likely to report homosexual/bisexual orientations and FGNC individuals are more likely to report heterosexual/asexual orientations.

H3: Sexual orientation will moderate the relationship between gender dysphoria and quality of life among MGNC individuals.

H4: Sexual orientation will moderate the relationship between gender dysphoria and anxiety among MGNC individuals.

Method

Participants

The GNC individuals are those whose behavior and gender expression do not conform to the sex assigned at birth (i.e., male or female) (APA, [2022](#)). Snowball sampling, supplemented by multiple outreach channels, was used. Data were collected from multiple cities in Pakistan, including Islamabad, Rawalpindi, Lahore, Gujrat, and Sialkot. A total of 420 participants were recruited, including 205 female sex-assigned at birth GNC (FGNC) individuals aged 18–50 years ($M = 25.93$, $SD = 6.31$), and 215 male sex-assigned at birth GNC (MGNC) individuals aged 18–50 years ($M = 22.68$, $SD = 5.40$).

Recruitment was initiated through multiple entry points and expanded through participant referrals. The MGNC individuals were primarily accessed through beauty salons and makeup professionals, whereas FGNC individuals were approached via college sports teams, fitness centers, private organizations, and sports clubs. Social media platforms (TikTok, Instagram, and Facebook) and LGBTQI applications (Grindr, Blued) were used to disseminate the study invitation and share participation links, allowing interested individuals to contact the researchers directly.

In addition, outreach was supported through collaboration with NGOs working with transgender and sexual minority communities (e.g., Naz, Khawaja Sira Society, Dignity, LGBTQI Association, and Hope). Further participants were recruited through cosmetic and laser clinics, educational initiatives such as Allama Iqbal Open University programs for transgender individuals, and personal referrals through academic and professional networks.

Overall, snowball sampling served as the primary recruitment strategy, with multiple community-based, institutional, and digital channels used to

broaden participant reach and enhance sample diversity.

Inclusion Criteria

Participants were GNC individuals aged 18-50 years of age, residing in the general population. Inclusion required the ability to understand English or Urdu language.

Exclusion Criteria

The study focused on gender nonconforming individuals from the general population; participants from the *KhawajaSira* (culturally existent subgroup of transfeminine individuals) community were excluded.

Recruitment of Gender Nonconforming Participants.

Participants were required to meet a minimum literacy level to ensure comprehension of the study measures, and the instruments were administered using Urdu-translated versions of the scales to ensure linguistic accessibility across participants from different regions of Pakistan.

Ethical Considerations

Ethical considerations as guided by the APA's Ethical Principles of Psychologists and Code of Conduct remained fundamental during this comparative study based on transgender women and men. Approval of this research was granted by the relevant institutional ethics committee (details masked for blind review). In accordance with APA principles of respect for persons, beneficence, and nonmaleficence, participants received clear information about the study's purpose, procedures, risks, and benefits, and provided informed consent prior to participation (APA, [2017](#)). Participation in the study was voluntary, having the right to withdraw at any stage.

Measures

All instruments were administered in Urdu. Out of the six scales used in the study, two had already validated Urdu versions, while four were translated in the present study using standard translation-back translation procedures to ensure clarity and equivalence.

Translation and Adaptation of Selected Measures

The original questionnaire was in English, which was not easily understood by the target population. Therefore, permission was obtained

from the original author, who holds the copyright, to translate the scale into Urdu. In order to translate the scales, as per the guidelines provided by Brislin (1970), following steps were used.

Step 1: Forward Translation. This step involved the translation of the questionnaires from the English language into target language (Urdu). In order to achieve this, three bilingual experts with a high level of proficiency in both languages were enlisted for the translation task. Two of these experts held Ph.D in Psychology, while the third had an M.Phil. in Urdu with a strong background in Psychology.

The translators were thoroughly briefed on the translation process, ensuring they understood the concepts behind the scales. They were given detailed instructions to translate the content in a way that accurately conveyed the original meaning in Urdu while ensuring it was comprehensible within the broader Pakistani cultural context. The translators were further provided with guidance and explanations during the process of translation, where needed.

Step 2: Committee Approach. The original English version of each item was compared with three independent Urdu translations and organized in a table for review and discussion by the translation committee to select the most appropriate wording. The committee consisted of four members in total, including the researcher and the research supervisor, along with two additional bilingual experts proficient in both English and Urdu. The supervisor led the committee process, and the diverse composition ensured linguistic accuracy, conceptual equivalence, and input from both academic and professional perspectives in gender diversity and related contexts.

The committee meticulously evaluated all the translations for each Item, selecting the most appropriate version based on clarity, comprehensibility, and both literary and semantic equivalence with the original item. Additionally, the instructions for each scale were finalized with the committee's consensus. To maximize the expertise and knowledge of relevant members, separate committees were formed for each scale. The committee made some changes to facilitate the process of Urdu translation.

Step 3: Backward Translation. After finalizing the Urdu translation, it was essential to ensure that the translated versions were equivalent to the original English versions. To achieve this, the scales needed to be back translated into English. For each scale, three independent bilingual experts

were engaged, ensuring that those who conducted the back translation were different from those who performed the initial Urdu translation. Additionally, the original English versions of the scales were not provided to the back translators to ensure unbiased and authentic results.

The experts were instructed to translate the items as accurately as possible, with continuous monitoring and guidance available to them, without compromising the originality and accuracy of their translations. The back-translated versions were then collected, compared, and typed. Finally, these versions were presented to the committee for comparison with the original scales. The translation process was completed after the authors expressed full satisfaction with the back translations and provided their final approval.

