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Correlates of Social support in individuals with a diagnosis of Common Mental Disorders and Non Communicable Medical Diseases in rural South India

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Abstract

Purpose: The purpose of the study was to examine the association between socio-demographic and clinical characteristics and perceived social support among patients with a diagnosis of depression and/or anxiety and co-morbid medical conditions from rural south India.

Methods: The study was conducted in 49 PHCs in Ramanagara district, Karnataka, and included 2481 participants, who were 30 years or older with co-morbid CMD (Common Mental Disorder) and hypertension, diabetes or ischemic heart disease. Socio-demographic characteristics of the participants were collected, and instrumental, emotional and total social support, quality of life, severity of disability, depression and anxiety were measured via face-to-face interviews using structured questionnaires.

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Results: The sample predominantly consisted of Hindu (98.5%) females (75%) in their middle to late adulthood. In multivariate models, age showed a significant curvilinear relation with all forms of social support (B=0.001 and p<0.05), and emotional social support (B= −0.056, p=0.004) was lower in employed than non-working participants. Household size was positively related to all forms of social support (B=0.029 for instrumental, B=0.022 for emotional, B=0.025 for total social support, all p<0.001). Quality of life was positively associated with all forms of social support (B=0.019 for instrumental, B=0.016 for emotional, B=0.018 for total social support, all p<0.001).

Conclusions: For this sample of outpatients diagnosed with both CMD and at least one comorbid medical condition in rural south India, greater household size was associated with better social support. The role of family in providing support can be utilized while designing interventions.

Keywords

social support; mental disorders; medical diseases; India; rural populations

Introduction

Social support has been defined as an interpersonal transaction involving emotional concern, instrumental aid, information about the environment, or appraisal relevant to self-evaluation [1, 2]. Researchers often study instrumental social support – which includes financial aid, material resources and needed services, as well as informational support – and emotional social support, which refers to love, empathy and emotional responsiveness, as they are found to have significant associations with indicators of physical and emotional health [2-5].

Globally, research in multiple settings has shown that lower incidence of physical illnesses and better health [3, 6- 9], as well as decreased odds of mental disorders and better mental health [10, 11, 12] are associated with greater social support. Inadequate social support is found to be associated with poor outcomes in terms of symptoms, recovery, social functioning and treatment adherence [13, 14]. Instrumental and emotional social support are differentially associated with stress. While emotional support is helpful to mitigate the stressful effects of events by defining, understanding and coping with them, instrumental support is more likely to be effective when the resources available are closely linked to the specific needs created by the stressful event and provides a tangible direct resolution [2]. Depression and anxiety are consistently associated with less emotional social support [15-18], while instrumental social support is more relevant when physical limitations are higher in late adulthood [19].

Identifying demographic characteristics and social determinants of social networks and social support can help to understand their differential effects on health. Factors that include increasing age [20, 21] female gender [21-23] and lower socioeconomic status [10, 24, 25] are found to be associated with less social support. The effects of these sociodemographic factors have been examined in several studies, however it is seen that the study setting could also have an effect on the association. A cross sectional study of a Native American

sample aged 55 years and older showed that increased age, being married/partnered, and female sex were associated higher social support [22] and concluded that culture could have an impact on perceptions of social support, especially in connection with increasing age. A three-wave study of male and female East German migrants between ages 14 and 66 was initiated shortly before the fall of the Berlin wall to explore the effects of social support on health complaints and negative affect. Younger women reported having the highest social support, with relatively low levels of support reported by middle-aged and older women. In contrast, the perceived social support of men remained similar across age groups [21]. In a longitudinal study [25] of the association of socioeconomic characteristics with adult depression and social support during adolescence and adulthood in Finland, lower socioeconomic status (SES) was associated with lower social support, especially in females. Findings from this study further indicated depression among lower SES group subjects was associated with low levels of social support, but the association varied across life stages and gender. In a hospital based, cross sectional, observational study from India on patients (18 to 60 years) diagnosed with depression, perceived social support appears to diminish with age [26]. This study also found that men reported more social support than women. Men received more social support from friends while women reported more social support from significant others.

