Research Report

DEPRESSION, ANXIETY AND STRESS AMONG THE LGBTQIA+ POPULATION IN NORTHERN KERALA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: LGBTQIA+ are a minority exposed to discrimination, stigma, and unfavorable legislation. They face difficulty in accessing appropriate healthcare interventions, which makes them more prone to psychological dysfunction. However, currently, there is a dearth of research in this area. Hence, this study aimed to estimate the prevalence of depression, anxiety, and stress among the LGBTQIA+ population in Northern Kerala. Also, this study attempted to find the association between sociodemographic profile and severity of anxiety, depression, and stress. **Materials and Methods**: Depressive symptoms, anxiety symptoms, and stress levels were evaluated in 78 participants from a health awareness camp for the LGBTQIA+ community using the PHQ-9 questionnaire, GAD-7 scale, and Perceived Stress Scale. Statistical analysis was conducted using SPSS version 20.0. **Results:** The majority of the participants experienced minimal to mild anxiety (70.5%) and depressive (47.5%) symptoms. Moderate level of stress was reported by 84.6% of participants. Association between anxiety symptoms and sociodemographic variables like biological sex and gender identity were found to be statistically significant (chi-square =14.986, p value=0.005 and chi-square =12.816, p value=0.046). Depressive symptoms had a significant association with gender identity (chi-square =18.132, p value=0.034), and stress had an association with socioeconomic status, which was found to be statistically significant. (chi-square =15.846, p value=0.003). **Conclusion:** The burden afforded by anxiety, depression, and stress on the lives of the LGBTQIA+ community warrants early detection and psychiatric intervention. In light of a dearth of studies, further research in this area is the need of the hour.

Keywords: Depression, Anxiety, Stress, LGBTQIA+ population.

INTRODUCTION

LGBTQIA+ are one of the most marginalized and underprivileged sections in society. [1,2,3] The emotional and physical trauma persists due to the problems of hopelessness, negligence, inadequate support from family, and inadequate employment possibilities, added to the pre-existing conditions of marginalization and social exclusion. [3,4] A study by Meyer et al identified that numerous stressors were associated with minority identification; for instance, some individuals may internalise stigma, conceal their identity out of fear of injury, or be suspicious of others (expectations of rejection). There are three minority stress mechanisms that are pertinent to LGBTQIA+ people. These include (a) objective, external stressful situations and events (both acute and chronic), (b) the expectation of such situations and the level of attention that goes along with them, and (c) internalizing negative attitudes from society. [5,6,7]According to King et al. (2008) systematic review, LGBTQIA+ individuals are more likely than heterosexuals to experience mental health issues, suicidal thoughts, substance abuse, and intentional self-harm.[8]

A study conducted by Ferlatte et al in Canada in 2019 found the prevalence of depression as 37.5% and 73.6% were found to have suicidal risk.[9] In a Study conducted in Poland by Kardasz et al LGBTQ+ individuals had shown higher anxiety scores in comparison to heterosexual individuals.[10] A Study conducted by Parchem et al in United States found mean anxiety symptoms were significantly higher when compared to pre-

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pandemic era, but no differences in mean depressive symptoms were detected. Results differed according to gender and sexual minorities. Financial stress, pandemic-related concerns, and witnessing discrimination were risk factors while academic performance, positive mental health, formal support were protective factors. [11]A study conducted in United States by Felner et al identified stressors such as self-stigma, expectations of rejection, and interpersonal and structural discrimination. [12]

A recent study conducted in Kerala by Das et al during Covid 19 found that 44.3% of the participants from the LGBTIQIA+ community experienced depression and 41.5% experienced anxiety compared to other members of society.[3] In a research project conducted under the research scheme of the National Human Rights Commission of India by Susanta Kumar et al in India found that 60.3%, 64.1% and 66.6% experienced stress, anxiety and depression respectively. The study also reported that higher scores of depressive and anxiety symptoms were found among Transgender and gay communities.[13] In a study conducted by Hebbar et in Manipal (2018) 25% of the participants suffered from depression and 18.7% had anxiety disorders. [14]

Meenal et al. found that 60% of the respondents had moderate, severe, or extremely severe depression in India. Anxiety that was moderate, severe, or extremely severe affected 71% of those surveyed. Fifty-one percent reported moderate, severe, or extremely severe stress. The information showed a strong positive relationship between stress level and educational attainment.[15] A study conducted by Longna et al in Assam found that 54% of participants experienced moderate level of stress.[16]

