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Heightened vigilance and its associations with suicidal ideation and suicide attempt among 285 Korean transgender and nonbinary adults: Effect modification by connectedness to the LGBTQ+ community

Sungsub Choo EdM, PhD¹ | Ranyeong Kim PhD^{1,2} | Hyemin Lee MPH, PhD³ |
Yun-Jung Eom MPH^{1,2} | Horim Yi MSW, PhD⁴ | Rockli Kim ScD^{1,5} |
David R. Williams MPH, PhD⁶ | Seung-Sup Kim MD, MPH, ScD⁷

¹Department of Public Health Sciences, Graduate School of Korea University, Seoul, South Korea

²Interdisciplinary Program in Precision Public Health, Department of Public Health Sciences, Graduate School of Korea University, Seoul, South Korea

³Department of Psychology, University of Maryland College Park, College Park, Maryland, USA

⁴Solidarity for LGBT Human Rights of Korea, Seoul, South Korea

⁵Division of Health Policy and Management, College of Health Science, Korea University, Seoul, South Korea

⁶Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, Boston, Massachusetts, USA

⁷Department of Environmental Health Sciences, Graduate School of Public Health, Seoul National University, Seoul, South Korea

Correspondence

Seung-Sup Kim, MD, MPH, ScD,
Department of Environmental Health
Sciences, Graduate School of Public
health, Seoul National University, 1
Gwanak-ro, Daehak-dong, Gwanak-gu,
Seoul 08826, South Korea.
Email: kim.seungsup@snu.ac.kr

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Abstract

Introduction: Anti-transgender stigma presents threats of discrimination to transgender and nonbinary (TGNB) individuals, prompting them to stay vigilant. Using a longitudinal data of 285 South Korean TGNB adults, we examined vigilance and its associations with suicidal ideation and suicide attempt and explored the protective role of connectedness to the lesbian, gay, bisexual, transgender, and queer (LGBTQ+) community.

Methods: Data were collected in October 2021 (baseline) and October 2022 (follow-up). Vigilance was measured using the 4-item Heightened Vigilance Scale at baseline. At follow-up, 12-month suicidal ideation and suicide attempt, and connectedness to the LGBTQ+ community were measured.

Results: Having heightened levels of vigilance was associated with increased prevalence of suicidal ideation (Prevalence Ratio [PR]: 1.33, 95% Confidence Interval [CI]: 1.09–1.62) and suicide attempt (PR: 2.18, 95% CI: 1.23–3.86), after adjusting for covariates including anti-transgender discrimination experiences and lifetime suicidality at baseline. When stratified by connectedness to the LGBTQ+ community, the associations between vigilance and suicidality remained statistically significant among those with low connectedness whereas no statistically significant association was observed among those with high connectedness.

Conclusion: The study provides empirical evidence for policies and interventions that ensure safety of TGNB individuals from discrimination and promote connectedness to the LGBTQ+ community to reduce the suicide risk among TGNB individuals.

KEYWORDS

connectedness to the LGBTQ+ community, suicidal ideation, suicide attempt, transgender, vigilance

INTRODUCTION

Suicide risk among transgender and nonbinary people

Transgender and nonbinary (TGNB) people have gender identities that are different from the sex they were assigned at birth (American Psychological Association, 2015). In societies that normalize binary gender and cisgender identities (i.e., when one's gender identity and birth-assigned sex align), TGNB individuals are minoritized and experience social isolation and stigmatization that can adversely affect their health (Bränström et al., 2022; Goldsen et al., 2022; Lee, Operario, et al., 2020; Tebbe & Budge, 2022). Particularly, growing evidence has accumulated on the elevated risk of suicidal ideation and suicide attempt among TGNB individuals (Adams & Vincent, 2019; Bränström et al., 2022; Lin et al., 2021). Systematic reviews of studies on TGNB individuals based in Canada and the United States (Adams & Vincent, 2019) and in China (Lin et al., 2021) summarize that average lifetime prevalence ranged between 34.8% and 46.6% for suicidal ideation and 18.8% and 27.2% for suicide attempt. These are greater than the lifetime prevalence of suicidal ideation and attempt of 9.2% and 2.7% reported from a cross-national study that spanned across 17 countries (Nock et al., 2008). Also, a population-based study from Sweden provides further evidence of disparities in suicidality, reporting that lifetime suicidal ideation and suicide attempt were 3- to 4-times more prevalent in transgender people, compared to cisgender people (Bränström et al., 2022).

Potential contributors to suicide risk within the TGNB populations have been examined in past research. From a clinical standpoint, studies have noted greater prevalence of depression (Bränström et al., 2022) in TGNB individuals and the presence of gender dysphoria (Dhejne et al., 2016), a psychological distress that some TGNB individuals experience from having sexual characteristics that are incongruent to their gender identity (Davy & Toze, 2018), and their attributions to the high burden of

suicide in TGNB communities. Other studies have pointed to the impact of hostile social environments as reflected in anti-transgender stigma and discrimination on the psychological distress and suicidality among TGNB individuals (Hughto et al., 2015; Reisner, Katz-Wise, et al., 2016; Testa et al., 2017; Wolford-Clevenger et al., 2018). The gender minority stress and resilience model is a widely used theory that identifies mechanisms by which social stigma exacerbates the mental health of TGNB individuals (Testa et al., 2015). The model indicates that enacted and internalized anti-transgender stigma as gender minority stressors, which are stressors uniquely experienced by TGNB individuals on the basis of their gender identity and expression. It is proposed that TGNB individuals are exposed to gender minority stressors, in addition to the universally existing stressors in life, which can lead to worse mental health outcomes, including suicidal ideation and suicide attempt (Bränström et al., 2022; Testa et al., 2015, 2017).

