Correlates of Symptoms of Depression and Anxiety among Clinic Patients in Western Jamaica

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ABSTRACT

Objectives: *There is a paucity of studies on psychosocial disorders in clinic populations in Jamaica. Therefore, we sought to determine the prevalence and correlates of symptoms of depression and anxiety in a clinic population in western Jamaica.*

Methods: *A total of 338 participants from four outpatient clinics of the Western Regional Health Authority (WRHA) were screened for symptoms of depression and anxiety using questions from the Beck Depression Inventory-II and the Beck Anxiety Inventory. The Chi-square test was used to examine differences in symptoms of anxiety and depression by gender. Multivariate linear and logistic regression were used to examine the associations between symptoms and sociodemographic variables with significance set at* $p < 0.05$.

Results: *Approximately 30% of participants had moderate or severe depression symptoms while 18.6% had moderate or severe anxiety symptoms. Participants aged 30–39 years were more likely than older participants to have moderate or severe anxiety symptoms (odds ratio [OR]: 2.0, 95% confidence interval [CI]: 1.39, 5.56). Women reported a statistically significant higher prevalence of anxiety symptoms (10.0% vs 7.1%,* $p = 0.003$). *There was also a statistically significant difference between anxiety means by gender. Furthermore, income was found to be a significant predictor of anxiety for women only (*$p = 0.0113$). *Married persons were more likely than those who had never married to have moderate or severe anxiety symptoms (OR: 2.57, 95% CI: 1.14, 5.76).*

Conclusions: *Our findings suggest that the prevalence of depression may be higher than global estimates in similar outpatient settings. Screening and intervention efforts may need to focus on younger persons, women, and married persons.*

Keywords: Anxiety, depression, Jamaica, outpatient

Correlaciones de los Síntomas de Depresión y Ansiedad entre los Pacientes de los Consultorios de Jamaica Occidental

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RESUMEN

Objetivos: *Son escasos los estudios realizados sobre trastornos psicosociales en la población clínica de Jamaica. Por lo tanto, intentamos determinar la prevalencia y las correlaciones de los síntomas de depresión y ansiedad en una población clínica en Jamaica occidental.*

Métodos: *Un total de 338 participantes de cuatro clínicas de atención ambulatoria de la Dirección Regional de la Salud (conocida por sus siglas en inglés WRHA) fueron expuestos a una prueba de tamizaje a fin de detectar síntomas de depresión y ansiedad usando preguntas del Inventario de Depresión de Beck II y el Inventario de Ansiedad de Beck. La prueba de Chi-cuadrado fue utilizada para examinar las diferencias en los síntomas de ansiedad y depresión por género. Se usó la regresión lineal y logística multivariada para examinar las asociaciones entre los síntomas y las variables sociodemográficas con significación de* $p < 0.05$.

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Resultados: *Aproximadamente el 30% de los participantes presentaron síntomas de depresión moderada o severa, mientras que el 18.6% presentaron síntomas de ansiedad severa o moderada. Los participantes con edad de 30 a 39 años eran más proclives a presentar síntomas de ansiedad moderada o severa (odds-ratio [OR]: 2.0, 95% intervalo de confianza [IC]: 1.39, 5.56) que los participantes de mayor edad. Las mujeres reportaron una prevalencia mayor, estadísticamente significativa, de los síntomas de ansiedad (10.0% vs 7.1%,* p = 0. 003). *También hubo una diferencia estadísticamente significativa entre los promedios de ansiedad por género. Además, se halló que los ingresos constituyen un predictor significativo de ansiedad sólo para las mujeres (*p = 0.0113). *Las personas casadas tenían más probabilidades de presentar síntomas de ansiedad moderada o severa (OR: 2.57, IC del 95%: 1,14, 5.76) que las personas que nunca se habían casado.*
Conclusiones: *Nuestros hallazgos sugieren que la prevalencia de la depresión puede ser superior a la que indican los estimados globales para pacientes externos similares. El estudio señala la posibilidad de que los esfuerzos de tamizaje e intervención deban centrarse en las personas más jóvenes, las mujeres y las personas casadas.*