Gender Identity/Gender Dysphoria Questionnaire for Adolescents and Adults (GIDYQ-AA)

The GIDYQ-AA (Singh et al., [2010](#)) is a 27-item screening tool available in separate versions for adolescents and adults, with male and female forms. The adult versions were translated and used for this study. Items are rated on a 5-point Likert scale (*Always–Never*); Items 1, 13, and 27 are reverse scored. The mean score (total divided by 27) is computed, with lower scores indicating higher gender dysphoria. A cut-off score ≤ 3 suggests clinically significant dysphoria. The adult versions (male and female) were translated into Urdu and used in this study. Reliability of translated scale was .95 for birth-assigned males and .93 for birth-assigned females.

Recalled Childhood Gender Identity/Gender Role Questionnaire (RCGI)

The RCGI (Zucker et al., [2006](#)) consists of 23 items assessing recalled childhood gender identity and parental closeness. Responses are measured using a 5-point Likert scale. Reverse scoring differs by sex assigned at birth (12 items for males, 8 for females). Higher scores reflect more conventional childhood gender roles. Urdu-translated versions of both male and female forms were used. Reliability of translated scale was .72 for birth-assigned males and .71 for birth-assigned females.

Sell Assessment of Sexual Orientation Scale (SASO)

The SASO (Sell, [1996](#)) has 12 items across three subscales: Sexual Attraction, Sexual Contact, and Sexual Orientation. Five items each assess

attraction/contact toward males and females. Items 11–12 qualitatively assess heterosexual/homosexual orientation but are excluded from quantitative scoring. Higher scores indicate stronger attraction/contact toward a given gender. The Urdu translation of the SASO was used for data collection. Reliability of the translated scale was .71 for birth-assigned males and .78 for birth-assigned females.

Gender Minority Stress and Resilience Scale (GMSR)

This scale by Testa et al. (2015) measures nine constructs: four distal stressors, three proximal stressors, and two resilience factors. Most items are rated on a 0–4 Likert scale; the first 17 items are scored 0 (“Never”) or 1 (“Any other response”). Two items (4 and 5) in the Community Connectedness subscale are reverse scored. Higher scores indicate greater stress or resilience, depending on the subscale. Urdu translated version was used. Reliability of translated scale was .94 for birth-assigned males and .94 for birth-assigned females.

WHOQOL-BREF (WHOQOL Group, 1998)

The present study used the Urdu version of the WHOQOL-BREF, which was translated by Khalid & Kauser, (2006). It is a 26-item measure of quality of life across four domains: Physical, Psychological, Social Relations, and Environment. It is rated on a 5-point Likert scale, with three reverse scored items (3, 4, 26). Higher scores indicate better quality of life. Reported reliability for Pakistani culture is $\alpha = .86$ (Lodhi et al., 2017). Reliability of translated scale was .90 for birth-assigned males and .90 for birth-assigned females.

Depression, Anxiety, Stress Scale – 21 (DASS-21)

The DASS a 21-item self-report scale developed by Lovibond and Lovibond (1995). The present study used its Urdu translated version by Aslam (2009). This scale has three subscales (Depression, Anxiety, Stress), each with seven items rated on a 4-point Likert scale. Scores are summed and multiplied by two; higher scores indicate more severe symptoms. Reliability in Pakistani samples is $\alpha = .86$ (Riaz et al., 2013).

Accordingly, the analysis was conducted using cut-off scores to evaluate the frequency and percentage of gender dysphoria among MGNC and FGNC populations, alongside childhood gender identity and sexual orientation, to determine the prevalence of gender dysphoria among GNC

individuals.

Results

To contextualize the sample characteristics underlying the proposed moderation model, examining gender minority stress, sexual orientation, and psychological outcomes, demographic distributions are presented below.

Table 1

Frequencies and Percentages of Demographic Categories for FGNC and MGNC Individuals (N=420)

Demographics	Categories	FGNC (n= 205) (%)	MGNC (n = 215) (%)
Age	18-25	167(81.46)	120(55.81)
	25-35	31(15.12)	69(32.09)
	35-50	-	16(7.4)
	50 and above	1(0.48)	1(0.46)
Education	Undermatric	5(2.4)	8(3.7)
	Matric	12(5.9)	16(7.4)
	F.Sc	47(22.9)	40(18.6)
	Graduation	98(47.8)	97(45.11)
	Masters	31(15.1)	31(14.41)
	M.Phil	4(2.0)	5(2.3)
	Missing	8(3.9)	18(8.3)
Preferred	Male	57(27.8)	142(66.0)
Pronoun	Female	127(62.0)	32(14.9)
	Other	30(14.6)	32(15.2)
CNIC	Male	10(4.9)	197(91.6)
Identification	Female	163(79.5)	3(1.4)
	Intersex	-	-
	transgender	-	1(.5)
	No card	19(9.3)	5(2.3)
Self- Identification	Male	63(30.7)	140(65.1)
	Female	122(59.5)	36(16.7)
	Third gender	3(1.5)	21(9.8)
	Other	4(2.0)	4(1.9)

Note. FGNC = Female sex-assigned at birth Gender Nonconforming individuals; MGNC = Male sex-assigned at birth Gender Nonconforming

individuals.

Table 1 presents the demographic characteristics of FGNC and MGNC individuals, indicating a predominantly young sample with diverse educational backgrounds and variability in gender expression indicators such as pronoun preference and self-identification.

