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Associations Between Minority Stressors and Mental Health and Changes Following a Gratitude Journaling Intervention Among Sexual Minority Adults in Nigeria

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Abstract

Sexual minorities experience disproportionately high rates of mental health challenges due to unique stressors linked to their minority status. This study investigated the relationship between minority stressors and mental health outcomes among sexual minorities, while evaluating the effectiveness of a gratitude-based intervention. Participants were 213 individuals aged 17–43 years (M = 27), including 139 males (65.3%), of whom 53.1% identified as men who have sex with men (MSM) and 20.7% as bisexual. Recruitment utilized purposive and snowball sampling to ensure diversity. Data were collected via self-administered questionnaires (both physical and online), incorporating standardized measures such as the Internalized Homophobia Scale, Heterosexist Discrimination Scale, Stigma Consciousness Questionnaire, and the DASS-21. The gratitude intervention, delivered over four weeks, included daily journaling and structured reflection aimed at fostering resilience. Pre- and post-assessments were analyzed using SPSS 26, with Pearson's correlation assessing relationships between minority stressors and mental health outcomes, and repeated measures ANOVA evaluating intervention efficacy. Findings revealed significant associations between minority stressors and adverse mental health. Internalized homophobia strongly correlated with depression and anxiety, heterosexist discrimination was linked to anxiety, and stigma consciousness to general distress. The gratitude-based intervention produced substantial reductions in symptoms: depression scores declined from M = 9.04 (SD = 3.90) to M = 0.46 (SD = 0.57), with anxiety and stress also significantly reduced ($p < .001$). These results underscore the detrimental effects of minority stressors and highlight gratitude practices as promising tools for enhancing psychological well-being among sexual minorities, warranting further exploration of their long-term benefits.

Background of Study

In recent years, research attention has increasingly focused on the mental health and well-being of sexual minority populations, particularly the ways in which stigma and discrimination contribute to adverse psychological outcomes (Chan & Mak, 2019), owing to the wider acceptance of same-sex relationships in many parts of the world, including Africa (Baiocco *et al*., 2023). Studies have shown that, compared to heterosexual individuals, sexual minority individuals have an increased risk of experiencing mood and anxiety disorders (Gilman *et al*., 2001; Ross *et al*., 2018; Sandfort *et al*., 2006; Semlyen *et al*., 2016). Extant research indicates that 37% of sexual minority adults have experienced mental illness in the past year, more than double that reported by heterosexuals (Medley *et al*., 2016). Furthermore, LGBTQ+ individuals have at least one and a half times higher risk for depression and anxiety disorders and at least two times higher risk for suicide attempts, with some studies finding that up to 20% of sexual minority individuals attempt suicide in their lifetime (Hottes *et al*., 2016; Herek *et al*., 1999; Meyer *et al*., 2021). In the United States of America, for instance, where data are available, individuals who identify as sexual minorities comprise approximately 6% of the population (Copen *et al*., 2016; Herbenick *et al*., 2010), and disproportionate rates of mental illness among these individuals are a public health concern (Bränström *et al*., 2023; Cochran, 2001; Mongelli *et al*., 2019). As a result of disparities in mental health outcomes, in addition to variances in physical and behavioral health (Fredriksen-Goldsen *et al*.,

2014; Marshal *et al*., 2008), the National Institute on Minority Health and Health Disparities under the U.S. National Institutes of Health officially categorized sexual and gender minorities as a health disparity population for research purposes in 2016 (National Institute on Minority Health and Health Disparities, 2016). However, much of the research on minority stressors, such as internalized homophobia, heterosexist discrimination, and stigma consciousness, and their implications for mental health outcomes has been conducted predominantly in Western contexts (Brooks, 1981; Meyer, 1995, 2003; Meyer & Frost, 2013). Existing evidence indicates that sexual and gender minority populations experience significant mental-health disparities associated with stigma, discrimination, rejection, and other minority stressors (Fish et al., 2020).

Concerns about mental health outcomes and health disparities among sexual and gender minority populations have received increasing research attention; however, substantial gaps remain in the representation of diverse and multiply marginalized LGBTQI populations in health research (Poteat et al., 2021a, 2021b). These gaps are particularly important in contexts such as Nigeria, where research on the size, characteristics, and mental-health experiences of sexual and gender minority populations remains limited. These disparities have been shown to exist in many different countries, communities, and cultures around the world, including among transgender and gender nonconforming populations (Bockting *et al*., 2016; Clements-Nolle *et al*., 2001), but in Nigeria and other sub-Saharan African countries there is a dearth of literature on the association between minority stressors and mental health outcomes among these growing populations (Hwahng & Kaufman, 2024; World Health Organization, 2023). Few studies have examined rates of mental illness among these minority groups, but what little there is suggests that they are more likely to suffer from serious mental illness (Cochran, 2001; Hatzenbuehler, 2009, 2016; Kelleher, 2009). This is consistent with the broader literature documenting the psychological legacy of prejudice and stigma (Allport *et al*., 1954) and the ways in which stigma "gets under the skin" to produce emotional and behavioral dysregulation (Hatzenbuehler, 2009, 2016).

Although there seems to be a preponderance of empirical evidence supporting the positive effect of gratitude interventions on mental well-being (Chan, 2010; Froh *et al*., 2008; Seligman *et al*., 2005; Watkins *et al*., 2003; Wood *et al*., 2008), there have also been challenges to their efficacy (Wood *et al*., 2010; Diniz *et al*., 2023). Davis *et al*. (2016) conducted a series of meta-analyses investigating the efficacy of gratitude interventions across three outcomes (gratitude, anxiety, psychological well-being) and determined that appreciation interventions typically yield minimal impacts. Other meta-analyses concluded that gratitude interventions have a small effect on depression (Cregg and Cheavens, 2021; Dickens, 2017) and anxiety (Cregg and Cheavens, 2021). Dickens (2017) states explicitly that the effect of gratitude interventions may be limited for university students, who are potentially less invested in the practice when the intervention is part of a course. Nevertheless, emerging evidence suggests that gratitude practices buffer stress and negative affect even amid global crises such as the COVID-19 pandemic (Fekete & Deichert, 2022; Geier & Morris, 2022), that appreciation of others attenuates the association between stressful life events and depressive symptoms (Deichert *et al*., 2019), and that gratitude uniquely predicts lower depression even in chronic illness populations (Sirois & Wood, 2017).