Palabras claves: Ansiedad, pacientes externos, depresión, Jamaica

INTRODUCTION

Psychosocial disorders are a global issue affecting both developed and developing countries and have been shown to decrease quality of life as well as have a negative association with health outcomes, especially in persons with chronic disease (1, 2). According to the World Health Organization (WHO), depression affects over 154 million people worldwide (3). Globally, there is a 15% lifetime prevalence of anxiety disorders (4). Approximately 6.7% of persons living in the United States of America (USA) have a 12-month prevalence of depression (4). In South Africa, a comprehensive study estimated that 9.8% of study participants had major depression while another 15.8% suffered from symptoms of anxiety disorders (5). In Latin America and the Caribbean, there was an increase in disability adjusted life years (DALYs) from 8.8% in 1999 to 21.0% in 2004 due in part to mental health disorders such as anxiety and depression (6). In studies of outpatient clinic populations conducted in China and Northern India, the prevalence of anxiety disorders was 9.8% and 11.1%, respectively (7, 8). In Northern India, 15.7% of participants had depression. Anxiety and depression are subcategories of psychosocial disorders that are related to or have a root cause in one's social condition (9).

Previous studies have examined the associations between depression and anxiety and social conditions such as victimization, violence, unemployment and marital status. An outpatient clinic study conducted in Trinidad and Tobago reported a positive association between abuse (both physical and sexual) and the presence of anxiety and/or depression (10). Of the 5.8% of women in the study who reported anxiety symptoms, 56% reported abuse (10). This study also reported that married women were more likely to be abused than non-married women. In a study by Asnani *et al*, a cohort of Jamaican patients with sickle cell disease (SCD) was assessed for loneliness and depression (11). The prevalence

of depression in the patients with SCD was 21.6% compared to 9.4% among controls (11). Furthermore, depression was positively associated with unemployment in this cohort [OR: 2.9, 95% CI: 1.6, 5.1] (11). A study of anxiety disorders in 5312 outpatient clinic attendees from 23 internal medicine departments in Shenyang, China, found that having an anxiety disorder was associated with having ever been married (OR: 3.5, 95% CI: 2.3, 5.4), receiving treatment for psychological issues at some time before the study (OR: 3.3, 95% CI: 1.8, 6.0), possessing spiritual values (OR: 1.9, 95% CI: 1.3, 2.9), having inadequate resources (OR: 1.5, 95% CI: 1.2, 1.9) and no college attendance [OR: 1.3, 95% CI: 1.02, 1.8] (7). Another study associated lower income and lower education level with a higher prevalence of depression as well as having more somatized symptoms than cognitive symptoms of depression in women (12). A meta-analysis of epidemiological studies has shown that there is an inverse correlation between depression and education level (13).

Women have a higher prevalence of symptoms of anxiety and depression than men (14). In a national survey in Australia, 17.9% of women *versus* 10.3% of men reported experiencing depression (15). In Latin America and the Caribbean, the prevalence of depression and anxiety in women is reported to be twice that of men (16). In a survey of persons in the USA aged 18 years and older by the National Institute of Mental Health (NIMH), women were 70% more likely to experience depression than men (4). A woman's education level has also been associated with her use of health services beyond primary care (17).

Depression and anxiety have also been shown to have negative social impacts on individuals and negative economic impacts on individuals as well as on countries. Depressed persons have been observed to have misperceptions about social cues, leading to feelings of futility (*ie* uselessness), decreased productivity, and social isolation (18). One study in the United Kingdom reported that

psychosocial disorders have become the most common reason for long-term absences from work (19). Furthermore, a study in France showed that persons who were treated for their psychosocial disorders were less likely to request sick leave and had increased productivity compared to untreated persons (20). Personal finances and national productivity are affected by the diminished work productivity of persons with untreated psychosocial disorders (19). Countries directly and indirectly bear the cost of psychosocial disorders through the cost of healthcare, social benefits, and lost tax revenue (21, 22).

Up to 20% of public health clinic attendees in developing countries suffer from symptoms of anxiety and/or depression. Persons in developing countries such as Jamaica have higher rates of psychosocial disorders compared to people in developed countries (23, 24). The reported prevalence of depression in the Jamaican population is 8% (25). Previous studies of psychosocial disorders in Jamaican medical populations have focussed on patients in mental hospitals (25), persons with chronic disease such as SCD (11), and persons with HIV/AIDS (26). The objectives of this study were (i) to determine if the prevalence of symptoms of anxiety and depression in a clinic population is higher than Jamaica's general population and estimates for outpatient clinical populations in other developing countries globally and (ii) to identify sociodemographic correlates of symptoms of depression and anxiety among Jamaicans attending outpatient clinics.

