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Multilevel Influences on Depressive Symptoms among Men in Bangladesh

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Abstract

Depression is a worldwide problem, and is especially prevalent in lower-income countries with insufficient resources and widespread poverty, such as Bangladesh. Yet multilevel determinants of depressive symptoms in men have not been studied in this context. We leverage a novel dataset from men in Bangladesh to determine the community- and individual-level influences of masculine dominance strain and financial strain on the frequency of married men's depressive symptoms in Bangladesh. Data were collected between January and June, 2011, as part of the *UN Multi-Country Study of Men and Violence*, conducted by The International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). Masculine dominance strain at both levels was related to the frequency of depressive symptoms. Financial strain only at the individual level was related to the frequency of depressive symptoms. We conclude that community-level economic interventions may not directly influence individual-level depression; however, addressing customary conceptions of masculinity at the community and individual level and addressing individual-level financial strain are promising joint strategies to improve married men's mental health in Bangladesh and similar settings.

Keywords

Depression; Multilevel analysis; gender role strain; economic strain; men's mental health

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Mental health is considered a major public health issue in low- and middle-income countries (Hossain, Ahmed, Chowdhury, Niessen, and Alam, 2014). In countries such as Bangladesh, however, depression is understudied (Hossain et al., 2014; Islam, Ferrari, Seissler, Niessen, and Lechner, 2015). Depression is associated with cognitive impairment, unemployment, lower quality of life, higher risk of suicide, and higher risk of death from heart disease and stroke (Lepine and Beiley, 2011). Documented rates of depression in Bangladesh range from 6.5% to 35.0% (Hosain et al., 2007). Bangladesh remains a patriarchal society, with strong norms of masculine dominance (Islam & Karim, 2012), and 31.5% of the population live below the poverty line (The World Bank: Bangladesh, 2010). Depression among men worldwide has been associated with poverty (Patel & Kleinman, 2003) and pressure to fulfill norms of masculine dominance (Levant & Powell, 2017). Despite similar pressures, men in higher-income countries are less likely than women to seek treatment for depressive symptoms (Rochlen, Paterniti, Epstein, Duberstein, Willeford, and Kravitz, 2010). Also, even if Bangladeshi men were to seek help for depression, mental health systems in Bangladesh are nascent (Newman, 2013), mental health is under-funded (Newman, 2013), and treatment systems are inadequate (Hashimoto et al., 2015). Thus, despite the known associations of poverty and norms of masculine dominance with negative mental health outcomes in other settings, mental health among men in Bangladesh is almost totally overlooked in the literature (Hosain, Chatterjee, Ara, & Islam, 2007).

Depression may be exacerbated by norms of masculine dominance. Dominant masculinity has been defined as using aggression to maintain one's reputation, having control over one's wife, and exhibiting sexual prowess (Levant, 2011), although multiple forms of masculinity have been posited (Khan & Townsend, 2014). In Bangladesh, marriage is nearly universal, non-marital intimate relationships are discouraged, and so ideals of masculinity generally find their full expression in the context of marriage. Social expectations of men in marriage in Bangladesh include the man serving as head of household and primary breadwinner (Baluja, 2003; Islam & Karim, 2012; Jakupcak, Lisak, & Roemer, 2002; Khan & Townsend, 2014). Under conditions of poverty, however, it often is difficult for men to live up to these social expectations (Selim, 2010). Thus, depression among men in Bangladesh may result from strain related to constrained opportunity, their own financial distress, community norms of masculine dominance, their own endorsement of masculine dominance, their own failure to exhibit/perform "appropriate" masculinity, or all of these issues.

We use a multilevel framework to assess the association of masculine dominance strain and financial strain with self-reported depressive symptoms in a sample of Bangladeshi men. We define masculine strain as a man's perception that dominance and aggression are necessary to maintain his reputation and to control his wife and children. Financial strain is conceptualized as a lack of income and food security with which a man can achieve the masculine ideal of family provider. We account separately for the influence of these two types of strain at both the community level and individual level. We include each type of strain at the community level to assess their influences on depressive symptoms, above and beyond the influences of these two types of strain at the individual level (Blalock, 1984; Raudenbush & Bryk, 2002). To our knowledge, no study has assessed the multilevel influences on depressive symptoms in men in Bangladesh, so below, we review the relevant literature on strain and mental health in Bangladesh.

Background

Strain Theory

Strain theory was developed to explain criminal behavior (Agnew, 1999; Merton, 1957), and focuses on how different types of strain may affect behavior (Agnew, 1992). Community-level strain also was identified as a potential influence on delinquent behavior, above and beyond individual-level strain (Agnew, 1999). Agnew (2001) suggested a difference between objective strain, related to conditions that are “disliked by most members of a group” (p. 320; community effects), and subjective strain, related to conditions that are “disliked by the people who are experiencing (or have experienced) them” (p. 321; individual effects). Community-level strain also was theorized to influence behavior through pathways of emotional distress (Agnew, 1999). Specific to masculinity, three types of strain have been identified (Levant & Powell, 2017). First, *discrepancy strain* results when “one fails to live up to one’s internalized manhood ideal” (p. 19, Levant & Powell, 2017) Second, *dysfunction strain* results when a man endorses masculine norms within a culture, with the norms themselves having a negative influence on him (Levant and Powell, 2017). Finally, *trauma strain* can result from belonging to a marginalized class of men. Our focus here is on dysfunction strain and the negative psychological effects on men of their endorsement of cultural ideals of masculine dominance, although we also address discrepancy strain among men who fail to live up to ideals of masculinity within Bangladeshi culture, as not all men in our sample fully endorse norms of masculine dominance.