Heightened vigilance of transgender and nonbinary individuals

Several studies have suggested heightened vigilance in response to social stigma as an extension to the extant theories on gender minority stress (Bauerband et al., 2019; Rood et al., 2016; Wells et al., 2020). The literature on health inequities of racial and ethnic minorities define vigilance as a state of psychological arousal that individuals with minority status maintain to detect and prepare for encounters with social stigma and discrimination and indicates that vigilance can be a risk factor for poor health outcomes (Clark et al., 2006; Williams, 2018). While vigilance has been less studied in the literature on TGNB experiences, past studies have noted its similarities with constructs such as rejection sensitivity and expectations of rejection based on gender identity and expression (Bauerband et al., 2019; Rood et al., 2016; Wells et al., 2020). In a society where anti-transgender stigma prevails, TGNB individuals learn to expect and sense rejection in the forms of discrimination and bias incidents, with or without experiencing rejection (Rood et al., 2016;

Wells et al., 2020). This increased sensitivity towards potential rejection is attributable to the maintenance of a heightened level of awareness and vigilance towards one's surroundings, which sometimes could be unsafe and hostile for TGNB individuals, warranting a need to examine how vigilance operates in the lives of TGNB individuals and affect their health (Bauerband et al., 2019).

On the contrary, recent articles have viewed vigilance as a psycho-behavioral process distinct from minority stressors that have been examined among sexual minority and gender-diverse populations, and proposed a need to explore vigilance as its own distinctive risk factor to health (Diamond & Alley, 2022; Hollinsaid et al., 2022). For example, social safety theory proposes that individuals build a sense of social safety based on social relationships and circumstances that provide acceptance, belonging, and connection and describes vigilance as a consequence of compromised social safety, which is observed among TGNB individuals (Diamond & Alley, 2022; Slavich et al., 2023). In societies that stigmatizes them, TGNB individuals face deprivation of supportive and protective social interactions along with exposure to explicit and implicit biases, leading them to stay vigilant to detect threats to their safety (Diamond & Alley, 2022). It is posited that the chronic state of vigilance among sexual and gender minority individuals widens the disparities in health they experience (Diamond & Alley, 2022).

A couple of empirical studies have shown support for the relevance of vigilance in understanding the lives of TGNB individuals. A qualitative study that aimed to expand on the current understanding of TGNB-specific experiences of social marginalization identified one of its main themes to be "bodily vigilance," which entailed hyper-awareness towards other's perceptions of TGNB individuals' gender identity and expression (Puckett et al., 2023). Furthermore, the Heightened Vigilance Scale, a measure used in studies of vigilance among racial and ethnic minority populations (Clark et al., 2006; Williams, 2018), has demonstrated its compatibility in assessing vigilance in response to social stigma against sexual and gender minority individuals (Bauerband et al., 2019). Given these findings indicating that vigilance may be an important byproduct of marginalization and discrimination experienced by TGNB individuals, there is a need for more concerted efforts to investigate the role of vigilance in the lives of TGNB individuals including its potential mental health sequelae.

Protective role of transgender community connectedness

Another notable construct within the research on TGNB health is resilience. According to the literature, resilience

is defined as resources within TGNB individuals and communities that buffer against the harmful effects of gender minority stressors (Testa et al., 2015). One of the resilience factors identified is community connectedness, which refers to a sense of belongingness and social support gathered from the transgender community (Testa et al., 2015). Community connectedness has been examined as a moderator in the relationship between gender minority stressors and suicidal ideation (Carter et al., 2019; Rabasco & Andover, 2021). For example, a longitudinal study of 180 TGNB adults found that higher levels of connectedness with the transgender community was associated with decreased severity in suicidal ideation from baseline to follow-up, demonstrating the protective role of the resilience factor (Rabasco & Andover, 2021). However, there has yet to be a study that has examined the role of community connectedness in suicide attempt among TGNB individuals.

Anti-transgender stigma in the Korean society

South Korea (hereafter Korea) is an example of a society where stigma against its TGNB members is deeply entrenched and widespread in its culture. The binary gender system is normalized and stipulated by law. Each citizen has an identification number, where one of its 13-digit string codes for their legal gender that was assigned to them at birth. These identification numbers are the most frequently used mode of self-identification. They can act as barriers for TGNB individuals in pursuing social resources and opportunities. Legal gender change is an option but the process is regulated by court guidelines that include irreversible medical procedures such as sterilization and genital reconstruction surgery as requirements for gender recognition (Park, 2021). In such a social climate, exposure to stigma and discrimination is commonplace for TGNB Koreans (Hong et al., 2020), which have shown to increase the risk of suicidality in previous literature (Hughto et al., 2015; Reisner, Katz-Wise, et al., 2016; Testa et al., 2017; Wolford-Clevenger et al., 2018). It has been found that TGNB Koreans have rates of suicidal ideation and suicide attempt that are higher than that of the general Korean population (Lee, Operario, et al., 2020). A couple of studies have explored internalization of anti-transgender stigma (Lee, Tomita, et al., 2020) and gender identity change efforts (Lee et al., 2023) as potential risk factors of suicidality among TGNB Koreans. However, other risk factors and potential protective factors to suicidality of TGNB individuals are yet to be studied, reflecting an important gap in the research to understand and intervene on the high risk of suicide in this population.