SUBJECTS AND METHODS

This study was approved by the University of Alabama at Birmingham's Internal Review Board (IRB), the Advisory Panel of Ethics and Medico-Legal Affairs in the Jamaican Ministry of Health, and the Western Regional Health Authority (WRHA).

A cross-sectional study was conducted in the major health clinics of the four parishes (Trelawny, St James, Hanover and Westmoreland) of the WRHA, Jamaica. Persons at the clinics were approached and asked if they had come to the clinic to see the physician for themselves. If the person answered in the affirmative, they became a potential interviewee and were told by the interviewer that the clinic was doing a survey of how patients were feeling over the past two to four weeks. If the patient expressed interest in the study, the interviewer briefly answered any questions that were asked. The interviewee was then taken through the informed consent process. Once informed consent was obtained, participants were asked to complete the questionnaire. Potential study participants were male and female adults (≥ 19 years) attending outpatient clinics in the parishes who, by self-report, were not previously diagnosed with a psychosocial disorder. A total of 390 patients were screened for participation of which 18 were excluded due to prior mental illness. An additional nine participants were excluded due to missing information on prior mental illness. Another 25 participants were excluded due to missing Beck Anxiety Inventory (BAI) or Beck Depression Inventory II (BDI-II) instrument scores.

Questionnaire

Demographic characteristics, health status, general well-being, and symptoms of anxiety and depression were assessed using a questionnaire. Three health status questions were taken from the Short Form-36 (SF-36) survey (27). These questions asked about the participant's perception of their current health and their mental and emotional health history.

The General Health Questionnaire (GHQ-12), questions from the BAI, and the BDI-II had all been previously standardized in the Jamaican population. The BAI and BDI-II were chosen based upon their conformity to the diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) and the International Classification of Diseases [ICD-10] (28–30). The 28-item version is the most widely used form of the GHQ (31). However, the 12-item form of the GHQ was used instead of the 28-item form because of consideration of the entire length of the survey to screen for psychosocial disorders in the population of interest. These questions assessed mood and activity.

The BAI was designed to distinguish anxiety from depression (29) and assesses "somatic symptoms" and "cognitive symptoms" (32). The items on the BAI are scored on a four-point scale from "not at all" to "I could hardly stand it" related to items such as "fear of losing control", "indigestion" and "difficulty breathing" (32). The possible score range of 0 to 63 points was divided into four major categories: mild (0–13), minimal (14–19), moderate (20–28) and severe (29–63).

The BDI-II was utilized in this study because it is based upon the diagnostic criteria for major depression as noted in the DSM-IV (33). The BDI-II performs well in a wide age range and has shown "high internal consistency, good test-retest reliability, and good construct and concurrent validity with other common measures of depression in clinical and nonclinical samples" (11). The items covered in the BDI-II include sadness and worthlessness. The question for sadness has four options, which range in scoring from zero to three. If a participant chose the option of zero this indicated that he or she was not feeling sad. However, by choosing the option of three, which states "I am so sad or unhappy that I cannot stand it", the participant chose the highest degree of sadness that was rated by the BDI-II in this particular category. The third option for worthlessness states, "I feel utterly worthless". The score range is from 0 to 63 points and scores were divided into four major categories as dictated by the BDI-II: mild (0–13), minimal (14–19), moderate (20–28) and severe (29–63).

Although Jamaica is an English-speaking country, there are many colloquialisms used in the setting of

Jamaica's form of creole, patois. The investigators, with major input from the Jamaican psychiatrist, determined that some items in the questionnaire could be interpreted differently by participants than their meaning in Standard English and should be phrased differently to elicit accurate responses from study participants. Therefore, changes were made to the GHQ-12, questions from the BAI and the BDI-II to fit the cultural vernacular. In the GHQ-12, item 3 asks, "Have you felt you were playing a useful part in things?" with possible responses of: 1) More so than usual, 2) Same as usual, 3) Less than usual, 4) Much less than usual. The question stem was read verbatim and then qualified by "Do you feel needed by friends and family?" Item 5 of the GHQ-12, which states "Have you felt constantly under strain?" was read verbatim and then qualified with "stress" as indicated by the Jamaican psychiatrist. Changes were also made to item 16 of the BAI, which asked about indigestion. The word "indigestion" was read and then the interviewer explained that it meant "upset stomach" as suggested by the consulting psychiatrist. The BDI-II was read verbatim except for item 17 which asked about the level of irritability. The question was read as written and then the interviewee was told that this means "miserable".

