Gender and Anxiety in Nepal: The Role of Social Support, Stressful Life Events, and Structural Violence

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Introduction: Throughout the world, anxiety disorders are 1.5–2 times more prevalent among women than men but the reasons for this gender disparity remain elusive. Despite frequent attribution to cultural roles of men and women, data regarding gendered risk factors in non-Western settings are scant.

Aims: This study evaluated the role of gender as a moderator (effect modifier) of stressful life events (SLEs) and social support on the risk of anxiety in Nepal. A cross-sectional random sampling design was employed to recruit 316 persons in a rural community. The participants completed the Beck Anxiety Inventory (BAI), Stressful Life Events Rating Scale (SLERS), and a measure of social support.

Results: The prevalence of anxiety differed by gender: 36.9% of women versus 20.4% of men endorsed anxiety symptoms above the validated cutoff for intervention (odds ratio [OR] = 2.3, 95% confidence interval [CI] = 1.4–3.8). The number of SLEs and levels of social support did not differ by gender, nor did gender moderate the relationship between SLEs and anxiety. Gender did moderate the relationship of social support with anxiety. Men who reported low social support had 3.5 times greater odds (95% CI = 1.4–10.7) of endorsing anxiety relative to men reporting high social support. Women exhibited no association of anxiety with social support.

Conclusion: Women are at a greater risk of anxiety in Nepal. Social support moderates the risk of anxiety among men but not among women. Ethnography and mixed-methods research are needed to identify other forms of support that may be protective for women and such factors should be promoted in gender-focused mental health interventions.

Introduction

A major challenge for mental health providers across the globe is the gender disparity in mental health problems, including anxiety. In the majority of countries and cultures studied throughout the world, women have a greater prevalence of anxiety disorders than men [1–4]. Moreover, functional impairment from anxiety disorders tends to be greater in women than in men [1]. However, the reasons for the cross-cultural pervasiveness of this gender disparity and the influence of culture on its extent have yet to be elucidated. Identifying the underlying mechanisms for these gender disparities is not merely an academic concern; it has important implications for

promoting interventions that address specific circumstances of women.

On average, women throughout the world have 1.5–2 times greater odds than men of suffering from anxiety [4]. However, the gender ratio varies widely by country. Figure 1 presents sex ratios for a series of studies included in the World Health Organization (WHO) World Mental Health Surveys [4] and other national studies [5–21], including reports from conflict regions. Women had lower odds of any anxiety disorder in only two nations: China 0.5:1 (female:male ratio) [5] and Nigeria 0.8:1 [6]. The greatest gender differences were observed in South Africa, with a ratio of 2.1:1 [18], Brazil 2.2:1 [19], France 3.4:1 [20], and Italy 3.7:1 [21]. Despite claims that

Figure 1 Sex ratio for anxiety disorders by country.

women are more susceptible to the effects of war compared with men [22], the sex ratio in conflict regions was in the middle range among studies (Guatemalan refugees [7], Afghanistan [10], and Lebanon [13]). One study of a sample from eastern Afghanistan stands out among settings of political violence by finding 12.8 times greater odds of women endorsing anxiety compared with men [23].

Mental health researchers have proposed various hypotheses for gender differences in the prevalence and severity of anxiety disorders. These comprise biased estimates, psychological processes, and social conditions. Regarding bias, men may be reluctant to report anxiety compared with women [24]. Men with anxiety disorders are more likely to engage in substance abuse that may mask anxiety presentation, as has been observed in Mexico [25]. Others have suggested that the category of anxiety is inherently a pathologization of femininity [26]. Mahalingam and colleagues have described this in India, where anxiety traits are considered emblematic of essentialized feminine identity [27,28].

Psychological processes proposed to explain gender differences include learning perspectives and gender role perspectives. Learning perspectives suggests that women may be “more vulnerable to being conditioned to fear responses” [1] based on putative greater somatic attention among women. Differential somatic attention may underlie the increased prevalence of psychosomatic complaints among women [29,30]. The sex and gender role perspective pertains to expected behaviors and socioeconomic positions, which are conducive to the display of anxiety by women but preclude it in men. For example, women may be socialized to function in the domestic domain, whereas men are socialized to function in the public domain [28]. Moreover, men may be socialized to respond to stress with assertiveness, whereas women may

be expected to respond with dependence and helplessness [31,32].