However, much of this evidence was initially established in Western nations, which raises inquiries regarding the recognition and addressing of mental health challenges experienced by sexual minority individuals globally through the lens of minority stress theory (Meyer, 1995, 2003; Frost and Meyer, 2023; Diamond & Alley, 2022). The efficacy of gratitude-based interventions such as gratitude journaling in improving mental health outcomes has also been inconsistent (Emmons & Stern, 2013; Sansone & Sansone, 2010), hence their adoption in this study to either debunk or affirm their efficacy. In the Nigerian context, there remains a relative scarcity of empirical literature examining the relationships among internalized homophobia, heterosexist discrimination, stigma consciousness, and psychological well-being among sexual minorities. This gap is particularly important given the broader structural and social stigma surrounding sexual minority identities in Nigeria. Evidence from international research indicates that sexual orientation concealment is common among sexual minorities living in high-stigma environments and is associated with poorer mental health outcomes (Pachankis & Bränström, 2019; Pachankis et al., 2020). Indeed, Pachankis and Bränström (2019) estimated that sexual minorities in Sub-Saharan Africa have among the highest levels of sexual orientation concealment globally, reflecting the influence of structural stigma and hostile social environments. Consequently, the hidden nature of sexual minority populations in high-stigma settings can create substantial challenges for recruitment, sampling, and the generation of population-based evidence, further contributing to gaps in the literature. There are limited studies examining the relationship between minority stress and mental health issues including anxiety, depression, and stress symptoms in this particular group in Nigeria or Sub-Saharan Africa. In Nigeria, sexual minority individuals experience social marginalization, discrimination, violence, family rejection, and stigma related to their sexual orientation, with these minority stressors occurring alongside concealment and internalized homophobia and contributing to mental health problems such as depression, anxiety, social isolation, and suicidal thoughts **(**Ogunbajo et al., 2020; Ogunbajo et al., 2021**)**.

The substantial knowledge vacuum regarding the effects of minority stressors on mental health outcomes, and the potential of gratitude-based interventions as therapy (Alessi, 2014; Pachankis, 2015; Vaughan & Rodriguez, 2014), forms the foundation upon which this study is built. By investigating these relationships, the study sought to provide empirical evidence that deepens understanding of the psychological impact of minority stress and evaluates the efficacy of a constructive psychological intervention for enhancing the mental health of these underprivileged communities. The study addressed the following research questions: (i) For sexual minorities, is it likely that internalized homophobia correlates positively with depressive symptoms? (ii) In what way will heterosexist discrimination associate with anxiety symptoms among sexual minorities? (iii) Will stigma consciousness or perceived stigma positively associate with general distress among sexual minorities? (iv) Will gratitude-based intervention improve issues pertaining to mental health among sexual minorities?

METHODOLOGY

Research Design

In order to accomplish the research goals and answer the research questions, the study was divided into two parts. The first phase involved a cross-sectional survey to explore relationships among the study variables. This type of design investigates the connection between two or more variables to determine whether a change in one leads to a change in the other. Additionally, it assesses the relationship between those variables. Some advantages of the correlational design include the ability to test expected relationships between variables and make predictions. It also allows for the assessment of these relationships within the context of everyday life experiences. A structured questionnaire was distributed to a sample of persons from the sexual minority demographic to accomplish this who were considered representative of the broader LGBTQ community in Delta State. The intervention phase made up the second part of the research. This research used a one-group pre- and post-test quasi-experimental design; participants were given a survey to fill out before the intervention, which lasted four weeks. After the intervention, participants were evaluated again.

Research Area

The study was conducted in Delta State, South-South Nigeria. Specifically, the study was conducted in five different locations namely: Asaba, Warri, Udu, Ughelli and Ika local government areas. The locations were selected using purposive sampling based on participants' availability, during General Ibrahim Babangida's military regime. To the north lies Edo State, to the east are the states of Anambra and Rivers, and to the south is Bayelsa State. On the west coast, stretching for around 160 kilometers, is the Bight of Benin. In 1991, the state was established with 12 LGAs; later, it expanded to 19 LGAs, and presently there are 25 LGAs. The state capital is Asaba, which is situated along the River Niger in the northeastern part of the state. Warri, which is located on the southwestern coast and has major oil and gas development operations, is the economic hub of the state.

Population of the Study

The population of the study were members of sexual minorities (LGBTQ) who are 17 years old and above. The population comprises individuals sharing one or more traits of interest to the researcher (Adam & Kamuzora, 2008). The specification of the population targeted by the inquiry influences the decisions researchers must make regarding sampling and resource allocation (Kothari, 2004).

The population for this study consists of individuals from the LGBTQ+ community. Due to the unique characteristics and diverse experiences within this community, it is considered an infinite population. This categorization is based on the difficulty of establishing a precise, comprehensive count of LGBTQ+ individuals, particularly due to societal stigma, privacy concerns, and the evolving nature of gender and sexual identity. For this research, participants include self-identified LGBTQ+ individuals from various demographic backgrounds, encompassing different age groups ranging from 17 to 43 years, socioeconomic statuses, and geographical regions within Delta State. The study did not place restrictions based on gender identity, sexual orientation, or other sub-categories within the LGBTQ+ spectrum, to capture a broad range of experiences and perspectives. Given the infinite nature of this

population, recruitment of participants were conducted using both physical outreach (Support group meetings at the OSS) and online platforms to ensure diverse participation. Special consideration was given to the privacy and confidentiality of the participants, in line with ethical guidelines for research with minority and vulnerable populations.

