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The relationship between the gendered norm of eating last and mental health of newly married women in Nepal: A longitudinal study

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Abstract

Eating last is a gendered cultural norm in which the youngest daughters-in-law are expected to eat last after serving others in the household, including men and in-laws. Using women's eating last as an indicator of women's status, we studied the association between eating last and women's mental health. Using four rounds of prospective cohort data of 18–25-year-old newly married women ($n = 200$) cohabiting with mothers-in-law between 2018 and 2020 in the Nawalparasi district of Nepal, we examined the association between women eating last and depressive symptom severity (measured using 15-item Hopkins Symptom Checklist for Depression; HSCL-D). Twenty-five percent of women reported eating last always. The prevalence of probable depression using the established cutoff was 5.5%, consistent with the prevalence of depression in the general population. Using a hierarchical mixed-effects linear regression model, we found that women who always ate last had an expected depressive symptom severity (0–3 on HSCL-D) 0.24 points (95% confidence interval [CI]: 0.13–0.36) greater compared to women who did not eat last when adjusted for demographic variables, household food insecurity, and secular trends. Sensitivity analysis using logistic regression also suggested that women who eat last have greater odds of having probable depression (adjusted odds ratio [AOR] = 4.05; 95% CI: 1.32–12.44). We explored if the association between eating last and depressive symptom severity was moderated by household food insecurity and did not observe evidence of moderation, underscoring the significance of eating last as a woman's status indicator. Our study findings highlight that newly young married women in Nepal are a vulnerable group.

KEYWORDS

cultural issues, depression, infant and child nutrition, maternal nutrition, mental health

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1 | BACKGROUND

Depression is a leading cause of death and disability worldwide, with South Asian countries reporting the highest prevalence (14.2%) of common mental disorders such as depression and anxiety (Naveed et al., 2020). Among persons with common mental disorders, the prevalence of depression was 26.4% per a recent meta-analysis published in 2020 (Naveed et al., 2020). Despite the high burden of mental health disorders in the population, the mental health infrastructure and availability of specialists in the region are inadequate for the needs of the population (Seth, 2016). Of those diagnosed with common mental disorders, only 24% of people in South Asia receive any form of treatment and services due to a lack of facilities, professionals, and stigma in society against seeking care for mental health (Naveed et al., 2020; Thara & Padmavati, 2013; Wang et al., 2007).

Past research from South Asia has shown that women who are married early (defined as marriage before the age of 18) have lower decision-making autonomy, receive less support from their families and are at a higher risk of common depressive and anxiety disorders (Patel et al., 2006). Young women report facing mistreatment, stress, and depression due to their inability to bear children early in marriage (Naab et al., 2019). Epidemiological evidence has consistently demonstrated a disparity in the lifetime prevalence of major depressive disorder between genders, with a female to male risk ratio of nearly 2:1. This disparity has been consistently documented across diverse countries and ethnic populations (Kessler, 2003; Noble, 2005). Known factors contributing to depression among women in low-income settings include social stressors like poverty, gender-based violence, poor social support, lack of spousal empathy and support, and tension with in-laws (Fisher et al., 2012; Patel et al., 2006). Multiple factors adversely affect women's mental health, but gendered risk factors such as women eating last have received less attention, particularly in strongly patriarchal countries like Nepal (Kandiyoti, 1988).

In Nepal, a nation that lies in the classic patriarchal belt of South Asia, gendered cultural norms often favour men in matters of household and individual-level decision-making, mobility, and access to nutrition and other household resources (Skinner 1997; Therborn, 2004). In patrilocal-patrilineal systems, a woman's status depends on her position in the household. The tradition of moving to the marital household in typical joint family systems after marriage means that the newest bride in the family often holds the lowest position in the household hierarchy (Gupta, 1995). Thus, newly married women face 'double powerlessness' (Gupta, 1995), where they have lower status than men and other senior women in the household (Gupta, 1995, 1996; Skinner, 1997).