After the revisions were made to the questionnaire, it was pre-tested with 25 clinic attendees for face validity. Through this process it was ascertained that persons were able to understand the questions clearly and no further changes were needed. Interviews in the pre-testing stage lasted a maximum of 45 minutes.

Statistical analysis

Descriptive statistics of sociodemographic factors were reported as frequencies and percentages for categorical variables. A Chi-square test was used to assess possible associations between sociodemographic factors by gender. Continuous outcomes such as GHQ-12, BAI and BDI-II scores were reported as means for the study population and stratified by gender. *T*-tests were used to detect differences between the means of males and females for each construct measured. The prevalence of persons by symptom category and gender was tabulated for both depression and anxiety. A Chi-square test for association between symptom category and gender was also used for both depression and anxiety. Linear regression models were derived for continuous scores of BDI-II and BAI with independent variables such as age, marital status, and health status removed by backward selection. In addition to an overall model for BAI scores, separate models were derived for males and females due to the statistically significant difference in the BAI scores by gender. Predictors (independent variables) of BDI-II and BAI were retained in the model based on a significance level $p < 0.05$.

Logistic regression models were developed for both anxiety and depression to determine the prevalence odds ratios and predictors for moderate or severe symptoms. In the BDI-II model, participants with a score of ≥ 20 were categorized as having moderate or severe symptoms and were compared to participants with a score of < 20 who were categorized as having minimal or mild symptoms (29, 30). In the BAI model, participants with a score of ≥ 16 were categorized as having moderate or severe symptoms and were compared to those with a score of < 16 who were categorized as having minimal or mild symptoms (29, 30). Predictors retained in the logistic regression models were determined in the same manner as the predictors for the regression models. All statistical analysis was done with SAS version 9.2 and JMP 8 software (34, 35).

RESULTS

A total of 338 participants were retained for data analysis. Approximately 57% of participants were from St James, 28% were from Westmoreland, 17% were from Trelawny and 16% were from Hanover. Table 1 represents selected sociodemographic characteristics such as education level, employment, marital status, and monthly income of the study participants. Approximately 35% were ≥ 50 years old and 38.7% reported that they had never been married. The percentage of men who had never been married was 45.6% compared with 34% of women. Of the 307 participants that responded to the income question, approximately 57% made $\geq \$7000$ Jamaican ($78.45 US dollars (USD)) weekly; 11.4% refused to provide their income. Approximately 53% of men and women reported high school graduation. A higher percentage of men were employed (63%) than women (52%). Approximately 39.7% of persons lived by themselves or at least with one other person while 55.5% lived in a household of three to five persons and the remaining 4.8% lived in a household with at least six persons. The majority of respondents rated their health as good (36.5%) compared to a minority of respondents who rated their health status as poor (9.8%). Approximately 58% of respondents were taking medication for health conditions such as cardiovascular diseases and diabetes. The Chi-square test for statistically significant differences between males and females for sociodemographic characteristics and health status revealed only one variable with a statistically significant difference, number of persons in the household [$p = 0.0007$] (Table 1). This may mean that the number of persons living at home differentially affects males and females, and therefore the severity of depression and anxiety symptoms between males and females.