Sample and Sampling Techniques

This research focused on individuals from the LGBTQ+ community, which is often considered hard to reach due to issues such as stigma, discrimination, and privacy concerns. The LGBTQ+ community is diverse and constantly changing, making it challenging to determine an exact population size for research purposes. Initially, I used the Cochrane formula for infinite populations (Cochran, 1977) to calculate the required sample size, which recommended a larger sample size. However, due to the practical challenges of recruiting LGBTQ+ individuals, I was only able to recruit 213 participants for this study. Recruiting participants for this study was challenging due to the hard-to-reach nature of the population. I used a combination of physical outreach (community centers, LGBTQ+ advocacy groups etc) and online platforms (social media, LGBTQ+ forums) to ensure diverse representation. However, we faced recruitment challenges, such as the need to protect participant confidentiality, lack of interest to participate in the study and the reluctance of some individuals to disclose their identities due to fear of stigma. These challenges limited the final sample size. Despite these challenges, we were able to recruit 213 participants, This study utilized a hybrid of snowball and purposive selection methods to select participants. The study population was intentionally kept invisible due to its unique characteristics. Purposive sampling involves the researcher using their expert judgement to identify and recruit individuals with specific characteristics relevant to the study objectives. In this case, purposive sampling was used to identify members of the LGBTQ+ community, including bisexual, transgender, queer, and queer individuals who have experienced minority stressors and were born into the LGBTQ+ family.

This method was mostly appropriate because the study focuses on marginalized and hard-to-reach population. Recruiting participants from known safe spaces where U.S. CDC-supported healthcare services are provided ensures access to individuals who met the inclusion criteria for the study. Moreover, due to stigma and legal sensitivities surrounding sexual minorities in Nigeria, a probabilistic sampling technique wouldn’t have been feasible or ethically appropriate. Therefore, purposive sampling allows for the intentional selection of participants who could provide meaningful data to answer the research questions.

Inclusion criteria included are: (i) Individuals who identify themselves as member of LGBTQ+ community, (ii) being 18 years and above, (iii) willingness to participate in the study and (iv) voluntary provision of informed consent (v) ability to read and write in English.

Exclusion criteria are: (i) Individuals who were not identified as LGBTQ+, (ii) those below 18 years of age, (iii) individuals with severe mental health conditions that could limit their ability to understand or respond

to the survey questions, (iv) unwillingness to participate or provide an informed consent, (v) inability to read and write in English.

Snowball sampling is a sampling method used in studies on human populations where respondents are asked to share the questionnaire with their social ties networks. This method is often used when the target population is difficult or hard to reach through traditional sampling techniques. Snowball sampling can help researchers access hard-to-reach populations like the LGBTQ+ community and gather data from individuals who may not be easily identifiable or located through other means. It involves recruiting initial participants, who then refer additional participants, creating a "snowball" effect. This sampling technique has been used in various fields, including sociology, public health, and market research. Snowball sampling is particularly useful for recruiting individuals from hidden, hard-to-reach, or otherwise difficult-to-identify populations because participants can refer other individuals who possess the characteristics of interest (Johnson, 2014). The approach has also been applied in infectious disease research, including during the COVID-19 pandemic, where researchers used snowball sampling to identify and recruit contacts of infected individuals for serological surveys (Kennedy-Shaffer et al., 2021). It allows researchers to gather data from a wider range of individuals and can provide insights into hidden or marginalized populations, such as members of sexual minorities who are the participants for this study. In a nutshell, snowball sampling was employed to reach more participants through referrals from initial respondents. This approach helped to build trust and increase participation among a community that may be reluctant to disclose their identity or experiences to outsiders. Efforts were made to maximize participant engagement and trust, which included ensuring anonymity and using LGBTQ+-friendly recruitment methods highlighted above to reach participants. Given these considerations, the sample size of 213 is reflective of the study's context and the constraints of working with a hard-to-reach population.

Procedure

Despite their well-documented and widely acknowledged strong psychometric properties, I piloted all the instruments used in this study to further confirm and establish their reliability. The pilot study involved 26 participants who were sexual minorities in Owerri, Imo State. The scales used in the study were administered in person during the monthly support group meeting at the Caritas One-Stop Shop (OSS) in Owerri. The OSS was selected as it provides healthcare services for study participants who face stigma and discrimination in public healthcare facilities. Analysis of the results, including Cronbach's alpha and split-half reliability, confirmed the robust psychometric properties of the scales.

The Akwa Ibom State Health Department gave their stamp of approval for the research to go on Research Committee. After the pilot study, four clinical psychologists were enlisted as research assistants for the first phase of the main study in different locations across Delta State. This team consisted of three males and one female, all of whom worked at various one-stop shops in Delta State where members of the key population access healthcare services. Despite being familiar with data collection, the psychologists underwent a brief orientation and training before participating in the study.

Their training covered creating rapport with participants, respecting their decisions, maintaining confidentiality, and obtaining consent without coercion. They were also trained on the purpose of the study, the study's instruments, and methods of data collection.

After training the research assistants, the study participants were recruited both online, using Google Forms, and offline with printed hard copies of the research instruments. The participants were asked to complete a questionnaire after giving their consent to participate in the study which was attached to the research questionnaire. The soft copies of the questionnaire were shared with participants via WhatsApp and other social media platforms, while the printed hard copies were administered in person at various locations including Community-based organizations, one-stop shops etc. Consent forms were included with the questionnaire to give participants time to review the information and respond at their own pace. Data collection for both parts of the study took place over a period of 10 weeks. Interested participants were provided with a link to an externally administered survey via Google Forms, this includes the study's variables and eligibility requirements, as well as the authorized consent form.

The research protocols made it clear to participants that they were free to withdraw from the study at any moment without penalty. Furthermore, participants were given contact information for the study's lead investigator, including an email and phone number, in case they had any inquiries or issues.