Gender differences may arise from social disparities in exposures, such as women’s greater traumatic experiences, including sexual and domestic violence as well as chronic stressors of dependency, poverty, and hunger [3]. However, after controlling for the greater exposure of women to trauma, women continued to have approximately twice the odds of suffering from anxiety compared with men [33,34]. Such explanatory limitations suggest the need to look beyond trauma and stress and consider cultural and structural factors that regulate chronic access to resources and acute buffers against the negative effects of trauma and stress. Such regulatory factors may include both absolute and relative processes.

Absolute processes include structural factors that determine women’s vulnerability and agency. Absolute processes regulate the ability to fulfill basic needs, protection from sexual violence, and requirements for socially appropriate roles and statuses. One absolute difference would be cultural settings in which men do not permit women to move independently in public without male accompaniment. *Relative processes* are pathways of inequity in which men may benefit relatively compared with women in a specific setting. Such benefits may be external material and social rewards or internalized psychological ones. For example, in some settings, it may be acceptable for women to seek employment outside the home but compensation and positions held are not comparable. Similarly, men may experience social and psychological rewards for activities in public settings, while such settings risk social opprobrium or psychological costs for women.

Increasingly, anthropologists have pointed to *structural violence* as a process that differentially marginalizes certain groups and renders them more vulnerable to morbidity and mortality [35–37]. Farmer describes structural violence as constrained agency: “the degree to which agency is constrained is correlated inversely, if not always neatly, with the ability to resist marginalization and other forms of oppression” [37]. While Farmer generally refers to absolute structural violence in terms of poverty in Haiti, Chiapas, and Russia [38], structural violence is also a relative process with regard to ethnic or gender disparities in access to resources even in affluent nations. Galtung’s original definition of structural violence refers to processes that erode human needs [39]. The definition could be qualified to include erosion of both absolute needs in social and material terms and relative needs in comparison with others in one’s community.

This expanded definition of structural violence emphasizes processes that erode psychosocial needs and generate differential psychological burdens. It therefore offers

a possible framework to address the questions of gender, culture, and anxiety. Structural violence can be operationalized as *processes historically rooted in economic, political, religious, and other cultural institutions that differentially enrich or deprive individuals of resources based on the individual's membership in a specific group*. This includes processes such as gender and racial discrimination, health care or education contingent upon financial status, and the lack of rights protection in local, national, or international policy and legislation. The exclusion of women through structural violence, whether in absolute terms or relative to men, could explain the gender differences observed across settings. For example, Sanday defines gender inequality as exclusion from economic and political decision making and the condoning of gendered violence [40]. Because of historical exclusion from educational, political, economic, and law enforcement resources, women carry a greater chronic psychosocial burden and have little recourse to prevent or escape domestic violence and other forms of traumatic and stressful events. Moreover, differential access to these resources reduces the opportunities available for women compared with men.

For example, in a series of studies in Brazil, gender differences in anxiety were explained by the lack of education, restrictions in occupation and wage-earning opportunities, and sharing of living quarters with non-family, all of which were greater among women [41–43]. Among Mexican women, the greater burden of socioeconomic deprivation, high rate of child mortality, and associated feelings of responsibility were hypothesized to contribute to the greater burden of psychological and somatic distress [44]. Similarly, in a recent evaluation of mental health in Bosnia and Herzegovina, Mexico, Indonesia, India, and Tonga, women presented greater levels of mental health problems even after controlling for their greater exposure to poverty and lower education levels [2]. Thus, structural violence may be an important area of inquiry to understand gender differences in anxiety.