Masculine dominance strain and ideals of masculinity—Overall, masculine dysfunction strain in men has been defined as “psychological distress created by overly rigid adherence to traditional [or customary] masculine norms” (p. 159, Addis, 2008). Customary masculinity norms, especially in patriarchal settings, represent ideals of masculine dominance over women, although masculinity can be performed in a variety of ways by any one individual man (Haque & Kusakabe, 2005). Depressive symptoms and other negative mental health consequences have been linked to strain related to endorsement of customary masculinity (Levant, 2011; O’Neil, 1981; Pleck, 1981; Rice, Fallon, & Bambling, 2011). In line with discrepancy strain, men who fail to attain dominant masculine ideals may be marginalized (Anwary, 2015; Connell, Eide, & Breines, 2000; Courtenay, 2000; Haque & Kusakabe, 2005; Levant & Powell, 2017), and may experience strain from their endorsement of often unattainable norms of masculine dominance (Levant & Powell, 2017). For both dysfunction and discrepancy strain, failure to perform masculinity in alignment with strong social norms of masculine dominance may result in emotional distress (Greene, Robles, & Pawlak, 2012; Levant, 1992; Levant & Powell, 2017).

Research on masculinity has tended to examine individual differences (Mahalik, Talmadge, Locke, & Scott, 2005) and largely has not included the influence of community norms of masculinity on depression in men. The few scholars who have addressed the impact of community norms of masculinity on individual-level strain suggest that in communities where norms of masculine dominance are stronger, individual men may be more likely to experience strain related to their personal endorsement of the norms (O’Neil, 2008), as outlined by notions of dysfunction strain. Men may also fear stigma if they fall short of

social expectations (Connell et al., 2000; O'Neil, 2008), or strain may stem from a man's frustration at not meeting ideals of masculine stoicism and control (Addis & Cohane, 2005; Magovcevic & Addis, 2005) in line with notions of discrepancy strain. A central tenet of the gender-role strain paradigm is that community norms can influence a man's endorsement of customary masculinity as typically found in patriarchal contexts (Levant & Powell, 2017), potentially resulting in negative emotional consequences (Selim, 2010).

Financial strain—Financial strain is a multidimensional construct related to inadequate resources leading to deprivation of needs (Butterworth et al., 2009; Peirce, Frone, Russell, & Cooper, 1994; Price, Choi, & Vinokur, 2002). Deprivation has been defined in many ways including low overall socioeconomic status (Maqsood, Flatt, Albert, Maqsood, & Nizamuddin, 2013), having a low income (Dijkstra-Kersten, Biesheuvel-Leliefeld, van der Wouden, Penninx, & van Marwijk, 2015), joblessness or job loss (Price et al., 2002; Selim, 2010; Wang, Schmitz, & Dewa, 2010; Weich & Lewis, 1998), and food insecurity (Butterworth et al., 2009; Okechukwu, El Ayadi, Tamers, Sabbath, & Berkman, 2012; Price et al., 2002). Financial strain has been linked to depression in multiple contexts (Dijkstra-Kersten et al., 2015; Hosain et al., 2007; Peirce et al., 1994; Price et al., 2002; Wang et al., 2010).

In Bangladesh, poverty remains common, and social expectations often define a man in terms of his ability to function as the primary provider and breadwinner for his household (Selim, 2010). Financial strain may occur if a man is unable to achieve material success that enables him to support his family (Greene et al., 2012; Joon Jang, 2007; Selim, 2010), which may lead to depression or other negative emotional or physical responses (Selim, 2010). Financial strain has been associated with higher depressive symptoms among men in higher income countries (Peirce et al., 1994; Price et al., 2002; Zimmerman & Katon, 2005) and in low-income countries (Hosain et al., 2007; Kuruvilla & Jacob, 2007; Selim, 2010). Yet, research is lacking in South Asian populations on financial strain and depression in men, with most research focusing on women (Coast, Leone, Hirose, & Jones, 2012), or on connections between physical ailments and mental health, regardless of gender (Bhattacharyya et al., 2014; Natasha, Hussain, Azad Khan, & Bhowmik, 2015; Selim, 2010).

While measures of financial strain often are included in theories of masculinity and gender role strain (Greene et al., 2012), financial strain and constrained opportunities for financial success may influence depressive symptoms in married men, beyond that accounted for by either community-level norms of masculinity or individual-level endorsement of male dominance and authority (Haque & Kusakabe, 2005). Thus, living in an impoverished community may cause strain for married men, who do not see opportunities for personal advancement which would allow them to adequately support their families (Strandh, Hammarström, Nilsson, Nordenmark, & Russel, 2013), leading to increased mental health issues including depression (Joon Jang, 2007). Individual-level financial strain also may exacerbate depressive symptoms in married men, who lack resources to meet their family's basic needs (Selim, 2010). Thus, research on the links between financial strain and depression in married men in low-income countries such as Bangladesh is important, as men in these settings are subject to stronger social norms of masculine responsibility for the

economic well-being of their families (Greene et al., 2012), under conditions of limited opportunity and endemic poverty (Selim, 2010).

Depression in Bangladesh—Depression in Bangladesh most often has been studied in association with chronic diseases such as diabetes (Roy, Lloyd, Parvin, Mohiuddin, & Rahman, 2012), stroke and cancer (Karim, Firoz, & Alam, 2001), in the context of maternal and child health (Gausia et al., 2011; Nasreen, Kabir, Forsell, & Edhborg, 2010), or in the general population, without disaggregating by gender (Hossain, et al., 2014; Newman, 2013). Some researchers have assessed the relationship between men's perpetration of intimate partner violence and higher depressive symptoms in women, either in Bangladesh (Author Cite), or in a multi-country study that included Bangladesh (Dillon, Hussain, Loxton, & Rahman, 2013). Only one qualitative study has addressed the influence of masculinity on depression in men and women (Selim, 2010). Thus, research on men and depression in Bangladesh is lacking, and no studies have examined how the strains encompassed in poverty and social expectations of masculine dominance may influence a married man's depression using a multilevel framework.