To fill these knowledge gaps, the present study seeks to build upon prior work on vigilance and resilience among TGNB individuals by using a longitudinal dataset of Korean TGNB adults. The study aims to examine vigilance and its longitudinal associations with suicidal ideation and suicide attempt after a 12-month follow-up, while adjusting for experiences of anti-transgender discrimination, history of major depression, and lifetime suicidal ideation and suicide attempt. The study goes on to investigate community connectedness among TGNB individuals and its role as a modifier of the effect of vigilance on suicide ideation and suicide attempt.

METHODS

Data and participants

The data for this study comes from the “Rainbow Connection Project III - Korean Transgender Adult’s Health Panel Study,” which was a two-wave longitudinal study that was conducted between October 2021 (baseline) and October 2022 (follow-up). Participants had to be 18 years or older, Korean citizens living in Korea, and identify as TGNB to be eligible for participation at baseline. The survey was administered online and the link to the survey was advertised and accessible at both online and offline venues: advertisement through the research team’s Facebook page and online transgender forums, clinics that specialize in gender affirmation healthcare services in Seoul, offices of lesbian, gay, bisexual, transgender, and queer (LGBTQ+) rights organizations, and social media posts. The survey was approved by Korea University Institutional Review Board (KUIRB-2020-0189-01). All participants provided informed consent for academic use of their responses.

Of the 591 participants who participated in the baseline survey, 483 agreed to be followed up and were individually invited to fill out the follow-up survey. A total of 323 participants completed the follow-up survey. Phone numbers were used to match the follow-up survey responses to the baseline responses, and 290 responses were uniquely matched to baseline responses (follow-up rate: 60.0%). The final analyses included 285 participants after dropping those with missing data on the Heightened Vigilance Scale, measures of suicidality, and covariates ($N = 5$).

The baseline survey used the “two-step” method to measure and verify that the participants had TGNB identities (Reisner, Deutsch, et al., 2016). Participants’ responses on their gender identity (man, woman, or nonbinary) and sex assigned at birth (male or female) were cross-tabulated. After dropping those who were identified to be

cisgender, participants were categorized according to their TGNB identities: trans woman, trans man, nonbinary assigned male at birth (AMAB), and nonbinary assigned female at birth (AFAB).

Measures

Vigilance

Vigilance was measured at baseline with a 4-item version of the Heightened Vigilance Scale, which was abbreviated from the original 6-item scale (Clark et al., 2006; Williams, 2018) for the Chicago Community Adult Health Study (Hicken et al., 2018). The use of original scale with the TGNB individuals has previously been validated (Bauerband et al., 2019). For the use with Korean TGNB participants, the 4-item version was translated into Korean using the guidelines for cross-cultural adaptation of scales (Beaton et al., 2000). The scale was first translated and back-translated by two English-Korean bilingual transgender individuals: both were involved in the TGNB community in Korea and one of them was working as an English-Korean translator. The translations and back-translations were critically reviewed by community experts and the author of the scale. Based on their comments, a Korean version of the abbreviated scale was finalized. Cronbach’s alpha of the scale was 0.80 in the current study.

The abbreviated Heightened Vigilance Scale measured frequencies of the following four behaviors of vigilance: preparation for possible insults, caring for how they look, caring for what they say, and avoidance of certain social situations and places. A 6-point Likert scale was used: (1) almost every day, (2) at least once a week, (3) a few times a month, (4) a few times a year, (5) less than once a year, and (6) never. The scores were summed (range: 4–24) and lower scores indicated higher vigilance levels. The responses were dichotomized at the median score of 10, with each group having low or high levels of vigilance.

Suicidal ideation and suicide attempt

In the follow-up survey, participants were asked two yes/no questions on suicidality: “In the past 12 months, have you seriously considered committing suicide?” and “In the past 12 months, have you attempted suicide?” Responses were dichotomized to give 12-month suicide ideation and suicide attempt, respectively. Lifetime suicide ideation and suicide attempt were measured at baseline with yes/no questions and included in the statistical models as baseline health outcomes.

Connectedness to the LGBTQ+ community

The follow-up survey assessed for TGNB individuals' connectedness towards the LGBTQ+ community using a Korean adaptation of the measure of community connectedness (Lee et al., 2019), which had been developed to measure the connectedness that sexual minority individuals felt regarding LGBTQ+ community (Frost & Meyer, 2012). This seven-item measure had previously been used in a study of Korean LGB adults and demonstrated high internal consistency (Cronbach's $\alpha = 0.88$) (Lee et al., 2019), which was also observed in the current study with Korean TGNB adults (Cronbach's $\alpha = 0.89$).

Participants were asked to rate how much they agreed with statements such as "You feel a bond with the LGBTQ+ community" and "Participating in the LGBTQ+ community is a positive thing for you" using a 4-point Likert scale ranging from "Strongly agree" (1) to "Strongly disagree" (4). The responses were summed (range: 4–28) and dichotomized at the median score of 16. The group with scores less than 16 was labeled "High connectedness to the LGBTQ+ community" and the other group "Low connectedness to the LGBTQ+ community."