People living in rural communities may be at a disadvantage when compared to urban communities due to having less accessibility to health care and scarcity of resources [27,28]. They are also more likely to be governed by traditional roles and responsibilities which has implications for social support [29]. Studies that examined the difference in social support in rural and urban societies in Korea and Japan, found that depression is associated with less social support in the elderly only in rural areas [30, 31]. An exploratory descriptive study conducted in rural Odisha in India found that elderly males preferred their spouse while females preferred their son as the trusted care provider in long term care [29].

Few studies have examined factors associated with social support in individuals diagnosed with both a mental disorder and chronic physical disease. Depression with co-morbid chronic medical conditions is associated with increased severity for both conditions, and poorer quality of life and increased disability [32, 33] and could adversely impact social support. An understanding of the factors that influence the perception of emotional and instrumental social support may be helpful in developing culture specific interventions and adaptive strategies. In the present report, we examined the association between socio-demographic and clinical characteristics and perceived social support among primary health clinics patients with a diagnosis of depression and/or anxiety and co-morbid medical conditions from rural south India.

Methods

This analysis is based on baseline data collected as part of a cluster randomized controlled trial on the implementation and evaluation of the effects of a collaborative care intervention on the screening, diagnosis and treatment of depression co-morbid with diabetes and or cardiovascular conditions in 49 Primary Health Centers (PHCs) in rural Karnataka (HOPE study). The design and protocol of this study have been published previously [34]. Ethics

approval was obtained from the Institutional Ethical Review Board at St. John's Medical College and Hospital and Committee on Human Research, University of California, San Francisco.

Setting

The HOPE study was conducted in 49 PHCs in Ramanagara, a rural district of Karnataka state in southern India. The research investigators are located in the same state and the study was conducted in the existing public health system with the permission of the state government. Individuals living in the catchment area that either sought care in the PHC or attended one of our health fairs and met the eligibility criteria during the screening were invited to participate in the study. Written and verbal information about the study was provided to the participants and informed consent was taken.

Inclusion and exclusion criteria

Individuals who were 30 or older, with co-morbid CMD (Common Mental Disorder, i.e. depression or anxiety disorder) and either hypertension, diabetes, or ischemic heart disease, and who were willing and able to consent to participate and be followed for 12 months were considered eligible for inclusion in the study, yielding a total sample size of 2,486. Three participants had missing data on education and two participants had incomplete data on social support. These five participants were excluded from this analysis resulting in a final sample size of 2481.

Measures

All language based measures were translated into Kannada, back translated and reviewed for semantic equivalence [35].

Socio-demographic characteristics

Socio-demographic characteristics of the participants that included age, education, gender, religion, marital status, employment status and total number of members in the household were collected.

Psychosocial Variables

Social Support—The Social Support Questionnaire (SSQ) used in the present study was developed as part of an earlier study that examined the relation between parental social support, child's home environment and cognitive performance. The items in the SSQ were based on and adapted from existing questionnaires and example items given in articles and book chapters [36, 37]. The items were piloted, translated and adapted to Indian setting [38]. The SSQ consists of 12 items; six reflecting instrumental support (e.g., 'Do you feel there are enough people in your environment that would lend or give you something you need, like food, clothing or money?') and six reflecting emotional support (e.g., 'Do you feel there are enough people that can comfort you when you feel unhappy about your daily life'), with answer options ranging from definitely not enough (Score=1) to definitely enough (Score=4. The English and Kannada versions of the questionnaire are provided as supplementary material. The questionnaire had an alpha coefficient of 0.88 in the original

study [38]. Two items, one from the instrumental support and one from the emotional support sub-scale, were not included as they specifically referred to support for child care and hence were not applicable to most respondents in our sample of mostly older adults. Data from a participant were included in the analysis if they responded to at least 4 out of the 5 questions assessing each type of social support. The mean score of the items corresponding to instrumental, emotional and total social support were used in the present analysis.