Hypotheses

Taking into account known influences on married men's depression,¹ and all else being equal, we expect the following relationships between individual- and community-level sources of strain and a married man's reported depressive symptoms net of controls:

- H₁.** Individual endorsement of masculine dominance will predict depressive symptoms net of both levels of financial strain.
- H₂.** Community endorsement of masculine dominance will predict depressive symptoms net of both levels of financial strain.
- H₃.** Individual financial strain will predict depressive symptoms, net of both levels of masculine dominance strain.
- H₄.** Community financial strain will predict depressive symptoms, net of both levels of masculine dominance strain.

Methods

Sample & Data

The International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) collected the original data as part of the *UN Multi-Country Study of Men and Violence*. One rural and one urban site were included. The urban site was Dhaka metropolitan city, the capital and commercial center of Bangladesh. The rural site was Matlab, which has a population of about 500,000. The survey was conducted between January and June of 2011. A multi-stage, stratified, cluster sample design was used. Men ages 18–49 years were recruited from 62 rural villages and 50 *moholla* (the smallest urban administrative unit). Samples from two of the 114 communities surveyed that did not include any married men were dropped, for a

¹Examples of other known influences on depression are childhood trauma, low levels of schooling, and alcohol consumption.

total of 112 included communities. On average, each community had 13 married men (range 5 to 33 across communities). Villages were stratified by population size (large, medium, and small) according to information from icddr,b's Health and Demographic Surveillance System (icddr,b, 2012). Probability proportional to size (PPS) sampling was used to select the primary sampling unit in the rural areas, and 2011 Census data collected by the Bangladesh Bureau of Statistics (icddr, 2012) was used to stratify mohollas by population size in urban areas. Within strata, simple random sampling was used to select one enumeration area of approximately 120 households from each moholla. Finally, twenty households were randomly selected from each of the identified enumeration areas, and one eligible man was selected in each household. A total of 3,316 men were initially sampled, and 2,400 interviews were completed. The response rate in Dhaka was 73%, and in Matlab, it was 93% (Author Cite Removed). Of the men surveyed in the original study, 1,497 were married and were included in our analysis. Single men (N=885), and men missing marital status (N=18) were dropped. Another 54 men were dropped due to missing data on the outcome (n=1) or on the financial strain variable (n=53), for a total sample of 1,443 for the analysis.

The questionnaire had eight sections, including: 1) demographics and employment, 2) childhood experiences, 3) attitudes about gender relations, 4) health and well-being, 5) intimate relations, 6) fatherhood, 7) policies, and 8) illicit behavior. Male interviewers were used. Each interviewer received training on gender issues and how to minimize distress among respondents. Personal digital assistants (PDAs) were used to collect sensitive data (Author Cite Removed). Ethical permissions for the original data collection are reported elsewhere (Author Cite Removed).

Participants

Demographics—On average, married men in our sample scored 9.58 out of a possible 51 on the adapted CES-D scale, with the scores ranging from 0 to 46. Endorsement of masculine dominance was high, with an average score of 11.61 on a scale ranging from 0 to 18. Financial strain also was prevalent, with 90% of married men earning 20 thousand taka or less annually, and food insecurity was common, with 42% of married men indicating that their family had gone without food due to lack of money (Table 1). Exposure to emotional violence in childhood was common, with more than one third of men reporting that their families insulted or humiliated them in front of others (39%) and told they were lazy, weak, or stupid (36%). Exposure to physical violence in childhood also was common, with men often reporting they had witnessed their mother being beaten (29%) or were themselves beaten (14%). Few men reported drinking alcohol (5%), and most men reported following Islam (87%). On average, men were 37 years old, and their spouses were eight years younger. Men reported an average of two living children. Men had just over six grades of schooling, on average, and typically had more schooling than their wives (41%), though some men reported that their wives had the same amount (25%) or more schooling (34%).

Community Characteristics—The average cumulative frequency of depressive symptoms was 9.68 and ranged from 2.64 to 16.86 across communities. At the community level, poverty was common. On average married men within each community agreed with

about half of the poverty indicators. Communities also tended to have high average scores on norms of masculine dominance, with a mean of 11.50 and scores ranging from 8.79 to 13.50 out of a possible 18. A slight majority of communities were rural (55%; Table 2).

Measures

Individual-Level Outcome—The outcome for a married man’s *depressive symptoms* was created from seventeen items from The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). Example items are: “during the past week you felt lonely” and “during the past week you felt depressed.” Possible responses for how often a symptom was experienced in the last seven days were: 1=none of the time, 2=some of a little of the time (1–2 days), 3=moderate amount of the time (3–4 days), and 4=most or all of the time (5–7 days). One item was reverse coded to match the direction of the other items (“you were happy”). As the CES-D scale has not been validated among men in Bangladesh, we conducted a random split half exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), treating each item as categorical, to assess the underlying factor structure of the scale in this population. A one factor solution for the CES-D scale with 17 items demonstrated adequate fit (factor loadings=0.48–0.80, RMSEA=0.05, TLI=0.96, CFI=0.96). In our analyses, the response options of those 17 items were recoded to range from 0 to 3, and then summed as if they were continuous variables to create an index of depression, ranging from 0 (no symptoms reported on any days) to 51 (all symptoms reported on 5–7 days). Higher values indicate more days in the last week that higher numbers of depressive symptoms were reported (hereafter referred to as “depressive symptoms outcome” to facilitate interpretation). Alpha reliability for the 17 items was 0.90.