An important indicator of gendered hierarchy within the household is inequitable intrahousehold food allocation (Diamond-Smith et al., 2020; Gittelsohn, 1991; Gittelsohn et al., 1997; Harris-Fry et al., 2018; Madjadian & Bras, 2016). Food preparation in the household is a gendered activity and is considered part of women's responsibility (Madjadian & Bras, 2016). However, there is pro-male bias in food

Key points/highlights

- Newly married women in rural Nepal face harmful gender norms, such as eating last in the family, which does not improve over the first 2 years of marriage.
- In patrilocal societies like Nepal, newly married women often occupy the lowest status in the household, and eating last is a reflection of their low status.
- Women who eat last in the household experience greater depressive symptoms, irrespective of their household food insecurity status.
- The low status of women and harmful gender norms place them in situations that are detrimental to their mental health and well-being.

consumption and nutrition at the intrahousehold level (Berti, 2012; Coates et al., 2017; Haddad et al., 1996). Women often receive a lower quantity of food and lower nutritional intake than men (Harris-Fry et al., 2017; Madjadian & Bras, 2016). Senior women in the household also dictate food allocation. D'Souza and Tandon demonstrate that the absence of a mother-in-law in Bangladeshi households leads to better caloric intake for women spouses and their daughters through more equitable food allocation (D'Souza & Tandon, 2019). Young newly married women are especially at risk of poor nutrition because patriarchal norms and customs perpetuate their subordinate position and determine their intrahousehold food allocation (Diamond-Smith et al., 2020; Harris-Fry et al., 2017).

Past research from Nepal shows that daughters-in-law cook and serve the rest of the family and eat last in the household (Gittelsohn, 1991; Gittelsohn et al., 1997; Harris-Fry et al., 2017). Eating last is a gendered cultural norm in South Asian settings. On moving to their husbands' households, recently married women are expected to eat last to show deference to senior members in the household, including men of the household, in-laws, and more senior women (Gittelsohn, 1991; Harris-Fry et al., 2017). Qualitative research from South Asia suggests that women who eat last cut back on their food intake and prioritise other household members such as working males, senior members, and young children when serving food (Lentz, 2018; Lentz et al., 2019). They also are the first to restrict the number of meals they eat in times of scarcity (Lentz, 2018; Lentz et al., 2019).

Eating order can be considered a representation of status distinction in South Asian households. Women accept eating last as a 'matter-of-fact and the right thing to do' (Lentz et al., 2019). Further, it is customarily expected that younger brides in the household will eat last, after everyone has been served an adequate amount of food (Lentz et al., 2019; Morrison et al., 2021, 2018). However, this might change as newly married women gain status in the household--as women go out to work, get pregnant, or have children. A recent study of newly married women observed that there was no significant association between becoming pregnant and eating last but working outside the home was associated with a lower

likelihood of eating last in the household (Diamond Smith et al., 2022). Another qualitative study from Nepal also found that even when women became pregnant, women continued to conform to these gendered norms of eating last in the household to show deference to elders (Morrison et al., 2021).

Despite evidence that the newest daughters-in-law face inequitable intrahousehold food allocation and are at risk of eating last, little is known about how the gendered cultural norm of eating last is associated with women's mental health in South Asia. The impact of eating last, conceptualised as an indicator of women's status, especially among newly married women, has received scant attention in public health research including mental health. To our knowledge, only a single study from South Asia has examined the effects of eating last on mental health (Hathi et al., 2021). The authors found that eating last was positively associated with worse mental health even after accounting for socioeconomic status (Hathi et al., 2021). Restrictive gender norms and discriminatory practices may expose women to chronic stressors and potentially more significant depressive symptoms. We extend the literature on this understudied topic by examining the relationship between women eating last and their mental health.

Household food insecurity may moderate the order in which household members eat and the distribution of food resources within the household (Diamond-Smith et al., 2022; Gittelsohn, 1991). As defined by the United Nations Committee on World Food Security, food security is where 'all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life' (Swindale & Bilinsky, 2006). Food insecurity can be a measure of economic deprivation, suggestive of inadequate economic resources to meet basic needs. The harmful psychological consequences of food insecurity (having anxiety about accessing food and skipping meals) extend beyond adverse nutritional outcomes, including low birth weight (Borders et al., 2007) and congenital disabilities among children (Bronte-Tinkew et al., 2007) to psychological stress and poor mental health (Frongillo et al., 2017). Further, food insecurity at all levels of severity, including mild, moderate, or severe, is associated with depressive symptoms (Kolovos et al., 2020). A recent global meta-analysis of 19 studies estimated that there was a positive association between food insecurity and the risk of depression (odds ratio [OR] = 1.40, 95% confidence interval [CI]: 1.30–1.58) (Pourmotabbed et al., 2020).