Table 2

Prevalence of Gender Dysphoria Along with Childhood Gender Identity and Sexual Orientation Subtypes (N = 420)

Variables	FGNC (n = 205)	MGNC (n = 215)
Screened with subtypes	n (%)	n (%)
Gender Dysphoria	64(32)	48(23)
Childhood Gender Identity		
Unconventional Childhood Identity	47(23)	31(16)
Conventional Childhood Identity	17(9)	17(9)
Sexual Orientation		
Homosexual	31(16)	12(6)
Heterosexual	13(6)	13(6)
Bisexual	5(3)	17(9)
Asexual	15(8)	6(3)

Note. FGNC = Female sex-assigned at birth Gender Nonconforming individuals; MGNC = Male sex-assigned at birth Gender Nonconforming individuals.

Table 2 shows differences between FGNC and MGNC individuals in gender dysphoria prevalence, childhood gender identity patterns, and sexual orientation distribution, with FGNC individuals showing higher reported dysphoria, and MGNC individuals showing greater variation in sexual orientation categories. Table 2 illustrates the prevalence of gender dysphoria in relation to childhood gender identity and sexual orientation. The data shows that GNC individuals assigned female at birth reported higher levels of gender dysphoria and report more unconventional behaviors during childhood, compared to their male-assigned counterparts. Interestingly, the number of individuals reporting conventional childhood behavior is the same for both groups. When it comes to sexual orientation, individuals assigned male at birth are more likely to report a homosexual orientation than those assigned female at birth. However, the number of

individuals reporting a heterosexual orientation is equal across both groups. Additionally, male-assigned individuals report a higher prevalence of bisexual orientation, while female-assigned individuals more commonly report a homosexual orientation.

Given the central role of sexual orientation as a proposed moderating variable in the relationship between gender minority stress and psychological outcomes, group differences in sexual orientation were examined. To test the central hypothesis derived from gender minority stress theory, moderation analyses were conducted to examine whether sexual orientation alters the relationship between gender dysphoria (as an indicator of minority stress) and psychological outcomes, including anxiety and quality of life. Chi-square test was conducted in order to determine the frequency and percentage of types of sexual orientation in MGNC and FGNC individuals. Results are given in table 3.

Table 3

Frequencies and Chi-Square for Sexual Orientation for FGNC and MGNC Individuals (N = 420)

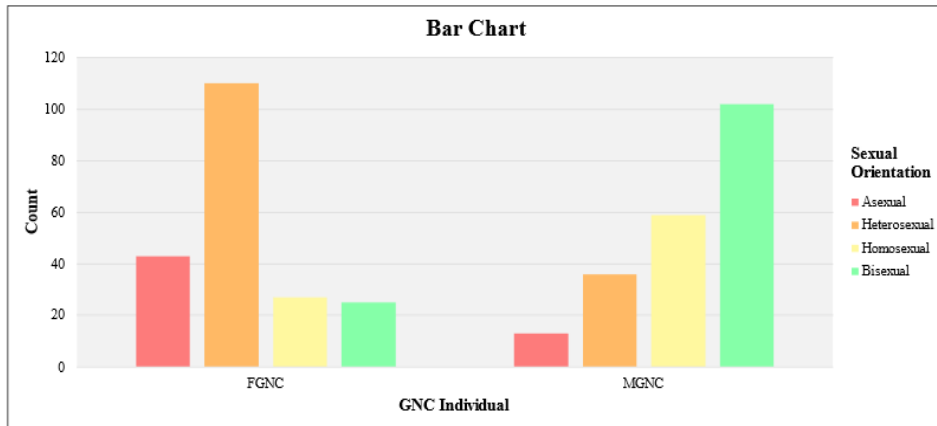
	Asexual		Heterosexual		Homosexual		Bisexual		χ^2 (3)
	n	%	n	%	n	%	n	%	
FGNC	43	21.0	110	53.7	27	13.2	25	12.2	112.12***
MGNC	13	6.2	36	17.1	59	28.1	102	48.1	

Note. FGNC = Female sex-assigned at birth Gender Nonconforming individuals; MGNC = Male sex-assigned at birth Gender Nonconforming individuals. *** $p < .001$

Chi-square test of independence was conducted to examine the association between GNC individuals and sexual orientation. The test resulted in a significant association, as indicated by a Chi-square statistic χ^2 (3, $N = 420$) = 112.12, $p < .001$. Additionally, Cramér's V ($V = .52$) was calculated, which is considered a large effect size. The specific pattern observed in the data suggests that FGNC individuals exhibited a higher frequency of heterosexual orientation, and then asexual orientation was reported by FGNC individuals, while MGNC individuals had a higher frequency of bisexual orientation and homosexual orientation. Bar chart provides a visual presentation of frequencies of sexual orientation.

Figure 1

Frequency Distribution of Sexual Orientation in MGNC and FGNC Individuals



The bar chart presents the distribution of sexual orientation categories (asexual, heterosexual, homosexual, and bisexual) among FGNC and MGNC individuals, using raw frequency counts. Among FGNC individuals, heterosexual orientation is the most frequently reported category, followed by asexual orientation, with comparatively lower frequencies observed for homosexual and bisexual orientations. In contrast, MGNC individuals show a different pattern, with bisexual and homosexual orientations occurring most frequently, while heterosexual and asexual categories are less prevalent. Overall, the chart highlights distinct differences in the distribution of sexual orientation across FGNC and MGNC groups.

Multi Categorical Moderation Analysis of Sexual Orientation

To test the central hypothesis derived from gender minority stress theory, moderation analyses were conducted to examine whether sexual orientation alters the relationship between gender dysphoria (as an indicator of minority stress) and psychological outcomes, including anxiety and quality of life.

Sexual orientation was taken as multi categorical moderator for GNC individuals. Sexual orientation can be categorized as heterosexual, homosexual, bisexual, and asexual orientation. As required by Hayes

Process Macro, multi categorical moderators are given a numerical value starting from asexual (0), heterosexual (1), homosexual (2) and bisexual (3), while Hayes Process Macro takes one category as reference category to compare it against other categories, in this case, asexual category was taken as reference category by Hayes Process Macro, and the Analysis was done separately for both FGNC and MGNC sample.