A significant association was found between gender and symptoms of anxiety (Table 2). Approximately 30% of participants had moderate or severe symptoms of depression [25% of males, 33.1% of females] (Table 2) and 18.7% of participants had moderate or severe symptoms of anxiety (15.8% of males, 20.3% of females). There was a higher prevalence of women (15.3%) with symptoms of moderate depression as compared to men (10.3%). However, in the moderate category of symptoms for anxiety there was a

Table 1:   Characteristics of study participants, Western Regional Health Authority, Jamaica 2010–2011

Characteristics	Male (n = 136)		Female (n = 202)		Total (n = 338)		χ^2, p
	n	%	n	%	n	%	
Age (n = 332)							4.6, 0.330
19–29 years	33	24.4	55	27.9	88	26.4	
30–39 years	30	22.2	37	18.9	67	20.1	
40–49 years	30	22.2	32	16.2	62	18.6	
≥ 50 years	42	31.2	73	37.0	116	34.8	
Weekly income* (n = 307)							7.1, 0.111
At least $7000	64	57.7	110	56.1	174	56.7	
Less than $7000	33	29.7	65	33.2	98	31.9	
Refused	14	12.6	21	10.7	35	11.4	
Education (n = 336)							0.08, 0.960
Primary or less	64	47.4	95	47.3	159	47.3	
High school or more	71	52.6	106	52.7	177	52.7	
Marital status (n = 336)							7.1, 0.130
Living with a partner	31	22.8	57	28.5	88	26.2	
Married	29	21.3	43	21.5	72	21.4	
Never been married	62	45.6	68	34.0	130	38.7	
Separated, divorced, or widowed	14	10.3	32	16.0	46	13.7	
Employment (n = 332)							5.3, 0.15
Yes	85	62.5	101	51.5	186	56.0	
Skilled	16	11.7	21	10.7	37	11.1	
Unskilled	69	50.7	80	40.8	149	44.9	
No	51	37.5	95	48.5	146	44.0	
Household (n = 315)							16.9, 0.0007
One to two	63	51.6	62	32.1	125	39.7	
Three to five	56	45.9	119	61.7	175	55.5	
Six or greater	3	2.5	12	6.2	15	4.8	
Number under 18 years (n = 337)							
Zero to two	74	54.4	114	56.7	188	55.8	
Three to five	17	12.5	43	21.4	60	17.8	
Six or greater	45	33.1	44	21.9	89	26.4	
Health status (n = 337)							4.5, 0.477
Excellent	17	12.6	20	9.9	37	10.9	
Very good	29	21.5	41	20.3	70	20.8	
Good	53	39.3	70	34.7	123	36.5	
Fair	24	17.8	50	24.7	74	22.0	
Poor	12	8.8	21	10.4	33	9.8	

*On average, 1 US dollar was equivalent to 89 Jamaican dollars at the time of the study

higher prevalence of men (12.9%) compared to women (10.9%). A higher prevalence of women was observed in the severe symptom category for both depression and anxiety. The mean scores ± SD for the GHQ-12, BAI, and BDI-II were 23.3 ± 5.4, 8.8 ± 9.1, and 14.3 ± 13.0, respectively (Table 2). No statistically significant differences were found between the scores of males and females for either the GHQ-12 ($p = 0.211$) or the BDI-II [$p = 0.203$] (Table 2).

In the linear regression model for BDI-II scores, income and education were negatively correlated with the continuous BDI-II score (Table 3). Therefore, as the value of the BDI-II score decreased, education and income levels increased. The R-squared value was 0.387, thus approximately 38.7% of the variance was accounted for by the

dependent variables. A higher depression score also correlated positively with a higher GHQ-12 score, having more children under the age of 18 years, and being on medication. Therefore persons with more dependents or who were taking a prescription drug had a higher number of depression symptoms than persons who had fewer dependents or were not on prescription medication.

In the overall BAI score linear regression model, there was a negative correlation between the anxiety score and income and marital status (Table 3). Having never been married was associated with having a lower BAI score (and thus fewer anxiety symptoms) than being married. There were positive correlations between BAI score and the inde-

Table 2:   Classification and means of Beck Depression Inventory-II (BDI-II) and Beck Anxiety Inventory (BAI) scores by gender with General Health Questionaire-12 (GHQ-12) means by gender