In a patriarchal society like Nepal, women undergo gender discrimination stressors throughout their life course. Newly married women move to their husbands' households, suffer isolation from their natal families and villages, experience mobility restrictions and limited autonomy, face childbearing expectations, and must prove fertility (Chorghade et al., 2006; Jeffery, 2014; Khalil & Mookerjee, 2019; Paudel & Acharya, 2018). Women are also vulnerable to stressors originating from their household status and food insecurity that adversely impact their mental health status (Kerr et al., 2020). We highlight the need to study the women's status in the household as a risk factor for depressive symptoms. We operationalized women's low status in the household using the variable on the frequency of women's eating order in the household. Further, we studied a related psychosocial chronic stressor,

food insecurity, that measures how deprivation and anxiety related to food could further moderate the association between eating last always and women's mental health. No known studies have tested whether household food insecurity exacerbates the relationship between the gendered norm of eating last and mental health in Nepal. Examining whether the association is moderated by food insecurity is important because Nepal's food insecurity has remained high and constant from 2011 to 2016, with over 50% of households reporting some level of food insecurity (Ministry of Health, 2017).

Our study aims to make significant contributions by exploring the association between eating last in the household and mental health and testing moderation of this association by household food insecurity status using a longitudinal study of newly married women in the Nawalparasi district of Nepal, an especially high-risk population. We hypothesised that: (1) women who eat last in the household will have higher depressive symptom severity independent of demographic characteristics and household food insecurity and (2) the association between women eating last and depressive symptom severity will be greater for women who are in food-insecure households than women in food secure households.

2 | METHODS

Between 2018 and 2019, we conducted four rounds of surveys at 6-month intervals with a longitudinal cohort of 200 newly married women. At baseline, women were eligible to enter the study if they were married within four preceding months, co-habiting with their mothers-in-law, were 18–25 years of age, and living in the Nawalparasi district, which is a relatively under-resourced district in Terai or the plains region of Nepal bordering India. To identify newly married women for our study, we conducted a mapping of households in one rural municipality (Pali Nandan) and one urban municipality (Sunwal) with the assistance of community leaders, including female community health volunteers, teachers, health workers, and religious leaders. We chose these municipalities because we believed they were representative of urban and rural areas, and thus the women residing in those areas, in this district. From this mapping exercise, we identified a total of 302 eligible women (160 from Sunwal and 142 from Pali Nandan) within the study areas. From this pool of eligible participants, we randomly selected 200 women (100 from each area). However, two of the initially selected women were unable to participate in the study due to objections from their family members, and thus they were replaced by the nearest eligible women in the same area. At baseline and each follow-up survey, enumerators surveyed respondents using questionnaires in Nepali about their depressive symptoms, eating order in the household, and other time-varying indicators, including paid work, pregnancy, health care utilisation, and food insecurity. Four trained female Nepali enumerators conducted face-to-face interviews on computer-assisted personal interview devices either at home or in a private location of the respondent's choice after obtaining written informed consent. Non-literate respondents

provided thumbprints to confirm consent. Respondents were offered an incentive of 3 USD at each visit. The women answered all the questions, including those on household details. The study received ethical approvals from the Nepal Health Research Council and the ethics committee of the University of California, San Francisco.

2.1 | Measures

2.1.1 | Dependent variable

Our dependent variable was depressive symptom severity. We used the 15-item Hopkins Symptom Checklist for Depression (HSCL-15 or HSCL-D) that has been previously used in Nepal (Derogatis et al., 1974; Garrison-Desany et al., 2020; Sharma et al., 2021; Thapa & Hauff, 2005). The response format comprises four categories describing to what extent the respondent was affected by a given symptom during the week before the survey: not at all, a little bit, quite a bit, or extremely. We coded the four categories of responses as not at all as 0, a little bit as 1, quite a bit as 2, and extremely as 3. A composite measure was calculated for each respondent by averaging their item responses, with higher scores indicating higher depressive symptom severity (worse mental health). We used it as a continuous measure for the multivariable analysis. In our study sample, Cronbach's alpha for the HSCL-15 was 0.92, indicating high internal consistency. Prior literature recommends examining depression either in terms of probable clinical diagnosis or symptom severity (Kessler, 2002). Hence, we used the continuous measure of depressive symptom severity as the outcome in our multivariable regression models. Based on past studies from Nepal and other low-resource settings (Jurinsky et al., 2022; Tsai et al., 2012), a binary variable with a mean cut-off of greater than 1.75 was used to classify respondents with probable depression.

2.2 | Independent variable

Our primary independent variable of interest is women eating last in the household, which is a marker of gendered norms and the status of women in the household. At each round, women were asked, 'How often do you eat last in your household?'. The response format consisted of five categories: never, rarely, sometimes, usually, and all the time. For the primary explanatory variable, we created an indicator variable by coding responses to eating last 'all the time' as 1 and 0 otherwise. The rationale for doing this was that always eating last was the most extreme marker of women's low status in the household and restrictive gendered norms. We also present the original categorical variable's results in a sensitivity analysis (Table 3).