There is a paucity of research assessing gender differences in mental health in Nepal and the work has not addressed a possible role for structural violence. Nepal is a landlocked country to the north of India and south of the Tibetan autonomous region of China, with a population of almost 28 million [45]. Its population comprises more than 60 ethnic and caste groups [46]. Currently, Nepal ranks 142nd out of 177 countries on the Human Development Index [47]. It is the lowest-ranked country in Asia. The Gender-related Development Index (GDI) reflects the difference between women and men in the burden of labor. Nepal's GDI score is 0.520, on the low end globally, whereas that for the United States is 0.937 [48]. In Nepal, less than half of adult women (48.9%) receive

compensation for their labor, whereas 67.6% of men are involved in compensation-related activities [49]. Girls are more likely to have micronutrient deficiencies compared with boys [50]. In times of scarcity, boys preferentially receive dairy products, eggs, meats, and a variety of vegetables, especially green leafy vegetables, while girls are more likely to receive grains and potatoes [51,52]. Gender discrimination can be observed at all socioeconomic levels and across all ethnic and religious groups. However, gender discrimination may be most profound among conservative upper caste Hindu groups and may be less severe in other social sectors [45,53]. Bennett suggests that the inordinate emphasis on reproduction for women's worth promotes both an external loss of social support and an internal loss of positive self-worth [53]. Relative to men, Nepali women report greater mental health problems [52,54,55] in both low and high caste groups [56].

The purpose of this study is to explore the relationship of structural violence with gender differences in anxiety in Nepal. Proxies for structural violence were selected to index psychosocial burdens (exposure to stressful life events [SLEs]) and access to resources (social support). The relationships of these indicators to anxiety were characterized and the possible moderating effect of gender was examined. The first hypothesis posits that SLEs will have a greater impact on anxiety among women because women (a) experience more of such events and (b) have fewer resources than men to mitigate their effects. The second hypothesis proposes that social support will play a strong protective role among women because they lack access to material resources outside the home—resources to which men have access. These hypotheses are tested in an adult population in rural Nepal.

Methods

Study Design and Population

This study took place in the headquarters of Jumla district, a community at 2375-m altitude in the northwestern mountainous region of Nepal. The majority (80.1%) of this polyethnic and multicaste population speak Nepali, and the average household size is 5.6 persons [57]. Jumla has nine health posts, 20 sub-health posts and one hospital nominally having three doctors, of whom only one typically resides in Jumla [58]. The residents of Jumla district seek health care primarily from traditional healers, *dhaami*. The major sources of mortality in the region are asthma, diarrhea, and acute respiratory infections, which are concentrated among the young [59]. The incidence of childhood diarrhea was

146 per 1000 children under 5 years [58]. Jumla has the second highest infant mortality rate in the country [60].

This was a cross-sectional study with random sampling of one adult per household. The sample was recruited for a psychiatric epidemiology study of depression and somatization from February through August 2000 [52]. This study was conducted before widespread Maoist violence in the area, which began in late 2001. The participants were aged 18 years or older. Consent was recorded with a signature for literate or a thumbprint for illiterate participants. The Department of Psychiatry at Tribhuvan University Teaching Hospital/Institute of Medicine in Kathmandu provided consultation prior to and during the assessment and gave final approval for the study.

Study Instruments

Beck Anxiety Inventory (BAI)

This 21-item scale was used to assess anxiety symptoms over the prior 2 weeks. The items are scored 0–3 with an instrument range of 0 to 62. The BAI has been validated for use in Nepal [61]: area under the curve was 0.85 (95% confidence interval [CI] = 0.8–0.9); internal reliability was also high, $\alpha = 0.9$. Based on clinical validation of the BAI in Nepal, a score of 17 or higher indicates moderate anxiety with the need for intervention (sensitivity = 0.77, specificity = 0.81). Two-week test–retest reliability (Spearman–Brown coefficient) for the BAI was 0.9.

Stressful Life Events Rating Scale (SLERS) for Cross-Cultural Research

The individuals reported both the frequency (number of occurrences in the past 12 months) of SLEs with the SLERS [62]. This instrument comprises nine subscales: academic events, intimate partner events, health events, family events, work events, financial events, social relationship events, environmental events, and political events. Greater frequency of SLEs as assessed by the SLERS is associated significantly with locally defined psychosomatic complaints in Nepal [52].