In the Indian setting, data on the exact population of the community is scarce. The Census conducted in 2011 included transgender population for the first time, which estimated the third gender count to be around 5 lakhs.[17] Homophobia and discrimination against LGBTQIA+ individuals remain significant issues in India despite recent legal progress. Many LGBTQIA+ persons face stigma, harassment, and violence in daily life, exacerbating mental health challenges and limiting access to essential rights.[18] Such challenges make them more prone to anxiety, depression, and stress. Early detection and management of psychiatric illness improve their quality of life, which emphasizes the need for adequate training and awareness among healthcare providers. Currently, research is scarce in this area. Hence, our study aimed to estimate the prevalence of depression, anxiety, and stress among the LGBTQIA+ population in Northern Kerala and to find the association between sociodemographic profile and severity of anxiety, depression, and stress.

MATERIALS AND METHODS

A Cross-sectional study was conducted among the LGBTQIA+ population attending an awareness camp conducted by the District Social Justice Department. The camp was conducted in December 2023 at District Panchayat Hall, Civil Station Malappuram. The study population included people above 18 years of age and those who gave consent. Self-reported participants with severe medical illness were excluded. Participants with intellectual disability were excluded based on clinical assessment. The sample size was calculated to be 78 using the formula: $n = \frac{z_\alpha^2 pq}{d^2}$ where z_α = standard normal value = 1.96, P = prevalence = 44.3(taken from a study conducted by Das et al in Kerala[3]), q = 100-p = 55.7, d = absolute error = 11%.

The research proposal was approved by the Institutional Ethics Committee, and written informed consent was obtained from each study participant. Personal data like name or address were not collected. Individual data was kept confidential throughout the study. A total of 100 participants attended the awareness camp, out of which ninety-eight met the eligibility criteria. Five participants were not willing to participate in the study. Out of the Ninety-three participants, 78 were recruited for the study consecutively. Sociodemographic details like age, biological sex, gender identity, sexual orientation,

education, employment, socioeconomic status, and religion were collected. Depression, anxiety, and stress were assessed using PHQ9, GAD 7, and Perceived Stress Scale, respectively.

Study Tools

Patient Health Questionnaire (PHQ-9)

The Patient Health Questionnaire (PHQ-9) [19] is a self-rated tool used for screening, diagnosing, and measuring the severity of depression with good internal consistency (Cronbach's α=0.89), reliability(r=0.945) and validity[20]. It consists of 9 items, with responses graded from 0 to 3, resulting in total scores ranging from 0 to 27. The scoring designates levels of depression as follows: 1-4 indicates Minimal depression, 5-9 Mild depression, 10-14 Moderate depression, 15-19 Moderately severe depression, and 20-27 Severe depression.

Generalized Anxiety Disorder 7-item Questionnaire (GAD-7)

The Generalized Anxiety Disorder 7-item Questionnaire (GAD-7)[21] is used to screen for anxiety and assess its severity with good internal consistency (Cronbach's α=0.92), reliability(r=0.83) and validity. Responses are scored from 0 to 3, with total scores ranging from 0 to 21. The interpretation of scores is as follows: 0-4 indicates minimal anxiety, 5-9 indicates mild anxiety, 10-14 indicates moderate anxiety, and a score greater than 15 indicates severe anxiety.

Perceived Stress Scale

The Perceived Stress Scale [22] is a widely used tool for measuring stress perception, with good internal consistency (Cronbach's α=0.78) and validity[23]. with responses scored from 0 to 4, resulting in total scores between 0 and 40. Scores of 0-13 indicate low stress, 14-26 indicate moderate stress, and 27-40 indicate high perceived stress. The questionnaires were translated into Malayalam by principal investigator and it was back-translated by two other faculties in the department. To assess socioeconomic status, B G Prasad's updated socioeconomic scale was utilized, which is based on the family's per capita monthly income. [24,25]

Statistical Analysis

The quantitative and categorical data were represented as mean ± SD and frequency (%), respectively. Data of all the participants were complete with respect to all the variables, hence there was no missing data. Normality test was performed (Kolmogorov Smirnov test) before selecting statistical test. Appropriate statistical tests like chi-square test/Fisher's exact/ Kruskal Wallis test were used to find the association of depression, anxiety, and stress with selected background variables. For all statistical interpretations, $p < 0.05$ was considered the threshold for statistical significance. The statistical software program SPSS, version 20.0, was used to conduct the statistical analyses.