2.3 | Covariates

We included the following time-variant and time-invariant confounders of interest chosen a priori based on previous research on

important social, cultural, and economic factors in this setting that could influence women eating last and depressive symptom severity (Diamond-Smith et al., 2020; Raifman et al., 2021).

2.3.1 | Household food insecurity

We measured food insecurity in the household using the Household Food Insecurity Access Scale (HFIAS). The HFIAS is composed of nine questions specific to three domains: (i) anxiety and uncertainty about food access (one question), (ii) insufficient quality (three questions), and (iii) insufficient quantity (five questions). Each item asks a frequency-of-occurrence question to determine if the condition in the household had happened rarely (once or twice), sometimes (3–10 times), or often (>10 times) during the 30 days before the survey. We coded the responses as 0 (never), 1 (rarely, 1–2 times), 2 (sometimes, 3–10 times), or 3 (often, 10+ times) with higher scores indicative of greater food insecurity. The HFIAS score was constructed by adding the values of the nine questions ranging from 0 indicating low experience of food insecurity to 27, indicating high experience of food insecurity. Cronbach's alpha for this scale was 0.91, indicating high internal consistency. Following the HFIAS guidelines, households that respond affirmatively to the more severe behaviours or experience them more frequently are classified as severely food insecure. The cumulative HFIAS score was categorised into four levels of household food insecurity: food secure households, and mild, moderate, and severe food insecurity (Coates et al., 2007).

Another time-varying characteristic that could potentially confound the relationship between women's eating order and depressive symptom severity is doing *paid work*. We hypothesised that women going outside the home for paid work may have greater psychological well-being compared to women who do not go outside the home for paid work. We operationalized *paid work* as an indicator variable to denote if the woman undertook paid work in the 6 months before the survey. In Nepal, childbearing follows shortly after marriage, and pregnancy and childbearing have been associated with depressive symptoms (Beck, 2001; O'Hara & Swain, 1996). Hence, to get at the independent relationship between eating last and depression, we used an indicator variable to denote if the respondent had experienced childbirth since the previous round of the survey. We also included an indicator variable for the *survey round* to control for time-specific effects such as seasonality patterns.

Time-invariant sociodemographic characteristics were included as potential confounders, including *women's age at baseline* (in completed years) and *education at baseline* as a continuous variable. Since Nepali society is ethnically complex, we included *ethnicity* categorised as follows: Brahmin and Chettri, upper-caste groups and the most privileged ethnic group as the reference group, indigenous group (*Terai Janajati*) as the middle group, and Dalits/religious minorities as the least privileged groups. *Household wealth* was constructed using principal components analysis from 40 variables, including ownership of house and land, quality of dwelling (e.g., house construction materials), access to services (water,

electricity, sanitation), and a set of household assets. The wealth index was then used to categorise households into quintiles, from poorest (quintile 1) to least poor (quintile 5). In South Asia, the type of marriage can potentially affect women's status in the household, such as women's decision-making power (Banerji & Deshpande, 2021). When women had parent-arranged marriages with no choice in partner selection (arranged marriage), they were more likely to have lower decision-making power compared to women in self-choice (or love) marriages (Banerji & Deshpande, 2021). Thus, we controlled for women's type of marriage with an indicator variable for an *arranged marriage* to denote if she had an arranged marriage or not.

2.4 | Analysis

We first computed sample descriptive characteristics for the baseline round of the survey and looked at trends of our primary independent and dependent variables over time. We ran random-intercept linear regression models to account for the correlation between repeated observations from the same respondents over time. Statistical interaction between eating last and food insecurity was assessed by including an interaction term (an indicator variable for whether the households belonged to different levels of food insecurity multiplied by whether the woman *always eats last*) in the multivariable models. In a sensitivity analysis, we refitted the primary regression models using logistic regression with the binary variable for probable depression to estimate the association between eating last always and probable depression. In another sensitivity analysis, we refitted the primary regression models using linear regression but with the categorical variable for frequency of eating last in the household. All data were analysed using Stata Version 15.1 (Stata Statistical Software, 2017). We use $p < 0.05$ as statistical significance for the regression models except for interaction terms where we use a Wald $p < 0.1$. Below we indicate our empirical specification to model the expectation of the continuous outcome of interest to test our first hypothesis:

$$E(Y_{ij}|X_{ij}, R_i, I_{1j}, I_{2ij}, u_j) = \beta_1 + \beta_2 X_{ij} + \beta_3 R_i + \beta_4 I_{1j} + \beta_5 I_{2ij} + u_j$$