Covariates

The following sociodemographic and participation-related covariates that were measured at baseline were used as control variables in the study: gender identity, sexual orientation (heterosexual and sexual minority), age (in years), highest attained education level (high school or lower, 2-year college, 4-year college, and graduate school), employment status (student, employed, self-employed or employer, and unemployed), monthly income (unit: 10,000 Korean Won, which equaled to 8.48 United States Dollars in 2020), region (metropolitan and non-metropolitan), and data collection channel (e.g., online advertisement and LGBT rights organizations).

In addition, the study also controlled for two other covariates. Studies on GMSR model and vigilance among TGNB individuals have found anti-transgender discrimination to be a common cause for both vigilance (Bauerband et al., 2019) and suicidal ideation (Testa et al., 2017). This rendered anti-transgender discrimination a potential confounder in the relationship between vigilance and suicidality. A dichotomous variable on anti-transgender discrimination was created using the responses to a yes/no question measured at baseline, "Have you experienced discrimination based on your gender identity or expression in the past 12 months?" and included in the statistical analysis models.

High rates of depression among TGNB individuals had also been noted as a potential risk factor for the

high burden of suicide experienced by them (Bränström et al., 2022; Wolford-Clevenger et al., 2018). At baseline, the study asked the participants a yes/no question: "Between January 1 and December 31, 2019, have you been diagnosed or treated for major depression in a healthcare setting?" The responses were codified to indicate their history of major depression and included in the statistical analysis models.

Statistical analyses

Descriptive analyses provide on the distribution of baseline vigilance and the prevalence of suicidal ideation and suicide attempt at follow-up across the covariates measured at baseline. Chi-square tests were performed to examine the bivariate associations with covariates for vigilance at baseline and suicidal ideation and suicidal attempt in the past 12-months at follow-up. Responses to each of the four items within the Heightened Vigilance Scale were also descriptively summarized. To examine the association between vigilance at baseline and suicidality at follow-up, multivariate Poisson regressions were each conducted for 12-month suicidal ideation and 12-month suicide attempt at follow-up.

The prevalence of suicidal ideation was greater than 20% at follow-up, therefore log-linked Poisson regression models with a robust sandwich estimator were used to estimate prevalence ratios (PR) with 95% confidence intervals (CI) instead of odds ratios (Zou, 2004). For both suicidal ideation and suicide attempt, an unadjusted model (Model 1) and a model that adjusted for the baseline sociodemographic characteristics, data collection channel, experience of anti-transgender discrimination, and history of major depression (Model 2) were conducted. Model 3 additively adjusted for matching baseline measures of lifetime suicidality, along with the covariates in Model 2.

We tested for interaction between vigilance and connectedness to the LGBTQ+ community in the association with suicidal ideation, and the interaction term was statistically significant ($p = 0.044$) after adjusting for the same covariates in Model 3. Therefore, stratification by levels of connectedness to the LGBTQ+ community was conducted for the associations between vigilance and both the suicidal ideation and the suicide attempt indicator at follow up, adjusted for the same covariates in Model 3. All analyses were carried out using STATA/MP version 16.0. (StataCorp LLC, College Station, TX).

RESULTS

Of the 285 participants, nonbinary AFAB was the most frequently reported identity ($N = 126$, 44.2%), followed by 84

trans women (29.5%), 40 trans men (14.0%), and 35 nonbinary AMAB (12.3%). The majority of the participants were sexual minorities ($N=241$, 84.6%), in their 20's or younger ($N=225$, 78.9%), residing in metropolitan areas ($N=167$, 58.6%), and had experienced anti-transgender discrimination ($N=193$, 67.2%). The prevalence of baseline mental health problems were relatively high: 174 (61.1%) had been diagnosed or treated for major depression in 2019, 257 (90.2%) reported lifetime suicidal ideation, and 136 (47.7%) had attempted suicide in their life. Trans women and nonbinary AMAB individuals had higher levels of vigilance than trans men and nonbinary AFAB individuals. Also associated with vigilance were experiences of anti-transgender discrimination and baseline mental health problems. (Table 1).

The 12-month prevalence of suicidal ideation and suicide attempt at follow up among the TGNB adults were 59.3% ($N=169$) and 14.0% ($N=40$), respectively. Suicidal ideation at follow-up was not associated with any of the sociodemographic covariates. On the contrary, suicide attempt at follow-up was more prevalent among those who were younger, had lower education level, were unemployed or students, and had lower income. Experiences of anti-transgender discrimination and baseline mental health outcomes had statistically significant bivariate relationships with both 12-month suicidal ideation and suicide attempt at follow-up. (Table 2).

In Table 3, distribution of responses for each of the items of the abbreviated Heightened Vigilance Scale was reported. Among Korean TGNB adults, caring for what they say and avoidance of certain social situations and places were observed to be more frequent forms of vigilance than the other two, with 48.4% ($N=138$) and 44.9% ($N=128$) of the participants reporting engagement in these two forms almost every day, respectively.

