Risk factors of geriatric depression among elderly Bangladeshi people: A pilot interview study

Tasnim Rahman Disu[a], Nusrat J. Anne[b,e], Mark D. Griffiths[c], Mohammed A. Mamun[b,d,*]

[a] Department of Preventive and Social Medicine, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh
[b] Undergraduate Research Organization, Savar, Dhaka, Bangladesh
[c] Psychology Department, Nottingham Trent University, 50 Shakespeare Street, Nottingham, NG1 4FQ, United Kingdom
[d] Department of Public Health & Informatics, Jahangirnagar University, Savar, Dhaka, Bangladesh
[e] School of Public Health Independent University, Dhaka, Bangladesh

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ABSTRACT

Globally, geriatric depression (GD) has been recognized to be one of the most prevalent problems among the elderly. However, there is an only one previous Bangladeshi study addressing the issue. Consequently, the present study investigated GD and its associated risk factors. A semi-structured face-to-face interview was conducted among 168 self-reported healthy elderly residents (59.5% female) aged 60–80 years in Patuakhali city and the neighboring village. Measures included the Geriatric Depression Scale-15, socio-demographic variables, psychosocial factors, physical health-related factors, lifestyle factors, and dietary factors. Results showed the GD prevalence rate was 36.9% (n = 62). Risk factors for GD included living in a rural area, having no history of chronic disease, having a history of previous personal and/or family depression, not engaging in daily life activities, not exercising regularly, having no hobbies, having a poor diet, and not engaging in religious practices regularly. The GD prevalence rate was generally higher compared to previous studies in other countries. This may have been due to the inclusion criterion of selecting self-reported healthy elderly individuals. It is recommended that a nationally representative study is carried out to assess the actual figure of GD in Bangladesh. The findings are helpful for depression-reducing intervention programs.

1. Introduction

Given the increasing life expectancy across most countries worldwide, the proportion of elderly individuals has substantially increased (including Bangladesh, where the present study was carried out) over the past few decades. Several physical and mental health consequences are related to age-specific suffering and are increased among the elderly (Barikdar et al., 2016; Khanam et al., 2011; Jindal et al., 2019; Shahar et al., 2011; WHO, 2018). Among mental morbidities, depression is arguably the most prevalent geriatric health concern, which reduces quality of life and increases healthcare utilization costs (Abe et al., 2012; Luppa et al., 2012). Depression is a heterogeneous-multifactorial mental disorder with diverse phenotypes across individuals, and can occur across the lifespan (Barcelos-Ferreira et al., 2013).

Depression is usually defined as anyone having the symptoms of mood alterations, feelings of guilt, sleep problems and insomnia, reduced appetite, reduced energy, increased fatigue, loss of interest in daily activities, and/or poor concentration on tasks (Arafat et al., 2019;

Kessler and Bromet, 2013; Indu et al., 2017; Mamun et al., 2019b; Nejati et al., 2019). The World Health Organization (WHO) predicted that depression would be the second most prevalent burdensome health condition (after ischemic heart disease) by the year 2020 (Kessler and Bromet, 2013). Moreover, it is also asserted that depression – along with other psychiatric disorders – are responsible as proximal risk factors in up to 90% of suicide cases (Arafat, 2019; Arafat and Mamun, 2019; Fleischmann et al., 2005; Harris and Barraclough, 1997). Recent studies have suggested that the majority of elderly individuals who commit suicide had major depression, although multiple other reasons can also be involved in most cases (Manthorpe and Iliffe, 2010; Oon-arom et al., 2019).

Geriatric depression (GD) – also known as late-life depression – refers to depression where the onset begins after the age of 60 years (Grover et al., 2019; Van Damme et al., 2018). The latest (fifth) edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines clinical GD as comprising anhedonia (losing interest in what were previously enjoyable entertainment activities) and/or having a

depressed mood through most of the day along with (four or more) other features: (i) significant decrease or increase in weight or appetite; (ii) insomnia or hypersomnia, (iii) fatigue, psychomotor agitation, or retardation; (iv) diminished ability to concentrate or make decisions; (v) feelings of worthlessness or inappropriate guilt; and (vi) recurrent thoughts of death or suicidal ideation (American Psychiatric Association, 2013; Van Damme et al., 2018).