	Male (n = 136)		Female (n = 202)		Total (n = 338)		χ^2, p
	n	%	n	%	n	%	
BDI-II level (Depression)							2.9, 0.399
Minimal	85	62.5	110	54.5	195	57.7	
Mild	17	12.5	25	12.4	42	12.4	
Moderate	14	10.3	31	15.3	45	13.1	
Severe	20	14.7	36	17.8	56	16.8	
BAI level (Anxiety)							13.2, 0.004
Minimal	88	65.5	99	49.0	187	55.3	
Mild	26	18.7	62	30.7	88	26.0	
Moderate	18	12.9	22	10.9	40	11.8	
Severe	4	2.9	19	9.4	23	6.9	
BDI-II mean score ± SD	13.3 ± 13.2		15.1 ± 12.6		14.3 ± 13.0		—, 0.203
BAI mean score ± SD	7.1 ± 8.1		10.0 ± 9.5		8.8 ± 9.1		—, 0.003
GHQ-12 score ± SD	22.8 ± 5.6		23.6 ± 5.4		23.3 ± 5.4		—, 0.211

Table 3:   Linear regression models for the Beck Depression Inventory-II (BDI-II) and Beck Anxiety Inventory (BAI) scores

Model	Effect	β^*	Standard error	Pr > F
BDI-II	Income	-0.313	0.166	0.0609
	Education	-0.827	0.559	0.1404
	GHQ-12 score	1.325	0.103	< 0.0001
	Children < 18 years	1.231	0.253	< 0.0001
	Medication	1.607	0.892	0.0725
				R² = 0.387
BAI	Income	-0.366	0.121	0.0028
	Gender	2.287	0.821	0.0057
	Marital status	-0.506	0.195	0.0103
	GHQ-12 score	0.701	0.077	< 0.0001
	Children < 18 years	0.843	0.185	< 0.0001
	Health status	1.790	0.365	< 0.0001
				R² = 0.361

*parameter estimate for effect

pendent variables gender, GHQ-12 score, number of children < 18 years, and health status. In the anxiety regression model, BAI scores correlated positively with GHQ-12 scores as well as an increasing number of children under the age of 18 years (Table 3). Beck anxiety inventory scores also correlated positively with being female ($R^2 = 0.361$). General health questionnaire-12 score, number of children < 18 years, and health status were significant in the BAI score linear regression models for both males ($R^2 = 0.374$) and females ($R^2 = 0.285$). However, income was only significant in the BAI score model for females (Table 4). This may relate to a higher percentage of women being unemployed (47%) as compared to men (38%). Income was also negatively correlated with BAI scores in females, which

means that the number of anxiety symptoms increases as income level decreases within the female study participants. In the logistic regression models (Table 5), those who self-identified as having excellent health were less likely than those who reported poor health to have moderate or severe symptoms of anxiety (OR: 0.2, 95% CI: 0.074, 0.591) or depression (OR: 0.15, 95% CI: 0.04, 0.61). Those who reported having very good, good, and fair health were also less likely than those who reported poor health to have moderate or severe symptoms of anxiety or depression. Married persons were more likely than those who had never married to have moderate or severe depression symptoms, controlling for sociodemographics (household number, number of children less than 18 years) and health status (OR:

Table 4:   Linear regression models for the Beck Anxiety Index (BAI) scores by gender

Model	Effect	β*	Standard	Pr > F error
Men	GHQ-12 score	0.55	0.11	< 0.0001
	Children < 18 years	0.84	0.25	0.0011
	Health status	1.19	0.54	0.029
				R² = 0.285
Women	Income	-0.42	0.16	0.011
	GHQ-12 score	0.81	0.11	< 0.0001
	Children < 18 years	0.68	0.26	0.011
	Health status	2.08	0.50	< 0.0001
				R² = 0.374

*parameter estimate for effect

Table 5:   Crude odds ratios (OR) for moderate or severe symptoms of depression and anxiety, adjusted for sociodemographics and health status