Table 4 reported on the associations that vigilance had with suicidal ideation and suicide attempt. Compared to low level of vigilance, a high level of vigilance at baseline predicted a greater 12-month prevalence of suicidal ideation (adjusted PR: 1.33, 95% CI: 1.09–1.62) and suicide attempt (adjusted PR=2.18, 95% CI: 1.23–3.86) at follow-up, after adjusting for baseline covariates, including experiences of anti-transgender discrimination, history of major depression, as well as lifetime suicidal ideation or lifetime suicide attempt.

In Table 5, results of the stratification analyses by connectedness to the Korean LGBTQ+ community were presented. Participants with low connectedness to the LGBTQ+ community showed similar trends: among them, a high level of vigilance predicted a 1.47- (95% CI: 1.11–1.95) and 3.09-fold (95% CI: 1.44–6.62) increase in

TABLE 1 Distribution of 285 Korean transgender and nonbinary adults with high level of vigilance at baseline across key covariates at baseline.

	Frequency	High level of vigilance	
	N (%)	N (%)	p Value ^a
Total	285 (100.0)	131 (46.0)	
Gender identity			
Trans women	84 (29.5)	47 (56.0)	0.015*
Trans men	40 (14.0)	15 (37.5)	
Nonbinary, AMAB	35 (12.3)	21 (60.0)	
Nonbinary, AFAB	126 (44.2)	48 (38.1)	
Sexual orientation			
Heterosexual	44 (15.4)	21 (47.7)	0.799
Sexual minority	241 (84.6)	110 (45.6)	
Age (years)			
19–24	155 (54.4)	72 (46.5)	0.628
25–29	70 (24.6)	36 (51.4)	
30–34	36 (12.6)	14 (38.9)	
35–39	17 (6.0)	7 (41.2)	
40 or older	7 (2.5)	2 (28.6)	
Highest attained education level			
High school or lower	174 (61.1)	81 (46.6)	0.272
2-year college	23 (8.1)	7 (30.4)	
4-year college	76 (26.7)	39 (51.3)	
Graduate school	12 (4.2)	4 (33.3)	
Employment status			
Student	121 (42.5)	50 (41.3)	0.472
Employed	82 (28.8)	42 (51.2)	
Self-employed or Employer	24 (8.4)	10 (41.7)	
Unemployed	58 (20.4)	29 (50.0)	
Monthly income (10,000 KRW)			
None	154 (54.0)	71 (46.1)	0.276
Less than 100	36 (12.6)	13 (36.1)	
100–199	56 (19.6)	32 (57.1)	
200–299	26 (9.1)	10 (38.5)	
300 or more	13 (4.6)	5 (38.5)	
Region			
Metropolitan area	167 (58.6)	75 (44.9)	0.671
Non-metropolitan area	118 (41.4)	56 (47.5)	
Data collection channel			
Online advertisement	71 (24.9)	35 (49.3)	0.457
Primary health care clinics	32 (11.2)	18 (56.3)	
LGBTQ+ rights organizations	46 (16.1)	19 (41.3)	
Friends and acquaintances	102 (35.8)	47 (46.1)	
Other	34 (11.9)	12 (35.3)	

TABLE 1 (Continued)

	Frequency	High level of vigilance	
	N (%)	N (%)	p Value ^a
Experienced anti-transgender discrimination			
Yes	193 (67.2)	104 (53.9)	<0.001*
No	92 (32.3)	27 (29.3)	
Baseline mental health outcomes			
History of major depression	174 (61.1)	93 (53.4)	0.002*
Lifetime suicidal ideation	257 (90.2)	124 (48.2)	0.019*
Lifetime suicide attempt	136 (47.7)	72 (52.9)	0.024*

Abbreviations: AFAB, assigned female at birth; AMAB, assigned male at birth.

^ap-values of the Chi-square tests between high level of vigilance and each of the key covariates.

*p < 0.05.

the 12-month prevalence of suicidal ideation and suicide attempt, respectively, compared to low level of vigilance. On the contrary, the associations attenuated and lost statistical significance for those with high connectedness to the LGBTQ+ community.

DISCUSSION

The current study presents empirical evidence about suicide risk and resilience using, to the best of our knowledge, the first longitudinal survey on TGNB individuals in Asia. Suicidal ideation and suicide attempt are reported to be prevalent among Korean TGNB adults, both in the past 12 months and over the course of their lifetime. We find that vigilance is longitudinally associated with suicidal ideation and suicide attempt in the following 12 months, after adjusting for experiences of anti-transgender discrimination and mental health status at baseline. These findings align with the results of the existing research on high risk of suicide within TGNB communities (Hughto et al., 2015; Reisner, Katz-Wise, et al., 2016; Testa et al., 2017; Wolford-Clevenger et al., 2018) and highlight vigilance as an important risk factor to examine in understanding health disparities that TGNB individuals experience. Also, connectedness to the LGBTQ+ community is shown to buffer the negative influence of vigilance on suicidality of TGNB individuals.

Our study expands on prior work by examining how frequently TGNB individuals experience vigilance. Previous research observed that transgender people feel vigilant and are prone to maintain heightened levels of alertness in preparation for potential discrimination

(Bauerband et al., 2019; Puckett et al., 2023). This study adds that vigilance is common-place in TGNB individuals' lives and that some types are more frequently experienced than others. Among the various types of heightened vigilance, TGNB participants engaged in carefully watching the content and the way in which they spoke (48.3%) and avoidance of certain social situations and places (44.9%) more frequently than the other two types. According to Bauerband et al. (2019), these two types of vigilance are included in the same subscale of the Heightened Vigilance Scale named "caution." This suggests that vigilance may be especially likely to take forms of cautious monitoring of oneself and one's surroundings by TGNB individuals to prevent exposure to anti-transgender discrimination. This highlights the need for future research to facilitate greater understanding of how various aspects of vigilance is experienced by the TGNB population.