Quality of Life—The WHO Quality of Life-BREF (WHOQOL-BREF) [39] instrument comprises 26 items with the following domains: physical health, psychological health, social relationships, and environment. As per standard scoring instructions, scores were calculated for the individual subdomains; however, the subdomain social relationships had to be dropped as it had only 3 items and 3% of the sample did not consider one of these items applicable to them. The mean of the other three domains was used to achieve a total score. The individual sub-domains were not used as they were significantly positively correlated (Pearson's r= 0.62-0.38). The scale ranges from 0-100, with higher scores indicating greater quality of life. This scale is used widely in research studies in India [40, 41].

Disability—The WHO Disability Assessment Schedule 2.0 (WHODAS 2.0) [42] was used to assess disability. It consists of 36 items organized into six domains designed to assess health status related to communication (i.e., understanding and communicating with the world), mobility (i.e., moving and getting around), self-care (i.e., attending to one's hygiene, dressing, eating, and staying alone), interpersonal (i.e., getting along with people), life activities (i.e., domestic responsibilities, leisure, and work), and participation in society (i.e., joining in community activities) for the past 30 days. The scores range from 0 to 100, with higher scores indicating greater perceived disability. This scale is used in previous research in India [43, 44].

Depression—The Patient Health Questionnaire-9 (PHQ-9) [45] was used to assess severity of depressive symptoms. The PHQ-9 consists of 9 items which represent each of the DSM IV criteria, with a total maximum score of 27. PHQ-9 scores of 5, 10, 15, and 20 represented mild, moderate, moderately severe, and severe depression, respectively [45]. A cutoff value of 10 on the scale was used to determine presence of at least moderate depression and higher scores reflect greater severity of depression. The test retest reliability of the scale developed in the USA is 0.84. A PHQ-9 score 10 has a sensitivity of 88% and a specificity of 88% for major depression [45]. One of the items measures passive thoughts of death/ self- injury /suicide and is used to screen for suicide risk [46]. The scale has been previously used in India [47-50].

Anxiety—The Generalized Anxiety Disorder-7 item scale (GAD-7) [51] was used to assess the severity of anxiety symptoms. The GAD-7 consists of 7 items with a total maximum score of 21. Scores of 5, 10, and 15 are taken as the cut-off points for mild, moderate and severe anxiety, respectively. A cut off value of 10 was used to determine presence of at least moderate anxiety and higher scores reflect greater symptom severity. The test retest

reliability is 0.83. At a cut point of 10 sensitivity is 89% and specificity 82% [51]. This measure has been previously used in India [52, 53].

Non-Communicable Diseases (NCDs)—The medical conditions hypertension (elevated systolic BP 140 mmHg and/or diastolic BP 90 mmHg), diabetes (blood glucose level HbA1c 6.5%), hyperlipidemia (LDL level >70 mg/dL if diabetic, >190 mg/dL if not diabetic) and angina (positive score on Rose Angina Questionnaire[54]) were evaluated and diagnosed. The number of medical conditions that each participant was diagnosed with as per the abovementioned criteria was summed to obtain a 1-4 range variable describing number of NCDs.

Procedure—The face-to-face study interviews were conducted in a quiet room in the PHC by trained research assistants with a Master's degree in Psychology or Social Work. The de-identified responses were entered into the study database using double- data entry procedures and uploaded to an encrypted password protected database. Quality control was conducted by the data manager, project manager and the senior statistician on an ongoing basis for completeness and accuracy.