Y_{ij} = Continuous outcome variable (depressive symptom severity scores) for an individual j at round i

X_{ij} = A binary variable indicator whether the woman eats last in the household all the time for a woman j at round i

R_i = Indicator variable for rounds 2, 3, 4 (Ref: Round 1)

I_{1j} = Vector of time-invariant variables at the individual level such as age at baseline, education at baseline, ethnicity, type of marriage, and wealth at baseline

I_{2ij} = Vector of time-varying variables at the individual level such as household-level food insecurity, had a childbirth recently, and paid work undertaken by the individual

u_j = Individual-level random intercept, $\sim N(0, \sigma^2)$

Model 1 estimated the association between eating last and depressive symptom severity, adjusting for all the covariates. Model 2 estimated the association between eating last and depressive symptom severity after adjusting for the covariates described above and including an interaction term between household food insecurity and eating last to test whether the relationship between eating last and depressive symptom severity was moderated by the level of food insecurity.

3 | RESULTS

Two hundred respondents completed the baseline survey, 192 completed Round 2, 191 completed Round 3, and 187 completed round 4, with 92% (183) of the respondents recruited at baseline completing all four surveys. We present the demographic characteristics in Table 1. The mean age of our respondents was 20.4 years (SD = 1.9), with an average of 10 years of schooling at baseline. On average, the household had seven members. An overwhelming majority of the women (70.5%) had a marriage arranged by their parents, while the rest chose their partners. In terms of ethnic/caste composition, most women (53%) belonged to indigenous groups, followed by 23% of women who belonged to Brahmin/Chhetri groups. The rest (25%, $n = 49$) belonged to Dalit or religious minority groups. Twenty-six per cent of women had engaged in paid work outside the home. Fifty-three per cent ($n = 107$) of households were categorised as food insecure. A quarter of the women (25%) reported eating last always. The prevalence of probable depression using the established cutoff was 5.5% which is consistent with the worldwide prevalence of depression in the general population (World Health Organisation, 2022).

Table 2 presents the trend over time of our independent and dependent variables of interest. There is a greater number of women who eat last all the time (or always) from Round 1 through Round 4. In Round 1, 25% of the sample reported eating last always and the proportion of women eating last always was 36% by Round 4. We noted that the depressive symptom severity scores also worsened (mental health worsened) from Round 1 through Round 3, but there was a drop (mental health improved) between Round 3 and Round 4.

Table 3 presents our multivariable random-effects linear regression model of the association between eating last and depressive symptom severity. In Model 1, we found that eating last was positively associated with an increase in depressive symptom severity ($\beta = 0.24$, 95% CI: 0.13–0.36), controlling for household food insecurity score, other confounders, and time. In Model 2, we test for interaction with household food insecurity levels in the household. While all levels of household food insecurity are independently associated with depressive symptom severity in food insecurity, we did not find evidence of heterogeneous effects by levels of food insecurity between eating last always and depressive symptom severity controlling for other covariates and time. A likelihood ratio test comparing models with interaction without

TABLE 1 Sociodemographic characteristics of women at Round 1 ($n = 200$).

Variable	n (%) or Mean (SD)
Age in years	20.4 (1.9)
Woman's education in years	10.0 (3.4)
Household size	6.9 (3.1)
Participant age at marriage	
Less than 20 years	76 (38.0)
Equal to or greater than 20 years	124 (62.0)
Marriage type	
Arranged	141 (70.5)
Love	59 (29.5)
Ethnicity/Caste	
Brahmin/Chhetri	45 (22.5)
Indigenous group	106 (53.0)
Dalits/religious minority group	49 (24.5)
Wealth quintile	
Poorest	40 (20.0)
Poor	40 (20.0)
Middle	40 (20.0)
Rich	44 (22.0)
Richest	36 (18.0)
Paid work outside the home (yes/no)	52 (26.0)
Household food insecurity access prevalence	
Food secure	93 (46.5)
Mildly food insecure	36 (18.0)
Moderately food insecure	44 (22.0)
Severely food insecure	27 (13.5)
Frequency of eating last	
Never	76 (38.0)
Rarely	17 (8.5)
Sometimes	12 (6.0)
Usually	45 (22.5)
All the time	50 (25.0)
Probable depression (Yes/No)	11 (5.5)

interaction was not statistically significant ($p = 0.466$) and confirmed the absence of interaction.

We also carried out sensitivity analysis using logistic regression as an alternate specification with the same control variables. The results suggest that women who eat last have four times higher odds of having probable depression than women who do not eat last controlling for household food insecurity, secular trends, and other

confounders (Table 4). Specifically, the adjusted odds ratio (AOR) for women who eat last was 4.05 (95% CI: 1.32–12.44, $p = 0.015$).