Moderating Role of Sexual Orientation for MGNC Individuals

Table 4

Moderating Effect of Sexual Orientation for Gender Dysphoria on Quality of Life Among MGNC Individuals (N= 215)

Predictor	B	95% CI	
		LL	UL
Constant	45.43***	30.63	60.24
Heterosexual Orientation (M1)	17.60*	.09	35.10
Homosexual Orientation (M2)	39.07***	19.26	58.88
Bisexual Orientation (M3)	32.31***	12.85	51.77
Gender Dysphoria	11.53***	7.37	15.68
Heterosexual Orientation X Gender Dysphoria	-5.28*	-10.12	-.44
Homosexual Orientation X Gender Dysphoria	-13.39***	-18.86	-7.92
Bisexual Orientation X Gender Dysphoria	-11.08***	-16.35	-5.81
R ²	.16		
ΔR^2	.06		
F	10.34***		

Note. * $p < .05$. *** $p < .001$.

The results indicate that the interaction between gender dysphoria and sexual orientation categories significantly predicts quality of life, with heterosexual individuals serving as the reference group. Specifically, the interaction terms show that, relative to heterosexual individuals, the association between gender dysphoria and quality of life is more negative for lesbian, gay, bisexual, and other non-heterosexual orientation groups included in the analysis. This indicates lower levels of quality of life among these groups in the presence of higher gender dysphoria. In this context, negative moderation suggests that belonging to these sexual orientation groups strengthens the negative association between gender dysphoria and quality of life, rather than buffering it. These findings support the hypothesized moderation model outlined in the introduction.

Figure 2

Interaction of Sexual Orientation and Gender Dysphoria on Quality of Life

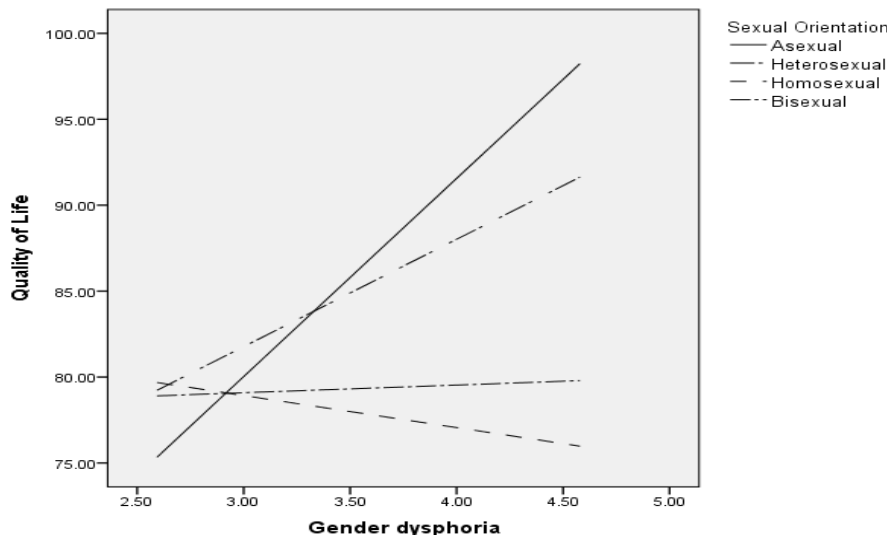


Figure 2 illustrates the moderating effect of sexual orientation on the relationship between gender dysphoria and quality of life among MGNC individuals. The plot shows different slope patterns for asexual, heterosexual, homosexual, and bisexual MGNC individuals. Overall, the graph indicates that the negative association between gender dysphoria and quality of life is stronger for asexual and heterosexual individuals, while the slopes for homosexual and bisexual individuals appear comparatively flatter. This pattern reflects variability in the strength of the relationship across sexual orientation groups.

Table 5

Moderating Effect of Sexual Orientation for Gender Dysphoria on Anxiety Among MGNC Individuals (N = 215)

Predictor	B	95% CI	
		LL	UL
Constant	4.73	-11.72	21.18
Heterosexual Orientation (M1)	10.08*	.95	40.71
Homosexual Orientation (M2)	4.34	-15.04	23.73
Bisexual Orientation (M3)	19.16*	.84	37.48
Gender Dysphoria	2.44	7.37	15.68
Heterosexual Orientation X Gender Dysphoria	-5.48*	-10.89	-.79

Predictor	B	95% CI	
		LL	UL
Homosexual Orientation X Gender Dysphoria	-.81	-5.82	4.19
Bisexual Orientation X Gender Dysphoria	-4.52	-9.22	.17
R^2	.08		
ΔR^2	.04		
F	3.41*		

Note. * $p < .05$.

Table 5 illustrates the moderating effect of sexual orientation on the relationship between gender dysphoria and anxiety. The interaction between sexual orientation and gender dysphoria was statistically significant, indicating that this relationship differs across sexual orientation groups. Heterosexual individuals were used as the reference group for comparisons. Relative to this group, the association between gender dysphoria and anxiety is stronger in certain sexual orientation categories. In this context, negative moderation means that membership in these categories intensifies the positive association between gender dysphoria and anxiety, such that an increase in gender dysphoria is linked to a greater increase in anxiety compared to the reference group.

