Depression and its Associated Factors among Patients Attending Chronic Disease Clinics in Southwest Trinidad

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ABSTRACT

This study determined the prevalence of depression and associated factors, among patients attending chronic disease clinics in Southwest Trinidad. This was a cross- sectional survey using a sample of consecutive patients at four large clinics. To determine the presence of depression, an interviewer-applied modified Zung Scale was validated. The modified Zung scale, at the cut-off index of 60, has a sensitivity of 60% and a specificity of 94%. Seven hundred and thirty-four completed questionnaires were received, a response rate of 76%. The patients were primarily Indo-Trinidadian (70%), over 50 years (76.4%) and female (72.3%). The prevalence of depression was 28.3%. There were statistically significant differences in the level of depression by age, gender, educational level achieved and occupation ($p < 0.05$). There were also statistically significant differences in the level of depression by the number of presenting complaints, the number of chronic diseases, the presence of arthritis, the presence of diabetes mellitus with another chronic disease and the presence of ischaemic heart disease ($p < 0.05$). No significant differences were found with respect to ethnicity ($p = 0.97$) or the presence of diabetes mellitus by itself ($p = 0.34$). Results of logistic regression indicate that the independent predictors of depression ($p < 0.05$) were the level of education achieved, those with higher levels of education had less depression; the number of presenting complaints, those with more presenting complaints were more likely to be depressed and the presence of arthritis and female gender. It is imperative that policy be developed to address the mental health problems of patients attending these chronic disease clinics.

La Depresión y sus Factores Asociados entre los Pacientes que Asisten a las Clínicas de Enfermedades Crónicas en el Suroeste de Trinidad

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RESUMEN

Este estudio determinó la prevalencia de la depresión y los factores asociados con ella, entre los pacientes que asisten a las clínicas en el suroeste de Trinidad. El mismo consistió en una encuesta transversal que utiliza una muestra de pacientes consecutivos en cuatro clínicas grandes. A fin de determinar la presencia de la depresión, validamos una escala de depresión de Zung modificada y aplicada por un entrevistador. La escala de Zung modificada, a un índice límite de 60, tiene una sensibilidad de 60% y una especificidad de 94%. Se recibieron setecientos treinta y cuatro cuestionarios respondidos, lo que equivale a una tasa de respuesta de 76%. Los pacientes fueron fundamentalmente indotrinitenses (70%), mayores de 50 años (76.4%) y mujeres (72.3%). La prevalencia de la depresión fue 28.3%. Hubo diferencias estadísticas significativas en el nivel de depresión por edad, sexo, nivel educacional alcanzado, y ocupación ($p < 0.05$). Hubo también diferencias estadísticamente significativas en el nivel de depresión por el número de quejas que se presentaban, el número de enfermedades crónicas, la presencia de artritis, la presencia de diabetes mellitus junto con otras enfermedades crónicas, y la presencia de cardiopatías isquémicas ($p < 0.05$). No se hallaron diferencias sig-

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nificativas en relación con la etnicidad (p = 0.97) o la presencia de diabetes mellitus por sí sola (p = 0.34). Los resultados de la regresión logística indican que los predictores independientes de la depresión (p < 0.05) fueron: el nivel educacional alcanzado, poseyendo aquellos con niveles de educación más altos, menos depresión; el número de quejas, presentándose en aquellos con más quejas, una mayor probabilidad de sentirse deprimidos; la presencia de artritis y género femenino. Es imprescindible desarrollar una política encaminada a abordar los problemas de salud mental de los pacientes que asisten a estas clínicas de enfermedades crónicas.

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INTRODUCTION

Depression is well recognised to be associated with chronic diseases and non-psychiatric medical disorders. The prevalence of clinically significant depression in North American patients with chronic diseases is 10–27% among post-stroke patients, 14% among diabetics, 40–65% among patients who have had a myocardial infarction, and 25% among cancer patients, this is substantial when compared with the 4% in large population samples (1). Many patients with chronic diseases such as arthritis suffer from chronic pain, and there is a substantial literature about the prevalence and morbidity of depression in patients with chronic pain (2). For example, men with chronic lower back pain had significantly higher lifetime rates of major depression when compared to controls (32% *vs* 16%) (3). Similarly, the lifetime rate of depression among sufferers of fibromyalgia, a chronic syndrome of diffuse, aching, musculoskeletal pain, is 71%, compared to 14% for patients with rheumatoid arthritis (4).

Among general medical patients, the exact mechanism for the development of depression varies. It may be that the depression arises *de novo* in patients who are genetically predisposed, or as a result of living with the chronic disease. Depression may also occur as a side effect of the medication taken to control the chronic disease. A mix of some or all of these factors may be important (1). Regardless of the aetiology, recognizing and treating depression is an important factor in managing these patients.

There is a growing Caribbean literature that illustrates the mental health burden facing the population of patients with medical problems. Among general practice attendees with fatigue, the prevalence of depression was 66% (5) and 'significant depressive symptoms' were found in 46.5% of 101 patients on admission to an acute adult medical ward in a general hospital in Trinidad and Tobago (6).

In Trinidad and Tobago, care for chronic disease patients often occurs initially through specialists in hospitals. When stable, these patients are referred to peripheral primary care clinics. Here they are seen with other 'chronic' care patients. The clinics have a wide variety of patients including patients with diabetes, hypertension, asthma, heart disease, thyroid problems, arthritis and strokes, and patients with combinations of medical problems. Physicians working in these clinics are usually required to see 40 or more patients in a four-hour session. A formal assessment for depression is usually not included.