Statistical analyses—Descriptive and preliminary analyses were conducted using SPSS 17, the multivariate models in Stata 16. Means, standard deviations and percentages were used to describe the data. Normality of the data was estimated using Q-Q plots and histograms. Unadjusted associations of socio-demographic, psychosocial factors and number of physical conditions with indices of social support were assessed using bivariate general linear models. The intention of the analysis was exploratory, and so we initially tested several predictors which could potentially have an association with social support based on previous research. Religion and house ownership were not included as predictors due to lack of variability in the data, as over 95% of the participants were Hindus and owned their homes. A hierarchical linear model estimated via restricted maximum likelihood, with participants nested within PHC and a random intercept for PHC was used to examine the adjusted associations for those variables that were bivariately at least marginally significant for at least one form of social support. Severity of anxiety was excluded from the multivariate models as it had a very high correlation (Pearson's r= 0.75) with severity of depression. AIC and BIC fit statistics are reported. We also report the marginal R^2, i.e. the proportion of variance explained by the fixed portion of the model, as per Snijders and Bosker's formula [55].

Results

The sample predominantly consisted of Hindu (98.5%) females (75%) in their middle to late adulthood (Mean [SD] age = 59.23 [10.01]) (Table 1). The majority of the participants received no formal education (57.9%), lived in their own house (96%), and was not gainfully employed (62.9%). The mean (SD) number of diagnosed disorders was 2.19 (0.89).

The means (SD) of instrumental, emotional and total social support were 2.87 (0.50), 2.90 (0.48) and 2.89 (0.46), respectively. In the present study, 526 (21.2%) participants had at

least moderate anxiety symptoms on the GAD-7 and 853 (34.4%) had at least moderate depressive symptoms on PHQ-9.

In the unadjusted bivariate general linear regression analyses (supplementary table 1), all variables showed significant associations with at least one of the social support variables, except the number of medical disorders, which was still marginally significant for instrumental social support, and hence retained for multivariate analyses as well. In the multivariate hierarchical linear models that controlled for clustering by PHC, the demographic variables that remained significant were age (in a quadratic relationship), employment status and household size. As seen in Figure 1, total social support slightly increased until about age 60, and then declined again. The trend looked similar for emotional and instrumental social support. Emotional social support (B= −0.056, p=0.004) was lower in employed participants than among those who were unemployed, after adjusting for all the other covariates in the model. A greater number of household members was associated with better social support. B for instrumental, emotional and total social support were 0.029, 0.022 and 0.025 (all p<0.001), respectively. Quality of life had a positive association with both indices of social support; B for instrumental, emotional and total social support were 0.019, 0.016 and 0.018 (all p<0.001) respectively (table 2).

Discussion

This study examined the factors associated with social support among participants from rural South India who reported depression and/or anxiety and at least one comorbid medical condition. The results show that participants between the ages 50-60 years have greater perceived social support, and younger and older participants have lower perceived social support. The larger the size of the household, the greater the perceived social support, and this holds for both instrumental and emotional support. Being employed was found to be associated with less emotional social support. Not surprisingly, greater quality of life was associated with greater instrumental, emotional and total social support.

Participants between 50-60 years of age have higher social support when compared to younger and older participants. Studies that have shown that social support tends to decrease as age increases (20,22) in older adults, which is seen in the present study also, as gaps increase in needs for instrumental and social support. The present study examined social support in younger population also, and they had less social support than middle aged participants. This could be because younger participants tend to be employed, and being employed is associated with less emotional support in the present study. It could also be because young individuals with disorders report less social support as they are developmentally externally oriented for social support and this could lead to more negative consequences of detrimental interactions [56] when compared to middle aged adults who have a more restrictive, but stable family structure and better coping mechanisms [56].