Individual and Community Level Exposures—The main exposure variables at the individual level were endorsement of masculine dominance strain and financial strain. At the community level, they were norms of masculine dominance and community poverty. The measure for individual level endorsement of masculine dominance was created using six non-economic items representing traditional masculinity, taken from the gender equitable men scale (Pulerwitz & Barker, 2004). We selected the items that best represented the concept of men’s power over women and men’s dominance in society more generally, consistent with conceptions of masculinity in Bangladesh (Selim, 2010). Examples of items are: “to be a man you need to be tough” and “you think that a man should have the final say in all family matters” (Table 1).

Response options for each item were ordinal and ranged from 1=strongly agree to 4=strongly disagree. The individual level items, representing men’s gender attitudes, were validated using random split-half exploratory and confirmatory factor analyses treating the items as categorical. We selected items that demonstrated adequate factor loadings (0.42–0.70) and for which fit statistics in the full sample indicated adequate fit (RMSEA = 0.05; CFI = 0.95; TLI = 0.91). Alpha for the six items was 0.61. We then recoded each item to 0=strongly disagree to 3=strongly agree, and summed them, treating them as continuous items in the final measure. The final summed scale ranged from a score of 0 indicating no endorsement of masculine dominance, to 18 indicating full endorsement of masculine dominance, thus higher numbers represented stronger endorsement of masculine dominance.

A community level measure of norms of masculine dominance was created by taking the mean individual level score across men within each community.

The measure for individual-level financial strain was created using four items representing individual-level financial difficulty and deprivation. The first item included in the financial strain scale was “how often would you say people in your home go without food because of lack of money” coded as 1=every week, 2=every month but not every week, 3=it happens but not every month, and 4=never. The second item included was “how much do you earn per month?” Original response options were “1=20+ taka, 2=10–20 thousand taka, 3=5–10 thousand taka, and 4=less than 5000 taka. The third item included was “do you usually work throughout the year, seasonally, once in a while, or you’ve never worked?” This was originally coded as 1=throughout the year, 2=seasonally, 3=once in a while, 4=never worked. Finally, the fourth item was “does your home have a television?” coded as 0=TV, 1=no TV. Items were included in an EFA/CFA as categorical and had adequate factor loadings (0.52–0.84), and fit statistics in the full sample (RMSEA = 0.06; CFI = 0.98; TLI = 0.95). Alpha for the four items was 0.55 (Table 1). After the CFA was complete, the three non-dichotomous items were recoded to never food insecure vs. ever food insecure, income less than 20 thousand taka vs. greater than 20 thousand taka, and never worked vs. ever worked. For each item, 1 indicated that type of financial strain was present, and 0 indicated that type of financial strain not present. All four dichotomous items were then summed, creating a count scale with higher numbers representing more financial strain. Alpha for the final scale using the four dichotomous items was 0.46. The final count scale ranged from 0 (agreed with no financial strain items) to 4 (agreed with all financial strain items). The mean count for each community was the indicator for community level poverty.

Covariates—We controlled for variables we expected to be related to depressive symptoms, financial strain, and masculine dominance strain. First, we included a measure of a married man’s childhood exposure to violence (Heim, Newport, Mletzko, Miller, & Nemeroff, 2008). Items were adapted from the Childhood Trauma Questionnaire – Brief Screening Version (Bernstein et al., 2003; Table 1). Examples of items are “before you reached 18 you were told you were lazy, weak, or stupid by someone in your family” and “before you reached 18 you saw or heard your mother being beaten by her husband or boyfriend.” Response options were 1=never, 2=sometimes, 3=often, and 4=very often. The individual-level measure was created based on random split-half exploratory and confirmatory factor analyses used to select a set of items with adequate factor loadings (0.51–0.87), and adequate fit in the full sample (RMSEA = 0.07; CFI = 0.97; TLI = 0.95). Alpha reliability for the seven included items was 0.70. Items then were dichotomized to 0=never experienced and 1=ever experienced, and summed such that higher numbers represented exposure to more types of violence in childhood. The final count scale ranged from 0 (agreed with none) to 7 (agreed with all). Alpha for the seven dichotomized items was 0.71. Other included controls were: completed grades of schooling (Lorant et al., 2003) entered as a continuous variable ranging from 0 to 22 grades, whether (=1) or not (=0) a man’s marriage involved a dowry (Anwary, 2015), the respondent’s age in years (Das, Do, Friedman, & McKenzie, 2009), their spouse’s age in years (Varma, Chandra, Thomas, & Carey, 2007), the number of living children they had (Hosain et al., 2007), the relative

schooling attainment of the husband and wife (1=husband more, 2=wife more, 3=same; Ruppner, 2009), and alcohol consumption (1=ever, 0=never; Gilman & Abraham, 2001). Urban (=1) versus rural (=0) location was included as a control at the community level.

Analysis Plan

We assessed descriptive statistics and missingness for each variable, followed by bivariate associations between our variables. We, then, used multilevel regression models to test our three hypotheses (Goldstein, 2011; Raudenbush & Bryk, 2002). EFA/CFA analyses were performed in MPlus version 8 (Muthén & Muthén, 1998–2012), and all other analyses were performed in Stata 14.0 (STATA Corp, 2015).

Let y_{jk} denote the number of days that participant j in community k reported depressive symptoms. The full model for the community-level effects of norms of masculine dominance is represented by:

$$y_{jk} = \gamma_{00} + \gamma_{01} \text{Avg_MascDom}_{1k} + \sum_{p=2}^3 \gamma_{0p} \text{Level} - 2 \text{Control}_{pk} + \gamma_{10} \text{MascDom}_{1jk} \quad (1) \\ + \sum_{q=2}^{12} \gamma_{q0} \text{Level} - 1 \text{Control}_{qjk} + e_{ij} + u_j.$$

where Avg_MascDom_k represents aggregate level norms of masculine dominance for community k , MascDom_{jk} denotes self-reported masculine dominance of participant j in community k . There are two level-2 and 11 individual controls. The two error terms for participant i in community j and for community j are denoted by e_{ij} and u_j , both are assumed to be normally distributed with a mean of zero and a variance of σ^2 and τ at their corresponding levels.