Social Support

Social support was scored with nine questions assessing support in the following areas: care when sick, shopping, providing basic necessities, lending money, fixing broken equipment and maintenance (e.g., kitchenware, plows, or radio), domestic chores and work, getting advice, preparing and cooking food, and child care. The items were summed to provide a score of 0–9, with 9 indicating support available in all of the areas. Internal reliability, as assessed by Cronbach's alpha, was 0.9.

Demographics assessed included self-reported gender, age, education level, monthly household income, and the number of livestock.

Analysis

Crude estimates for gender differences were identified with the Mantel–Haenszel odds ratio (OR) estimates and Wald CIs for dichotomous variables and with χ^2 for ordinal variables with greater than two groups. Crude gender differences in anxiety levels were assessed with independent *t*-tests for mean BAI scores and the Mantel–Haenszel OR estimate with Wald CIs for categorical outcomes (BAI above the validated cutoff >17) with men as the referent group. Categorical BAI outcomes were used for all subsequent analyses.

Kleinbaum and colleagues' [63] framework for assessing effect modification was followed in accord with current approaches to interactions [64–66]. Effect modifiers (also known as moderators) are variables that alter the strength or direction of association between two other variables. For example, one goal of this analysis was to determine whether gender moderated the effect of social support on anxiety. A full multivariate logistic regression model with all risk variables of interest was created. In the model, the two interactions of interest were included: gender by SLEs and gender by social support to test for effect modification. The interaction term was placed in the model along with the original terms and all covariates. Nonsignificant interactions ($P > 0.05$) were removed. Then, based on the presence of significant interactions, the sample was stratified by gender [66].

P-values less than 0.05 were considered statistically significant. Statistical analyses were performed in SPSS version 16.0 [67].

Findings

The study sample comprised 316 households with one participant per household. Table 1 presents participant demographics. The sample included a preponderance of men ($n = 186$) over women ($n = 130$). Women were more likely than men to be high caste (women 86.9%, men 68.8%). Women had lower education levels than men (>fifth grade education: women 23.8%, men 48.9%). Men and women did not differ in the number of SLEs in the past 12 months or level of social support, nor did they differ by age, household income, or household livestock. Women were more than twice as likely as men to have anxiety scores above the validated cutoff for disorder (36.9% of women, 20.4% of men; OR = 2.3, 95% CI = 1.4–3.8) (See Table 2).

Table 1 Demographics by gender (N = 316)

	Women (n = 130) No. (%)	Men (n = 186) No. (%)	Total (N = 316) No. (%)	Gender difference (men = 1 [Ref.])	
				OR (95% CI) ^a	Sig.
Caste					
High caste	113 (86.9)	128 (68.8)	241 (76.3)	3.0 (1.7–5.5)	<0.001
Low caste	17 (13.1)	58 (31.2)	75 (23.7)	1	
Age					
≤40 years	93 (71.5)	117 (62.9)	210 (66.5)	1.5 (0.9–2.4)	0.100
>40 years	37 (28.5)	69 (37.1)	106 (33.5)	1	
Education					
≤5 th grade	99 (76.2)	95 (51.1)	194 (61.4)	3.1 (1.9–5.3)	<0.001
>5 th grade	31 (23.8)	91 (48.9)	122 (38.6)	1	
Household income					
No income	62 (47.7)	80 (43.0)	142 (44.9)	1.2 (0.8–1.9)	0.400
Any income	68 (52.3)	106 (57.0)	174 (55.1)	1	
Livestock					
0–6 animals	85 (64.5)	117 (62.9)	202 (63.9)	1.1 (0.7–1.8)	0.700
>6 animals	45 (34.6)	69 (37.1)	114 (36.1)	1	
Social support					
≤4 types	113 (86.9)	150 (80.6)	263 (83.2)	1.6 (0.9–3.0)	0.100
>4 types	17 (13.1)	36 (19.4)	53 (16.8)	1	
Stressful life events				χ^2 ^b	
0–9 events	49 (37.7)	74 (39.8)	123 (38.9)	0.6	0.900
10–14 events	29 (22.3)	43 (23.1)	72 (22.8)		
15–20 events	17 (13.1)	26 (14.0)	43 (13.6)		
>20 events	35 (26.9)	43 (23.1)	78 (24.7)		

OR, odds ratio; CI, confidence interval.