Moreover, our findings suggest that there may be gender differences in experiencing vigilance among TGNB individuals. We found that a high level of vigilance was more frequently observed among trans women (56.0%) and nonbinary AMAB individuals (60.0%) than among trans men (37.5%) and nonbinary AFAB individuals (38.1%). These gender differences in vigilance may be attributed to the unique challenges that trans women and nonbinary AMAB individuals experience. Prior research indicates that AMAB transgender individuals' identification as women or their presentation of characteristics on the female-spectrum make them targets of sexual victimization that are driven by negative stigma linked to the intersection of transphobia and misogyny (Hawkey et al., 2021; Matsuzaka & Koch, 2019). Therefore, trans women and nonbinary AMAB individuals likely adapt by maintaining a heightened state of vigilance and alertness to protect themselves from potential sexual victimization and stigmatization (Hawkey et al., 2021).

TGNB individuals with a high level of vigilance are reported to have higher prevalence of suicidal ideation and suicide attempt compared to their counterparts with a low vigilance level. In other words, staying psychologically aroused to monitor the way they dress and talk, scan their surroundings, and rehearse how they would react to potential discrimination appears to exacerbate TGNB individuals' mental health. Notably, the associations vigilance had with suicidal ideation and suicide attempt remained significant after adjusting for experiences of anti-transgender discrimination. These findings suggest that maintaining a state of heightened vigilance regardless of actual experiences of discrimination is associated with increased suicide risk among TGNB individuals. This expands the existing literature that has mostly focused on the effects of enacted and internalized anti-transgender stigma (Rabasco & Andover, 2021; Testa et al., 2017;

TABLE 2 Prevalence of suicidal ideation and suicide attempt in the past 12 months at follow-up among 285 Korean transgender and nonbinary adults across key covariates at baseline.

	Frequency	Suicidal ideation		Suicide attempt	
	N (%)	N (%)	p Value ^a	N (%)	p Value ^b
Total	285 (100.0)	169 (59.3)		40 (14.0)	
Gender identity					
Trans women	84 (29.5)	48 (57.1)	0.145	13 (15.5)	0.460
Trans men	40 (14.0)	18 (45.0)		5 (12.5)	
Nonbinary, AMAB	35 (12.3)	24 (68.6)		2 (5.7)	
Nonbinary, AFAB	126 (44.2)	79 (62.7)		20 (15.9)	
Sexual orientation					
Heterosexual	44 (15.4)	25 (56.8)	0.716	9 (20.5)	0.182
Sexual minority	241 (84.6)	144 (59.8)		31 (12.9)	
Age (years)					
19–24	155 (54.4)	97 (62.6)	0.197	30 (19.4)	0.022*
25–29	70 (24.6)	38 (54.3)		9 (12.9)	
30–34	36 (12.6)	24 (66.7)		1 (2.8)	
35–39	17 (6.0)	8 (47.1)		0 (0.0)	
40 or older	7 (2.5)	2 (28.6)		0 (0.0)	
Highest attained education level					
High school or lower	174 (61.1)	112 (64.4)	0.095	32 (18.4)	0.042*
2-year college	23 (8.1)	14 (60.9)		3 (13.0)	
4-year college	76 (26.7)	36 (47.4)		5 (6.6)	
Graduate school	12 (4.2)	7 (58.3)		0 (0.0)	
Employment status					
Student	121 (42.5)	75 (62.0)	0.105	23 (19.0)	0.005*
Employed	82 (28.8)	47 (57.3)		5 (6.1)	
Self-employed or Employer	24 (8.4)	9 (37.5)		0 (0.0)	
Unemployed	58 (20.4)	38 (65.5)		12 (20.7)	
Monthly income (10,000 KRW)					
None	154 (54.0)	100 (64.9)	0.111	28 (18.2)	0.047*
Less than 100	36 (12.6)	21 (58.3)		7 (19.4)	
100–199	56 (19.6)	30 (53.6)		4 (7.1)	
200–299	26 (9.1)	14 (53.8)		1 (3.8)	
300 or more	13 (4.6)	4 (30.8)		0 (0.0)	
Region					
Metropolitan area	167 (58.6)	97 (58.1)	0.620	23 (13.8)	0.879
Non-metropolitan area	118 (41.4)	72 (61.0)		17 (14.4)	
Data collection channel					
Online advertisement	71 (24.9)	44 (62.0)	0.351	10 (14.1)	0.170
Primary health care clinics	32 (11.2)	19 (59.4)		4 (12.5)	
LGBTQ+ rights organizations	46 (16.1)	26 (56.5)		2 (4.3)	
Friends and acquaintances	102 (35.8)	65 (63.7)		20 (19.6)	
Other	34 (11.9)	15 (44.1)		4 (11.8)	
Experienced anti-transgender discrimination					
Yes	193 (67.2)	128 (66.3)	<0.001*	33 (17.1)	0.031*
No	92 (32.3)	41 (44.6)		7 (7.6)	

TABLE 2 (Continued)

	Frequency	Suicidal ideation		Suicide attempt	
	N (%)	N (%)	p Value ^a	N (%)	p Value ^b
Baseline mental health outcomes					
History of major depression	174 (61.1)	123 (70.7)	<0.001*	34 (19.5)	<0.001*
Lifetime suicidal ideation	257 (90.2)	164 (63.8)	<0.001*		
Lifetime suicide attempt	136 (47.7)			35 (25.7)	<0.001*

Abbreviations: AFAB, assigned female at birth; AMAB, assigned male at birth.