4 | DISCUSSION

Using prospective longitudinal data from Nepal, this study examined whether eating-last-always in the household was associated with greater depressive symptom severity among young, newly married women. Our analysis leveraged four rounds of data collection during young Nepali women's early marital lives when they have the lowest status in the household. In this sample, eating last always was positively associated with greater depressive symptom severity. Results are consistent with a recent cross-sectional study from India that found that women who eat last were more likely to have worse mental health than women who did not eat last (Hathi et al., 2021).

We found that household food insecurity had an independent significant association with depressive symptom severity. This is also consistent with results from a global review that found association between nutrition distress, food insecurity, and women's poor mental health (Myers, 2020). Several global reviews have highlighted that food insecurity is linked to poor mental health, potentially through behavioural and biological pathways (Pourmotabbed et al., 2020; Jones, 2017).

Contrary to our hypothesis, we did not find evidence that the relationship between eating last and depression varied by household food insecurity. In other words, household food insecurity did not moderate the association between eating last and depressive symptom severity among this sample of newly married women. A plausible explanation for not finding moderation by food insecurity levels could be that always eating last, as conceptualised in our study, is a marker of the low status of women in the household. Hence, women are treated as lower-status individuals regardless of food security levels in the households and always eating last (a marker of very low social status in the household) adversely affects their mental health. Our results from another sensitivity analysis using the eating order frequency (Table 5 in the supplementary section) also indicated how *always eating last* (or *eating last all of the time*) is associated with greater depressive symptom severity, lending credence to our characterisation of always eating last as a marker of women's low social status within the household.

There are several different pathways through which eating last may impact mental health. One pathway is biological, where eating last always can affect women's mental health through poor nutrition. Prior evidence suggests that the order of eating is associated with lower quality and quantity of foods consumed (Barker et al., 2006; Gittelsohn, 1991; Palriwala, 1993), including iron-rich foods (Sedlander et al., 2021) putting women at greater risk for poor nutritional outcomes and anaemia (Barker et al., 2006; Chorghade et al., 2006; Coffey, 2015; Sedlander et al., 2021). Persistent undernutrition can be associated with mental health disorders (Ohrnberger et al., 2017; Scott et al., 2007). More research using

TABLE 2 Frequency of eating last and depressive symptoms by round of survey.

	Round 1		Round 2		Round 3		Round 4	
	No.	%	No.	%	No.	%	No.	%
How often respondent eats last								
Never	76	38	57	29.7	41	21.5	42	22.5
Rarely	17	8.5	21	10.9	37	19.4	42	22.5
Sometimes	12	6	18	9.4	11	5.8	14	7.5
Usually	45	22.5	26	13.5	35	18.3	22	11.8
All the time	50	25	70	36.5	67	35.1	67	35.8
Mean and SD of depressive symptom severity	200	0.48 (0.56)	192	0.56 (0.61)	191	0.58 (0.64)	187	0.42 (0.55)
Prevalence of probable depression	11	5.5	11	5.7	13	6.8	6	3.2
Total sample size (n)	200		192		191		187	

mediation analysis is required to disentangle the biological pathways from eating last to mental health.

Accumulation of chronic stressors through gender-based discrimination can negatively influence women's mental health outcomes over the life course (Kerr et al., 2020; Kirschbaum et al., 1995; Stroud et al., 2002). Gender-based discrimination can negatively influence women's mental health outcomes (Kerr et al., 2020; Kirschbaum et al., 1995; Stroud et al., 2002). Chronic stressors contribute to health deterioration and directly negatively affect women's mental health (Kerr et al., 2020). In patrilocal-patrilineal settings such as Nepal, gender discrimination stressors affect women throughout their life. Extensive research from South Asia demonstrates that women and girls are at a nutritional disadvantage due to son preference right from childhood resulting in poorer health and nutritional outcomes (Chen et al., 1981; Fledderjohann et al., 2014; Ganatra & Hirve, 1994; Jayachandran & Kuziemko, 2011; Miller, 1997; Raj et al., 2014). Nutritional deficiencies are particularly acute during adolescence and early years of marriage for women in South Asia (Akhtar, 2016; Black et al., 2008; D'Souza & Tandon, 2019). Further, as newly married women move into their marital homes with their husbands and in-laws, they lose connections with their natal households and peer networks, face mobility restrictions, have lower autonomy and decision-making, and lower access to high-quality food (Diamond-Smith et al., 2020; Khalil & Mookerjee, 2019). They also face the pressures of early childbearing to prove their fertility (Chorghade et al., 2006; Dixit et al., 2021).

