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Research Article

Social Class, Gender and Psychological Distress in Mumbai: Risk and Protective Factors

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Background: Common mental disorders contribute to a large proportion of the non-fatal disease burden in India. Mumbai is among the most crowded cities in Asia, with half the population housed in slums, creating an environment of vulnerability. In this context, the risks and protective factors associated with depressive symptoms are explored by investigating the role of social class and gender in Mumbai.
Methods: 491 lower-income and 326 middle-income respondents were screened for depressive symptoms and compared on 4 subscales of the GHQ 28: somatization, anxiety, social dysfunction, and severe depression.
Results: The relative risk (RR) of depressive symptoms for lower-income individuals was 1.27. The relative risk associated with being female was 1.04 in the lower-income group and 1.55 in the middle-income group. Apart from stress and perceived health, which proved to be significant predictors for every subscale, hope emerged as a protective variable for somatization and severe depression, positive emotional style emerged as a protective factor against anxiety and severe depression, and tobacco was found to be a risk factor for social dysfunction.
Conclusion: The incidence of depressive symptoms was highest for middle-income women. This work provides insights from an intersectional framework of class and gender. The inclusion of positive variables in conjunction with risk factors highlights the role of positive protective factors such as hope and positive emotional style for mental health.

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Introduction

Depression is the leading contributor to years lived with disability (YLD) globally and accounts for 7% of total YLDs in India [1]. Depression has a very large impact measured in numbers, with 45.7 million Indians estimated to be affected by this debilitating condition in the year 2017, with the prevalence as well as disease burden increasing steadily since 1990 [2]. Depression impacts the individual, the family, as well as the economy. Psychological distress is an indicator of risk of affective disorders. With this background and motivation, our goal here is to

understand the risk and protective factors associated with psychological distress in a non-clinical population in the city of Mumbai, India.

The current work builds on previous studies that document pathways that mediate the relationship between poverty and depression in other populations; examples include the role of gender [3], stress [4], lower control [5], negative emotion, and addiction [6]. Other work has also documented structural pathways, such as lower levels of education, housing, food, and financial security, to be consistent predictors of common mental disorders in Low- and Middle-Income Countries [7].

Depression is among one of the leading causes of disease burden among women [8] with the pathways to depression among women being similar to those in the lower socio-economic status (SES), such as inequality, stress, and a lower sense of control [9]. Women are more likely to subscribe to interdependent norms while relating to others [10] thus becoming vulnerable to criticism and guilt, which are possible pathways to depression. Nolen-Hoeksema's review of gender differences in depression highlights women's social roles that expose them to chronic strain (role overload), higher reactivity to stress because of ovarian hormones, higher probability of being exposed to sexual violence, ruminative and passive coping style, as well as being more likely to experience affective states of anxiety, fatigue, boredom, helplessness, and hopelessness [11].

In India, restrictive gender roles and a culture of patriarchal oppression curtail women's freedom to a large extent [12]. Women's participation in the labour force in India is small, at approximately 29% [13] , contributing to the cycle of dependency. All the pathways discussed above are, in fact, amplified in India. Interpersonal conflict, marital disharmony, and sexual coercion have been identified as risk factors for mental health among women [3][14]. In collectivist cultures, the emphasis on social roles and maintaining harmony [15] puts tremendous pressure on the individual to compromise on goals and emotional expression, which in turn affects their wellbeing, and this is especially true for Indian women.

With regard to social class, higher SES is associated with more positive mood states [16] , and lower SES is associated with negative affective states of hopelessness, anxiety, boredom, fatigue, and anger [17]. Tobacco addiction is strongly correlated with lower income, education, and living in a developing country [18] , and alcohol consumption in India reveals a pattern of binge drinking among the poor [19].

Psychological dysfunction tends to manifest differently across the class spectrum as well as the gender divide. Therefore, rather than using a single scale to measure distress, four subscales, including somatization, anxiety, social dysfunction, and severe depression, were used. In the context of poor access to mental healthcare, considering the economic cost of depression in terms of lost productivity, insight into the determinants of distress is of value, as psychological distress is a precursor to depression.

The megapolis of Mumbai is not a particularly livable city, with extremely expensive real estate that forces half of its 13 million population to live in slums [20] and also commute long distances in inhumanly crowded circumstances [21]. Entrenched poverty because of the caste system, and increased inequality [22] as a result of the lopsided nature of recent economic

growth in urban India, make the urban population of Mumbai uniquely vulnerable to common mental disorders.

Methods

Two studies were conducted, one with a lower socio-economic status (LSES) group and one with a middle socio-economic status (MSES) group. Housing is the real fault line of social class in Mumbai, with apartment housing being the mark of middle-class membership. With this context in mind, two separate samples from two different sampling frames were drawn - one from the LSES population was drawn from the slums, and one from the MSES population was drawn from apartment complexes in different neighborhoods in Mumbai. The LSES sample consisted of 491 respondents, and the MSES sample consisted of 326 respondents.

Objective

To identify the pathways that link social class to psychological distress in terms of behavioral, psychological, and health factors. To use the intersectional framework of class and gender to discuss the results.