Several risk factors (i.e., biological, social, psychological, environmental, etc.) have been suggested in the development of GD (Van Damme et al., 2018). However, the prominent risk factors of GD include being female, older, single or widow, smoker, drug user and multiple medication user, having lower educational status, low income, being unemployed, lack of health insurance, poor physical health (e.g., multiple comorbidities, sleeping disorders, etc.), frailty (e.g., weight loss, decreased handgrip strength, slowness, exhaustion, low physical activity, etc.), loneliness, lack of social, support, stressful life events, poverty, nutritional deficits, cognitive impairment, and neurodegenerative disease (Barcelos-Ferreira et al., 2013; Cong et al., 2015; Domènech-Abella et al., 2018; Luppa et al., 2012; Sözeri-Varma, 2012; Van Damme et al., 2018; Yaka et al., 2014; WHO, 2018).

It is estimated that approximately 900 million are elderly people (aged 60 + years) which accounts for 12% of total global population. It is predicted that this number will more than double (to two billion) by the year 2050 and that 80% of these individuals will be living in low- and middle-income countries such as Bangladesh. Approximately 15% of elderly individuals suffer from a mental disorder, and 7% of elderly individuals globally are reported as having depression (WHO, 2018). At present, Bangladesh – the tenth densely populated country worldwide – has an elderly population of 14 million (7.7% of the total population), which is estimated to increase to 17.2 million by 2025 (Bangladesh Bureau of Statistics, 2015). However, there are no national statistics relating to mental health suffering in the country. Moreover, the growth of the elderly population provides challenges for Bangladesh alongside the decline in both fertility and mortality rates in early life have resulted in increased life expectancy (Khanam et al., 2011). However, there is a lack of study concerning the issues of geriatric problems in Bangladesh. In relation to depression, only one previous study has been conducted (Das et al., 2014), which means there is a large knowledge gap in the country, where increased information would be helpful in preventive approaches. Therefore, the present study investigated geriatric depression and its socio-demographic predictors among elderly Bangladeshi individuals.

2. Methods

2.1. Participants, design, and procedure

The study was cross-sectional in nature and conducted among the residents of Patuakhali city and its neighboring village between July 2018 and June 2019. The principal investigator (PI) randomly knocked on people's houses and enquired whether anyone elderly lived in the house. Participants who agreed to take part were interviewed by the PI at the participant's house. Each interview lasted approximately 40 minutes and all interviews took place on Bangladeshi weekends (Fridays and Saturdays). Participants were included in the study if they were (i) aged between 60 to 80 years old, (ii) said they were not currently suffering from any kind of illness or sickness on the day of the interview (excluding long-term chronic illnesses) because this may have artificially increased the prevalence rate of depression in the sample, (iii) spoke Bangla (the language in which the interviews were conducted), and (iv) capable of giving informed written (or verbal) consent. A purposive convenience sampling technique was utilized among 350 elderly individuals, where a total 188 participants met the inclusion criteria of participating in the study and were surveyed. Twenty elderly individuals declined to be interviewed for the study leaving a final sample size of 168 participants (89% response rate). The data were

collected utilizing a semi-structured face-to-face interview, which included five sections: (i) socio-demographic variables, (ii) psychosocial factors, (iii) physical health-related factors, (iv) lifestyle and dietary factors, and (v) the Geriatric Depression Scale.

