

Sociodemographic Factors Associated with Depressive Symptoms among Elderly Persons from Two Communities in Kingston, Jamaica

RC Gibson, SM Neita, WD Abel, K James, D Eldemire-Shearer

ABSTRACT

Objective: To explore possible associations of age, gender, socio-economic status, educational level and level of cognitive functioning with depressive symptoms in a community sample of elderly persons.

Method: Two hundred elderly persons from two communities in Kingston, Jamaica, were randomly selected for participation in the study. They or their caregivers provided sociodemographic information and participants also completed the Zung Self-rating Depression Scale (ZSDS) and the Mini Mental Status Examination (MMSE). Variables of interest were entered in a multiple variable regression model using ZSDS score as the outcome variable.

Results: Predictors of depression were older age ($B = 0.26$, $se = 0.08$, $p < 0.01$), female gender ($B = 3.98$, $se = 1.44$, $p < 0.01$), low socio-economic status ($B = 5.14$, $se = 1.50$, $p = 0.01$) and low level of cognitive function ($B = -0.38$, $se = 0.18$, $p < 0.05$). No statistically significant association was found between educational attainment and depressive symptoms.

Conclusion: The findings highlight the need for further exploration of the extent to which the associations identified are relevant for the overall population of elderly persons as well as the potential value of targeted preventive and treatment interventions.

Keywords: Caribbean region, depression, elderly, Jamaica

Factores Sociodemográficos Asociados con Síntomas Depresivos entre Personas Mayores de Dos Comunidades en Kingston, Jamaica

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RESUMEN

Objetivo: Explorar posibles asociaciones de edad, género, estatus socioeconómico, nivel educacional, y nivel de funcionamiento cognitivo con síntomas depresivos en una muestra de la comunidad de personas mayores.

Método: Doscientas personas mayores de dos comunidades en Kingston, Jamaica, fueron seleccionadas al azar para participar en el estudio. Las personas o sus cuidadores proporcionan información sociodemográfica, y los participante stambién completaron la Escalade Autoevaluación para la Depresión de Zung (ZSDS) y el Mini Examen del Estado Mental (siglas MMSE en inglés). Las variables de interés fueron introducidas en un modelo de regresión variable múltiple usando la puntuación de ZSDS como la variable de resultado.

Resultados: Los predictores de la depresión fueron mayores ($B = 0.26$, $se = 0.08$, $p < 0.01$), sexo femenino ($B = 3.98$, $se = 1.44$, $p < 0.01$), bajo estatus socio-económico ($B = 5.14$, $se = 1.50$, $p = 0.01$) y bajo nivel de función cognitiva ($B = -0.38$, $se = 0.18$, $p < 0.05$). No se hallaron asociaciones estadísticamente significativas entre el nivel educacional y los síntomas depresivos.

Conclusión: Los hallazgos resaltan la necesidad de continuar explorando hasta que punto las asociaciones identificadas son pertinentes para la población total de personas de edad avanzada, así como el valor potencial de las intervenciones preventivas y de tratamiento planificadas.

Palabras claves: Caribe, depresión, personas mayores, Jamaica

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INTRODUCTION

Depression is one of the leading causes of disease burden worldwide (1) and has been found to be more prevalent among elderly persons than other age groups (2). The prevalence of depression in older persons has been associated with negative outcomes which affect both the individual and society at large. Elderly persons with depressive symptoms have been shown to have a higher disability burden than elderly persons without depression (3), and the disability burden tends to worsen over time in cases of persisting symptoms of depression (4). Healthcare costs have also been shown to be significantly greater among persons with depressive symptoms compared to those without (5).

It is therefore important to identify the presence of depression in elderly persons and to initiate appropriate treatments as necessary. The recognition of cases of depression in the elderly may be made easier with knowledge about the sociodemographic factors which are associated with the condition in this group. Such factors have been studied in a number of settings (6–9). However, the extent to which they may be relevant to the Caribbean elderly has not been clearly shown. This study aims to explore the association of socio-economic status, age, gender, educational attainment and cognitive functioning with depression.

Previous research has shown that, in the elderly, low socio-economic status is associated with depression (6, 8) as are female gender (6, 7), increasing age (9), low educational level (8) and cognitive impairment (8, 9). We hypothesize that similar associations will be found among community dwelling elderly persons in Kingston, Jamaica.

Ethical approval for this study was obtained from the University Hospital of the West Indies/University of the West Indies/Faculty of Medical Sciences Ethics Committee.

SUBJECTS AND METHOD

The data used in this paper were collected for another study which was a postgraduate research project of one of the authors (SN) and which explored dementia prevalence and risk factors.

Data were obtained from a cross-sectional community survey. Eligible participants were persons aged 60 years and over, in keeping with previous research on mental health issues among older Jamaicans (10). The study was conducted over the months of February to July 2010 in the communities of August Town and Mona Heights in Kingston, Jamaica. These two communities were purposely selected to facilitate socio-economic contrast. August Town is a low-income community (11) [population over age 60 years: 6269, 53.0% female (12)] and Mona Heights is a middle-income community (13) [population over age 60 years: 4111, 58.9% female (12)]. Community was used as a proxy measure of socio-economic status.