^aMantel–Haenszel odds ratio estimate and Wald confidence intervals used for dichotomous variables.^b χ^2 used for ordinal variables with greater than two groups.**Table 2** Anxiety by gender (N = 316)

	Mental health continuous outcomes			Mental health categorical outcomes		
	Mean total score (95% CI)	t-statistic ^a	P-value	No. (%) above cutoff ^b	Odds ratio (95% CI) ^c	P-value
Anxiety (BAI)						
Women (n = 130)	14.5 (12.6–16.2)	3.3	0.001	48 (36.9)	2.3 (1.4–3.8)	0.001
Men (n = 186)	10.8 (9.5–12.2)			38 (20.4)	1	
Total sample (N = 316)	12.3 (11.2–13.4)			86 (27.2)		

^aIndependent t-tests were used to compare continuous scale mean scores between women and men.^bValidated Nepali cutoff score indicating moderate or severe anxiety with need for intervention being 17 or greater for the BAI.^cMantel–Haenszel odds ratio estimate and Wald confidence intervals with men as the referent group.

Tests for effect modification are presented in Figures 2(A) (anxiety by gender and SLEs) and (B) (anxiety by gender and number of types of social support). Both men and women showed a positive relationship between the number of SLEs and anxiety symptom severity. Women showed a trend toward a greater increase in anxiety with increasing number of SLEs, but there was no statistically significant gender interaction. Social support did show

gender differences in association with anxiety. Men manifested an inverse relationship between the number of types of social support and the severity of anxiety symptoms, but there was no relationship of social support with anxiety levels in women ($P > 0.05$).

A multivariate logistic regression was developed, including gender, caste, age, education, household income, livestock, social support, and SLEs. The two interactions

Figure 2 Anxiety by gender: stressful life events (A) and social support (B).

of interest were placed in the model: gender by SLEs and gender by social support. In the complete model, the interaction for gender by SLEs was not significant ($P = 0.78$); however, gender by social support was significant ($P = 0.018$). The nonsignificant interaction was then removed from the model, leaving a model with one interaction term (See Table 3). Because the interaction was significant, the analyses were stratified by gender.

Table 4 presents the results of the multivariate logistic regressions stratified by gender. Among women, age and SLEs were the only significant predictors of anxiety with all variables in the model. Women older than 40 years were more than six times as likely to have anxiety scores greater than cutoff levels compared with women younger than 40 years ($OR = 6.0$, 95% $CI = 2.3$ – 15.6). Among men, three significant predictors of anxiety were identified: caste, household income, and social support. Men with fewer types of social support had more than three times the odds of reporting anxiety ($OR = 3.9$, 95% $CI = 1.4$ – 10.7).

Discussion

The goal of this study was to determine whether there were gender differences in the prevalence of anxiety in an adult population in rural Nepal and then to determine whether gender modified the effect on anxiety of factors

Table 3 Multivariate logistic regression for anxiety with interaction term for gender and social support ($N = 316$)

	OR (95% CI) ^a	Sig.
Gender		
Men	1	0.040
Women	2.4 (1–5.7)	
Caste		
High caste	1	0.002
Low caste	3.6 (1.6–7.9)	
Age		
≤40 years	1	0.006
>40 years	2.5 (1.3–4.7)	
Education		
≤5 th grade	1 (0.5–2.2)	0.900
>5 th grade	1	
Household income		
No income	1.5 (0.8–3.0)	0.200
Any income	1	
Livestock		
0–6 animals	5.6 (1.2–25.1)	0.030
>6 animals	1	
Social support		
≤4 types	4.4 (1.7–11.8)	0.003
>4 types	1	
Stressful life events		
0–9 events	1	0.030
10–14 events	1.1 (0.4–2.6)	
15–20 events	2.1 (0.8–5.5)	
>20 events	3.7 (1.6–10.9)	
Interaction (gender by social support)		
Men with >4 types	0.2 (0.0–0.7)	0.020