2.2. Measures

2.2.1. Socio-demographics

Information concerning socio-demographic variables included age, gender, religion, family income, educational status, accommodation type, marital status, employment status, and family type. Although the country has four major religions, only two (i.e., Islam and Hinduism) were found in the present sample. Family income was used as an indicator of social class: less than 10,000 BDT (lower class), 10,000 to 20,000 BDT (middle class), and more than 20,000 BDT (upper class) (based on the recommendations of Mamun et al., 2019c). The marital status of being single included those who were divorced and widowed (because there were so few participants in these categories).

2.2.2. Psychosocial factors

A wide range of psychosocial variables (i.e., peer group support, living alone, bonding with family, social support, stressful life events, perceived health status, history of previous family depression, etc.) were also assessed. For assessing peer group support, participants were asked if they received any type of support from friends, whereas social support was assessed by asking about involvement with social welfare activities.

2.2.3. Physical health-related factors

The participants were asked as if they had any history of suffering from chronic disease. They were also asked about the current perception of their health condition.

2.2.4. Lifestyle and dietary factors

This study also assessed the lifestyle and dietary-related variables such as engagement in daily activities, smoking status, amount of regular exercise, types of hobby (if any), dietary habits, and religious practices using a 'yes/no' binary response. For assessing, daily activities, participants were asked if they performed daily activities on their own such as shopping, household chores, washing clothes, etc., whereas regular exercise was considered if they had light exercise such as walking, playing a game, cycling, swimming, and/or any other activity lasting at least 30 min daily (Mamun et al., 2019a).

2.2.5. Geriatric depression scale

Depression was assessed with Geriatric Depression Scale-15, the most well-established scale for assessing elderly depression, which has been tested and widely used in both community and clinical settings (Yesavage et al., 1982). The GDS assesses depressive symptoms experienced in the preceding week. The scale comprises 15 questions requiring a binary ('yes/no') response. Of the 15 items, 10 indicate the presence of depression when answered positively, while the remainder (Items 1, 5, 7, 11, and 13) indicate depression when answered negatively. The scale has a total score of 15, where depression level is classified into normal (scores 0–4); mild depression (scores 5–8); moderate depression (scores 9–11); and severe depression (scores 12–15) (Pramesona and Taneepanichskul, 2018). A score > 5 indicates probable depression (El-Gilany et al., 2018; Reyes Fernández et al., 2016). The internal consistency of the scale in the present study was very good (Cronbach's alpha = 0.85).

2.3. Statistical analysis

Data were analyzed using 22.0 version of SPSS (Statistical Package for Social Sciences) software. Descriptive statistics including frequency, percentage, means, standard deviations, and inferential statistics (i.e.,

correlation and regression analysis) were carried out to assess the relationship between variables and depression status. All the variables statistically significant in bivariate analysis, were entered into the binary logistic regression models. The results of logistic regression are reported as unadjusted and adjusted odds ratios with 95% confidence intervals and all association with a *p*-value less than 0.05 were regarded as significant for this study.

2.4. Ethics

This study was approved by the Ethical Review Committee of National Institute of Preventive and Social Medicine (NIPSOM, Mohakhali, Dhaka, Bangladesh). Before each interview, informed consent (verbal for illiterate individuals) was obtained from every participant by informing the purpose and procedure, expected duration, nature, and anticipated physical and psychological risks and (no typical financial or commercial) benefits of participating. Confidentiality of data and privacy of the participants was strictly maintained.

3. Results

The GD prevalence rate among the participants was 36.9% (n = 62). The participants' socio-demographic information is presented in Table 1. Three-fifths of participants were female (59.5%), 50% were from a rural area, 35.7% were single (including divorced and separated individuals), half of them were only educated up to Grade 5 (i.e., 11 years of age; 51.2%), and 60.1% were unemployed. Of the psychosocial factors, 58.9% had received peer group support, 10.1% lived alone, most had a good family bonding (85.7%), and 19.6% had a history of personal and/or family depression. Among physical health-related variables, 40.5% had a good perception about their health condition and 50% had a history of suffering chronic diseases. Two-thirds of participants engaged in daily life activities (63.1%), half of them were smokers, 14.3% exercised regularly, 31.5% had at least one hobby, 57.7% had good dietary habits, and 78.6% performed religious activities regularly (Table 1).