Figure 3

Interaction of Sexual Orientation and Gender Dysphoria on Anxiety Among MGNC Individuals

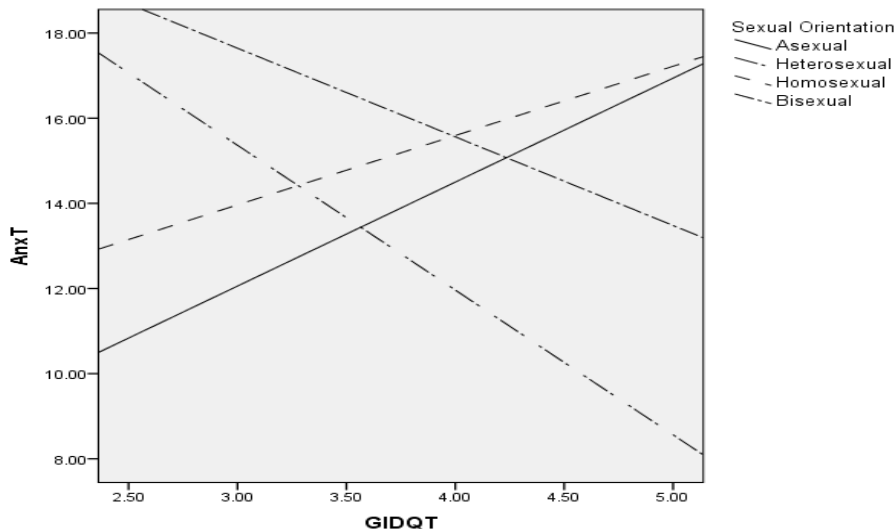


Figure 3 illustrates the moderating effect of sexual orientation on the relationship between gender dysphoria and anxiety among MGNC individuals. The plot shows different slope patterns across asexual, heterosexual, homosexual, and bisexual groups. The negative association between gender dysphoria and anxiety appears stronger for heterosexual and bisexual individuals, while the slopes for asexual and homosexual individuals are comparatively flatter. This pattern reflects variation in the strength of the relationship across sexual orientation groups.

Moderating Role of Sexual Orientation for FGNC Individuals

Table 6

Moderating Effect of Sexual Orientation for Gender Dysphoria on Quality of Life Among FGNC Individuals (N = 205)

Predictor	B	95% CI	
		LL	UL
Constant	53.54***	36.69	70.38
Heterosexual Orientation (M1)	9.59	-10.08	29.27
Homosexual Orientation (M2)	35.43*	8.40	62.46
Bisexual Orientation (M3)	21.14	-12.56	54.85
Gender Dysphoria	.42***	.28	.56
Heterosexual Orientation X Gender Dysphoria	-3.60	-21.35	-5.25
Homosexual Orientation X Gender Dysphoria	-13.30**	-21.35	-5.25
Bisexual Orientation X Gender Dysphoria	-6.84	-16.25	2.56
R ²	.17		
ΔR ²	.04		
F	3.77*		

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

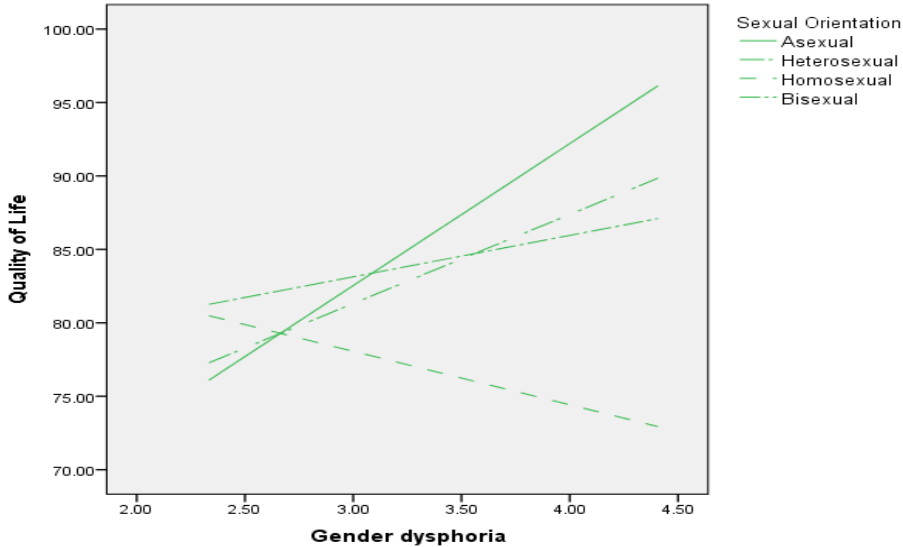
The results indicate that the interactions between gender dysphoria and different sexual orientation categories have significant effect on quality of life.

Figure 4 illustrates the moderating effect of sexual orientation on the relationship between gender dysphoria and quality of life among FGNC individuals. The plot shows different slope patterns across asexual, heterosexual, homosexual, and bisexual groups. The association between gender dysphoria and quality of life appears more positive for asexual and heterosexual individuals, while the slopes for homosexual and bisexual individuals are comparatively flatter. This pattern reflects variability in the

strength and direction of the relationship across sexual orientation groups.

Figure 4

Interaction of Sexual Orientation and Gender Dysphoria on Quality of Life



Moderating Role of Sexual Orientation for MGNC Individuals

Table 7

Moderating Effect of Sexual Orientation for Gender Dysphoria on Quality of Life Among MGNC Individuals (N= 215)

Predictor	B	95% CI	
		LL	UL
Constant	45.43***	30.63	60.24
Heterosexual Orientation (M1)	17.60*	.09	35.10
Homosexual Orientation (M2)	39.07***	19.26	58.88
Bisexual Orientation (M3)	32.31***	12.85	51.77
Gender Dysphoria	11.53***	7.37	15.68
Heterosexual Orientation X Gender Dysphoria	-5.28*	-10.12	-.44
Homosexual Orientation X Gender Dysphoria	-13.39***	-18.86	-7.92
Bisexual Orientation X Gender Dysphoria	-11.08***	-16.35	-5.81
R ²	.16		
ΔR ²	.06		
F	10.34***		

Note. * $p < .05$. *** $p < .001$.