^aOdds ratio estimate and Wald confidence intervals for adjusted model of anxiety (BAI score above the cutoff >17). All variables in the table are included simultaneously in a single model.

associated with structural violence, specifically the impact of SLEs or the presence of social support. The odds of reporting anxiety were 2.3 times greater among women compared with men. This gender difference is on the upper end of the spectrum compared with global studies, positioned above South Africa and Brazil but below France and Italy.

SLEs were hypothesized to exert a greater impact on anxiety among women because women would have more life events and/or have fewer resources to buffer the effects of stress. Analyses revealed neither gender difference in the number of life events nor effect modification by SLEs: both men and women showed a positive relationship of SLEs with anxiety. However, in gender-stratified models, SLEs were significant predictors of anxiety for women but not for men. This, in part, supports

Table 4 Multivariate logistic regression for anxiety by gender (N = 316)

	Women (n = 130) OR (95% CI) ^a	Sig.	Men (n = 186) OR (95% CI) ^a	Sig.
Caste				
High caste	1	0.060	1	0.009
Low caste	3.5 (0.9–13.3)		4.2 (1.4–12.2)	
Age				
≤40 years	1	<0.001	1	0.900
>40 years	6.0 (2.3–15.6)		1 (0.4–2.8)	
Education				
≤5 th grade	1.2 (0.3–4.1)	0.800	1 (0.3–3.2)	0.900
>5 th grade	1		1	
Household income				
No income	0.8 (0.3–2.2)	0.700	3.5 (1.2–10.2)	0.020
Any income	1		1	
Livestock				
0–6 animals	2.5 (0.4–14.0)	0.300	N/A ^b	0.900
>6 animals	1		1	
Social support				
≤4 types	0.6 (0.2–2.3)	0.400	3.9 (1.4–10.7)	0.010
>4 types	1		1	
Stressful life events				
0–9 events	1	0.040	1	0.800
10–14 events	1.3 (0.4–4.5)		0.7 (0.2–2.9)	
15–20 events	2.7 (0.7–10.9)		0.8 (0.2–4.0)	
>20 events	8.4 (1.7–42.3)		1.3 (0.3–6.7)	

^aOdds ratio estimate and Wald confidence intervals for adjusted model of anxiety (BAI score above the cutoff > 17). All variables in the table are included simultaneously in a single model.

^bUnstable estimate not presented.

the prediction that SLEs would show a stronger association with anxiety among women compared with men. For men, resources such as income and support, rather than exposures, appeared to be most important for anxiety. The results from the second analysis rejected the hypothesis that social support would have a greater impact on anxiety among women. While there was effect modification of social support by gender, the relationship was significant for men but not for women. Men reporting less social support displayed greater anxiety severity.

Myriad factors may influence gender differences in the role of social support on anxiety. One explanation is reporting effects: there may be gender differences in appraisal of social support, as measured in this study. Less anxious men may simply appraise their social network as strong, broad, and generous, while highly anxious men may devalue theirs. The same appraisal bias may not operate in women, whose report of social networks may be more accurate and less biased by their state of anxiety. The state of anxiety may be more connected with somatic perception in women [27] and this may be why stressors

and aging, which affect health, play an important role in women's anxiety. Unmeasured barriers related to structural violence may impair women from accessing social support even when they appraise that others would help them. For example, a man may be able to identify sources of support and access them when needed. In contrast, when a woman reports the presence of someone in the community who could help in time in need, that person may have more impediments in helping a woman versus a man when crises actually arise. For example, it would be appropriate for a man to provide support to an unrelated man but a man could not acceptably help an unrelated woman. There also may be gendered patterns of responding to anxiety, which benefit from different types of social support. For example, material social support may be more beneficial for men if they use problem-focused coping, whereas emotional social support may be more important if women rely upon emotional coping. The survey employed in this study was biased toward material rather than toward emotional social support. Overall, the results suggest that the measure of social support used was not particularly relevant for women's anxiety and the very nature of social support likely varies by gender. The unanswered questions are why is this so and what other measures of social support would be most salient for women in Nepal. Further research is necessary to identify these features of social support, such as what members of society contribute most beneficially to women's mental health. Ethnographic research including narratives and life histories of women could elucidate these issues [68,69].