With regards to permanent residence, rural participants were significantly more likely than urban participants to have GD (44.0% rural vs. 29.8% urban; χ^2 = 3.681, df = 1, p = 0.05). Participants with a history of previous personal depression or family depression was more prone to GD compared to those with no history (51.5% vs. 33.3%; χ^2 = 3.765, df = 1, p = 0.05). Participants with no chronic disease history had higher GD rate (44.0%) than those who did not (29.8%) (χ^2 = 3.681, df = 2, p = 0.05). Those not performing daily life activities (50.0% vs. 29.2%; χ^2 = 7.237, df = 1, p = 0.007), not exercising regularly (40.3% vs. 16.7%; χ^2 = 4.925, df = 1, p = 0.026), and not having any hobbies (43.5% vs. 22.6%; χ^2 = 6.765, df = 1, p = 0.009) had higher GD rates. Having a poor diet habit (57.7%) was significantly associated with GD compared to those who did (21.6%) (χ^2 = 22.939, df = 1, p < 0.001). Participants who did not engage in religious practices were significantly more prone to depression (63.9% vs. 29.5%; χ^2 = 14.328, df = 1, p < 0.001) (Table 1).

A regression analysis was carried out to examine the associations between GD and all the variables significant at 0.05 level or below. Risk factors for GD included living in a rural area, having no history of chronic disease, having a history of previous personal and/or family depression, not engaging in daily life activities, not exercising regularly, having no hobbies, having a poor diet, and not engaging in religious practices regularly (Table 2)

4. Discussion

The present study found a GD prevalence rate of 36.9%. The only previous Bangladeshi study conducted in the rural area of the Mirzapur sub-district reported 42% were mildly depressed and that 17% were severely depressed (Das et al., 2014). A different Bangladeshi study

among the rural residents of Narail upazila reported that 58.7% of those aged 60–69 years were suffering psychological distress. This increased to 65.7% among those aged 70–79 years, and 71.8% among those aged 80+ years (Islam, 2019). However, depression rates among other cohorts (such as students, hospitalized patients, etc.) have been reported as being up to 65% (e.g., Asghar et al., 2007; Islam et al., 2016; Mamun and Griffiths, 2019; Mamun et al., 2019a; Mamun et al., 2019b; Rafi et al., 2019; Roy et al., 2012).

Compared to other worldwide studies, GD rates have been reported to be 3.8% in Brazil (Barcelos-Ferreira et al., 2013), 42.5% in Indonesia (Pramesona and Taneepanichskul, 2018), 10.5% in China (Cong et al., 2015), 44.4% in Egypt (El-Gilany et al., 2018), 18.5% in Turkey (Yaka et al., 2014), 23.7% in Thailand (Wongpakaran et al., 2019) and 14.4% in India (Pilania et al., 2017). A cross-national study among 13 cities of nine lower and middle income countries estimated the prevalence rate of GD to be 1.0% to 38.6% among those aged 65 years and over (Guerra et al., 2016), whereas a study among ten European Union countries reported GD rates ranging from 18.1% to 36.8% (Ladin, 2008). In a recent systematic review and meta-analysis, the prevalence of major depression was reported as being 7.2% (ranging from 4.6% to 9.3%), and the prevalence of depressive disorders was reported as being 17.1% (ranging from 4.5% to 37.4%) among those aged 75 years and older (Luppa et al., 2012).

The GD prevalence in the present study was lower than previous Bangladeshi study conducted among elderly but higher than many other elderly cohorts globally. This was probably because one of the key exclusion criteria was not having a current illness or sickness (excluding long-term chronic conditions). If the sample had included those with current illness, the prevalence rate of GD may have been higher. The findings also suggested that participants with long-term chronic diseases were less likely to have depression. This suggests that such individuals had learned to live with and accept the chronic conditions they had.