The LSES Study

Sampling

The LSES sample was drawn from a single suburb in the eastern suburbs of Mumbai, from two distinct neighborhoods. One neighborhood consisted of campus housing inside a government institute, and one was a slum adjacent to the campus. A door-to-door approach, beginning at a random point in each neighborhood, was used to generate a random community sample within each setting.

Participants

The participants in the campus neighborhood were employees with the least-skilled and lowest-paid jobs (for e.g., gardener, security guard). Those living in the slum worked at similar jobs. Although participants from both neighborhoods were very similar in terms of SES, living conditions were better in campus housing. Respondents were 181 males and 310 females who ranged in age from 18 to 61 (mean age = 34.08, SD = 10.94). One hundred and thirty-eight participants lived in campus housing, and 353 in the neighboring slums. One hundred and thirty-three (27%) participants were illiterate.

Sample Size and Response Rate

Based on Cohen's strategy [23] for detecting a small effect size in the context of multiple regression analysis with 12 predictors at a power of.80 with α =.05, a sample size of approximately 170 was arrived at for the LSES study. Of the 545 individuals approached, 510 responded (91.07% response rate). After removing data outside the selected age range (18-61 years old), 491 individuals met the criterion for inclusion in the final analyses.

Measures

Demographic Questionnaire: A pre-coded demographic questionnaire was developed with questions regarding age, marital status, income, education, and religion.

Health Behavior Questionnaire: Questions regarding exercise and tobacco use were included.

Health Outcome Questionnaire: A checklist of chronic conditions was constituted (Hypertension, Heart Trouble, Respiratory Illness, Diabetes, Musculoskeletal ailments, Digestive ailments, Cancer, Surgery) based on the International Classification of Diseases (ICD) categories [24], and a question regarding past hospitalization episodes was also included. They were also asked if they had 'any other health problem', and the answers were recorded. Self-reported chronic conditions were coded as a dichotomous variable with 1 indicating the presence of one or more chronic conditions (35% of the sample) and 0 representing the absence of such conditions.

Self-reported Perceived Health: Perceived health was measured by a single question where respondents were asked to rate their current health status as very good, good, fair, or poor [17]. Self-reported perceived health was dichotomized with the responses 'poor' and 'fair' coded as 1 (44.6% of the sample) and the responses 'very good' and 'good' coded as 0 [17].

Trait Hope Scale: This is a 12-item trait measure [25] and has a reported internal consistency of.80 [25] and.79 in this study.

Positive Emotional Style (PES): Respondents were asked how well the following three emotions described them [26][27]: vigor (lively, energetic), well-being (happy, pleased, and cheerful), and calm (at ease, relaxed). The internal reliability reported for this scale is.81 [28]. In the present sample, however, the internal reliability was found to be.44.

Perceived Stress Scale (PSS): measures the extent to which life situations are perceived as stressful. A short four-item version was used in this study, which has a reported internal consistency of.72 [29] and.56 in the present study.

General Health Questionnaire 28: Developed by Goldberg and Hillier (1979), it consists of four subscales that measure somatization (GHQ A), insomnia and anxiety (GHQ B), social dysfunction (GHQ C), and severe depression (GHQ D) [30]. The CGHQ scoring method, which considers the chronicity of the depressive symptoms, was used to identify those with chronic symptoms [31]. Test-retest reliability has been reported to be between.78 and.90 [32]. In this study, the internal consistency coefficients for GHQ A were.77 for the LSES and.76 for the MSES. For GHQB, they were.78 for the LSES and.85 for the MSES. For GHQC, they were.52 for LSES and.72 for MSES. For GHQ D, they were.77 for the LSES and.83 for the MSES.

Procedure

The study was approved by the department ethics committee. Based on a pilot study (n = 30 campus-housing residents), the original questionnaire was modified. The questionnaire was translated into Hindi and then translated back into English. It was refined using participatory methods in the pilot studies [33]. Respondents were approached at home, and only if they agreed and gave consent

were they interviewed in Hindi. No identifying information was sought, and hence complete confidentiality was maintained. The interviews were conducted by the author and trained research assistants who were undergraduate and graduate students of psychology. Many of the respondents were illiterate and semi-literate, and hence the GHQ 28 and other questions had to be read out to them in the form of an interview.

The MSES Study

Participants

MSES participants lived in apartment buildings and were approached using snowball sampling by paid research assistants who lived in the neighborhood. Three hundred and twenty-six participants from the suburbs of Mumbai who ranged in age from 21 to 64 years made up the sample. There were 142 males and 184 females, 78% were married, and 84% were employed in white-collar jobs, with the rest being made up of homemakers and students. Ninety-four percent had a college degree, and 54% had an annual family income between ₹ five lakh ($7420) to ₹ fifteen lakh ($22,260). Thus, income (above ₹ two lakh), education (high school graduate), and housing (apartment buildings) characterized the middle-class sample [34].

Procedure

The questionnaire used in the LSES study was used here. Informed consent was taken, and demographic questions were posed in an interview format. The psychological scales, however, were given to them in an envelope, which they filled out in privacy and returned to the research assistant. In this context, the questionnaire was administered in English. Neither name nor any identifying information was recorded, thus maintaining complete confidentiality. Of the 500 individuals approached, 400 responded, of which 326 were retained after discarding incomplete questionnaires.