Model	Variables	Crude OR[1]	Adjusted OR	(95% CI[2])
Depression symptoms				
	Marital status			
	Married	1.89	2.57	(1.14, 5.76)*
	Living with a partner	0.76	1.14	(0.48, 2.67)
	Separated, divorced, or widowed	1.03	1.26	(0.47, 3.40)
	Never been married	1.0	–	–
	Health status			
	Excellent	0.11	0.15	(0.04, 0.61)*
	Very good	0.13	0.16	(0.05, 0.47)*
	Good	0.26	0.31	(0.13, 0.75)*
	Fair	0.33	0.36	(0.14, 0.92)*
	Poor	1.0	–	–
	Number of children < 18 years			
	0–2	0.64	0.7	(0.37, 1.58)
	3–5	1.8	0.57	(0.18, 1.78)
	≥ 6	1.0	–	–
	Household			
	1–2	5.02	3.06	(0.33, 28.28)
	3–5	2.44	1.54	(0.18, 13.31)
	≥ 6	–	–	–
Anxiety symptoms	**Health status**			
	Excellent	0.24	0.2	(0.074, 0.591)*
	Very good	0.12	0.11	(0.041, 0.286)*
	Good	0.23	0.22	(0.097, 0.510)*
	Fair	0.23	0.23	(0.092, 0.554)*
	Poor	1.0	–	–
	Age (years)			
	19–29	1.7	2.0	(1.01, 3.88)
	30–39	2.6	2.8	(1.39, 5.56)*
	40–49	1.9	1.8	(0.87, 3.75)
	≥ 50	1.0	–	–

[1]Odds ratio, [2]95% confidence interval
*Significant at $p < 0.05$

2.57, 95% CI: 1.14, 5.76). Also, although there was a statistically significant difference between males and females in terms of the number of persons in the household, this sociodemographic variable did not prove to be statistically significant in the logistic regression model, controlling for sociodemographics such as marital status and number of children less than 18 years as well as health status (Table 5). Persons who had only one to two persons per household were more likely to exhibit a moderate or severe level of depression symptoms as compared to persons who resided in a household of six or more persons. Persons aged 30–39 years were more likely than persons aged 50 years and older to have moderate or severe anxiety symptoms (OR: 2.8, 95% CI: 1.39, 5.56).

DISCUSSION

The purpose of our study was to determine the prevalence of symptoms of anxiety and depression in outpatient clinic patients in a Western Jamaican clinic population and compare the results to global estimates in similar outpatient settings within developing countries. We also sought to determine the sociodemographic correlates of symptoms of depression and anxiety BAI and BDI-II scores.

The major finding of our study was that the 29.9% prevalence of adults with moderate or severe symptoms of depression was higher than the previously reported 8% prevalence for the general Jamaican population (24). In a study of Jamaicans with sickle cell disease, it was found that the prevalence of depression among this population was 21.6%, which is similar to the global estimate of 20%. Both of these estimates are lower than the prevalence of depression symptomology in our outpatient clinic population (11). This may result from an underestimation of the prevalence of both depression and anxiety. However, the controls in the sickle cell study had a depression prevalence of 9.4%, which is comparable to that of the general Jamaican population (11, 24). Differences between the Asnani study and the present study may be due to data collection methodology and the type of population that was the focus of each study (11).

Several studies have reported lower prevalence estimates of anxiety symptoms than the 18.7% prevalence of moderate or severe symptoms of anxiety found in our study. This was seen specifically in developing countries with a similar healthcare infrastructure. For example, a study conducted in South Africa reported a 15.8% prevalence of persons with anxiety disorders (5). In an outpatient clinic population in China, the prevalence of anxiety disorders was 9.8% (7), which is nearly one-half the prevalence found in our study. A study conducted in a Northern Indian outpatient population reported a prevalence of anxiety symptoms of 11%, which is also lower than the anxiety prevalence of our study (8). Study methodology may account for the differences in prevalence of symptoms of anxiety such as the use

of the Patient Health Questionnaire-9 *versus* the BAI (8, 29, 30).

Female participants had a higher prevalence of moderate and severe symptoms of depression as compared to male participants. However, no association was seen between gender and depression with Chi-square tests. The negative correlation between education level and BDI-II scores corresponds with the findings of a literature survey of epidemiological studies assessing the connection between psychosocial disorders and education (13). Therefore, higher education levels correspond with lower levels of depression.

Female participants also had a higher prevalence of moderate and severe anxiety symptoms. When comparing women and men within the moderate category only, men had a higher prevalence of moderate anxiety symptoms than women. This was unexpected based on previous studies in which women had a higher prevalence of anxiety across symptom levels (14, 16). Income was a negatively correlated predictor of BAI score in females, but not in males. In a study conducted by Sareen *et al*, it was reported that both males and females with lower incomes had higher levels of anxiety than their neighbours who made at least a median income (36). In addition, limited family resources were associated with having symptoms of anxiety in a survey of outpatient clinic attendees in Shenyang, China (7). However, some studies have shown that women of lower economic status suffer a higher burden of anxiety and depression than males of similar status (14, 37). Women in developing countries have less access to financial resources and educational opportunities than men. This may contribute significantly to their higher levels of psychosocial disorders as compared to men (14, 16, 38).