Given that rural elderly individuals are more likely to live with their extended family (compared to living within a nuclear family) they are likely to have closer relationships with their family members because those family members living in city environments are more likely to have jobs that keep them away from their elderly retired relatives., where greater stable social interaction negatively mediates the development of depression (El-Gilany et al., 2018; Pilania et al., 2017). Approximately 65% of the Bangladeshi population lives in rural areas where the relationships between family members tend to be better than those living in cities because elderly individuals tend to be left on their own in city residences (Trading Economics, 2016). Therefore, there is arguably less of a possibility of being depressed among elderly Bangladeshi individuals compared to those who live in the city (because of increased social isolation). However, the present study found those who lived in rural areas were significantly more likely to be depressed compared to those who lived on the city. There is no obvious reason why this is the case (and may simply be a result of a methodological factor such as the sample being relatively small and recruited via convenience sampling). Consequently, further investigation of this unexpected finding is needed.

For many years, empirical studies have shown that mood disorders such as depression are heritable within the family and associated with history of previous personal depression (Dennis and Ross, 2006; Tenev et al., 2009; Wurtman, 2005). The present study also found that individuals with personal and/or familial depression were more likely to experience depression. Depression is associated with decreased energy, increased fatigue, loss of interest in daily activities, and poor concentrate on tasks (Arafat et al., 2019; Kessler and Bromet, 2013; Mamun et al., 2019b). In the present study, elderly individuals that engaged in sweat-producing activities (i.e., performing daily household activities, engaging in regular exercise, etc.) had lower levels of depression as has been found in previous studies (Li et al., 2016; Tsai et al., 2013; Tu et al., 2012). It was reported that elderly individuals performing

Table 1

Distribution of the socio-demographic variables with depression.