A number of other risk factors were identified. In the gender-stratified models, low caste status was a strong predictor of anxiety among men. The substantial effect size among women likely was not significant because of the small number of low caste women in the study. In analyses of mental health and caste conducted with this sample and reported elsewhere [56], caste was associated strongly with anxiety and depression, with approximately twice the effect size on anxiety compared with depression. Substantial unexplained variance in the association between anxiety and caste remained even after controlling for the mediating effect of SLEs, economic factors, and social support. Caste discrimination may represent a quintessential mode of structural violence. In these analyses, its profound effects are not gendered, exemplifying that absolute processes can cut across gender as well.

Age was a significant predictor of anxiety among women, with women over 40 years of age having a greater risk of anxiety compared with younger women. In contrast, men manifested no relationship between age and anxiety. Several interpretations are possible. Age

is associated with increasing health problems. With the high burden on reproductive health, aging may bring greater physical impairment for women than for men. With regard to structural violence, women's worth in the home may be connected with physical productivity. As a woman ages and her health deteriorates, her relatives may view her as a burden. Moreover, postmenopausal women may lose value once they can no longer reproduce. Women also may become more vulnerable as they age because of their resource dependency upon their husbands or adult sons. Widowhood brings social and material deprivation and systematic cultural proscriptions [27]. A husband's property is passed not to the widow but to the sons. Unlike widowers, widows cannot remarry [53]. Many women have considerably older husbands and are vulnerable for early widowhood: one woman in this study was widowed at 9 years of age.

Household income's significance for men but not women may reflect structural violence factors. Men more often have access to wage-earning occupations. Household cash income may be a status marker for men, who have access and control over it. Women have less opportunity to access, spend, or save these funds. Many women reported that their husbands wasted the families' cash holdings on gambling and drinking, while they felt powerless to intervene. Education and number of livestock were not significant predictors for either gender.

Taken together, these results did not support the specific hypotheses proposed for proxies of structural violence. Nevertheless, the greater burden of anxiety born by women, the elderly, the poor, and low caste persons firmly indicates the significance of marginalization in determining mental health. Such findings illustrate gender and other group differences based on positioning within the social distribution of structural violence. The findings furthermore suggest the need for other approaches to operationalize structural violence as a mechanism for gender differences in mental health across cultural groups. It also is worth considering that the lack of moderation by proxies of structural violence may not reflect a failure of the measure of support. Rather, it may suggest a failure of efficacy in social support that constitutes strong evidence for the intervening effects of structural violence.

Limitations

This study only examined SLEs over the previous 12 months, whereas current mental health may reflect a lifetime accumulation of differences in SLE exposure. This study did not include childhood and lifetime traumatic events, which may be particularly important sources of gender differences in anxiety because women are more likely to suffer physical and sexual abuse com-

pared with men [1]. Future studies should examine stereotyped gender roles [27] and their impact on social support and anxiety in Nepal.

An important caveat for interpreting the results here is the potential for masking effects, particularly through gendered substance abuse, such as in Mexico, where alcoholism among men masks their anxiety severity, thus leading to false attribution of higher anxiety among women [25]. Nepal also suffers from gender disparities, with alcohol abuse significantly more common—and more acceptable—among men. Men may have other behavioral outlets that mask or convert anxiety into other phenomenon such as violence and other forms of aggression. If we were to account for these other behaviors, it might substantially decrease the gender disparity in anxiety complaints.