We first estimated an unconditional model with no predictors at either level (reported below). Next, we assessed H_{1-4} by entering both types of strain in the model as predictors along with appropriate control variables. Results from this model can be found in Table 3 with coefficients reported as both unstandardized and y -standardized. We group-mean centered the two strain variables at the individual level in these models to test the between-community effects of each type of strain accounting for the other, and the within community effect of each type of strain accounting for the other, on the depressive symptoms outcome.

Results

Multilevel Regression Models of Men's Reports of Depressive Symptoms¹

The unconditional multilevel regression model with a random intercept shows that under conditions of normality, we would expect 95% of communities to have a cumulative frequency of depressive symptoms reported between 8.97 and 10.19 ($\hat{\gamma}_{00} = 9.58$). The intraclass correlation is 0.08 indicating that 8% of the variation in depressive symptoms is due to differences between communities. In Table 3, we estimated the individual-level association of endorsement of masculine dominance and of individual financial strain with

the depressive symptom outcome, as well as the effects of community-level norms of masculine dominance and community financial strain above and beyond the individual level, on the outcome, net of other individual and community controls (all grand-mean centered). The y -standardized results supported H_1 , such that one-unit higher endorsement of masculine dominance at the individual level was associated with 0.04 of one standard deviation higher depressive symptoms ($p < 0.01$). H_2 also was supported, with one-unit higher norms of masculine dominance at the community level being associated with 0.12 of one standard deviation higher depressive symptoms, accounting for the individual-level effect of endorsement of masculine dominance, both levels of financial strain, and other controls ($p < 0.01$; Table 3).

As expected (H_3), financial strain at the individual level was positively associated with the depressive symptoms outcome, such that one-unit higher financial strain was associated with 0.12 of one standard deviation higher depressive symptoms ($p < 0.001$), accounting for both levels of endorsement of masculine dominance and controls. However, contrary to H_4 , there was no significant association of community poverty, beyond that which was already accounted for individual financial strain, and endorsement of masculine dominance (y -std coefficient = 0.14, $p = n.s.$), net of controls.

Several control variables also were significant. Depressive symptoms were higher by 0.11 of one standard deviation for each additional unit of men's exposure to childhood violence ($p < 0.001$), even after accounting for the two types of strain and other control variables. The man's marriage having involved a dowry also was related to depressive symptoms, with 0.18 of one standard deviation higher depressive symptoms reported when a dowry was present. Finally, the age of the man's spouse was related to depressive symptoms, such that as the spouse's age went up, depressive symptoms went down (y -std coefficient = -0.02 , $p < 0.05$). Other controls such as schooling, number of children, religion, and the relative education of the husband and wife were not related to depressive symptoms.

Discussion

This study examined the multilevel determinants of depression in men in Bangladesh. To our knowledge, this study is the first multilevel analysis of men's mental health in a low-income, patriarchal setting in South-Asia. As such, this study uniquely situates mental health as an outcome of a broader set of social ecological circumstances, beyond individual-level "risk factors" or the family environment. The findings from this study underscore that, in a context of poverty and limited opportunity, community social norms and expectations about manhood can be a powerful strain for men in Bangladesh with adverse mental health outcomes, and potentially cascading implications for their relationships with women.

We found that strain related to expectations of masculine dominance, at the individual and community levels, was related to a higher depressive symptoms outcome in married in Bangladesh, net of controls, supporting hypothesis one and two. Hypothesis three also was supported, as net of controls, financial strain was a significant predictor of higher depressive symptoms at the individual level. However, hypothesis 4 was not supported, suggesting that regardless of the community conditions, an individual married man's depressive symptoms

are related to his own individual economic circumstances, and not to the opportunity structure of his community. Thus, interventions to improve the economic status of the community will likely do little to impact the individual man unless the intervention specifically leads to improvement in his own individual financial state. Our results also suggest that strain related to expectations of masculine dominance and financial strain are separate constructs, although they likely work in tandem.

These results show that married men in Bangladesh are experiencing strain related to endorsement of masculine dominance and financial strain, consistent with findings from patriarchal, resource poor settings (Author Cite; Khan, 2004). Strain related to endorsement of masculine dominance at the individual- and community-levels was associated with the depressive symptoms outcome, suggesting that both social norms of masculine dominance and a man's own endorsement of those norms, can negatively influence a married man's mental health, consistent with dysfunction strain. An association has been suggested before between strain and psychological disorder (Pleck, 1981). Specifically, in samples of men and women in the U.S., those who subscribed to traditional gender roles were more likely to experience depression (Keith & Schafer, 1980). Strain linked to ideologies of masculine dominance may be correlated to depression through several pathways. Men may experience fear of femininity or being less of a man (O'Neil, Helms, Gable, David, & Wrightsman, 1986), or experience distress due to an inability to live up to internalized ideals of masculinity (Levant and Powell, 2017), consistent with discrepancy strain. Further, men may experience strain from engaging in masculine dominance behaviors in response to social expectation, or because they fear the possible negative consequences of not adhering to norms of masculinity (Levant & Powell, 2017). A qualitative study conducted in one rural and one peri-urban area of Bangladesh (Author Cite) suggests presence of all of these gender role strains among men in Bangladesh's rapidly changing social context which includes women's greater mobility, education and employment. This study suggests that married men perceive these changes as challenging their customary roles as providers and protectors of the family, while also challenging their power and control over women.