Table 7 illustrates the moderating effect of sexual orientation for gender dysphoria in predicting anxiety. The interaction effect of sexual orientation and gender dysphoria was found to be significant. It indicates that Gender significantly moderates the relationship between gender dysphoria and anxiety.

Figure 5

Interaction of Sexual Orientation and Gender Dysphoria on Quality of Life

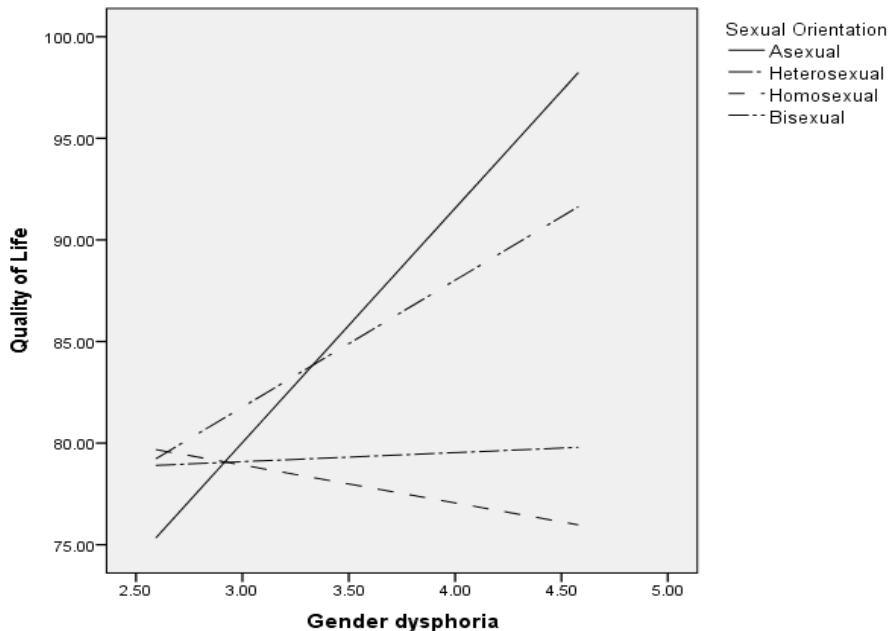


Figure 5 illustrates the moderating effect of sexual orientation on the relationship between gender dysphoria and quality of life among MGNC individuals. The plot shows different slope patterns across asexual, heterosexual, homosexual, and bisexual groups. The association between gender dysphoria and quality of life appears stronger for asexual and heterosexual individuals, while the slopes for homosexual and bisexual individuals are comparatively flatter. This pattern reflects variation in the strength of the relationship across sexual orientation groups.

Table 8 presents the moderating effect of sexual orientation on the relationship between gender dysphoria and anxiety. The overall model was statistically significant ($R^2 = .08$, $F = 3.41$, $p < .05$), indicating that the

predictors explain a significant proportion of variance in anxiety.

Table 8

Moderating Effect of Sexual Orientation for Gender Dysphoria on Anxiety Among MGNC Individuals (N = 215)

Predictor	B	95% CI	
		LL	UL
Constant	4.73	-11.72	21.18
Heterosexual Orientation (M1)	10.08*	.95	40.71
Homosexual Orientation (M2)	4.34	-15.04	23.73
Bisexual Orientation (M3)	19.16*	.84	37.48
Gender Dysphoria	2.44	0.37	4.51
Heterosexual Orientation X Gender Dysphoria	-5.48*	-10.89	-.79
Homosexual Orientation X Gender Dysphoria	-.81	-5.82	4.19
Bisexual Orientation X Gender Dysphoria	-4.52	-9.22	.17
R^2	.08		
ΔR^2	.04		
F	3.41*		

Note. * $p < .05$.

Heterosexual individuals were used as the reference category. The interaction between heterosexual orientation and gender dysphoria was statistically significant ($B = -5.48$, 95% CI [-10.89, -0.79]), while the interaction terms for homosexual ($B = -0.81$, 95% CI [-5.82, 4.19]) and bisexual orientation ($B = -4.52$, 95% CI [-9.22, 0.17]) were not significant.

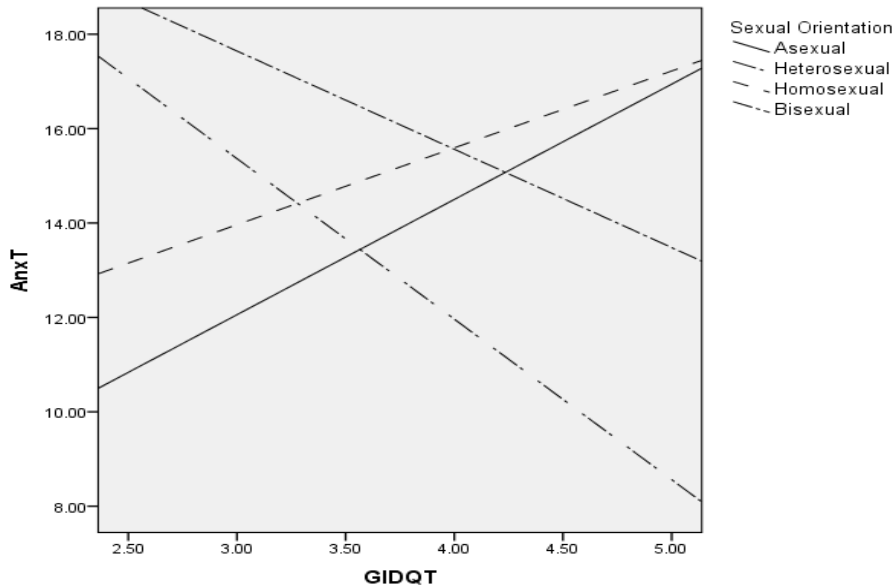
The significant negative interaction for the heterosexual group indicates that, compared to the reference structure of the model, the slope of the relationship between gender dysphoria and anxiety differs significantly only for heterosexual individuals. Specifically, the negative coefficient suggests a weaker positive association between gender dysphoria and anxiety in this group relative to others, while no significant moderation effect is observed for homosexual and bisexual orientations.