In the second part of the study, an intervention was conducted for selected participants who reported symptoms of anxiety, depression, and psychological distress as assessed by DASS-21. The study adopted a one-group pre-test/post-test quasi-experimental design to evaluate the efficacy of gratitude-based intervention on the mental health outcomes of participants who initially reported psychological symptoms. The design was adopted given the ethical and practical constraints of working with a hard-to-reach population and the need to explore changes within individuals over time. Of the 213 participants initially involved, 49 experienced these symptoms on the DASS-21 scale and were asked to take part in the intervention. Out of the 49 eligible participants who reported various forms of psychological symptoms, 41 agreed to take part in the intervention. In the second phase of the study, which involved a four-week gratitude journaling intervention, a total of 41 participants provided their informed consent to participate. Of these, 28 participants successfully completed the intervention, resulting in a completion rate of 68.3% and an attrition rate of 31.3%. They were asked to keep a daily gratitude journal and reflect on things they were grateful for, big or small, for at least 10 minutes a day. Participants were encouraged to reflect daily on their positive experiences and express gratitude through journaling. While 13 participants discontinued their participation before the end of the four weeks, the majority demonstrated consistent participation, suggesting that the intervention was both feasible and acceptable to the targeted population. This intervention consisted of four sessions, and the participants were provided with journals and given instructions on how to use them (Appendix ii). They were also thanked for participating in the study and provided with incentives on the first day. The participants were asked to divide their journals into seven days a week and fill them out before going to bed. The intervention was based on the gratitude condition described by Emmons and McCullough in 2003. The intervention lasted for four weeks and involved weekly in-person group sessions facilitated by the researcher at the One-

Stop Shop. The first session introduced participants to the concept of gratitude as a valuable psychological resource and outlined its empirically supported effects on mental health and overall well-being. Participants learned about the structure and objectives of the intervention, along with the reasoning behind gratitude journaling. They were also provided with personalized journals. The session included an introductory reflective writing exercise in which participants listed three things they were thankful for that day. This was followed by group sharing and feedback on a weekly basis. Each session lasted approximately 60–90 minutes. Below is the summary of the four-week gratitude journaling intervention:

Table 1
Four-Week Gratitude Journaling Intervention Plan

Week	**Session Topic**	**Objectives**	**Sample Journaling Prompts**	**Facilitator's guidance**
Week 1	*Gratitude in daily life*	Cultivate awareness and appreciation of every positive experience.	-Write 3 good things that happened today and why they made you grateful. -Appreciate daily routine.	**-** Encourage mindfulness and reflection on small, often overlooked positives in daily routine
Week 2	*Appreciating things and people in your life*	Foster gratitude in interpersonal relationships and enhance social connections	**-**Write about someone you are thankful for and why. - Describe recent act of kindness you have received -Write a gratitude letter	Emphasize the emotional value of recognizing others contribution to well-being.
Week 3	*Finding strength in adverse situations*	Help participants reframe past or current challenges with a sense of gratitude.	-Reflect on past challenges and lesson learnt -Write about failure(s) that lead to growth	Normalize difficulties and promote resilience by helping participants identify hidden blessings in life challenges
Week 4	*Integrating gratitude into everyday life*	Consolidating gratitude journaling practice beyond the study	**-**Describe how you feel in the past 4 weeks -What are you most grateful for today?	Encourage consistency and personal growth, and sustain a gratitude mindset beyond the intervention period.

The intervention included the following components:

1. **1. Daily gratitude journaling**: Journaling about three things to be thankful for every day and bringing those notebooks to the weekly meetings was the assignment.
2. **2. Group reflection**: During the weekly meetings, participants shared their gratitude experiences, discussed any challenges they faced in maintaining the daily practice, and reflected on how gratitude impacted their mental health. They were given gratitude journals and encouraged to consistently engage in the exercise. To maintain contact and support between sessions, participants were reminded of their daily gratitude task via phone calls, WhatsApp messages or SMS.

At the end of the four-week period, participants completed the DASS-21 again to assess changes in their psychological symptoms. Out of the 41 participants who started the intervention, 28 (68.3%) completed the full four weeks, attending all sessions and completing the post-intervention assessment. The data from these 28 participants were analyzed to determine the efficacy of the gratitude-based intervention in reducing symptoms of anxiety, depression, and distress.

Instrumentation

This section presents the four instruments that were utilized in this study:

The 21-Item Depression, Anxiety, and Stress Scale (DASS-21): In order to quantify the emotional states of sadness, anxiety, and overall distress, Lovibond (1995) created the Depression, Anxiety, and Stress Scale – 21 Items (DASS-21). Four possibilities for participants to choose from were: A score of 0 indicates never, a 1 indicates occasionally, a 2 indicates often, and a 3 indicates mostly or always (Lovibond & Lovibond, 1995). There are three subscales within the DASS-21, each with seven items. Questionnaire items 3, 5, 10, 13, 16, 17, and 21 of the depression scale measure symptoms such as dysphoria, hopelessness, devaluation of life, self-deprecation, disinterest, anhedonia, and lethargy. The anxiety scale (Items 2, 4, 7, 9, 15, 19, 20) measures a variety of symptoms, including physiological arousal and terror components of anxiety, as well as autonomic arousal, skeletal muscle reactions, situational anxiety, and the subjective experience of anxious affect. Anxiety symptoms such as shaking, sweating, feelings of panic, and fear of losing control are assessed by this autonomic activation test. Rather than the GAD-specific worry, the anxiety items seek to gauge the respondent's level of nervous arousal. Response levels to chronic non-specific arousal can be measured using the stress scale, which consists of items 1, 6, 8, 11, 12, 14, and 18. Impatience, anxious arousal, irritability, over-reactivity, and difficulty relaxing are all assessed. Items pertaining to stress gauge the degree to which the respondent feels overwhelmed by life's demands by focusing on their degree of tension and persistent general arousal. The main difference between the anxiety and stress subscales, according to Lovibond and Lovibond (1995), is that the former measures immediate reactions and the latter chronic strain. Anxiety primarily refers to the body's immediate physiological reaction to perceived threats, which includes fear and the fight-or-flight mechanism. On the other hand, stress is a more systemic and long-lasting response to ongoing pressures that are greater than an individual's resources and coping mechanisms, making it

difficult to relax. Depression, anxiety, and stress scores are calculated by adding up the scores of the relevant items.

Rather of viewing mental health issues in a binary fashion, the DASS-21 takes a more nuanced approach.

Research findings corroborated the DASS-21's underlying premise, which states that the variations in the severity of depression, anxiety, and stress experienced by clinical populations and normal people are primarily due to differences in baseline severity (Lovibond & Lovibond, 1995). Classificatory systems like the DSM and the ICD presuppose discrete diagnostic categories, and the DASS-21 does not directly affect this process. Coker et al. (2018) found that the DASS-21's dependability is excellent, with subscales measuring depression (0.81), anxiety (0.89), and stress (0.78).