Analyses

Based on the cGHQ method of scoring suggested by Goodchild and Duncan–Jones (1985), a positive result or distress is defined as a score equal to 13 or more [31]. Based on this score, the Relative Risk or Risk Ratio, which is the ratio of the probability of an event occurring (psychological distress) in the exposed group (LSES) to the probability of the event occurring in the control group (MSES), was calculated. The relative risk of being distressed for women as compared to men was also calculated.

Ordinary Least Squares regression was used to predict each subscale of the GHQ from demographic, behavioral, psychological, and health variables. Analyses were carried out using SPSS for Windows (version 17, SPSS, Chicago, IL) statistical software package [35].

Each GHQ subscale was regressed onto demographic factors, followed by neighborhood, health behaviors, psychological factors, and health variables. In Step 1, income and education were entered; in Step 2, neighborhood was entered; in Step 3, the behavioral factors of exercise and tobacco were entered; in Step 4, the psychological factors of Hope, PES, and PSS were entered; and in Step 5, two physical health variables were entered: Chronic Conditions (objective health) and

Perceived Health (subjective health). With the exception of Step 2 (neighborhood), the same model was used to analyze the MSES data.

Results

Relative Risk

The incidence of depression among the LSES was 21.19%, and among the MSES was 16.54%, based on the cGHQ method [31]. The relative risk associated with being in the LSES as opposed to being in the MSES of experiencing depressive symptoms was 1.27. The incidence of depression was 17.17% in women and 16.47% in men in the LSES, and the relative risk associated with being female was 1.04. The incidence of depression among women was 19.87% and men was 12.78% in the MSES, and the relative risk associated with being female was 1.55.

Linear Regression

Somatization

Predicting GHQA (somatization) (refer to Table 1a) for the LSES sample revealed gender, exercise, hope, perceived stress (PSS), and perceived health to be significant predictors. In the initial step of the regression, neighborhood was significant, with an advantage for housing in the government campus. But with the addition of behavior and emotion variables, it was no longer significant. In the MSES sample, gender, family income, tobacco, hope, perceived stress, chronic conditions, and perceived health were significant predictors.

Since gender was significant, the samples were partitioned by gender within each group and analyzed (Table 1b). Among LSES, exercise was significant only for women. For the MSES, tobacco and hope were significant for men, and exercise and stress were significant for women.

Variables	LSES			MSES		
	Step 4			Step 4		
	B	SE B	β	B	SE B	β
Age	.01	.01	.05	.00	.01	.00
Gender	.37	.19	.09	.85	.23	.21**
Neighborhood	-.17	.18	-.04			
Education	-.03	.02	-.09	-.03	.17	-.01
Family Income	-.02	.05	-.02	.28	.08	.18 **
Exercise	.44	.17	.10 *	-.03	.02	-.09
Tobacco	.00	.18	.00	.15	.06	.13*
PES	.03	.06	.02	-.00	.08	-.00
Hope	-.09	.03	-.15**	-.08	.03	-.13
PSS	.12	.03	.16 **	.09	.04	.12*
Chronic Conditions	.33	.24	.06	.65	.25	.16**
Perceived Health	-1.01	.09	-.43**	-.74	.14	-.30**

Table 1a. GHQA: Summary of linear regression model predicting Somatization for both samples

R^2 = .38 (p < .01) LSES
R^2 = .36 (p < .01) MSES
** p < .05 ** p < .01*

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Variables	LSES		MSES	
	Step 4		Step 4	
	Women (288)	Men (169)	Women (140)	Men (113)
	β	β	β	β
Age	.09	-.01	-.02	.02
Education	-.09	-.03	.02	-.09
Neighborhood	-.01	-.07		
Family Income	-.07	.04	.21**	.18*
Exercise	.16**	-.00	-.16*	-.02*
Tobacco	-.01	.02	.05	.19*
PES	-.01	.04	.00	-.03
Hope	-.16**	-.19**	-.02	-.27**
PSS	.16**	.18**	.16*	.03
Chronic Conditions	.09	-.02	.15	.21*
Perceived Health	-.39**	-.51**	-.31**	-.37**

Table 1b. GHQA: Summary of Linear regression Model predicting Somatization for men and women in both samples

R^2 = *.35 (p < .01) LSES Women*

R^2 = *.42 (p < .01) LSES Men*

R^2 = *.27 (p < .01) MSES Women*

R^2 = *.44 (p < .01) MSES Men*

Anxiety

While predicting GHQB (anxiety) for the LSES sample, gender, stress, and perceived health emerged as significant predictors. For the MSES sample, exercise, positive emotion, stress, chronic conditions, and perceived health were significant predictors.

Since gender was significant, the samples were partitioned by gender within each group and analyzed (Table 2b). Among LSES, although the models were significant for both men and women, none of the regression coefficients were significant. For the MSES, exercise, positive emotion, and stress continued to be significant for women, whereas only stress and perceived health were significant for men.