Figure 6 illustrates the moderating effect of sexual orientation on the relationship between gender dysphoria and anxiety among MGNC individuals. The plot shows different slope patterns across asexual, heterosexual, homosexual, and bisexual groups. The association between gender dysphoria and anxiety appears stronger for heterosexual and bisexual individuals, while the slopes for asexual and homosexual

individuals are comparatively flatter. This pattern reflects variability in the strength of the relationship across sexual orientation groups.

Figure 6

Interaction of Sexual Orientation and Gender Dysphoria on Anxiety Among MGNC Individuals



Overall, findings demonstrated that sexual orientation significantly moderates the relationship between gender dysphoria, and both anxiety and quality of life, with variations observed across specific sexual orientation subgroups, including asexual, heterosexual, homosexual, and bisexual individuals, and between FGNC and MGNC individuals. In particular, stronger moderating effects were observed among heterosexual and asexual groups, whereas weaker or nonsignificant patterns were noted among homosexual and bisexual groups in some models. Overall, these moderation patterns provide empirical support for the proposed model in which sexual orientation shapes the strength of association between gender minority stress and psychological outcomes among gender nonconforming individuals in Pakistan.

Discussion

The present study aligns with global research demonstrating the complex

interplay between gender dysphoria, sexual orientation, and psychological outcomes within gender-diverse populations. The present findings are discussed within a moderated gender minority stress framework, where gender dysphoria represents minority stress, psychological outcomes including anxiety and quality of life, and sexual orientation (asexual, heterosexual, homosexual, and bisexual orientations) function as a moderating variable. This model positions gender dysphoria as the predictor, sexual orientation as moderator, and anxiety and quality of life as outcomes. However, the strength and significance of these relationships is varied across sexual orientation categories, and between FGNC and MGNC individuals, indicating a heterogeneous moderation pattern rather than uniform effects.

Prevalence of higher gender dysphoria rates and experiences of more unconventional childhood gender identities among FGNC individuals is consistent with prior findings (e.g., Testa et al., [2015](#); Wilson et al., [2024](#)). In line with this literature, the present study found that gender dysphoria was associated with variations in anxiety and quality of life among gender nonconforming individuals in Pakistan (H1 partially supported). Similar patterns have been documented in Western cohorts, where assigned-female-at-birth individuals more frequently report earlier and persistent cross-gender identification, potentially reflecting greater social tolerance for gender nonconformity among girls and women (Zucker, [2018](#)). Longitudinal evidence from DSM-5-TR field studies further suggests that early gendered behaviors alone do not determine later dysphoria, even when similar proportions of conventional childhood gender expressions are observed across groups (APA, [2022](#)). Overall, these findings indicate that associations between gender dysphoria and psychological outcomes in this sample reflect contextual and distributional variations rather than fixed developmental trajectories.

Sexual orientation patterns differed by sex assigned at birth, with FGNC individuals reporting higher proportions of heterosexual and asexual orientations, whereas MGNC individuals more frequently identified as homosexual and bisexual orientations. This pattern is broadly consistent with international literature indicating that gender identity and sexual orientation often emerge through intersecting developmental and social processes shaped by identity exploration and disclosure contexts (Puckett et al., [2025](#)) (H2 supported).

Consistent with the study hypotheses, sexual orientation moderated the relationship between gender dysphoria, and both psychological outcomes (H3 and H4 supported), indicating variability in the strength of these associations across subgroups. Moderation analyses indicated that the impact of gender dysphoria on quality of life and anxiety differed across sexual orientation categories (asexual, heterosexual, homosexual, and bisexual). Overall, heterosexual and asexual orientations showed comparatively weaker adverse associations between gender dysphoria and psychosocial outcomes, suggesting a potential buffering pattern in relation to minority stress exposure. However, these moderation effects were not uniform across all sexual orientation categories. This aligns with minority stress research indicating that orientations closer to dominant social norms may be associated with relatively reduced cumulative stigma and its psychological impact. In contrast, homosexual and bisexual orientations did not consistently demonstrate significant moderating effects, which may reflect the compounding nature of minority stress among individuals with multiple marginalized identities, as outlined in the GMSR framework (Testa et al., [2015](#); Wilson et al., [2024](#)). Overall, these findings suggest heterogeneous moderation effects rather than a consistent buffering or risk pattern.