^ap-values of the Chi-square tests between suicidal ideation in the past 12 months and each of the key covariates.

^bp-values of the Chi-square tests between suicide attempt in the past 12 months and each of the key covariates.

*p < 0.05.

TABLE 3 Heightened vigilance among 285 Korean transgender and nonbinary adults, by type.

Types of heightened vigilance	Almost every day N (%)	At least once a week N (%)	A few times a month N (%)	A few times a year N (%)	Less than once a year N (%)	Never N (%)
1. Prepare for possible insults from other people before leaving home	53 (18.6)	53 (18.6)	47 (16.5)	48 (16.8)	11 (3.9)	73 (25.6)
2. Feel that you always have to be very careful about your appearance (to get good service or avoid being harassed).	79 (27.7)	64 (22.5)	36 (12.6)	41 (14.4)	14 (4.9)	51 (17.9)
3. Carefully watch what you say and how you say it.	138 (48.4)	44 (15.4)	32 (11.2)	21 (7.4)	5 (1.8)	45 (15.8)
4. Try to avoid certain social situations and places.	128 (44.9)	52 (18.2)	48 (16.8)	29 (10.2)	10 (3.5)	18 (6.3)

TABLE 4 Associations between vigilance at baseline and suicidal ideation and suicide attempt at follow-up (N = 285).

Vigilance	Model 1 ^a		Model 2 ^b		Model 3 ^c	
	PR	95% CI	PR	95% CI	PR	95% CI
Suicidal ideation						
Low	1	Reference	1	Reference	1	Reference
High	1.51**	1.24–1.84	1.36*	1.11–1.65	1.33*	1.09–1.62
Suicide attempt						
Low	1	Reference	1	Reference	1	Reference
High	2.44**	1.31–4.54	2.25*	1.25–4.03	2.18*	1.23–3.86

Abbreviations: CI, confidence interval; PR, prevalence ratio.

^aUnadjusted model.

^bAdjusted for the following variables measured at baseline: gender identity, sexual orientation, age, highest attained education level, employment status, monthly income, region, data collection channel, experience of anti-transgender discrimination, and history of major depression.

^cIn addition to model 2, adjusted for lifetime suicidal ideation or suicide attempt measured at baseline.

*p < 0.01, **p < 0.001.

Wolford-Clevenger et al., 2018), by proposing that vigilance, a psycho-behavioral response to anti-transgender stigma (Diamond & Alley, 2022), also plays a role in the mental health and well-being of TGNB individuals.

The results from the stratified analyses signify potential buffering effects of being connected to the LGBTQ+ community against the detrimental effects of vigilance among TGNB individuals. This extends the findings of a

TABLE 5 Associations between vigilance at baseline and suicidal ideation and suicide attempt at follow-up of 285 Korean transgender and nonbinary transgender adults: stratified by connectedness to the LGBTQ+ community.

	Distribution	Suicidal ideation			Suicide attempt		
	N	Prevalence (N (%))	PR ^a	95% CI	Prevalence (N (%))	PR ^b	95% CI
Low connectedness to the LGBTQ+ community (N=153)							
Low level of vigilance	82	37 (45.1)	1	Reference	9 (11.0)	1	Reference
High level of vigilance	71	54 (76.1)	1.47*	1.11–1.95	19 (26.8)	3.09*	1.44–6.62
High connectedness to the LGBTQ+ community (N=132)							
Low level of vigilance	72	37 (51.4)	1	Reference	4 (5.6)	1	Reference
High level of vigilance	60	41 (68.3)	1.07	0.79–1.44	8 (13.3)	1.22	0.37–4.08

Abbreviations: CI, confidence interval; PR, prevalence ratio.

^aAdjusted for the following variables measured at baseline: gender identity, sexual orientation, age, highest attained education level, employment status, monthly income, region, data collection channel, experience of anti-transgender discrimination, history of major depression, and lifetime suicidal ideation.

^bAdjusted for the following variables measured at baseline: gender identity, sexual orientation, age, highest attained education level, employment status, monthly income, region, data collection channel, experience of anti-transgender discrimination, history of major depression, and lifetime suicide attempt.