Each community was divided according to its enumeration district (ED) and as determined by the Statistical Institute of Jamaica (STATIN), each community had

nine. The ED served as the basic sampling unit and all EDs in each community were sampled. For each community, the number of participants obtained from each ED was proportional to the population size of the ED. The Statistical Institute of Jamaica has a list of the persons and the location of their abodes in the communities that were studied. The required number of participants was randomly selected from the eligible persons in the EDs, using a pen-spin method. In each ED, an origination point was chosen; this was a central location in centred areas, or an end of a road closest to the mark of origin on the ED map from STATIN in uncentred areas. From the origination point, a direction in which to move or a road to use was determined randomly by spinning a pen, if it was a centred area; or rolling a die, for areas with multiple non-central roads; or flipping a coin, to decide between two alternatives (*eg* right and left). Houses between the origination point and the periphery along that direction or road were enumerated and a house was randomly selected, using a table of random numbers; the house chosen served as the starting point for interviews. Recruitment was done at successive households until the designated number of participants was obtained from each ED. If an insufficient number of participants was obtained by reach of the periphery, the sequence was started again at the first household of the road. Another direction or road in the ED could be chosen by the random method if the required number of participants was not available on the one chosen.

The sample consisted of a total of 200 persons, 100 being identified from each of the two communities previously mentioned. The sample size was determined with the objective of obtaining sufficient statistical power to perform analyses that were able to detect significant correlations (Spearman's correlation coefficient ≥ 0.20 in magnitude). It was determined that a sample size of 194 would provide statistical power of 80% to demonstrate a correlation of strength ≥ 0.20 with statistical significance at $p < 0.05$; hence the sample size of 200 used.

The instruments used in the survey included the Zung Self-rating Depression Scale [ZSDS] (14), the Health and Social Status Questionnaire (HSSQ) and the Mini-Mental State Examination [MMSE] (15).

Zung Self-rating Depression Scale

The ZSDS (14) is a 20-item instrument for determining depression severity. Affective, cognitive, behavioural and physiological symptoms of depression are covered and items are rated on a four-point Likert scale; raw scores are summed, and then indexed to give a final score. Score ranges are: normal (< 50), mild (50–59), moderate (60–69), and severe (≥ 70) depression.

The ZSDS has been validated in Jamaica (16) and was found to have good reliability (Cronbach's $\alpha = 0.813$). Though designed to be a self-administered measure, it was administered by trained interviewers to address expected challenges with literacy, cognitive and visual abilities in the

sample population. Past research (17) has shown a significant correlation between the ZSDS when orally administered and depression diagnosed by clinicians. In a study among elderly individuals (18), the ZSDS has also shown comparable sensitivity and superior positive predictive value when compared with other depression scales such as the Geriatric Depression Scale [GDS] (19) and the Center for Epidemiologic Studies Depression (CES-D) scale (20).

Health and Social Status Questionnaire (HSSQ)

This questionnaire was developed by one of the authors (DE) and covers a wide range of demographic, health and social issues relevant to older persons. The parameters explored by the HSSQ which were of relevance to this paper were age, gender and educational level.

Mini-Mental State Examination

The MMSE (15) is a standardized assessment scale, widely used to identify and monitor the progression of cognitive impairment in neurodegenerative conditions. It evaluates the cognitive domains of orientation, memory, concentration, language and praxis. In keeping with research elsewhere (21, 22), a cut-off score of 24 was used in this study. The MMSE has shown good convergent validity with other measures of cognitive functioning (23, 24).

Variables of interest

The variables of interest were: the presence and severity of depression (determined by ZSDS score), age, gender and educational level (extracted from the HSSQ), socio-economic status (determined by community of residence) and level of cognitive functioning (determined by MMSE score).

Data were analysed using the statistical software package Predictive Analysis SoftWare (PASW) version 18, release 18.0.0. A multiple variable regression model was used to explore the extent to which age, gender, socio-economic status, level of cognitive functioning and educational level were predictors of depression, as measured by ZSDS score. Statistical significance was taken at $p < 0.05$.

RESULTS

Of the total sample of 200 participants, 71 (35.5%) were male and 129 (64.5%) were female. This is comparable to population figures (within six percentage points) as shown in Table 1. Participants' ages ranged from 60 to 100 years (mean 73.9 years, standard deviation 8.9 years). An equal number of participants came from each of the two communities surveyed (Table 1).