Previous studies have reported fewer symptoms of psychosocial disorders in married persons than any other relationship model because of the social support received within the marital bond (39). This corresponds with our study results for depression in which married persons had the lowest prevalence of symptoms as compared to any other marital status group. However, married persons were more likely to experience moderate or severe symptoms of anxiety than those who had never been married. This may be unique to the population studied.

Age and self-identified health status were both significant predictors of depression. Persons aged 30–39 years were more likely than persons aged 50 years and older to have moderate or severe depression symptoms. This is consistent with the u-shaped association between age and depression reported by Mirowsky and Ross in their exploration of the prevalence of depression across age categories as defined by life stages (40). A self-identified health status other than "poor" proved protective from severe or moderate symptoms of both anxiety and depression. A study in the USA reported that persons who rated their health as fair/poor had higher odds of mortality compared to those who reported

excellent/good health status (41). Self-reported health status has been used in numerous epidemiology studies, and is predictive of "future morbidity and mortality" (41–44).

There were several limitations to the current study that need to be mentioned. First, due to the cross-sectional design, temporality and causation of symptoms of anxiety and depression were indiscernible. Second, the estimation of the prevalence of symptoms of anxiety and depression cannot be used to determine the prevalence of diagnosed psychosocial disorders within this population (as these tools were not administered by a physician or other mental health professional licensed to make such diagnoses). Third, there is a stigma associated with psychosocial disorders in Jamaica that negatively impacts persons with the psychosocial disorder and their families in terms of social association and community status (45–47). Therefore, some patients may have refused to participate in the study for this reason. According to a study by Hickling *et al*, the negative attitude of Jamaicans toward persons with psychosocial disorders has diminished somewhat, however, the stigma associated with psychosocial disorders has not completely disappeared from the Jamaican population as a whole (48). There were also notable strengths to our study. First, the study included a relatively large sample of both males and females from the general clinical population. Second, the GHQ-12, questions from the BAI and the BDI-II are standardized instruments commonly used to assess general and mental health status (29, 30, 49). Finally, these assessment tools have been validated in the Jamaican population and similar populations (33, 49, 50). The use of these tools helps to fill the knowledge gap of the prevalence of anxiety and depression symptoms in the Jamaican outpatient population and may raise awareness of the magnitude of this problem in the community.

In conclusion, sociodemographic factors may affect the prevalence and severity of psychosocial disorders among patients attending outpatient clinic settings such as those studied in Jamaica. Based on our study results, factors such as income, marital status and age may impact the prevalence of psychosocial disorders and their severity in Western Jamaica. Our results further indicate that women may need more intensive interventions than men to alleviate the symptoms of both anxiety and depression because of their higher representation in the moderate and severe symptom categories of these conditions.

Recommendations

Evidence-based studies of the cost-effectiveness of interventions for persons affected by psychosocial disorders should be done to ensure the effective use of mental health dollars. In a WHO sponsored study by Chisholm, it was found that countries such as Nigeria that allocated money to psychosocial treatments of mental disorders in addition to pharmaceutical treatment received dividends in saved healthcare dollars and decreased DALYs (20). Several study participants expressed a sense of mistrust of others and a lack of

safety in their neighbourhoods, which is why the teaching of coping mechanisms should be included in the overall mental health plan for the WRHA. Psychosocial treatments should include the five essential principles that were characterized for interventions for persons who have experienced trauma from war and natural disasters, yet are applicable to the promotion of mental health in any circumstance (51). These five principles are "(i) a sense of safety, (ii) calming, (iii) a sense of self and community efficacy, (iv) connectedness, and (v) hope" (51).

Future work should include confirmatory diagnosis of screening outcomes by either a clinical psychologist or a psychiatrist. Shorter instruments may be useful and more efficient for actual clinical use by healthcare providers and researchers for screening and study. Furthermore, questionnaires assessing the level of exposure to environmental factors may prove useful in determining their association with the symptoms of anxiety and depression.

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