Recommended cut-off scores for conventional severity labels (normal, mild, moderate, severe, extremely severe) are as follows;

DASS-21 Severity Rating Ranges by Lovibond and Lovibond (1995)

Normal	**Depression**	**Anxiety**	**Stress**
	0–9	**0–7**	**0–14**
Mild	10–13	8–9	15–18
Moderate	14–20	10–14	19–25
Severe	21–27	15–19	26–33
Extremely severe	28 +	20+	34+

Scores on the DASS-21 are normally multiplied by 2 to calculate the final score. In the present study, a pilot study was carried out using a data from twenty-six (26) participants who were different the participants of the main study to obtain item-total reliability and Cronbach alpha. The item-total correlation analysis score for this study in DASS-21 ranges from .31 – .85 and the Cronbach alpha of .88 was obtained under this scale.

Heterosexist Discrimination Events (HHRDS): Szymanski created the Heterosexist Hashing, Rejection, and Discrimination Scale (2006). Based on a composite mean score, the HHRDS indicates significant levels of heterosexist discrimination; values range from 1 (never happened) to 6 (nearly all the time). There are a total of 14 questions in the test, with three subscales measuring different types of discrimination: harassment and rejection, workplace and school discrimination, and other forms of prejudice. The scale was originally created to examine the relationship between heterosexist events and psychological distress among lesbians (Szymanski *et al.*, 2016). Some example items from the scale are “How many times have you been treated unfairly by your family because you are a lesbian,” “How many

times have you been treated unfairly by teachers or professors because you are a lesbian," and "How many times have you be treated unfairly by strangers because you are a lesbian?" This measure has been found to have good internal consistency with an alpha score of .90 (Szymanski *et al.*, 2016). As the original scale was used with lesbian participants (Szymanski, 2006), the scale items in the current study was modified to include the term "an LGBTQ individual" instead of "lesbian." In this study, item-total correlation analysis and Cronbach alpha was obtained using 26 participants who were different from the participants used in the main study. The item-total correlation analysis score ranges from .38 to .80 and the alpha coefficient of .80.

Internalized Homophobia Scale (IHS)

The Internalized Homophobia Scale by Wagner (1994) is a 20-item scale designed to measure how internalized and applied heterosexist cultural ideas are in gay men. The IHS was scored on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Scores range from 20 to 100, with greater scores indicating higher internalized homophobia. Example items from this scale include "I wish I were heterosexual," "Whenever I think a lot about being gay, I feel critical of myself," and "Homosexuality is deviant." In one study, this measure was found to have high convergent validity and high internal consistency with a Cronbach's alpha of .92 (Wagner, 1994). To obtained the reliability and validity of this instrument, pilot study was conducted for 26 participants who were not part of the main study. The Cronbach alpha of .92 was obtained and item-total correlation analysis ranges from .30 to .90.

Stigma Consciousness Questionnaire (SCQ): The Stigma Consciousness Questionnaire developed by Pinel (1999), is a 10-item scale intended to measure an "individual's perceptions of the probability of being stereotyped" and encompasses both personal experiences in the dominant culture and beliefs about how they are viewed as a minority. The instrument was answered on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Responses were averaged to calculate the composite score, with higher scores indicating a greater stigma consciousness. According to the SCQ protocol, items 1, 2, 4, 5, and 6 were reverse-scored to maintain consistency in the direction of the responses. The corresponding composite score ranges from 1 to 7. Since the SCQ was published, there have been modifications in terms used to describe sexual minorities, For certain things, the phrasing was altered by substituting straight people for heterosexuals and gay or LGTBQ individuals for homosexuals. Here are a few sample SCQ questions: are "Stereotypes about LGBTQ people have not affected me personally," "Being an LGBTQ person does not influence how people act with me," and "Most straight people have a problem viewing LGBTQ people as equals." The test-retest reliability and Cronbach's alpha of this scale were demonstrated in a sample of gay men and lesbian women (Pinel, 1999). This instrument's Cronbach's alpha, using 26 participants who were not part of the main study was .78, while the item-total correlation analysis yielded a score ranges from .30 to .90.

Gratitude-based intervention

Gratitude-based intervention is a therapeutic approach that helps adjust our thinking. Hence, we allocate more time to concentrating on the positive aspects of life rather than the unpleasant ones. Gratitude

journaling facilitates a cognitive shift, enabling us to concentrate more on the positive aspects of life rather than the bad ones. The objective of gratitude-based intervention is to mitigate feelings of despondency, anxiety, envy, inadequacy, or stress that arise when we concentrate on perceived deficiencies in our life. Engagement in gratitude therapy enables us to reflect on our possessions and relationships, recognize our progress, and appreciate the desires we formerly held for our current circumstances. Consequently, our perspective and emotional state may transition towards appreciation rather than desire and jealousy.

Method of Data Analysis

Demographic data were analyzed using descriptive statistics, and hypotheses were tested using zero-order correlation and one-way analysis of variance. To find out how the independent variables related to the dependent variable, we employed the zero-order correlation. The intervention's impact on depressive, anxious, and stress-related psychological symptoms was demonstrated using one-way analysis of variance. In order to evaluate the data that was collected, the most recent version of SPSS was utilized.

Ethical Issues

All experimental protocols and procedures for this study were reviewed and approved by the Akwa Ibom State Health Research Ethics Committee (AKSHREC), Ministry of Health, Uyo, Nigeria, under Health Research Ethics Committee approval number AKHREC/29/01/25/316. The protocol, informed consent forms, and other participant information materials received full ethical approval on 15 April 2025, with approval valid from 15 April 2025 to 14 April 2026. All experimental methods, including participant recruitment, informed consent, data collection, and the gratitude-based intervention, were conducted in accordance with the approved research protocol and applicable ethical guidelines. Written informed consent was obtained from all participants before participation in the study.