It is important to recognise that women's status in the household is dynamic. Studies from India have found that married women gain status in the household over time with increased financial freedom and access to enabling resources such as property rights, particularly after they attain motherhood (Gupta, 1995, 1996; Reed, 2021). As daughters-in-law live up to their societal expectations and become mothers-in-law, their bargaining power increases by gaining higher status in the household (D'Souza & Tandon, 2019). In Indian households, bargaining power and allocation of nonfood resources resemble an inverted U-shaped relationship with the age of the women (Calvi, 2020). More rounds of data collection may allow us to document and

understand the trajectory of depressive symptom severity of married women over their reproductive events and life course.

This study has several strengths that are worth noting. To our knowledge, this is the first study from Nepal and the second in South Asia to examine the association between eating last in the household and women's mental health. Unlike the prior study from India, our study uses a prospective design, and newly married women were recruited within 4 months of their marriage, allowing us to conduct a robust longitudinal analysis between women eating last in the household and depressive symptoms within a highly vulnerable group. Since we also had information on household food insecurity, we could assess whether this was a moderator in the relationship between eating last and depressive symptoms. We also make significant contributions to the literature by studying an under-researched topic in this context—women's mental health. First, we focus on women's mental health outside of maternal depression, which is scarce in the South Asian context. Second, through this study, we highlighted how women's status and harmful gender norms that have been extensively studied to impede care-seeking behaviours and nutritional outcomes can also be detrimental to their mental health and well-being. Finally, we use validated scales to measure depressive symptoms and household food insecurity, though we acknowledge that these are self-reported scales prone to social desirability bias.

The study also has some limitations. The sample is relatively small (200 women followed for four rounds of survey), and all women lived in one district of Nepal. Further, the study sample comprises married women living with their husbands and mothers-in-law, so the results from this study are not generalisable to newly married women in similar contexts who do not co-reside with their mothers-in-law. Though we have a longitudinal design, we only have data from women about the first 2 years of their marital life, which precludes us from studying long-term trends of depressive symptoms over time. Since women's status is dynamic, future studies should attempt to explore women's status and long-term trends of status and depressive symptoms of women. It is also possible that women had depressive symptoms before their marriage which worsened due to their low status early in their marriage. Given the lack of access to

TABLE 3 Multivariable random effects linear regression model showing association between eating last and depressive symptom severity among newly married women over four waves in Nepal, $n = 770$.

	Model 1			Model 2		
	β	95% confidence interval (CI)	p	β	95% CI	p
Eat last always	0.24	0.13–0.36	0.000	0.28	0.07–0.50	0.010
Household food insecurity levels (ref: food secure)						
Mild food insecurity	0.19	0.04–0.33	0.010	0.15	0.01–0.30	0.038
Moderate food insecurity	0.48	0.36–0.61	0.000	0.52	0.37–0.67	0.000
Severe food insecurity	0.31	0.14–0.48	0.000	0.33	0.12–0.54	0.002
Eating last always by household food insecurity (ref: food secure)						
Eating last always \times mild food insecurity	-	-	-	0.09	-0.27–0.45	0.631
Eating last always \times moderate food insecurity	-	-	-	-0.12	-0.44–0.21	0.482
Eating last always \times severe food insecurity	-	-	-	-0.07	-0.36–0.22	0.656
Controls						
Age at baseline	-0.03	-0.06–-0.01	0.021	-0.03	-0.06–-0.01	0.021
Education at baseline	-0.01	-0.03–0.01	0.190	-0.01	-0.03–0.01	0.204
Wealth quintile at baseline (ref: poorest quintile)						
Second lowest	-0.07	-0.27–0.13	0.492	-0.06	-0.26–0.13	0.516
Middle	0.02	-0.19–0.23	0.884	0.02	-0.19–0.23	0.850
Second wealthiest	-0.07	-0.28–0.14	0.528	-0.07	-0.28–0.14	0.497
Wealthiest	0.00	-0.28–0.28	0.992	0.00	-0.28–0.28	0.999
Had an arranged marriage (ref: love marriage)	-0.10	-0.21–0.02	0.099	-0.10	-0.21–0.02	0.102
Ethnicity (ref: Brahmin/Chhetri)						
Indigenous group	-0.11	-0.27–0.05	0.162	-0.11	-0.27–0.05	0.173
Dalits/religious minority group	-0.12	-0.31–0.06	0.184	-0.13	-0.31–0.06	0.174
Paid work outside the home	0.01	-0.08–0.09	0.880	0.01	-0.08–0.10	0.823
Gave birth recently	-0.12	-0.22–-0.03	0.013	-0.12	-0.21–-0.02	0.016
Rounds						
Indicator for Round 2	0.05	-0.02–0.13	0.167	0.05	-0.02–0.13	0.159
Indicator for Round 3	0.16	0.06–0.25	0.002	0.16	0.06–0.25	0.002
Indicator for Round 4	-0.03	-0.11–0.06	0.561	-0.02	-0.11–0.06	0.610

services to identify and effectively treat depression, women may have had untreated pre-existing depressive symptoms, further worsening their status within the household, and leading to a vicious cycle of worsening depressive symptoms.