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Variables	LSES			MSES		
	Step 4			Step 4		
	B	SE B	β	B	SE B	β
Age	.01	.01	.06	.01	.01	.02
Gender	.48	.21	.11*	.49	.27	.10
Neighborhood	-.07	.21	-.01			
Education	-.02	.02	-.05	.08	.20	.02
Family Income	-.04	.06	-.03	.17	.10	.09
Exercise	.19	.19	.04	-.05	.02	-.12 *
Tobacco	-.07	.20	-.02	.06	.08	.05
PES	-.12	.07	-.07	-.22	.10	-.13 *
Hope	-.01	.03	-.02	-.04	.04	-.06
PSS	.31	.03	.40**	.26	.05	.30**
Chronic Conditions	.09	.27	.01	.57	.29	.12*
Perceived Health	-.59	.10	-23*	-.66	.17	-.22**

Table 2a. GHQB: Summary of Linear Regression Model predicting Anxiety for both samples

R^2 = .32 (p < .01) *LSES*
R^2 = .37 (p < .01) *MSES*

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Variables	LSES		MSES	
	Step 4		Step 4	
	Women (290)	Men (172)	Women (140)	Men (112)
	β	β	β	β
Age	.11	.01	.05	.02
Education	-.09	.09	.04	.04
Neighborhood	-.01	-.02		
Family Income	-.06	-.04	.08	.09
Exercise	.07	-.05	-.17*	-.03
Tobacco	-.05	.05	.07	.08
PES	-.03	-.19	-.18*	-.06
Hope	-.02	-.05	-.05	-.12
PSS	.41	.38	.27**	.27**
Chronic Conditions	.04	-.06	.13	.14
Perceived Health	-.24	-.24	-.10	-.41**

Table 2b. GHQB: Summary of Linear regression Model predicting Anxiety for men and women in both samples

R^2 = *.330 (p < .01) LSES Women*
R^2 = *.337 (p < .01) LSES Men*
R^2 = *.29 (p < .01) LSES Women*
R^2 = *.48 (p < .01) MSES Men*

Social Dysfunction

When predicting GHQC (social dysfunction) (Table 3) for the LSES sample, tobacco, stress, and perceived health emerged as significant. In contrast, in the MSES sample, only stress was significant.

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Variables	LSES			MSES		
	Step 4			Step 4		
	B	SE B	β	B	SE B	β
Age	.01	.01	.03	.01	.01	.09
Gender16	.13	.06	.06	.16	.03	
Neighborhood	.04	.12	.02			
Education	.01	.01	.02	.05	.12	.03
Family Income	-.05	.03	-.08	.06	.06	.07
Exercise	.09	.12	.03	-.01	.01	-.03
Tobacco	.25	.12	.10*	-.06	.04	-.08
PES	-.05	.04	-.06	-.09	.06	-.12
Hope	-.02	.02	-.06	-.03	.02	-.08
PSS	.13	.02	.29**	.10	.03	.24**
Chronic Conditions	.02	.16	.01	.07	.17	.03
Perceived Health	-.28	.06	-.20**	.06	.10	.04

Table 3. GHQC: Summary of Linear Regression Model predicting Social Dysfunction for both samples

R^2 = .21 (p < .01) LSES
R^2 = .12 (p < .01) MSES

Severe Depression

When predicting GHQD (severe depression) for the LSES sample, positive emotion, stress, and perceived health were significant. In the MSES sample, gender, stress, and chronic conditions were significant. Analyzing by gender, for men: income, hope, stress, chronic conditions, and perceived health were significant. For women, only stress was significant.

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Variables	LSES			MSES		
	Step 4			Step 4		
	B	SE B	β	B	SE B	β
Age	.01	.01	.03	.01	.01	.03
Gender	.16	.20	.04	.45	.22	.13*
Neighborhood	-.11	.19	-.03			
Education	-.03	.02	-.08	-.21	.16	-.07
Family Income	-.06	.05	-.06	.08	.08	.06
Exercise	.02	.18	.01	-.01	.01	-.02
Tobacco	-.08	.19	-.02	.01	.06	.01
PES	-.14	.06	-.09*	-.15	.08	-.12
Hope	-.04	.03	-.07	-.04	.03	-.08
PSS	.32	.03	.45**	.20	.04	.31**
Chronic Conditions	.27	.25	.05	.45	.24	.12*
Perceived Health	-.22	.10	-.10*	.01	.14	-.01

Table 4. GHQD: Summary of Linear Regression Model predicting Severe Depression for both samples.

$R^2 = .32 (p < .01)$ *LSES*
$R^2 = .25 (p < .01)$ *MSES*

Discussion

The objective of this study was to understand the risk factors associated with distress across socio-economic groups. The role of social class and gender is discussed, followed by a discussion of the demographic, behavioral, and psychological predictive factors for each of the subscales: somatization, anxiety-insomnia, social dysfunction, and severe depression, respectively.

The relative risk of psychological distress was higher for the lower socio-economic group (LSES), which is consistent with findings in the literature [36] [7] reflective of the chronic stress due to poverty. This is perhaps not surprising, given that inequality in India is at its highest level, with the top 1% of the population controlling 22% of total income, whereas in stark contrast, the bottom 50%'s share of income stands at 14.7% [37]. The large informal sector in India, which has no health care, sick leave, or paid time off, makes up a large part of the LSES sample.