Result

Table 1
Socio-Demographic Characteristics of the Study Participants

Variable	Frequency (n)	Percent (%)
Gender		
Male	139	65.3
Female	38	17.8
Transman	18	8.5
Transwoman	17	8.0
Missing	1	.5
Total	213	100
Sexual Orientation		
MSM	113	53.1
Lesbian	33	15.5
Bisexual	44	20.7
FSW	10	4.7
FWID	10	4.7
Missing	3	1.4
Total	213	100
Religion		
Christianity	168	78.9
Moslem	5	2.3
Others	36	16.9
Missing	4	1.9
Total	213	100
Marital Status		
Single	186	87.3
Married	24	11.3
Divorced	2	.9
Source: Field data (2024)		

Variable	Frequency (n)	Percent (%)
Gender		
Widowed	1	.5
Total	213	100.0
Source: Field data (2024)		

Table 1 illustrates the demographic characteristics of the 213 participants included in this study. The findings reveal that the majority of respondents were male (65.3%) while female participants were 17.8%, transman and woman were 8.5% and 8.0 respectively. In terms of sexual orientation, over half of the participants identified as MSM (53.1%), followed by individuals who identified as bisexual (20.7%) while FSW were 4.7%. The majority of participants identified as Christians (78.9%), 16.9% preferred not to mention their religion while only 2.3% of the participants were moslem. Regarding marital status, the data showed that the majority were single (87.3%), followed by married individuals (11.3%). The participants' ages ranged from 17 to 43 years, with an average age of 27 years.

Table 2
Zero-Order Correlation showing bivariate relationship among all the variables in the study

S/N	Variable	1	2	3	4	5	6	7	8	9
1	Depression									
2	Anxiety	.52**								
3	Stress	.59**	.85**							
4	Harassment	.38**	.25**	.27**						
5	Discrimination	.30**	.40**	.37**	.66**					
6	Rejection	.34**	.37**	.35**	.56**	.76**				
7	Internalised Homophobia	.29**	.42**	.33**	.29**	.52**	.50**			
8	Stigma Consciousness	.089	.24**	.18**	.10	.28**	.24**	.61**		
9	Age	− .069	− .05	− .05	− .09	− .01	.04	− .03	.002	

***. p = 0.01.*

Source: Field data (2024)

A zero-order analysis was carried out to show the bivariate relationship among the study variables including age. Table 4.2 presents the zero-order correlation matrix showing the correlates of the psychological symptoms for the study. The result shows that depression reported a significant positive

correlation with harassment *(r = 0.38, p < .01)*, discrimination/victimization *(r = 0.30, p < .01)*, rejection *(r = 0.34, p < .01)* and internalized homophobia *(r = 0.29, p < .01)*, while the correlations with stigma consciousness and age were not significant. Also, anxiety reported a significant positive correlation with harassment *(r = 0.25, p < .01)*, discrimination/victimization *(r = 0.40, p < .01)*, rejection *(r = 0.37, p < .01)*, internalized homophobia *(r = 0.42, p < .01)* and stigma consciousness *(r = 0.24, p < .01)*. Similarly, a significant positive correlation was reported between stress and harassment *(r = 0.27, p < .01)*, discrimination/victimization *(r = 0.37, p < .01)*, rejection *(r = 0.35, p < .01)*, internalized homophobia *(r = 0.33, p < .01)* and stigma consciousness *(r = 0.18, p < .01)*.

Table 3
One-ANOVA Repeated Measures Showing the Effect of Intervention on the Psychological Symptoms

Psychological Symptom			***Pre-Test***			***Post-Test***		
	F(1,27)	$\varvec{}_{p}^{2}$	**Mean**	**SD**	**n**	**Mean**	**SD**	**n**
Depression	155.64**	0.85	9.04	3.90	28	0.46	0.57	28
Anxiety	54.85**	0.67	5.32	3.64	28	0.10	0.31	28
Stress	138.47**	0.84	6.57	2.95	28	0.29	0.53	28

**p = 001

Source: Field data (2024)

Table 4.3 presents a repeated measures ANOVA showing the effect of intervention on the psychological symptoms of depression, anxiety and stress for the 28 participants. The result reveals that, for depression, the mean scores between pre-test *(M = 9.04, SD = 3.90)* and post-test *(M = 0.46, SD = 0.57)* were statistically significant *F(1,27) = 155.64, p = 001*, $\varvec{}_{p}^{2}$*= 85.* Also, the pre-test score (M = 5.32, SD = 3.64) and post-test score (M = 0.10, SD = 0.31) for anxiety were statistically significant *F(1,27) = 54.85, p = 001*, $\varvec{}_{p}^{2}$*= 67.* Similarly, the pre-test *(M = 6.57, SD = 2.95)* and post-test *(M = 0.29, SD = 0.53)* scores for stress were statistically significant *F(1,27) = 138.47, p = 001*, $\varvec{}_{p}^{2}$*= 83.*

Table 4
Post-hoc Test Showing the Mean Difference of Pre and Post Intervention Test for Depression, Anxiety and Stress

Variable	*Intervention*	_ $\varvec{X}$	*SE*	*95% CI*		_ ΔX
				LB	*UB*	
Depression	Pre-Test	9.03	0.74	7.52	10.55	
	Post-Test	0.46	0.11	0.24	0.67	8.57*
Anxiety	Pre-Test	5.32	0.67	3.91	6.73	
	Post-Test	0.107	0.06	-0.02	0.23	5.21*
Stress	Pre-Test	6.57	0.56	5.43	7.72	
	Post-Test	0.29	0.10	0.08	0.49	6.28*

A post-hoc analysis was conducted to show whether the mean difference between pre and post test scores is significant for the three psychological symptoms. The result showed that there was a significant difference between pre-test and post-test scores for depression ($\Delta \bar{X}$ = 8.57, $p < .05$), anxiety ($\Delta \bar{X}$ = 5.21, $p < .05$) and stress ($\Delta \bar{X}$ = 6.28, $p < .05$).

Discussion of Findings

The study investigated the relationship between minority stressors and mental health outcomes among sexual minorities, while evaluating the effectiveness of a gratitude-based intervention. Four hypotheses were stated and tested. The first hypothesis, which stated that there would be a positive association between internalized homophobia and depressive symptoms among sexual minorities, was affirmed. A significant positive correlation was observed between internalized homophobia and depressive symptoms. This means that the more an individual internalizes negative views about their sexual orientation, the more likely they are to experience depression. The findings of this study was consistent with the findings of Frost and Meyer, 2009; Igartua *et al*., 2003; Newcomb & Mustanski, 2010). In the Nigerian setting, this implies that when sexual minorities internalize negative societal attitudes, they become more susceptible to depressive symptoms (Barnes and Meyer, 2012; Van Beusekom et al., 2018).