Variables	Total (n; %)	Depression status		X^2 test value	df	p-value
		No; n (%)	Yes; n (%)			
Socio-demographics						
Gender						
Female	100; 59.5%	66 (66.0)	34 (34.0)	0.895	1	0.344
Male	68; 40.5%	40 (58.8)	28 (41.2)			
Age group						
60–65 years	91; 54.2%	56 (61.5)	35 (38.5)	1.003	2	0.606
66–70 years	48; 28.6%	33 (68.8)	15 (31.3)			
71–80 years	29; 17.3%	17 (58.6)	12 (41.4)			
Permanent residence						
Urban	84; 50%	59 (70.2)	25 (29.8)	3.681	1	0.050
Rural	84; 50%	47 (56.0)	37 (44.0)			
Religion						
Islam	150; 89.3%	94 (62.7)	56 (37.3)	0.110	1	0.740
Hinduism	18; 10.7%	12 (66.7)	6 (33.3)			
Marital status						
Single	60; 35.7%	36 (60.0)	24 (40.0)	0.384	1	0.535
Married	108; 64.3%	70 (64.8)	38 (35.2)			
Monthly income (BDT)						
Less than 10,000	75; 44.5%	41 (54.7)	34 (45.3)	4.472	2	0.107
10,000 to 20,000	52; 31.0	35 (67.3)	17 (32.7)			
More than 20,000	41; 24.4%	30 (73.2)	11 (26.8)			
Educational qualification						
Higher (grad 10 +)	46; 27.4%	34 (73.9)	12 (26.1)	3.280	2	0.194
Grad 5 to 10	36; 21.4%	22 (61.1)	14 (38.9)			
Less than grad 5	86; 51.2%	50 (58.1)	36 (41.9)			
Accommodation type						
Kacha house	69; 41.1%	38 (55.1)	31 (44.9)	4.104	2	0.128
Semi Paka house	44; 26.2%	28 (63.6)	16 (36.4)			
Paka house	55; 32.7%	40 (72.7)	15 (27.3)			
Employment status						
Employed	67; 39.9%	45 (67.2)	22 (32.8)	0.792	1	0.373
Unemployed	101; 60.1%	61 (60.4)	40 (39.6)			
Family type						
Nuclear family	124; 73.8%	78 (62.9)	46 (37.1)	0.007	1	0.931
Joint family	44; 26.2%	28 (63.6)	16 (36.4)			
Psychosocial factors						
Having peer group support						
Yes	99; 58.9%	68 (68.7)	31 (31.3)	3.237	1	0.072
No	69; 41.1%	38 (55.1)	31 (44.9)			
Living alone						
Yes	17; 10.1%	9 (53.9)	8 (47.1)	0.837	1	0.360
No	151; 89.9%	97 (64.2)	54 (35.8)			
Bonding with family						
Good	144; 85.7%	91 (63.2)	53 (36.8)	0.0004	1	0.948
Not so good	24; 14.3%	15 (62.5)	9 (37.5)			
Having social support						
Good	132; 78.6%	85 (64.4)	47 (35.6)	0.446	1	0.504
Not so good	36; 21.4%	21 (58.3)	15 (41.7)			
Having recent stressful life events						
Yes	53; 31.5%	27 (50.9)	26 (49.1)	4.910	1	0.027
No	115; 68.5%	79 (68.7)	36 (31.3)			
Having a history of previous personal depression and/or family depression						
Yes	33; 19.6%	16 (48.5)	17 (51.5)	3.765	1	0.050
No	135; 80.4%	90 (66.7)	45 (33.3)			
Physical health-related factors						
Having a good or bad perception about health condition						
Good	68; 40.5%	48 (70.6)	20 (29.4)	2.755	1	0.970
Not so good	100; 59.9%	58 (58.0)	42 (42.0)			
Having a history of chronic disease						
Yes	84; 50%	59 (70.2)	25 (29.8)	3.681	1	0.050
No	84; 50%	47 (56.0)	37 (44.0)			
Lifestyle and dietary factors						
Engaging in daily life activities						
Yes	106; 63.1%	75 (70.8)	31 (29.2)	7.237	1	0.007
No	62; 36.9%	31 (50.0)	31 (50.0)			
Smoking history						
Yes	84; 50%	51 (60.7)	33 (39.3)	0.409	1	0.522
No	84; 50%	55 (65.5)	29 (34.5)			
Exercising regularly						
Yes	24; 14.3%	20 (83.3)	4 (16.7)	4.925	1	0.026
No	144; 85.7%	86 (59.7)	58 (40.3)			

(*continued on next page*)

Table 1 (*continued*)

Variables	Total (n; %)	Depression status		X^2 test value	df	*p*-value
		No; *n* (%)	Yes; *n* (%)			
Having any hobby						
Yes	53; 31.5%	41 (77.4)	12 (22.6)	6.765	1	0.009
No	115; 68.5%	65 (56.5)	50 (43.5)			
Having a poor diet						
Yes	97; 57.7%	76 (78.4)	21 (21.6)	22.939	1	< 0.001
No	71; 42.3%	30 (42.3)	41 (57.7)			
Having a vegetarian diet						
Yes	61; 36.3%	38 (62.3)	23 (37.7)	0.026	1	0.871
No	107; 63.7%	68 (63.6)	39 (36.4)			
Engaging in religious practices						
Yes	132; 78.6%	93 (70.5)	39 (29.5)	14.328	1	< 0.001
No	36; 21.4%	13 (36.1)	23 (63.9)			

physical activities more than 5.2 hours per week were 60% less likely to be depressed compared to those who spent less than 2 hours per week (Bhamani et al., 2015). This may be because performing such activities mediates the release of various bodily chemicals (i.e., endorphins, norepinephrine, serotonin, etc.), which help prevent depression from occurring (Wang et al., 2018). The study also found that having no leisure time activities or hobbies was associated with depression, and confirms the findings of previous studies (e.g., Lee et al., 2012).