The relative risk of indicating distress was higher for females across class lines. The gender difference was smaller among the LSES, consistent with a recent review [9]. However, a striking finding was the large gender difference in the MSES, which is noteworthy and probably related to traditional gender roles and norms of female subservience [12]. MSES women scored the highest on the

anxiety insomnia subscale. Thus, at one level, the results for both the LSES and women reflect inequality, with MSES women being akin to the LSES. Reviews of the literature have indicated that the pathways of inequality which lead to depressive symptoms are lack of resources, lack of control, and stress, among others [7][9]. Given that the labor participation rate for both rural and urban Indian women has fallen in the past two decades [13], with women choosing to work less because of increased family income [38], this results in both reduced resources and control for women. Among urban Indian women with graduate degrees, up to 60% were involved solely in domestic duties at home [39], thus revealing the strong persistence of traditional gender roles even among the educated middle class.

In India, distress and depression are frequently presented as somatic complaints [3] consistent with the literature on traditional societies presenting more somatic complaints [40]. In this study, somatization was predicted by stress and health in both groups, consistent with previous findings [41]. Only for the LSES was physical work included in the measure of exercise, as recreational physical activity was not reported by this group. For this group, exercise (which included walking and physical work) was positively associated with somatization (GHQA), probably indicating a sense of fatigue. Hope emerged as a protective factor against somatization among the LSES, indicative of the psychological basis of somatization. This interesting relationship does not seem to have been previously documented in the somatization literature.

In the MSES sample, income, tobacco, and chronic conditions were additional predictors of somatization. Income was surprisingly positively related to somatization, which may be related to higher stress or longer working hours. Tobacco use being positively related may reflect better awareness of the adverse effects of tobacco [42]. Chronic conditions were associated with somatization in keeping with expectations, as the knowledge and awareness of these conditions are higher among the middle-income group because of better access to health care and greater educational attainment. When considered separately by gender, stress was a significant predictor only for women. Thus, women were similar to the lower SES in somatizing their distress rather than voicing it, as this is considered more socially acceptable [43]. Women scored higher on somatization across social class.

Anxiety and insomnia, measured by GHQB, are aspects of distress that frequently co-occur with depression. Across classes, perceived stress and perceived health were significant predictors. The connection of stress with anxiety and depression has been discussed, and a common cause may be neuroticism [44] or situational constraints [45]. Poor health may be a potential cause of anxiety symptoms.

In addition, for the MSES, chronic health conditions were significant predictors, as they were more likely to be aware of their health conditions as compared to the LSES. Also, exercise and positive emotional style were found to be protective factors against anxiety symptoms. The role of exercise as an anxiolytic, antidepressant, and insulation against future stress has been established previously [46]. Positive emotional style is characterized by being happy, lively, and calm and has been found to play a protective role against stress and in developing the common cold [47]. The relationship of positive emotional style

with anxiety symptoms does not appear to have been documented previously in the literature.

On partitioning by gender, both exercise and positive emotional style appeared to play a protective role only for women, thus highlighting their importance for women's well-being. Women across classes scored higher on the anxiety scale than men, which is consistent with the traditional gender roles in Indian society [12]. Research indicates that traditional gender roles that emphasize submissive behavior are consistent with high anxiety levels [48].

Social dysfunction (GHQC) was predicted by perceived stress across social classes. This relationship between stress, lack of social support, and social dysfunction among Indian patients has been reported previously [49]. In the LSES, in addition to stress, tobacco use and perceived health were associated with social dysfunction. Studies linking tobacco and depression suggest that they may share a common aetiology or that smoking may lead to depression or depression to smoking [50]. A more recent study indicated a genetic basis for the correlation between tobacco use and depression among males [51]. In this study, the impact of tobacco is noteworthy as it is independent of stress.

For the severe depression and suicidal ideation sub-scale (GHQD), stress and poor health were risk factors for both groups. Positive emotional style was a protective factor for the lower socio-economic group. According to Fredrickson's broaden-and-build model, positive emotions broaden the momentary thought-action repertoire that enables disengaging from negative emotions [52]. Positive emotions contribute to better coping with stress, which may serve as a protective factor.

For the MSES, gender was significant, and considering the predictors for men and women separately revealed that many factors played a role for men, but for women, only stress was a significant risk factor. For men, higher income was a risk factor, which is an intriguing finding and may be explained by its relation to more stress and lack of time. Hope also emerged as a protective factor only for men.

Perceived stress was noteworthy for being a significant predictor for all the subscales across class, highlighting the diathesis–stress model [53]. In addition to perceived stress, perceived health was also a significant predictor for all subscales in the LSES sample. Perceived health has been considered a relatively accurate reflection of morbidity as well as mortality [54]. In the LSES sample, perceived health emerged as important, as people may not be aware of chronic conditions and hence relied on their subjective self-report of health. The probability of this relationship reflecting a reciprocal causation with neuroticism as the common cause has been discussed in the past [55]. However, a longitudinal study by Koslowski et al. (2005), using a cross-lagged design, reported the predictive value of self-reported health for future depression rather than a mere reflection [56]. Self-reported health is a valuable indicator of health status independent of objective health and demographic factors [57]. In this study, self-reported perceived health appears to be a very sensitive predictor of distress among the LSES and can be used as a quick screening tool for evaluating depression risk.