Researchers have shown the negative influences of patriarchy on women's mental health (Author Cite Removed; Batnitzky, 2008; Trivedi, Mishra, & Kendurkar, 2007), but studies examining the influence of patriarchy on men are lacking. Thus, to mitigate the negative effects of patriarchy on *all* genders, dismantling expectations of gender both at the meso- or community-level and individual-level is needed (Courtenay, 2000). This process calls for a combination of community social-norm change efforts to promote gender equity, and individual counseling or other interventions aimed at alleviating individual level pressure to 'be a man' in line with customary patriarchal gendered stereotypes of men.

Financial strain also was evident, which was not surprising, given the resource poor environment in Bangladesh (Selim, 2010; Author Cite). Broader financial strain in the community, however, was not related to our depressive symptoms outcome. Rather, it was a married man's own individual financial circumstances that appeared to influence his mental health. This finding suggests that existing economic interventions that focus on resources for the individual are likely to improve mental health for those men who experience a decrease in their individual economic strain as a result of the intervention. However, community-level

economic interventions, such as infrastructure development, and community-level job creation (Ahsan Ullah & Routray, 2007), may be less effective in improving mental health in men – at least until the jobs that are created filter down to the individual man and provide him financial security at the individual level.

We aimed to disentangle strain related to masculine dominance from strain related to poverty and financial distress more generally. According to our findings, financial strain at the individual level was a separate, although likely highly related, construct from strain related to expectations of masculine dominance. This finding is interesting, given the degree to which financial responsibility for the family and household is entwined with customary notions of masculinity. The distinction between these two concepts may be due to the types of measures we used to operationalize them. While masculinity strain – both dysfunction strain and discrepancy strain, were captured using attitudinal items representing customary patriarchal notions of male dominance, financial strain was measured using indicators of actual financial difficulties and poverty. Thus, including attitudes about financial responsibility for the household in the measure of masculine dominance could lead to less distinction between financial strain and masculine dominance strain. However, these results suggest that when it comes to the influence on married men’s mental health, strain related to expectations of masculine dominance should be considered separately from financial strain. In other words, while married men may in fact experience strain and depressive symptoms related to financial struggles, success in the financial realm does not mitigate depressive symptoms related to strain from other aspects of expectations of masculine dominance. However, our measure for financial strain does not specifically capture “strain” experienced by not living up to being the financial provider, but rather captures expressed economic instability and lack of material resources, which may be a different construct from the financial components that are included in traditional gender-role strain theory. Thus, a different measure of financial strain that captured a man’s attitudes about providing for his family may show less differentiation from our conceptualization of strain related to masculine dominance. Still, both financial strain and strain related to expectations of masculine dominance are likely to be two dimensions of the broader construct of gender role strain (Levant, Rankin, Williams, Hasan, & Smalley, 2010; Mahalik et al., 2003; O’Neil, 2008), each with some degree of independent influence.

Some limitations of this work warrant comment. First, the data used were cross-sectional, thus it was not possible to determine if either type of strain led to depressive symptoms, or depressive symptoms led to either type of strain. For example, a man who is depressed may be less able to participate successfully in the workforce, thus worsening his financial condition. On the other hand, a man doing poorly financially may experience a higher frequency of depressive symptoms as he struggles to provide for himself and his family. In terms of strain related to the endorsement of masculine dominance, a man experiencing a higher frequency of depressive symptoms may feel less able to embody the components of customary masculinity such as being tough and emotionless, or may feel ashamed of his depressive symptoms (Addis, 2008; Addis & Cohane, 2005). Also, the reference period for depression scale was the past week, while most of the questions used to measure financial strain referred to a longer period. Thus, despite some overlaps, elements of temporality exist in the data. We suggest that longitudinal work be undertaken in Bangladesh or a similar

resource poor patriarchal setting so that the causal direction of the relationship between various types of strain and men's reports of depressive symptoms can be determined. Second, the sample size was relatively small, and a larger sample size would offer more power to identify community variation specifically. Nevertheless, we did find consistent and robust community effects for strain related to the endorsement of masculine dominance. Third, the alphas for our scales of financial strain and masculine strain were lower than is ideal, and this was particularly true for the financial strain scale. Thus, our estimates of the relationships could be attenuated. We suggest that a scale specific to financial strain be developed in the context of Bangladesh. We also recommend further exploration of scales for both masculine strain and financial strain in future work in Bangladesh. Fourth, the depressive symptoms were self-reported and not a clinical diagnosis of depression. However, self-reports of depressive symptoms often are used in research and have been found to correlate reasonably well with diagnostic criteria (Sanchez-Villegas et al., 2008). Also, our measure of depression was limited in items that referred to physical symptoms of depression. There are known cultural variations in the expression of depression, and in some cultures depression may be expressed somatically (Kirmayer, 2001). While our measure did include several items that are physical such "as feeling sick", experiencing "restless sleep" and "loss of appetite", it did not have a wide range of clinical symptoms of a somatic nature. However, the CES-D scale used in this analysis has been widely used in Bangladesh and cross culturally, and has been validated among multiple populations and cultures (Black, Baqui, Zaman, El Arifeen, & Black, 2009; Black et al., 2007; Nahar et al., 2012; Tsutsumi et al., 2007). To our knowledge, ours is the first validation of the CES-D scale in a population of Bangladeshi men. Fifth, our measure of endorsement of masculine dominance refers to one specific facet of gender strain. Thus, our findings are relevant only for endorsement of masculine dominance and not for gender strain overall. However, we feel that endorsement of masculine dominance is particularly problematic for men's mental health in a strongly patriarchal setting such as Bangladesh, and feel that our findings contribute to the literature on the negative effects of patriarchy on men specifically. We suggest that further research examining the concept of gender strain more broadly would also be of use. Finally, response to the questions on masculine dominance may be biased as men are socialized to be 'tough' and to not express emotion (Bhui, Chandran, & Sathyamoorthy, 2002).