* $p < 0.01$.

previous study of Korean lesbian, gay, and bisexual adults by Lee et al. (2019), by proposing that connectedness to the LGBTQ+ community protects against at least some of the negative mental health impact of homophobic and transphobic stigma among sexual minority individuals as well as gender diverse individuals. Our findings also align with prior studies that found community connectedness to be a protective factor to the well-being of TGNB individuals (McCann & Brown, 2017), especially against suicidality among them (Carter et al., 2019; Rabasco & Andover, 2021). Of note, the community connected scale we used came from the minority stress model (Frost & Meyer, 2012; Lee et al., 2019), instead of the GMSR model as in the past studies with TGNB individuals' community connectedness (Carter et al., 2019; Rabasco & Andover, 2021; Testa et al., 2015). The two scales both measured TGNB individuals' belongingness and connectedness but they differ in the community to which they felt connected. The scale in the current study asked for connectedness to the LGBTQ+ community as a whole, instead of the transgender community as in the past studies. Accordingly, the implications of the current study refer to the resources present in the broader queer and transgender community. In addition, the scale from the minority stress model includes items on community participation and political agency that are not present in the scale from the GMSR model (Frost & Meyer, 2012; Lee et al., 2019). The results on the protective role of connectedness to the LGBTQ+ community presented in this study therefore may serve to commence the discussions on community

involvement and engagement of TGNB individuals as important aspects of the intervention to reduce their mental health risks.

Our results can also be interpreted from the perspective of social safety theory, as proposed by Diamond and Alley (2022) in their adaptation of the theory to the sexual and gender minority individuals. It is posited that social stigma impacts the health of the marginalized individuals by undermining their social safety and subjecting them to a chronic state of vigilance towards threats of discrimination and victimization (Diamond & Alley, 2022). Our findings echo the implications of the theory that the health sequelae of social stigma may result from anticipating discrimination even when discrimination experiences are not present since the perpetual reinforcement of the social stigma in the society contributes to the maintenance of heightened levels of vigilance (Diamond & Alley, 2022). Furthermore, the theory provides substantial insights into understanding the protective role of connectedness to the LGBTQ+ community reported in the current study. Enhancing belongingness and community participation would likely elevate social safety especially for TGNB individuals with high level of vigilance, ultimately diminishing the negative effects on their risk of suicide.

The findings of the current study offer implications for interventions to reduce suicide risk among TGNB individuals in Korea. Informed by the social safety theory, decreasing the levels of vigilance would require efforts on legal and policy levels to guarantee greater safety for

TGNB individuals and eradicate anti-transgender stigma. Legally, there is a need to enact a comprehensive anti-discrimination law that includes gender identity and presentation as protected grounds in Korea. Currently, there is no law at the national level in Korea that provides legal protection to TGNB individuals from anti-transgender discrimination. Also needed is the legislation of a clear gender recognition statute or law that does not require irreversible medical procedures for legal gender recognition (Park, 2021). This would lower the hurdles for TGNB individuals to live with a legal gender that matches their gender identity. Such legislations would not only provide protection to the TGNB individuals (Diamond & Alley, 2022) but would also challenge the norms and stigma based on cisnormativity and affirm the diversity and dignity in gender identities.

There are several limitations to take into consideration when interpreting the findings of the present study. The study was performed using a non-probability sampling method, which limits its generalizability to the rest of the Korean TGNB population. In addition, the survey was only administered via online and the link to the survey was distributed through online and offline communities for TGNB Koreans. This may have made it easier for those who are younger, accepting of their TGNB identities, and aware of resources within the TGNB community to participate in the survey, further limiting the generalizability of the study.

There is also room for improvement in the examination of suicidality by using comprehensive measures such as Adult Suicidal Ideation Questionnaire (Reynolds, 1991) and Beck Scale for Suicide Ideation (Beck et al., 1988) to assess for the frequency and severity of suicidal ideation and suicide attempts. Finally, the measure for history of depression was only able to account for those who were diagnosed or treated for major depressive disorder in the year of 2019, therefore leaving out those with a history of depression prior to 2019. This measure also left out those who may have had the symptoms but did not seek treatment, which is important to consider in the context of research on LGBTQ+ health and mental health stigma in Korea. Despite the high burden of depressive symptoms among LGBTQ+ Koreans (Lee, Operario, et al., 2020; Yi et al., 2017), they have been shown to avoid or delay seeking healthcare, with anti-LGBTQ+ stigma noted as a potential contributor to their healthcare avoidance and delay (Choo et al., 2022; Kim et al., 2023; Lee et al., 2021). This exists in addition to the mental health stigma that prevails across the Korean society, which has been shown to act as a barrier to mental health service utilization (Kim, 2023; Park & Jeon, 2016). Therefore, a use of a life-time measure of depression and depressive symptoms measured at baseline in future studies is advised.

Despite these limitations, this study is the first to examine vigilance as a risk factor for suicidal ideation and suicide attempt among TGNB individuals. We highlighted the unique role of vigilance in the mental well-being of TGNB individuals, by adjusting for experiences of anti-transgender discrimination when examining the association of vigilance with suicidal ideation and suicide attempts. The longitudinal design of the study is also noteworthy given the scarcity of longitudinal studies on the suicidality of TGNB individuals.

CONCLUSION

Using the first-known longitudinal dataset of TGNB individuals in Asia, we found that vigilance is frequently observed among TGNB individuals and is associated with suicidal ideation and suicide attempt, which is ameliorated by their connection to the LGBTQ+ community. Our study holds important implications for interventions aimed at reducing TGNB individuals' vigilance and alertness as a means to lower their risk of suicide. To suppress vigilance, it is crucial to promote and ensure safety of TGNB individuals whose social safety has been compromised due to anti-transgender stigma (Diamond & Alley, 2022; Slavich et al., 2023).

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to disclose.

ETHICS STATEMENT

This study has been approved by the Korea University Institutional Review Board (KUIRB-2020-0189-01).

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