When considering these results in terms of implications for treatment, sensitivity to vulnerable groups, in terms of understanding their difficult life circumstances, needs to be factored in as mentioned by Jacob: "Deemphasizing

the medicalization of personal and social distress and focusing on underlying causes of human misery including poverty, unmet needs, and the lack of rights" [58]. Offering instrumental support such as help with finding employment, addressing domestic conflict, and better access to healthcare would contribute to a greater sense of control. Middle-class women proved to be a vulnerable group, and the challenges of their socio-cultural context need to be further explored. Routine screening for depression at regular healthcare appointments needs to be introduced, especially for vulnerable groups. Therapy that factors in these psychological and social realities would be more appropriate, such as support groups with similar others or counseling from community members [59]. In a 14-week intervention with poor minority mothers, one-hour counseling sessions were offered at home, which led to a significant improvement over a clinic-based counseling control group [60]. Home-based family counseling may be the most effective and would be able to address gender inequity, which also contributes to distress and depression. Thus, using pharmacotherapy in developing countries may not always be the best intervention, especially for mild and moderate depression, and in fact, psychotherapy may be more effective as well as cost-effective [61]. Future research needs to focus on more individual-level factors, which will provide insights for preventive care.

In this study, the risk of depression in terms of distress was assessed, and data were collected at a single point in time. Subjective social class, which is an important variable with respect to well-being, was not measured and could be added in future research. Despite these limitations, this study had several strengths. It generated rich data on the subcomponents of distress, such as somatization, anxiety, social dysfunction, and severe depression, for a large urban Indian non-clinical sample. In addition, this is one of the few studies highlighting the role of protective factors as well as risk factors.

Conclusion

Both the lower-income group and women indicated higher levels of depressive symptoms reflective of societal inequality. Stress was a risk factor for all four subscales. Hope and a positive emotional style emerged as protective factors against somatization and anxiety symptoms, independent of stress. These unique findings have implications for both preventive and treatment interventions, as well as for medical education to be tailored to the specific vulnerabilities of groups.

Statements and Declarations

Ethics

The study was reviewed and approved by the ethics committee of IIT Bombay. The participants provided their written informed consent to participate in this study. For participants who were illiterate, the consent form was read aloud, and consent was documented according to procedures approved by the ethics committee.

Data Availability

The data supporting the conclusions of this article and the SPSS syntax are available from the corresponding author upon reasonable request.

Author Contributions

MK confirms sole responsibility for the study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

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References

1. ^*World Health Organization (2017). "Depression and other common mental disorders: global health estimates." WHO/MSD/MER/2017.2, World Health Organization.*
2. ^*Sagar R, Dandona R, Gururaj G, Dhaliwal RS, Singh A, Ferrari A, Dua T, Ganguli A, Varghese M, Chakma JK, Kumar GA, Shaji KS, Ambekar A, Rangaswamy T, Vijayakumar L, Agarwal V, Krishnankutty RP, Bhatia R, Charlson F, Chowdhary N, Erskine HE, Glenn SD, Krish V, Mantilla Herrera AM, Mutreja P, Odell CM, Pal PK, Prakash S, Santomauro D, Shukla DK, Singh R, Singh RKL, Thakur JS, ThekkePurakkal AS, Varghese CM, Reddy KS, Swaminathan S, Whiteford H, Bekedam HJ, Murray CJL, Vos T, Dandona L (2020). "The burden of mental disorders across the states of India: the Global Burden of Disease Study 1990–2017." Lancet Psychiatry. **7**(2):148–161. doi:10.1016/S2215-0366(19)30475-4.*
3. a, b, c*Grover S, Dutt A, Avasthi A (2010). "An overview of Indian research in depression." Indian J Psychiatry. **52**(Suppl1):S178–S188.*
4. ^*Adler NE, Boyce T, Chesney MA, Cohen S, Folkman S, Kahn RL, Syme SL (1994). "Socioeconomic status and health: The challenge of the gradient." Am Psychol. **49**(1):15–24. doi:10.1037/0003-066X.49.1.15.*
5. ^*Lachman ME, Weaver SL (1998). "The sense of control as a moderator of social class differences in health and well-being." J Pers Soc Psychol. **74**(3):763–773.*
6. ^*Brook DW, Brook JS, Zhang C, Cohen P, Whiteman M (2002). "Drug Use and the Risk of Major Depressive Disorder, Alcohol Dependence, and Substance Use Disorders." Archives of General Psychiatry. **59**(11):1039–1044. doi:10.1001/archpsyc.59.11.1039.*
7. a, b, c*Lund C, Breen A, Flisher AJ, Kakuma R, Corrigall J, Joska JA, Swartz L, Patel V (2010). "Poverty and common mental disorders in low and middle income countries: A systematic review." Soc Sci Med. **71**(3):517–528. doi:10.1016/j.socscimed.2010.04.027.*
8. ^*Peters SAE, Woodward M, Jha V, Kennedy S, Norton R (2016). "Women's health: A new global agenda." BMJ Global Health. **1**(3). doi:10.1136/bmjgh-2016-000080.*
9. a, b, c*Ridley M, Rao G, Schilbach F, Patel V (2020). "Poverty, depression, and anxiety: Causal evidence and mechanisms." Science. **370**(6522). doi:10.1126/science.aay0214.*
10. ^*Cross SE, Madson L (1997). "Models of the self: self-construals and gender." Psychol Bull. **122**(1):5–37.*
11. ^*Nolen-Hoeksema S (2002). "Gender differences in depression." In: Handbook of depression. New York, NY, US: The Guilford Press. pp 492–509.*
12. a, b, c*Kakar S (1978). The inner world: a psycho-analytic study of childhood and society in India. New Delhi: Oxford University Press.*