RESULTS

The sample size was 78. The mean age of the study participants was 31.94 (SD = 7.061) years. A normality test was done to determine whether the data followed a normal distribution. The socio-demographic description of the sample is summarized. (Table 1). Most of the participants had high school levels of education (51.3%) and were hailing from a lower middle socioeconomic status (75.6%). About half of the participants were Hindus (52.6%).

Among the 78 participants, the majority experienced minimal to mild anxiety (70.5%) and depressive (47.5%) symptoms. Additionally, 66 participants (84.6%) reported moderate stress levels, whereas 4 participants (5.1%) reported

high stress. (Table 2). The mean level of perceived stress was 19.128 (SD = 4.844).

Table 1: Sociodemographic Description of the Study Sample

		Frequency (N)	Percentage (%)
Biological Sex	Male	73	93.6
	Female	4	5.1
	Prefer not to say	1	1.3
Gender Identity	Male	4	5.1
	Female	1	1.3
	Transgender	72	92.3
	Prefer not to say	1	1.3
Sexual Orientation	Bisexual	5	6.4
	Heterosexual	1	1.3
	Gay	67	85.9
	Others	3	3.8
	Prefer not to say	2	2.6
Education	Primary School	3	3.8
	Middle School	23	29.5
	High School	40	51.3
	Graduate	11	14.1
	Professional Degree	1	1.3
Employment	Unemployed	23	29.5
	Unskilled work	29	37.2
	Semi-skilled	19	24.4
	Skilled	7	9.0
Socioeconomic status	Lower	12	15.4
	Lower Middle	59	75.6
	Middle	7	9.0
Religion	Nil	2	2.6
	Hindu	41	52.6
	Christian	11	14.1
	Muslim	24	30.8

Age was not following normal distribution; hence, the Kruskal Wallis test was done to compare age among different severity categories of depression, anxiety, and stress. Age did not show any significant association with anxiety symptoms, depressive symptoms, and stress. (Table 3).

Table 2: Prevalence of Depression, Anxiety and Stress in LGBTQIA+ Population

		Frequency (N)	Percentage (%)
Anxiety symptoms	Minimal Anxiety symptoms	15	19.2
	Mild Anxiety symptoms	40	**51.3**
	Moderate Anxiety symptoms	17	21.8
	Severe Anxiety symptoms	6	7.7
Depressive symptoms	No Depressive symptoms	6	7.7
	Minimal Depressive symptoms	8	10.3
	Mild Depressive symptoms	29	**37.2**
	Moderate depressive symptoms	18	23.1
	Moderately Severe depressive symptoms	10	12.8
	Severe Depressive symptoms	7	9.0
Perceived Stress	Low Stress	8	10.3
	Moderate Stress	66	**84.6**
	High Stress	4	5.1

There was a statistically significant association between anxiety symptoms and sociodemographic variables like biological sex (p=0.005) and gender identity (p=0.046). (Table 4)

Table 3: Association of Age with Anxiety Symptoms, Depressive Symptoms, and Perceived Stress

Variables		Category	Mean rank	p-value
AGE	Anxiety	Minimal /mild anxiety symptoms	41.85	0.24
		Moderate anxiety symptoms	36.41	
		Severe anxiety symptoms	26.67	
	Depression	No depressive symptoms	29.33	0.51
		Minimal/mild depressive symptoms	41.43	
		Moderate depressive symptoms	42.50	

	Stress	Moderately severe/severe depressive symptoms	35.71	
		Low perceived stress	33.69	0.41
		Moderate perceived stress	41.43	
		High perceived stress	42.50	

Among the socio-demographic variables, depressive symptoms had a significant association with gender identity (p=0.034). (Table 5) While biological sex, which was related to anxiety, showed no significant association.