Several psychological mechanisms may explain this link. For self-stigmatization, individuals internalizing homophobia may feel alienated from both the broader society and their own identity, leading to isolation and loneliness, which are key predictors of depression (Meyer et al., 2008; Steptoe et al., 2013). Internalized homophobia can also result in cognitive distortions, such as persistent negative thinking patterns about oneself, which are central to depressive disorders (Hatzenbuehler, 2009). These findings align with previous studies reporting significant associations between internalized homophobia and

poorer mental health and well-being among LGBTQ individuals (Ross & Rosser, 1996; Newcomb & Mustanski, 2010; Yolaç & Meriç, 2021). Evidence from Nigeria similarly indicates that internalized homophobia is associated with poorer quality of life among gay and bisexual men, further demonstrating the relevance of internalized homophobia as a minority-stress-related factor in the Nigerian context (Oginni et al., 2020).

The second hypothesis, which stated that heterosexist discrimination would be positively associated with anxiety symptoms, was affirmed. The positive correlation means that as experiences of discrimination increase, so do symptoms of anxiety. This is consistent with prior research identifying discrimination as a strong predictor of anxiety in sexual minorities (Balsam et al., 2005; Lewis et al., 2006), including victimization by strangers and family (Dunbar, 2006; Herek *et al*., 1997) and discrimination during the COVID-19 pandemic (Kneale and Bécares, 2021).

The third hypothesis, which stated that stigma consciousness would be positively associated with general distress among sexual minorities, was also affirmed. Stigma consciousness was found to be positively associated with general distress, encompassing symptoms of anxiety and depression (Lewis et al., 2006; Pinel, 1999). The findings align with previous research indicating that stigma, prejudice, and discrimination can constitute significant sources of psychological stress among sexual minority populations, thereby increasing vulnerability to adverse mental health outcomes (Meyer, 2003). The Minority Stress Model proposes that sexual minority individuals experience unique stressors arising from stigma and prejudice, including expectations of rejection, concealment of sexual orientation, and internalized stigma, which can contribute to mental health disparities (Meyer, 2003). Empirical evidence has also demonstrated an association between internalized homophobia and internalizing mental health problems, including depression and anxiety, among lesbian, gay, and bisexual individuals (Newcomb & Mustanski, 2010). However, Crocker and Major (1989) proposed that stigmatized individuals may sometimes employ self-protective mechanisms that preserve self-esteem and buffer the psychological consequences of stigma. Thus, variation in psychological outcomes may partly reflect differences in coping resources and the availability of protective factors.

The fourth hypothesis stated that a gratitude-based intervention would reduce psychological symptoms. The gratitude-journaling intervention demonstrated a significant reduction in psychological symptoms post-intervention. Gratitude journaling involves deliberately attending to and recording positive aspects of one's life and experiences. Experimental research has demonstrated that gratitude-focused exercises can enhance subjective well-being and positive affect (Emmons & McCullough, 2003). Similarly, gratitude interventions have been associated with improvements in optimism, life satisfaction, and reductions in negative affect (Froh et al., 2008). More broadly, research indicates that gratitude is strongly associated with psychological well-being and may operate through mechanisms involving positive affect, coping, and adaptive cognitive processes (Wood et al., 2010).

The present finding is also consistent with broader evidence concerning the effectiveness of gratitude interventions. A meta-analysis of 38 studies found that gratitude interventions produced beneficial

effects across several psychological outcomes (Dickens, 2017), while a more recent systematic review and meta-analysis of 64 randomized clinical trials found that gratitude interventions were associated with better mental health and fewer symptoms of anxiety and depression (Kirca et al., 2023). These findings provide empirical support for the use of structured gratitude practices as a potentially useful complementary psychological intervention.

Importantly, gratitude may also have particular relevance for sexual minority populations. Kaniuka et al. (2020) reported that gratitude was associated with lower suicidal ideation among sexual minority individuals, suggesting that attention to positive experiences may function as a protective psychological resource within a population exposed to elevated minority stress. Furthermore, gratitude-writing interventions have demonstrated beneficial effects during periods of collective adversity. For example, Fekete and Deichert (2022) found that a brief gratitude-writing intervention decreased stress and negative affect during the COVID-19 pandemic, while Geier and Morris (2022) reported beneficial effects of a gratitude intervention on mental well-being among university students during the pandemic.

The social dimension of gratitude may provide another explanation for its potential therapeutic value among stigmatized populations. Algoe (2012) proposed the “find, remind, and bind” framework, suggesting that gratitude can help individuals identify responsive relationship partners, strengthen awareness of valuable relationships, and promote interpersonal bonds. This social function may be particularly relevant to individuals experiencing stigma-related social disconnection. In addition, McCullough et al. (2001) conceptualized gratitude as a moral affect with functions that include motivating prosocial behaviour and reinforcing positive interpersonal relationships. These interpersonal processes may complement the cognitive and emotional mechanisms through which gratitude contributes to psychological well-being.

Nevertheless, the effectiveness of gratitude interventions should not be interpreted as universal or equivalent to comprehensive clinical treatment. Research among trauma-exposed populations indicates that gratitude may be associated with well-being even among individuals experiencing post-traumatic stress disorder, but this does not establish gratitude practice as a substitute for evidence-based trauma-focused treatment (Kashdan et al., 2006). Similarly, reviews of gratitude interventions have noted methodological limitations in the literature and the need for more rigorous trials before making strong causal or clinical claims (Wood et al., 2010). Consequently, the effectiveness observed in the present study should be interpreted as evidence that a structured four-week gratitude intervention may be a feasible and potentially beneficial complementary approach for reducing psychological symptoms among sexual minority participants experiencing minority stress.

Finally, the findings provide support for the applicability of Minority Stress Theory beyond the Western settings in which much of the theory's empirical development has occurred. Meyer (2003) conceptualized stigma, prejudice, discrimination, concealment, and internalized homophobia as stress processes capable of contributing to mental health disparities among sexual minorities. The present findings extend this framework by demonstrating the relevance of these processes within a Nigerian

LGBTQ+ population while also suggesting that gratitude may function as a potentially modifiable psychological resource. This is particularly important because evidence from Nigerian sexual minority populations has documented the presence of minority stressors and their relationship with psychological difficulties, supporting the need for culturally and contextually appropriate approaches to mental health promotion.