Larger household size was associated with greater instrumental, emotional and total social support when controlling for other variables. This may be because the support received from close relatives is more accessible when they are living in the same household, which is consistent with the findings by Ohaeri [57], that patients with psychiatric illness

perceived close relatives as sources of material, social and emotional support. The majority of participants in our study were elderly, and previous research has found that support needs change as age increases, with gaps arising due to illness or death of significant others [20]. In urban societies non-kin social networks are available, for example, in the form of elder care facilities. However, that is not the case in India, especially in rural households where this study was conducted, because such facilities are not available and are not preferred by the society. The availability of family members for support becomes particularly important for older Indian adults as they often prefer support provided by close family members [29] and due to the high degree of interdependence among Indian families [58]. Similar findings have been noted in other cultures such as African-American communities where extended families and kinship networks are an important source of social support [57, 59, 60]. Kim et al. [61] report in their review that Asians and Asian Americans are more reluctant to explicitly ask for support than European Americans. The authors hypothesize that availability of unsolicited social support, cultural value for independence, or perceived negative consequences on the relationship could be the reasons for this difference. This is even more pronounced in older adults as it is seen that they may seek less explicit social support and benefit more from implicit social support [62]. As a result, unsolicited social support available through family members and relatives are important sources of social support particularly in Asian cultures and India [61].

While greater household size was associated with greater social support, another demographic variable, employment, was related to lower levels of emotional and total social support. This is in contrast to studies in the West showing that being employed increases social support [63, 64]. Most of the employed participants in this rural setting were engaged in agriculture related work, and this may allow less time for socializing both inside and outside of work. With long hours of solitary work outside the house, people working in agriculture often end up spending less time at home with family members. Apart from that, the majority of participants in our study were females, and in India, it is not uncommon for women who spend much of their time at work to perceive themselves as having less social support [65]. This may be due to the fact that Indian women who are employed have to fulfill multiple traditional roles such as household chores and child rearing increasing their burden [66], leaving them with less time to engage in activities that can provide emotional support like talking to friends or attending a social gathering. This could also be because older women being employed in a rural setting often belong to lower income groups or have lower socioeconomic status which in turn has been found to be associated with less social support [10]. Studies that explore work patterns and opportunities for social interactions among working women in India are needed to understand this association.

It was found that greater quality of life was associated with greater instrumental, emotional and total social support. This relationship could be bi-directional. Wang et al. [67] reported that appraisals of one's coping resources, which include social support determine his/her perception of quality of life. On the other hand, quality of life also includes a person's structural aspects of social support, such as family size, and functional aspects such as the actual support received [68, 69].

The study has several limitations that may affect the generalizability of the results. A majority of participants were above sixty years old and their experiences may not be representative of younger rural population. In addition, the study was conducted in rural Karnataka and the findings of this study may not be generalizable to rural areas in other regions, which may be different like northern parts of India. This is a cross sectional study and the cause-effect relationships cannot be determined. A longitudinal study would help us better understand the drivers of perceived social support. In spite of these limitations, this study provided valuable information on the roles that household size, age and employment status play in social support in this vulnerable population. Studies have shown the importance of adopting a household-based approach rather than an individual-based approach in treatment, research and devising public health strategies for chronic diseases. As individual ages, social support needs increase, and in Asian and Indian families, the support in the main, is provided by families [70, 71]. Availability of support from household members may improve access to health care facilities and improve adherence to treatment recommendations or medication regimens.

To the best of our knowledge, this is the first paper to explore factors related to social support in a rural Indian population diagnosed with both a mental disorder and a physical disorder. The results of this study illustrate the importance of family as an important source of social support in this population. Thus, supporting and strengthening family networks is an important component of treatment of individuals who have emotional disorders with co-morbid medical conditions.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements

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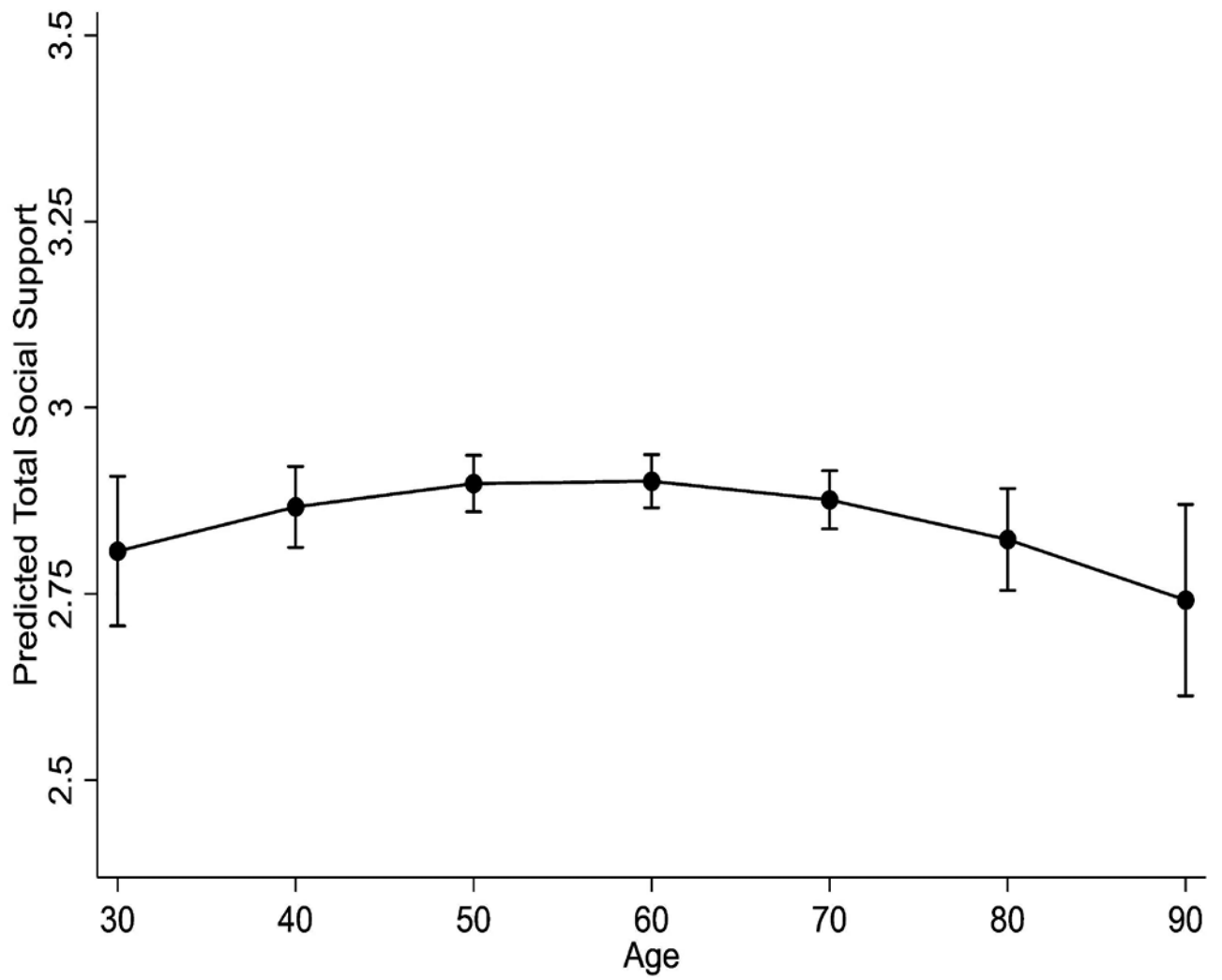
Figure 1:
Quadratic term for age

Table 1:

Demographic and psychosocial characteristics of the sample (n=2481)