Table 4: Association of Anxiety Symptoms with Sociodemographic Variables among LGBTQIA+ Population

		Min	Mod	Mod/ Severe	χ^2/F P
Biological Sex	Male	52	17	4	14.98 **0.005**
	Female	3	0	1	
	Prefer not to say	0	0	1	
Gender Identity	Male	3	1	0	12.81 **0.04**
	Female	1	0	0	
	Transgender	51	16	5	
	Prefer not to say	0	0	1	
Sexual Orientation	Gay	48	15	4	14.60 0.06
	Heterosexual	0	0	1	
	Bisexual	3	1	1	
	Others	2	0	0	
	Prefer not to say	2	1	0	
Education	Primary School	2	0	1	6.80 0.55
	Middle School	16	6	1	
	High School	29	7	4	
	Graduate	7	4	0	
	Professional Degree	1	0	0	
Employment	Unemployed	12	7	4	12.59 0.05
	Unskilled	26	3	0	
	Semi-skilled	11	6	2	
	Skilled	6	1	0	
Socio-economic status	Middle	6	0	1	5.42
	Lower Middle	43	13	3	
	Lower	6	4	2	0.24
Religion	Nil	1	1	0	10.03 0.12
	Hindu	30	10	1	
	Christian	8	3	0	
	Muslim	16	3	5	

Min- Minimal; Mod - Moderate

Table 5: Association of Depressive Symptoms with Sociodemographic Variables among LGBTQIA+ Population

		Min	Mild	Mod	Mod/ Sev	χ^2 P
Biological Sex	Male	5	35	18	1	6.29 0.39
	Female	1	2	0	1	
	Prefer not to say	0	0	0	1	
Gender Identity	Male	0	2	2	0	18.13 **0.03**
	Female	1	0	0	0	
	Transgender	5	35	16	16	
	Prefer not to say	0	0	0	1	
Sexual Orientation	Gay	5	31	17	14	8.41 0.75
	Heterosexual	0	0	0	1	
	Bisexual	1	2	1	1	
	Others	0	2	0	1	
	Prefer not to say	0	2	0	0	
Education	Primary School	0	1	1	1	9.23 0.68
	Middle School	3	11	3	61	
	High School	3	16	13	8	
	Graduate	0	8	1	2	
	Professional Degree	0	1	0	0	
Employment	Unemployed	3	7	5	8	15.7 0.07
	Unskilled	1	16	10	2	
	Semi-skilled	2	8	3	6	
	Skilled	0	6	0	1	
SES	Middle	0	4	1	2	5.36 0.49
	Lower Middle	6	25	16	12	
	Lower	0	8	1	3	
Religion	Nil	0	2	0	0	7.77 0.55
	Hindu	5	19	10	7	
	Christian	0	6	1	4	
	Muslim	1	10	7	6	

Min- Minimal; Mod- Moderate; Sev - Severe

Perceived stress had a significant association with socioeconomic status (p=0.003), while biological sex and even gender identity showed no significant association. (Table 6)

Table 6: Association of Stress with Sociodemographic Variables among LGBTQIA+ Population

		Low	Mod	High	χ^2 p-value
Biological Sex	Male	7	62	4	1.32 0.85
	Female	1	3	0	
	Prefer not to say	0	1	0	
Gender Identity	Male	0	4	0	9.70 0.13
	Female	1	0	0	
	Transgender	7	61	4	
	Prefer not to say	0	1	0	
Sexual Orientation	Gay	6	58	3	11.27 0.18
	Heterosexual	0	1	0	
	Bisexual	1	4	0	
	Others	1	2	0	
	Prefer not to say	0	1	1	
Education	Primary School	0	3	0	12.64 0.12
	Middle School	3	20	0	
	High School	4	33	3	
	Graduate	0	10	1	
	Professional Degree	1	0	0	
Employment	Unemployed	4	16	3	7.89 0.24
	Unskilled	2	27	0	
	Semi-skilled	2	16	1	
	Skilled	0	7	0	
Socioeconomic status	Middle	1	4	2	15.84 **0.003**
	Lower Middle	7	52	0	
	Lower	0	10	2	
Religion	Nil	0	2	0	3.22 0.78
	Hindu	6	33	2	
	Christian	1	10	0	
	Muslim	1	21	2	