Despite these shortcomings, the findings show that financial strain and strain related to expectations of masculine dominance are different, albeit related, constructs, and both are associated with men's reported depressive symptoms. Thus, both strain related to expectations of masculine dominance and financial strain are important to address in men in Bangladesh, and similar South Asian contexts, given the known negative consequences that strain can produce, such as physical ailments (Karim et al., 2001) and higher risks of perpetrating intimate partner violence (Copp, Kuhl, Giordano, Longmore, & Manning, 2015).

Patriarchy is a multilevel social ecological concept and as such, it can impact men in a multitude of ways. While research has demonstrated that patriarchy is bad for women, we also argue that it is bad for men, as has been previously shown in Bangladesh (Author Cite) and elsewhere (Holter et al., 2014). Men living in strong patriarchal societies have specific ideals of masculinity they are expected to endorse and to model. Our research shows that

expectations of masculinity can have negative repercussions for married men living in strongly patriarchal cultures such as Bangladesh.

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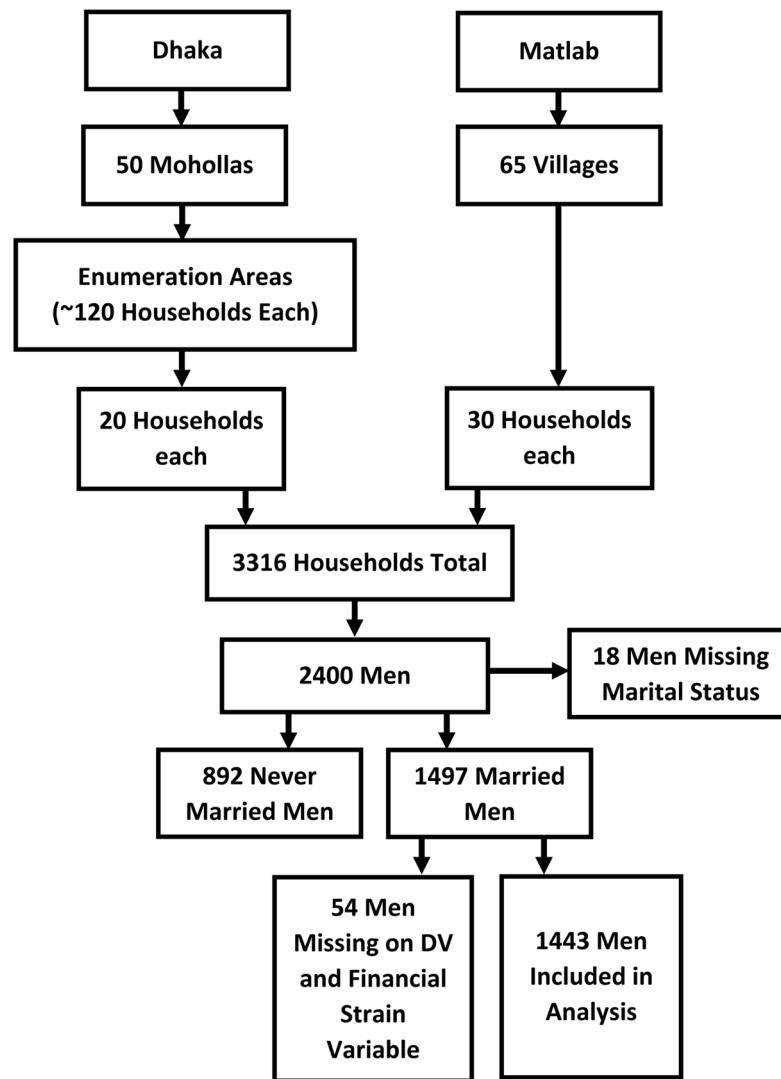


Figure 1. Sampling Frame for the Bangladesh Component of the UN Multi-Country Study of Men and Violence, Dhaka and Matlab.

Table 1

Demographics of 1,443 Married Men, Ages 18 – 49 Years, Urban Dhaka and Rural Matlab, Bangladesh, 2011.

<u>Depressive Symptoms Variables (higher=more depressive symptoms)</u>	Mean	SD	Range
...you were bothered by things that usually don't both you	0.70	(0.92)	0 to 3
...you did not feel like eating/your appetite was poor	0.66	(0.91)	0 to 3
...you felt you could not cheer yourself up even with the help of family and friends	0.65	(0.88)	0 to 3
...you had trouble keeping your mind on what you were doing	0.70	(0.92)	0 to 3
...you felt depressed	0.80	(0.90)	0 to 3
...you felt that everything you did was an effort	0.82	(0.97)	0 to 3
...you thought your life had been a failure	0.49	(0.81)	0 to 3
...you felt fearful	0.34	(0.64)	0 to 3
...your sleep was restless	0.43	(0.73)	0 to 3
...you were happy (reverse coded)	2.97	(0.97)	0 to 3
...you talked less than usual	0.56	(0.82)	0 to 3
...you felt lonely	0.46	(0.76)	0 to 3
...people were unfriendly to you	0.36	(0.69)	0 to 3
...you had crying spells	0.19	(0.52)	0 to 3
...you felt sick	0.68	(0.85)	0 to 3
...you felt that people dislike you	0.30	(0.63)	0 to 3
...you could not get 'going'	0.40	(0.73)	0 to 3
Total depression score	9.58	(8.41)	0 to 46
<u>Endorsement of Masculine Dominance Variables (higher=more agreement)</u>			
I will defend reputation with force if necessary	1.79	(0.68)	0 to 3
To be a man you need to be tough	2.29	(0.54)	0 to 3
A woman should obey her husband	2.17	(0.54)	0 to 3
The man should have final say in all family matters	1.82	(0.68)	0 to 3
A woman cannot refuse to have sex with her husband	1.50	(0.64)	0 to 3
A man can punish his wife for wrong-doing	2.04	(0.57)	0 to 3
Total masculine dominance score	11.61	(2.13)	3 to 18
<u>Financial Strain Variables</u>			
Poverty Income Level (20K Taka or Less Annually) (yes=1)	0.90	(0.30)	0 to 1
No work in prior 12 months (yes=1)	0.13	(0.33)	0 to 1
Food Insecure ^a (yes=1)	0.42	(0.49)	0 to 1
No television in home (yes=1)	0.41	(0.49)	0 to 1
Number of financial strain variables agreed with	1.86	(1.02)	0 to 4
<u>Individual Level Control Variables</u>			
Exposure to Violence in Childhood Variables (<i>before you reached 18...</i>)			
...you saw or heard your mother being beaten by her husband or boyfriend	0.29	(0.45)	0 to 1
...you were told you were lazy or stupid or weak by someone in your family	0.36	(0.48)	0 to 1
...someone touched your buttocks or genitals or made you touch them when you did not want to	0.26	(0.44)	0 to 1
...you were insulted or humiliated by someone in your family in front of other people	0.39	(0.49)	0 to 1
...you were beaten at home with a belt or a stick or something else which was hard	0.14	(0.35)	0 to 1