In a preliminary regression model with ZDS score as the dependent variable and age, gender, socio-economic status, educational level and level of cognitive functioning as covariates, all covariates except educational level showed a statistically significant relationship with the ZDS score. For this reason, educational level was dropped from the final

Table 1: Characteristics of participants in a community survey of elderly persons in Kingston, Jamaica, February – July, 2010

	Study participants			Population of Kingston ≥ 60 years of age ^a	
	Mean ± SD	n	%	n	%
Age in years	73.9 ± 8.9	200	–		
Gender					
Male	–	71	35.5	27 537	41.3
Female	–	129	64.5	39 088	58.7
Community					
August Town	–	100	50.0		
Mona Heights	–	100	50.0		
Education^b					
Primary	–	101	51.025		
Secondary	–	51	25.5		
Tertiary	–	46	22.975		
ZSDS score	43.5 ± 10.5	200	–		

^aStatistical Institute of Jamaica, Demographic Statistics for Metropolitan region of Kingston and St Andrew, 2010.

^bData unavailable for two participants

regression model. This final model showed that depression was significantly associated with increasing age, female gender, lower socio-economic status, and lower level of cognitive functioning (Table 2).

Table 2: Predictors of depression among a community sample of elderly persons in Kingston, Jamaica, February–July, 2010

	Regression co-efficient	SE	<i>p</i>
Age	0.26	0.08	0.002
Gender	3.98	1.44	0.006
Socio-economic status	5.14	1.50	0.001
Level of cognitive functioning	-0.38	0.18	0.034

$R^2 = 0.181$

DISCUSSION

As expected, depression among the elderly persons who participated in the study was associated with increasing age, female gender, lower socio-economic status and lower level of cognitive functioning. Surprisingly, educational level showed no association with depression. However, it is possible that past associations between educational level and depression have been mediated by the effect of education on socio-economic status and cognitive functioning (a low educational level can be expected to be associated with low cognitive functioning and low socio-economic status) and that having controlled for these two issues in our analyses, education level on its own showed no association. Further exploration of the extent to which this explanation might be correct seems warranted and should be the subject of future research.

The fact that depression appears to be more prevalent among older persons within the elderly age-group is an important finding when viewed in the context that Jamaicans over the age of 80 years constitute one of the country's fastest growing population groups with a growth rate twice that of the over 60 population (25). As this demographic trend continues, the findings from this pilot community study would suggest a possible associated increase in depression prevalence overall along with all the attendant implications for affected individuals as well as for the society at large. However, further research on a larger and more representative sample of the Jamaican elderly is needed to clarify this issue. If a trend toward increasing rates of depression in the old elderly (elderly persons over 75 years of age) is confirmed, then it would be useful to encourage and practice the screening of depression as a routine element of medical examinations in this age group.

The finding that depression was more common among women than men is in keeping with a global gender profile for depression found among all post-pubertal age groups (26). Often, the increased prevalence among women has been attributed to greater detection among that gender because of the greater likelihood of them engaging in help-seeking behaviour as opposed to men (27). However, taking into account the methodology applied in this study, it would appear that help-seeking behaviour among the women who participated in this study is not the only factor contributing to their heightened risk for depression. A community survey research design, like the one used in this study, presumably gives both strong and weak help-seekers an equal opportunity of being selected and, in this case, of being tested for depression. Strong help-seekers cannot therefore be said to be over-represented in the women sampled in this study. It would appear that the women studied have a true increased risk of depression compared with their male counterparts. One could speculate that differences in social and cultural roles, norms, experiences and expectations may be responsible for the variability in depressive symptoms according to gender. Again, a study of these issues on a larger scale would be useful in guiding appropriate interventions at the national level.

Notwithstanding the limitation of using community characteristics as an indicator of individual socio-economic status, the study's findings are suggestive of poorer elderly persons being at risk of depression than those who are less poor. This is an expected finding and has significant implications for Jamaica where the poverty level has been as high as 16.5% in 2009 (28). Special attention to the vulnerable group of the poor elderly would seem warranted in order to help reduce the individual and societal effects of depression. However, further exploration of these issues on a nationally representative sample should first be carried out.

Finally, the study confirms the linkage between depression and impaired cognitive functioning in a Jamaican population; an association which has been reported in pre-

vious studies in different settings (29–31). The relationship between depression and cognition is a complex one with depression having been variously characterized as a prodrome, risk factor, psychological reaction and imitator of cognitive decline (29–31). It is therefore difficult to delineate where depression ends and where a cognitive disorder begins or vice versa. Equally difficult to accomplish is the accurate identification of depressive symptoms in the face of cognitive impairment. Nevertheless, where depressive symptoms can be determined to be present, they represent a poor prognostic factor for cognitive impairment. Depression confers the risk of more rapid cognitive deterioration, accelerated impairment in activities of daily living, lower quality of life, greater frequency of nursing home placement and greater mortality (32, 33). The heightened risk of these negative outcomes highlights the need for a more definitive exploration of the association between depression and cognitive function in Jamaican elderly.

In summary, the findings of this pilot study suggest that within the elderly population, old elderly, women, persons with cognitive decline and poorer persons may be disproportionately affected by depression. The generalizability of these findings to the overall population of elderly Jamaicans needs to be explored and appropriate interventions undertaken.

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