Mod- Moderate

DISCUSSION

In the current study, the majority of the participants were young. These findings were almost similar to a research study conducted by Susanta Kumar et al. India, where the mean age of the respondents was 29.97 ± 8.71 years.[13] Most of the participants in the present study were Hindus followed by Muslims and Christians. This could be explained by the religious distribution of India according to the 2011 Census.[17] The majority of the participants reported their biological sex as male followed by female. In a study conducted by Salim et al (2022) majority of participants reported their biological sex as male (63.1) .[26] In the present study, the sexual orientation of majority of the participants is gay, followed by bisexual. In a study conducted by Salim et al (2022) majority of participants reported their sexual orientation as Gay (42.3).[26]

As per the present study about half of the participants had high school level of education and majority were engaged in unskilled job. A research project conducted in North India [13] reported that 29.6% had high school education and 48.8% did unskilled or semiskilled job in Lucknow, 43.8% had primary school education and 60.2% did unskilled job in Bhubaneswar, 23.2% had intermediate or post high school diploma and 56.4% were unemployed in Mumbai and 40.8% had high school education and 54.4% did unskilled job in Puducherry. The present study comprises majority of the participants with higher education when compared to North India. There is a considerable reduction in the number of participants engaged in unskilled job. This could be explained by the high literacy rate of Kerala as per the Census 2011.[17] The importance given to education and the availability of job opportunities in South India may explain the findings.[27] This could be strengthened by implementing existing reservations in job and education for them.

In the present study majority of the participants had minimal to mild anxiety symptoms. A study conducted by Das et al in Kerala during Covid pandemic reported a higher level of anxiety symptoms (41.5%).[3] A study conducted in Mumbai (77.2%) and Puducherry (54%) also

revealed severe levels of anxiety symptoms.[13] Inadequate coping strategies and perpetuating significant psychosocial stressors in the sexual minority may be attributing for the finding. [5,6,7]

In the current study majority of the participants experienced minimal to mild depressive symptoms. A study conducted by Das et al in Kerala reported a severe level of depressive symptoms (44.3%).[3] A study conducted by Susanta Kumar et al in Mumbai (74.4%) and Puducherry (68%) also identified severe depressive symptoms.[13] The finding from studies clearly portraits the intense distress and helplessness to which this minority is subjected to. Early detection of anxiety and depressive symptoms could prevent them from self-harm attempts, which could be addressed by providing speciality clinics in hospitals. Proper awareness should be given to public and the community through mass media which could reduce the stigma faced by them. Implementing the existing laws and providing adequate legislation could reduce the harassment and discrimination from the society.

Among the participants in the present study, the majority reported moderate stress followed by low stress and high stress. This can be because of the rejection and neglect they experience from others, which discourages them from communicating to their families and other people about their challenges. All of these may be explained by Meyer et al.'s minority stress concept.[5,6,7] The present study also reveals that the participants of lower and lower middle socioeconomic status are experiencing more stress compared to those in middle socioeconomic status. A study conducted by Jadva et al found that lower socioeconomic status was a risk factor for self-harm and suicide.[28]

A study conducted by Yadav et al identified that most of the participants were physically assaulted by their parents and were denied personal needs, which compelled them to leave their families. The study also identified that they were stared and teased by others in common places.[29]

A study conducted by Ahuja et al identified that the combination of limited access to affordable health services and social obstacles results in increased anxiety and depression. The study further emphasizes that the participants lack adequate awareness regarding the medical services available for their surgical and hormonal needs, in addition to the accessibility of hospitals. Lack of adequate training among healthcare providers, lack of specialist care in primary healthcare level and inaccessibility to insurance services (which lead to increased financial burden while accessing treatment options from private hospitals) were identified as a barrier to gender affirmation surgeries.[30]

Strength of our study is one being a face-to-face evaluation, unlike majority of the studies which had utilized internet based google forms. Our study has various limitations: A larger sample size would be required for generalizing the results. The study design was a Cross-sectional study. The longitudinal course of the deficits and the various factors affecting them need to be assessed. Rating scales used are screening tools and not diagnostic tools.

CONCLUSION

The inclusion of new guidelines in medical education would enhance the awareness among healthcare workers. Establishing Psychiatry clinics and counseling sessions in hospitals would reduce the barrier to seeking healthcare. Proper measures against conversion therapy are needed. Appropriate legislation and the creation of safe spaces may help improve their quality of life. Awareness among the public could be

enhanced through social media, which reduces the stigma towards them.

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