13. ^a, ^b International Labour Office (2014). "Global employment trends 2014: Risk of a jobless recovery?" International Labour Office. http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_233953.pdf. Accessed 29 December 2020.
14. ^ Poongothai S, Pradeepa R, Ganesan A, Mohan V (2009). "Prevalence of Depression in a Large Urban South Indian Population — The Chennai Urban Rural Epidemiology Study (Cures – 70)." PLoS One. **4**(9). doi:10.1371/journal.pone.0007185.
15. ^ Markus HR, Kitayama S (1991). "Culture and the self: Implications for cognition, emotion, and motivation." Psychol Rev. **98**(2):224–253.
16. ^ Ross CE, Wu CL (1995). "The links between education and health." Am Sociol Rev. **60**(5):719–745.
17. ^a, ^b, ^c Cohen S, Kaplan GA, Salonen JT (1999). "The Role of Psychological Characteristics in the Relation Between Socioeconomic Status and Perceived Health." J Appl Soc Psychol. **29**(3):445–468.
18. ^ World Health Organization (2012). "WHO global report: Mortality attributable to tobacco." World Health Organization. http://www.who.int/tobacco/publications/surveillance/rep mortality attributable/en/. Accessed 29 December 2020.
19. ^ Benegal V (2005). "India: alcohol and public health." Addict. **100**(8):1051–1056.
20. ^ Census of India (2011). "Primary Census Abstracts." Registrar General of India, Ministry of Home Affairs, Government of India. https://www.censusindia.gov.in/2011census/PCA/pca highlights/pe data.html. Accessed 10th January 2021.
21. ^ Tyagi S, Sukhadeve RB, Parchake MB, Pathak HM (2015). "Mumbai local: Life line or life stealing." Journal of Indian Academy of Forensic Medicine. **37**(3):246–249.
22. ^ National Sample Survey Office (2011). "Employment and unemployment situation in India, 2009- 2010: NSS 66th round." National Sample Survey Office, Government of India. http://mail.mospi.gov.in/index.php/catalog/18/download/1609. Accessed 29 December 2020.
23. ^ Cohen J (1992). "A power primer." Psychol Bull. **112**(1):155.
24. ^ World Health Organization (2010). "International statistical classification of diseases and related health problems." https://www.who.int/classifications/icd/ICD10Volume2 en 2010.pdf. Accessed 10 January 2021.
25. ^a, ^b Snyder CR, Harris C, Anderson JR, Holleran SA, Irving LM, Sigmon ST, Yoshinobu L, Gibb J, Langelle C, Harney P (1991). "The will and the ways: development and validation of an individual-differences measure of hope." J Pers Soc Psychol. **60**(4):570–585.
26. ^ Benyamini Y, Leventhal EA, Leventhal H (2000). "Gender Differences in Processing Information for Making Self-Assessments of Health." Psychosom Med. **62**(3):354–364.
27. ^ Usala PD, Hertzog C (1989). "Measurement of affective states in adults: Evaluation of an adjective rating scale instrument." Res Aging. **11**(4):403–426.
28. ^ Cohen S, Doyle WJ, Turner RB, Alper CM, Skoner DP (2003). "Emotional Style and Susceptibility to the Common Cold." Psychosom Med. **65**(4):652–657.
29. ^ Cohen S, Kamarck T, Mermelstein R (1983). "A global measure of perceived stress." J Health Soc Behav. **24**:385–396.
30. ^ Goldberg DP, Hillier VF (1979). "A scaled version of the General Health Questionnaire." Psychol Med. **9**(1):139–145.
31. ^a, ^b, ^c Goodchild M, Duncan-Jones P (1985). "Chronicity and the general health questionnaire." Br J Psychiatry. **146**(1):55–61.