Limitations

There are a number of limitations to consider. First, the use of purposive and snowball sampling does not enhance the generalizability of the findings and introduces sampling bias as a result of which the sample is not representative of the wider sexual minority population. Also, it was predominantly male participants who already have access to online sites excluding the less connected or more underlying individuals.

Second, all measures relied on self-administered questionnaires, which are susceptible to social desirability bias and recall inaccuracies. Furthermore, mental health outcomes were evaluated over a relatively short intervention period of 4 weeks, thus limiting conclusions about long-term effectiveness of gratitude-based interventions.

Furthermore, the study did not examine other potentially relevant variables such as social support, coping styles, or socioeconomic status that may mediate or moderate the relationship between minority stressors and mental health outcomes. Finally, the absence of a randomized control group restricts the ability to attribute improvements solely to the intervention rather than natural symptom fluctuation or placebo effects.

Despite these limitations, the study provides valuable insight into the impact of minority stress and shows preliminary promise for gratitude-based strategies in improving mental health among sexual minorities.

Future Studies

Building on the limitations identified, future research should consider employing probability-based or stratified sampling techniques to enhance representativeness and improve generalizability across diverse sexual minority groups. Researchers should also explore longer-term follow-up designs to examine the sustained effects of gratitude-based interventions over extended periods.

Further studies are encouraged to include randomized controlled trial (RCT) designs with well-defined control groups to strengthen causal inferences regarding intervention effectiveness. Additionally, incorporating objective or clinician-administered assessments alongside self-report measures may help minimize response bias and improve measurement accuracy.

Future research should also investigate the influence of moderating and mediating factors such as social support, coping mechanisms, socioeconomic status, and intersectional identities to better understand the pathways linking minority stress to mental health outcomes.

Finally, expanding recruitment to include individuals with limited digital access or from rural and highly marginalized communities would provide a more comprehensive understanding of mental health experiences among sexual minorities.

Conclusion

The study emphasizes the significant negative impact of minority stressors, such as internalized homophobia, heterosexist discrimination, and stigma consciousness, on the mental health of LGBTQ individuals. These stressors originate from a societal environment that marginalizes and discriminates against sexual minorities, leading to increased levels of psychological distress. Living in a heteronormative environment where one's identity is devalued can cause chronic stress, worsening mental health issues such as depression, anxiety, and stress. This stress, known as "minority stress," significantly predicts negative mental health outcomes in LGBTQ populations.

The research suggests that interventions focusing on cultivating positive emotional states, particularly gratitude, can act as a protective buffer against the harmful effects of minority stress. Gratitude-based interventions, which emphasize acknowledging and appreciating the positive aspects of life, can help shift individuals' focus away from the pervasive negativity of discriminatory experiences. By fostering an emotional state rooted in appreciation and positivity, these interventions allow individuals to develop resilience and a stronger sense of well-being, even in the face of ongoing stressors.

Furthermore, the study indicates that gratitude may not only improve mood but also provide broader psychological benefits by encouraging individuals to recognize supportive relationships, personal strengths, and moments of joy that may otherwise be overlooked due to the overwhelming nature of discrimination and internalized stigma. Through this process, gratitude can help mitigate the psychological damage caused by minority stress and promote a sense of personal empowerment.

The study concludes that LGBTQ people could benefit from adding gratitude-based interventions to their toolbox of mental health methods. Such treatments have the potential to mitigate the negative impacts of minority stressors and improve mental health outcomes by concentrating on the development of positive emotional states. This discovery highlights the significance of creating mental health strategies that are sensitive to different cultures that address both the external stressors and the internal emotional landscapes of LGBTQ individuals, providing them with tools to cope more effectively with the challenges they face.

Declarations

Author’s Contribution

J.R. Sunday: Conceptualization (lead), methodology (lead), and writing - original draft (lead).

E.M. Akpan: Supervision (lead), writing - review and editing (equal), and project administration (lead).

S.I. Babatunde: Formal analysis (lead), software (lead), and data curation (supporting).

J.E. Effiong: Writing -review and editing (supporting) and validation (equal).

G.R. Umoh: Data curation (lead), investigation (equal), and resources (equal).

K.B. Usen: Visualization (lead), investigation (supporting), and writing- review and editing (supporting).

A.P. Etuk: Methodology (supporting), formal analysis (supporting), and writing - review and editing (supporting).

O.O. Essien: Funding acquisition (lead), resources (lead), and supervision (supporting).

W.E. Akpan: Conceptualization (supporting), project administration (supporting), and writing -review and editing (equal).

U.S. Isaiah: Validation (lead), investigation (supporting), and writing - review and editing (supporting).

G.E. Abikoye: Supervision (equal), writing -review and editing (lead), and critical revision of the manuscript (lead).

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Data Availability Statement

The data supporting the findings of this study are available upon reasonable request. Due to ethical considerations and to protect participant confidentiality, the datasets are not publicly available. Interested researchers may request access by contacting the corresponding author via email at uwemedimoisaiah.msc@uniuyo.edu.ng

Ethics approval and consent to participate

This study was approved by the Akwa Ibom State Health Research Ethics Committee (AKSHREC), Ministry of Health, Uyo, Nigeria, in accordance with the relevant ethical guidelines and regulations governing health research and the principles of the Declaration of Helsinki. Ethical approval was granted under protocol number AKHREC/29/01/25/316 on 15 April 2025, and was valid from 15 April 2025 to 14 April 2026. All study procedures, including participant recruitment, informed consent, data collection, and administration of the gratitude-based intervention, were conducted in accordance with the approved protocol, the relevant guidelines and regulations of AKSHREC, and applicable ethical standards. Written informed consent was obtained from all participants prior to their participation in the study.

Consent for publication: Not applicable. This manuscript contains no individually identifiable details, personal data, or images. All findings are presented strictly in an aggregated, anonymous format.

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Tables 4.2, 4.3

Tables 4.2, 4.3 are not available with this version