Depressive Symptoms Variables (higher=more depressive symptoms)	Mean	SD	Range
...one or both of your parents were too drunk to take care of you	0.35	(0.48)	0 to 1
...you were beaten so hard at home that it left a mark or a bruise	0.03	(0.18)	0 to 1
Number of exposure to violence items agreed with	1.82	(1.78)	0 to 7
Marriage Involved a Dowry (yes=1)	0.23	(0.42)	0 to 1
Respondent Age	36.56	(7.35)	18 to 49
Age of Spouse	28.48	(6.48)	15 to 47
Years of schooling	6.35	(5.20)	0 to 22
Number of Living Children	2.03	(1.33)	0 to 13
Relative schooling of husband and wife			
Husband has more schooling (yes=1)	0.41	(0.49)	0 to 1
Wife have more schooling (yes=1)	0.34	(0.47)	0 to 1
Husband and wife have same schooling (yes=1)	0.25	(0.43)	0 to 1
Drinks Alcohol (yes=1)	0.05	(0.21)	0 to 1
Muslim (yes=1)	0.87	(0.34)	0 to 1

^aFood insecure is measured by self-report as to if anyone in the respondent's family has ever gone without food because of lack of money.

Table 2

Means for community level demographics and community level variable correlations. Married Men in 112 Communities, Ages 18 – 49 Years. Urban Dhaka and Rural Matlab, Bangladesh, 2011.

	Mean	SD	Range
Depressive Symptoms	9.58	3.30	3.67 to 19.11
Norms of Masculine Dominance	14.62	0.52	12.37 to 15.71
Community Poverty	1.88	0.51	0.67 to 2.94
Urban Residence	0.45	0.50	0 to 1

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Table 3

Multilevel Regression Models for Level of Depressive Symptoms, Married Men 18–49 Years (N = 1,443), Urban Dhaka and Rural Matlab, Bangladesh, 2011.

Fixed Effect	Coefficient	SE	γ -Standardized Coefficient	SE
Intercept ($\hat{\gamma}_{00}$)	9.21	(0.37)	-0.04	0.12 ***
<i>Community-Level Variables</i>				
Community Endorsement of Masculine Dominance ^a ($\hat{\gamma}_{01}$)	1.04	(0.39)	0.12	0.05 **
Community Financial Strain ^a ($\hat{\gamma}_{02}$)	1.19	(1.01)	0.14	0.12
Urban location ^a ($\hat{\gamma}_{03}$)	0.75	(0.96)	0.09	0.11
<i>Individual-Level Variables</i>				
Individual Endorsement of Masculine Dominance ^b ($\hat{\gamma}_{10}$)	0.30	(0.11)	0.04	0.01 **
Individual Financial Strain ^b ($\hat{\gamma}_{20}$)	1.04	(0.26)	0.12	0.03 ***
Men's Childhood Exposure to Violence ^a ($\hat{\gamma}_{30}$)	0.94	(0.13)	0.11	0.01 ***
Marriage involved dowry ^a ($\hat{\gamma}_{40}$)	1.54	(0.56)	0.18	0.07 **
Age of respondent ^a ($\hat{\gamma}_{50}$)	0.09	(0.05)	0.01	0.01 †
Age of spouse ^a ($\hat{\gamma}_{60}$)	-0.13	(0.06)	-0.02	0.01 *
Grades of Schooling ^a ($\hat{\gamma}_{70}$)	-0.01	(0.06)	-0.00	0.01
Number of living children ^a ($\hat{\gamma}_{80}$)	-0.04	(0.21)	-0.01	0.03
Spousal education (ref: husband higher)				
Husband and wife equal ^a ($\hat{\gamma}_{090}$)	-0.90	(0.57)	-0.11	0.07
Wife higher ^a ($\hat{\gamma}_{100}$)	-0.57	(0.56)	-0.07	0.07
Alcohol Consumption (ref: none) ^a ($\hat{\gamma}_{110}$)	0.26	(0.99)	0.03	0.12
Muslim (ref: no) ^a ($\hat{\gamma}_{120}$)	0.08	(0.77)	0.01	0.09
Random Part				
Level-2 random part:	Parameter	(SE)		
$\hat{\tau} = \text{var}(u_j)$	3.66	(1.11)		
Level-1 random part:				
$\hat{\sigma}^2 = \text{var}(e_{ij})$	59.24	(2.29)		

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^aVariable is grand-mean centered.

^bVariable is group-mean centered.

Note:

^cp < 0.10.

* p < 0.05.

** p < 0.01.

*** p < .001.