32. ^ *Robinson RG, Price TR (1982). "Post-stroke depressive disorders: a follow-up stu dy of 103 patients." Stroke. **13**(5):635–641.*
33. ^ *Hanna L, Hunt S, Bhopal R (2008). "Insights from research on cross-cultural vali dation of health-related questionnaires: The role of bilingual project workers and lay participants." Curr Sociol. **56**(1):115–131.*
34. ^ *Meyer C, Birdsall N (2012). "New estimates of India's middle class." Center for Gl obal Development. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.303.2846&rep=rep1&type=pdf. Accessed 2020 20th December.*
35. ^ *SPSS Inc. (2008). SPSS Statistics for Windows, Version 17.0. Chicago: SPSS Inc.*
36. ^ *Heflin CM, Iceland J (2009). "Poverty, material hardship, and depression." Social Science Quarterly. **90**(5):1051–1071.*
37. ^ *Chancel L, Piketty T (2017). "Indian income inequality, 1922-2014: From British Raj to Billionaire Raj?" C.E.P.R. Discussion Papers. 12409. CEPR Centre for Econo mic Policy Research.*
38. ^ *Kapsos S, Silberman A, Bourmpoula E (2014). "Why is female labor force partici pation declining so sharply in India?" International Labour Office. http://www.il o.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_250977.pdf. Accessed 29 December 2020.*
39. ^ *Thomas JJJE (2012). "India's labour market during the 2000s: Surveying the cha nges." Econ Polit Wkly. **47**:39–51.*
40. ^ *Kleinman A (1988). The illness narratives: Suffering, healing, and the human co ndition. New York: Basic books.*
41. ^ *Gureje O, Simon GE, Ustun TB, Goldberg DP (1997). "Somatization in cross-cultur al perspective: a World Health Organization study in primary care." Am J Psychia try. **154**(7):989–995.*
42. ^ *Giotakis K, Douzenis A, Tselebis A, Pachi A, Zafeiropoulos G, Bratis D, Moussas G, Karkanias A (2013). "Psychological parameters and habitual smoking among hea lth professionals." Encephalos. **50**(3):82–88.*
43. ^ *Raguram R, Weiss MG, Channabasavanna S, Devins GM (1996). "Stigma, depress ion, and somatization in South India." Am J Psychiatry. **153**(8):1043–1049.*
44. ^ *Eysenck HJ, Eysenck MW (1985). Personality and individual differences: A natura l science approach. New York: Plenum Press.*
45. ^ *Lovibond PF (1998). "Long-term stability of depression, anxiety, and stress synd romes." J Abnorm Psychol. **107**(3):520–526.*
46. ^ *Salmon P (2001). "Effects of physical exercise on anxiety, depression, and sensiti vity to stress: a unifying theory." Clin Psychol Rev. **21**(1):33–61.*
47. ^ *Cohen S, Alper CM, Doyle WJ, Treanor JJ, Turner RB (2006). "Positive emotional style predicts resistance to illness after experimental exposure to rhinovirus or inf luenza A virus." Psychosom Med. **68**(6):809–815.*
48. ^ *McLean CP, Anderson ER (2009). "Brave men and timid women? A review of the gender differences in fear and anxiety." Clin Psychol Rev. **29**(6):496–505. doi:10.10 16/j.cpr.2009.05.003.*
49. ^ *Kulhara P, Chopra R (1996). "Social support, social dysfunction and stressful life events in neurotic patients." Indian J Ppsychiatry. **38**(1):23–29.*
50. ^ *Breslau N, Peterson EL, Schultz LR, Chilcoat HD, Andreski P (1998). "Major Depre ssion and Stages of Smoking: A Longitudinal Investigation." Arch Gen Psychiatry. **55**(2):161–166. doi:10.1001/archpsyc.55.2.161.*
51. ^ *Edwards AC, Maes HH, Pedersen NL, Kendler KS (2011). "A population-based twi n study of the genetic and environmental relationship of major depression, regul*

ar tobacco use and nicotine dependence." Psychological Medicine. ***41****(2):395–405. doi:10.1017/S0033291710000589.*

52. ^*Frederickson BL (2000). "Cultivating positive emotions to optimize health and well-being." Prev Treat.* ***3****(1):18–48.*
53. ^*Masten AS (2001). "Ordinary magic: Resilience processes in development." Amer ican Psychologist.* ***56****(3):227–238.*
54. ^*Jylhä M (2009). "What is self-rated health and why does it predict mortality? To wards a unified conceptual model." Soc Sci Med.* ***69****(3):307–316. doi:10.1016/j.socsc imed.2009.05.013.*
55. ^*Pressman SD, Cohen S (2005). "Does positive affect influence health?" Psychol B ull.* ***131****(6):925–971.*
56. ^*Kosloski K, Stull DE, Kercher K, Van Dussen DJ (2005). "Longitudinal Analysis of the Reciprocal Effects of Self-Assessed Global Health and Depressive Symptoms." J Gerontol B Psychol Sci Soc Sci.* ***60****(6):296–303. doi:10.1093/geronb/60.6.P296.*
57. ^*Idler EL, Benyamini Y (1997). "Self-Rated Health and Mortality: A Review of Tw enty-Seven Community Studies." J Health Soc Behav.* ***38****(1):21–37. doi:10.2307/295 5359.*
58. ^*Jacob K (2008). "The prevention of suicide in India and the developing world: th e need for population-based strategies." Crisis - The Journal of Crisis Intervention and Suicide Prevention.* ***29****(2):102–106.*
59. ^*Patel V, Rodrigues M, DeSouza N (2002). "Gender, Poverty, and Postnatal Depres sion: A Study of Mothers in Goa, India." Am J Psychiatry.* ***159****(1):43–47. doi:10.1176/ appi.ajp.159.1.43.*
60. ^*Toth SL, Rogosch FA, Oshri A, Gravener-Davis J, Sturm R, Morgan-López AA (201 3). "The efficacy of interpersonal psychotherapy for depression among economic ally disadvantaged mothers." Dev Psychopathol.* ***25****(4 Pt 1):1065–1078. doi:10.101 7/S0954579413000370.*
61. ^*Chisholm D, Sanderson K, Ayuso-Mateos JL, Saxena S (2004). "Reducing the glo bal burden of depression: Population-level analysis of intervention cost-effective ness in 14 world regions." Br J Psychiatry.* ***184****(5):393–403. doi:10.1192/bjp.184.5.39 3.*

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