4.1 | Policy implications

The mental health of newly married women is vital for their functioning and well-being. In addition, poor mental health among newly married women negatively affects child health as one in two newly married women gets pregnant within the first year of marriage

in Nepal (Ministry of Health, 2017). The poor mental health of mothers impairs the ability to take care of their children with adverse consequences for their children's growth and development (Nguyen et al., 2014; Rahman et al., 2008). Our results provide evidence that restrictive gendered norms, in this case eating last, put women at greater risk for depressive symptoms. These results highlight the vulnerabilities that newly married women face as they move away from their parents' home, adjust to their married life with in-laws and husbands, and start childbearing. Many government programs in Nepal target pregnant women to improve their nutrition and prenatal care through community outreach and mass media. In addition to regular programming for prenatal care and nutrition for women, policymakers

TABLE 4 Multivariable random effects logistic regression models estimating the association between eating last and probable depression among newly married women in Nepal ($n = 770$).

	AOR	95% confidence interval (CI)	<i>p</i>
Eat last	4.05	1.32–12.44	0.015
Household food insecurity levels (ref: food secure)			
Mild food insecurity	6.03	0.92–39.45	0.061
Moderate food insecurity	9.58	2.07–44.44	0.004
Severe food insecurity	3.39	0.50–22.96	0.211
Controls			
Age at baseline	0.76	0.58–0.99	0.045
Education at baseline	0.96	0.84–1.09	0.530
Wealth quintile at baseline (ref: poorest quintile)			
Second lowest	0.87	0.30–2.55	0.801
Middle	0.76	0.24–2.44	0.647
Second wealthiest	0.31	0.07–1.43	0.133
Wealthiest	2.38	0.36–15.58	0.367
Had an arranged marriage (ref: love marriage)	0.43	0.15–1.22	0.112
Ethnicity (ref: Brahmin/Chhetri)			
Indigenous group	0.47	0.11–2.13	0.287
Dalits/religious minority group	0.38	0.08–1.72	0.188
Works outside the home	0.70	0.29–2.03	0.514
Gave birth recently	0.84	0.32–2.18	0.717
Indicator variable for rounds (ref: Round 1)			
Round 2	0.86	0.33–2.24	0.751
Round 3	1.75	0.67–4.62	0.255
Round 4	0.71	0.23–2.19	0.555

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval.

need to pay attention to this vulnerable group of newly married women to design and test interventions that can improve their status in the household and transform harmful gendered norms and practices, especially before married women start childbearing. While it is important to increase access to food for a household with a newborn, our results indicate that this may not be enough to benefit women if they continue to suffer from having the lowest status within the household. Moreover, the limited availability of accessible mental health services in South Asia including Nepal (Naveed et al., 2020; Thara & Padmavati, 2013), makes it imperative for the policymakers to target social determinants such as women's status, restrictive gender norms, and food insecurity that can be addressed using community-level interventions alongside clinic-based interventions.

5 | CONCLUSION

Assessing the influence of eating last on mental health and psychological well-being in a resource-poor context like Nepal, where newly married women lack status and autonomy to seek healthcare, is essential—and these findings suggest that gendered norms around eating, regardless of food insecurity, impact women's mental health. Given the scant attention given to mental health among newly married women previously, there is ample scope and need for more analysis on the lives of newly married women to advance our understanding of social determinants of mental health such as eating last and to test interventions that transform harmful gender norms, improve women's status and women's health and well-being.

AUTHOR CONTRIBUTIONS

Lakshmi Gopalakrishnan conceptualised the research in this paper, analysed the data, performed the statistical analysis, and wrote the paper. Nadia Diamond-Smith designed the main study, received the funding, helped analyse, and provided feedback on the paper. Bibhav Acharya and Stefano M. Bertozzi reviewed the draft paper and provided feedback on the paper. Mahesh Puri managed the field research, helped design the research, and provided feedback on the paper.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data are available on request from the authors.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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