Demographic parameters	
Age (years), Mean (SD)	59.23 (10.01)
Level of Education	
No formal education, n (%)	1436 (57.9)
Primary education, n (%)	726 (29.3)
Secondary or higher, n (%)	319 (12.9)
Males, n (%)	620 (25.0)
Own house, n (%)	2383 (96.0)
Married, n (%)	1587 (64.0)
Employed, n (%)	920 (37.1)
Hindu, n (%)	2444 (98.5)
Monthly household income (INR)	
<5000, n (%)	1767 (71.2)
>5001-10000, n (%)	714 (28.8)
Household size, Mean (SD)	3.80 (2.12)
Psychosocial parameters	
Depression, (PHQ9), (0-27) Mean (SD)	8.52 (4.12)
Anxiety, (GAD7), (0-21) Mean (SD)	6.74 (3.73)
Quality of life, (WHO-QOL bref), (0-100) Mean (SD)	48.85 (10.64)
Disability, (WHODAS), (0-100) Mean (SD)	25.59 (16.08)
Number of physical disorders, (1-4) Mean (SD)	2.19 (0.89)
Instrumental social support, (SSQ) (1-4) Mean (SD)	2.87 (0.50)
Emotional social support, (SSQ) (1-4) Mean (SD)	2.90 (0.48)
Total social support, (SSQ) Mean (1-4) (SD)	2.89 (0.46)

Table 2

Multivariate hierarchical linear regression analysis of demographic and psychosocial variables and social support (n=2481)

Socio-demographic and psychosocial variables	Instrumental social support		Emotional social support		Total social support	
	B (95% CI)	p value	B (95% CI)	p value	B (95% CI)	p value
Age[a] (per 5 years)	−0.002 (−0.010, 0.005)	0.676	−0.005 (−0.020, 0.001)	0.089	0.005 (−0.015, 0.005)	0.250
Age*Age[a] (per 5 years)	−0.001–0.001, 0.00002	**0.043**	−0.001 (−0.001, −0.0001)	**0.021**	−0.001 (−0.005, −0.00001)	**0.020**
Education						
No formal education	−0.037 (−0.096, 0.022)	0.224	−0.012 (−0.070, 0.046)	0.680	−0.025 (−0.079, 0.029)	0.371
Primary education	−0.019 (−0.078, 0.039)	0.514	−0.019 (−0.076, 0.039)	0.527	−0.019 (−0.073, 0.034)	0.484
Secondary or higher	Ref	–	Ref	–	Ref	–
Male	0.016 (−0.032, 0.064)	0.512	0.015 (−0.032, 0.064)	0.517	0.016 (−0.029, 0.060)	0.495
Married	−0.008 (−0.048, 0.033)	0.706	−0.010 (−0.049, 0.030)	0.635	−0.009 (−0.046, 0.029)	0.646
Employed	−0.026 (−0.065, 0.012)	0.182	−0.056 (−0.094, −0.018)	**0.004**	−0.040 (−0.076, −0.005)	0.024
Income (INR)						
<5000	0.012 (−0.028, 0.052)	0.560	0.026 (−0.014, 0.066)	0.204	0.006 (−0.030, 0.044)	0.683
>5000	Ref	–	Ref	–	Ref	–
Household size	0.029 (0.020, 0.037)	**<0.001**	0.022 (0.013, 0.030)	**<0.001**	0.025 (0.018, 0.033)	**<0.001**
Greater depression	0.0004 (−0.005, 0.005)	0.988	−0.005 (−0.010, −0.001)	0.088	−0.002 (−0.007, 0.003)	0.378
Better quality of life	0.019 (0.017, 0.021)	**<0.001**	0.016 (0.015, 0.018)	**<0.001**	0.018 (0.016, 0.019)	**<0.001**
Greater disability	−0.001 (−0.002, 0.000)	0.127	−0.000 (−0.002, 0.001)	0.499	0.001 (−0.002, 0.000)	0.246
Greater number of medical disorders	−0.011 (−0.030, 0.009)	0.231	−0.006 (−0.025, 0.013)	0.449	−0.009 (−0.027, 0.008)	0.290
	Marginal R^2: 0.22[b]		Marginal R^2: 0.18[b]		Marginal R^2: 0.23[b]	
	AIC: 3015.35		AIC: 2965.69		AIC: 2594.00	
	BIC: 3108.41		BIC: 3058.75		BIC: 2687.06	

Statistically significant p values ($p < 0.05$) are indicated in bold

Controlling for clustering of participants in PHCs via a random intercept for PHC

[a] Centered around 60

[b] Snijders and Bosker fixed effects R^2 [55]