Moreover, the intersection of culture and anxiety was not evaluated with regard to gender differences. For example, in some cultures, women are considered more vulnerable to certain idioms of distress or personality traits [70] and these are often traits related to anxiety [27]. Ethnophysiological frameworks—local conceptual models for understanding bodily processes—contribute to gender differences in the experience of anxiety-like states during certain sensations [71–73]. For example, in Thailand, women are considered more susceptible to the condition *lom* (wind illness), which is characterized by gastrointestinal distress, whereas men in a different region of Thailand are considered more vulnerable to *rook klua lai tai* (fear-of-sudden-nocturnal-death illness), which is characterized by paroxysmal nocturnal dyspnea [70]. Therefore, women may react with more anxiety to gastrointestinal complaints, whereas men may suffer greater anxiety following shortness of breath upon wakening at night. In Nepal, ethnophysiological models consider women to have weaker aptitude of the brain-mind to control the heart-mind and thus are considered more vulnerable to the effects of worries in the heart-mind [74]. In previous work in Nepal, we have found that the idiom of *jham-jham* (paresthesia) is twice as prevalent among person with anxiety and this form of distress is disproportionately represented among women [52]; thus, cultural focus on sensations [71] in Nepal could elucidate processes underlying gender differences in anxiety. Anxiety, cultural idioms, and substance abuse ideally should be addressed together. For example, in Mongolia, prevalence rates of the cultural idiom of distress *yadargaa* are considerably higher among women; however, men are more likely to express their distress through substance abuse [75].

Despite a strong impact of gender on anxiety in Jumla, the effect may not hold in other regions of Nepal or South Asia. Jumla is religiously homogeneous: more than 90%

of the population is Hindu. The national average is less than 70% Hindu, and there are other regions of religious heterogeneity with Buddhists, Muslims, Christians, and animists. Areas with a smaller percentage of Hindu practitioners may have less gender difference in mental health problems. Communities of ethnic minorities and Buddhist groups are considered to have less gender-based oppression in Nepal [53]. Biological factors cannot be excluded as contributors to the observed differences among genders. Ultimately, the most effective studies of gender disparities in mental health across cultural groups should employ biocultural approaches [76,77]. Last, our results may be attributable to reverse causation, wherein the dependent variable, in this case anxiety, may affect the independent variables. Mental health status may affect economic status, exposure to stressful events, and the amount of social support. Moreover, the causal pathway may operate differently by gender [1]. These issues are being explored through longitudinal studies with this population.

Implications

This study has implications for both research and intervention. Regarding mental health research, it raises questions about the gendered nature of constructs and scales. The social support scale used here focused on perceived availability of socially mediated resources such as loans, childcare assistance, support during illness, and transportation. Although these markers were salient for men, they did not reflect aspects of social support most relevant to women's well-being. Future studies can best assess this employing ethnography in mixed-methods study designs with cultural epidemiology [68].

Regarding intervention, the findings support mounting calls for considerations of gender to weigh the differential benefit of a specific intervention with women versus men [1]. Based on this study, interventions that reduce exposure to SLEs and mitigate the impairments from aging would benefit women. The need for health care is common to both stressful events and aging. Interventions addressing health needs, especially reproductive health, should be considered as pathways to reduce anxiety. Economic interventions should benefit women directly and place control of the wealth within women's purview rather than generally support household economics, which appeared only to benefit men. Microfinance collectives, wherein women work together with a pool of funds, may be more effective than programs in which funds go directly into the household where men can monopolize the capital. These efforts would be consistent with a structural violence understanding of gendered anxiety.

Greater attention to potential gender biases in both research and interventions is needed urgently. Denov has pointed out that too often both Western-based interventions and local forms of ritual and healing are dominated by male biases [78]. She cautions that failure to address these biases runs the risk that mental health and psychosocial interventions may do more harm than good for women. Such problems are by no means limited to non-Western cultural settings. Affluent postindustrial nations continue to suffer from significant gender differences in mental health. Ultimately, eradication of structural violence and gender disparities in mental health and health care will require global initiatives that examine gender and mental health across cultures and settings throughout the world.

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Conflict of Interest

The authors have no conflict of interest.

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