Having religious faith (and engaging in religious practices) is often regarded as helping maintain spiritual wellbeing and good mental health (Tu et al., 2012; Wittink et al., 2009). Those who engage in daily religious prayers have a daily structure and routine (e.g., Muslims pray five times a day, Hindus pray two to three times a day), and this discipline is likely to be helpful in relation to good mental health. Praying means that individuals have to get up in the early morning and go to bed early. Consequently, a structured and disciplined life is maintained and participants tend to be less depressed. Previous studies have shown that individuals with high levels of general religious involvement, organizational religious involvement, religious salience, and intrinsic religious motivation are at reduced risk for depressive symptoms and depressive disorders (McCullough and Larson, 1999; Tu et al., 2012). Furthermore, loss of faith is regarded as a strong predictor of depression

(Wittink et al., 2009), although a review by McCullough and Larson (1999) showed that specific religious beliefs have no reliable relationship with depression in some cases. However, it is believed that having religious faith and engaging regularly in spiritual and religious activities have the capacity to act as a passive medical treatment method and which may help alleviate depression (Wittink et al., 2009).

The generalizability of findings in the present study are limited by the cross-sectional nature of the data, the small sample size, the use of self-report, and the non-representative sample from Patuakhali city and the neighboring village. Those who said they had a current illness or sickness (excluding long-term chronic conditions) were excluded from the study. Therefore, the prevalence of GD was always likely to be lower. Despite these limitations, the study suggested a wide range risk factors in a country where there is a lack of available data.

5. Conclusions

Elderly people with depression appear to have a greater risk of suicide and suicidal behaviors (Manthorpe and Iliffe, 2010; Oon-arom et al., 2019; Rodda et al., 2011). Reducing the occurrence of GD may be possible if there is robust data on related factors, which can be used to help reduce potentially life-threatening behaviors (e.g., suicidal

Table 2
Logistic regression analysis of the variables with depression.

Variables	Unadjusted model			Adjusted model		
	Odds ratio (OR)	95% Confidence Interval (CI)	*p*-value	Adjusted odds ratio (AOR)	95% Confidence Interval (CI)	*p*-value
Living residence						
Rural	1.858	(0.984–3.509)	0.056	2.048	(0.888–4.724)	0.93
Urban	Reference			Reference		
Having a history of chronic disease						
Yes	0.538	(0.285–1.017)	0.056	0.603	(0.279–1.300)	0.197
No	Reference			Reference		
Having a history of previous personal depression and/or family depression						
Yes	2.125	(0.983–4.593)	0.055	2.248	(0.848–5.963)	0.104
No	Reference			Reference		
Engaging in daily life activities						
Yes	0.413	(0.216–0.792)	0.008	0.644	(0.295–1.405)	0.269
No	Reference			Reference		
Exercising regularly						
Yes	0.297	(0.96–0.913)	0.034	0.732	(0.182–2.949)	0.660
No	Reference			Reference		
Having any hobby						
Yes	0.380	(0.181–799)	0.011	0.611	(0.229–1.628)	0.325
No	Reference			Reference		
Having a poor diet						
Yes	0.202	(0.103–0.397)	< 0.001	0.258	(0.116–0.574)	< 0.001
No	Reference			Reference		
Engaging in religious practices						
Yes	0.237	(0.109–0.515)	< 0.001	0.198	(0.077–0.506)	< 0.001
No	Reference			Reference		

ideation) and the present study provided such data in the Bangladeshi context. The findings of the present study will be helpful for prevention programs regarding the mental wellbeing of elderly (i.e., providing evidence-based information for depression risk-reducing programs, mental health education, awareness rising programs, etc.).

Authors contributions

TRD and MAM contributed to the conceptualization. TRD conducted the project administration. TRD and NJA contributed to the data curation. MAM conducted the data interpretation and formal analysis. TRD, NJA, MDG and MAM contributed to the draft themes. MAM contributed to the resources and writing of the original draft. Review and editing were done by TRD, NJA, MDG, and MAM. MDG and MAM addressed the reviewers' comments and prepared the final revised draft.

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Declaration of Competing Interest

None.

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