For MGNC individuals, the association between gender dysphoria, and both anxiety and quality of life varied across sexual orientation groups (asexual, heterosexual, homosexual, and bisexual), with heterosexual individuals showing comparatively different patterns relative to other categories, while bisexual and homosexual orientations showed weaker or non-significant variations. A similar pattern was observed among FGNC participants, where asexual and heterosexual orientations showed relatively distinct associations with mental health and quality of life outcomes, whereas homosexual and bisexual orientations demonstrated less consistent effects. These findings reflect heterogeneity in gender minority stress processes across sexual orientation subgroups and are broadly consistent with prior research suggesting that heterosexual orientation may be associated with reduced exposure to sexual orientation–related stigma, thereby attenuating some psychological impacts of gender dysphoria (Bariola et al., [2015](#)). Conversely, existing literature indicates that transgender and gender nonconforming individuals may experience heightened distress following sexual orientation–related stigma, discrimination, and victimization (Szymanski & Mikorski, [2016](#)). Within

this context, sexual orientation appears to shape the intensity of minority stress exposure, thereby contributing to variability in anxiety and quality of life outcomes. However, moderation effects were partial and varied across groups, indicating no uniform pattern of association.

Overall, the findings are consistent with broader theoretical frameworks including gender minority stress theory, and the rejection sensitivity model (Feinstein, [2020](#)), and DSM-5 conceptualizations of gender dysphoria (APA, [2022](#)). The results support a moderated pattern in which sexual orientation influences the strength of associations between gender dysphoria and psychological outcomes, rather than exerting uniform effects across groups. This suggests that stigma-related processes, including internalized transphobia, marginalization, and anticipated rejection, may operate differently depending on sexual orientation context, contributing to variations in psychological distress including anxiety and impaired functioning (Roberts, [2020](#)).

The previous trends of the GMSR framework suggested that distal stressors are closely related to mental health outcomes and it also highlighting the importance of resilience focused strategies (Breslow et al., [2015](#)). The present findings extend this evidence to a Pakistani context, supporting the applicability of minority stress processes in non-Western settings and highlighting gender dysphoria as a key psychological stress-related construct within this framework. The observed heterogeneity may reflect differences in identity salience, stigma exposure, and intersectional minority stress processes across sexual orientation groups. Given the cross-sectional design, causal interpretations cannot be inferred.

Pakistan's sociocultural and political context plays a significant role in shaping these dynamics. Although legislative frameworks such as the transgender persons (Protection of Rights) Act, 2018 represent important progress, inconsistent implementation and socioreligious opposition contribute to ongoing uncertainty and anticipatory stress among gender-diverse individuals. Religious and moral discourses further influence institutional responses across healthcare, legal, and identification systems, often reinforcing concealment and internalized stigma. These stressors are compounded by collectivist family structures, where concerns related to honor (izzat) may contribute to pressure for conformity or secrecy, with important implications for mental health outcomes (Manzoor et al., [2022](#)). At the same time, culturally embedded *KhwajaSira* traditions provide forms

of community recognition and resilience, despite ongoing marginalization. These contextual stressors may differentially impact psychological outcomes across sexual orientation groups.

These findings highlight the need for multilevel and culturally responsive interventions targeting both structural and psychosocial determinants of mental health among gender nonconforming individuals. Relevant strategies may include family-based psychoeducation addressing stigma and honor-related concerns, development and wider use of validated Urdu assessment tools such as the GMSR Scale, and community-level stigma reduction initiatives. Socioeconomic support mechanisms are also critical to reduce reliance on precarious survival strategies and to improve overall well-being. Recognizing sexual orientation as an integral dimension within gender minority stress processes can enhance both empirical understanding and intervention design. Overall, the present findings reinforce the importance of intersectional and contextually grounded applications of gender minority stress theory in Pakistan. The findings indicate a heterogeneous and outcome-specific moderation pattern rather than a uniform effect of sexual orientation.

Conclusion

This study applies the GMSR framework to Pakistan, suggesting that sexual orientation moderates the relationship between gender dysphoria, anxiety, and quality of life. Findings indicate that heterosexual and asexual orientations are associated with relatively weaker negative associations between gender dysphoria and psychosocial outcomes, whereas homosexual and bisexual orientations show comparatively greater vulnerability, reflecting the compounded effects of multiple minority identities. These patterns underscore the need for culturally tailored assessment tools, further quantitative research on GMSR constructs, and interventions addressing both distal and proximal stress processes. Clinically, enhancing resilience through family-inclusive psychoeducation, community outreach, and structural reforms may reduce stigma and improve mental health outcomes. Recognizing sexual orientation as a key contextual moderator is important for developing inclusive and evidence-based mental health frameworks in Pakistan.

Limitations & Suggestions

- Cross-sectional design prevents causal inference; longitudinal studies

are needed to examine developmental trajectories of gender nonconforming individuals. Longitudinal studies with larger, stratified samples are required to explore sexual orientation as a moderator over time.

- Self-report measures may have been affected by social desirability, stigma, and legal constraints, potentially underestimating non-heterosexual orientations. Qualitative research on underrepresented groups (asexual, and GNC persons and *KhawajaSira* communities) is needed to understand intersectional identity dynamics.
- Categorical sexual orientation measures may not capture fluid or evolving attraction patterns. Designing interventions targeting resilience, community connectedness, and mental health support, considering sexual orientation as a moderating factor are the needs of the hour.

Implications for Policy and Practice

- Development of inclusive mental health programs that address sexual orientation differences and promote community connectedness.
- Integration of culturally adapted minority stress assessment tools to improve care for gender-diverse populations.
- Strengthening legal and social protections for all gender nonconforming individuals, including transgender men and bisexual or asexual persons, to reduce structural and proximal stressors affecting mental health.

Author Contribution

Arooj Fatima: conceptualization, data curation, formal analysis. **Humaira Jami:** supervision, writing – original draft. **Uzma Ilyas:** writing – review & editing.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

The data associated with this study will be provided by the corresponding author upon request.

Funding Details

No funding has been received for this research.

Generative AI Disclosure Statement

The authors did not use any type of generative artificial intelligence software for this research.

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