This study is a first step in the documentation of the presence of depression and its prevalence in the Trinidadian chronic disease population. If the prevalence of depression is significant in this population, then physicians need to raise their index of suspicion for depressive illness and the policies governing the human resources allocated to these clinics need to be revised.

Specifically, this study asks, with regard to Trinidadian patients in chronic disease clinics, what proportion of patients can be demonstrated to be depressed, using a validated instrument, and what are the associated features and independent predictors of this depression?

METHODS

This was a cross-sectional survey with consecutive sampling. Four health offices (Couva, Debe, La Brea and Point Fortin) in the Southwest region of Trinidad were used. These health offices were deliberately chosen because they had well-established chronic disease clinics, had sufficient staff and space to facilitate the research assistants, and are widely distributed within the Southwest region to represent the population, including the different ethnic groups (Figure). The pre-tested questionnaires were administered between July and August 2001. The ethics committee of the South-west Regional Health Authority provided approval for this study.

DIAGRAM 1. DISTRIBUTION OF HEALTH OFFICES IN THE SOUTH-WEST REGION OF TRINIDAD USED IN THE STUDY

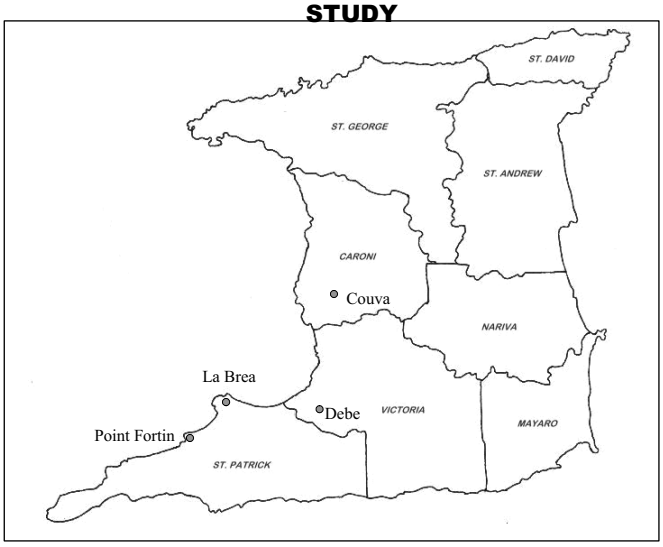

Figure: Distribution of health offices used in study in Southwest Trinidad.

Depression was determined using a validated, interviewer-applied modified version of the Zung self-rating depression (SRDS) scale (7–10). This is a relatively short questionnaire, simple to use and with good patient acceptability and therefore suitable for use in the population under study. Though primarily used as a screening tool, the Zung scale was modified for use in this study as a brief diagnostic tool. The Zung was assessed for face validity by a sociologist and construct validity by a psychiatrist, both attached to the University of the West Indies. Brief changes were made in the terms used in the scale. Testing of this modified scale was carried out with a sample of 43 patients attending the chronic disease clinics. These patients were first interviewed by a researcher using the modified scale and then by a psychiatrist who had no knowledge of the results of the application of the scale. The psychiatrist functioned as the 'gold standard' for determining depression making a clinical assessment using the criteria of the Diagnostic and Statistical Manual of Psychiatric Illness Version IV-TR. A 2 x 2 table was constructed with true positives, true negatives, false positives and false negatives. This testing of several cut-off points for the Zung scale, 50, 55 and 60, indicated that the cut-off point of 60 on the interviewer-applied modified Zung scale had a specificity of 94%, a sensitivity of 60%, and a likelihood ratio (11) for a positive test result of 10. This cut-off point was used. (Further details of the modification process and copies of the scale are available from the authors.)

Patients presenting to chronic disease clinics in the Southwest Region of Trinidad completed the interviewer-applied modified Zung questionnaire with regards to their symptoms over the previous two weeks. Three trained interviewers were employed to collect the data. Additional data were collected regarding the patients' main reasons for seeing the physician that day, their age, gender, ethnicity, marital status, level of education, their occupation or, if retired, that just prior to retirement. The interviewers excluded all patients attending for food handlers' certificates or medical examinations for a driver's permit, young people under the age of 18 years, those who refused and those who had previously responded. Those patients attending for insurance physicals or physicals for firearm user permits were also excluded.

Descriptive and frequency statistics were determined. Chi-square analysis was used to compare levels of depression by age, gender, number of presenting complaints, education level achieved, level of employment, ethnicity and marital status. Stepwise logistic regression analysis was used to determine the independent predictors of depression in this population. Analysis was carried out using SPSS for Windows (version 11.0).

RESULTS

Completed questionnaires were collected for 734 persons at the primary care clinics in Southwest Trinidad, a response rate of 76%. Details of the patients are illustrated in Table 1.

Table 1: Presence or absence of depression by demographics and medical variables in chronic disease patients in Southwest Trinidad

Demographics and medical variables	Not Depressed (%)	Depressed (%)	*p*
No 734	526 (71.7)	208 (28.3)	
Age group (years)			
18–19	7 (1.3)	0 (0)	
20–29	18 (3.4)	4 (1.9)	
30–39	25 (4.8)	7 (3.4)	
40–49	87 (16.5)	25 (12.0)	
50–59	141 (26.8)	64 (30.8)	
60–69	148 (28.1)	62 (29.8)	
70+	100 (19.0)	46 (22.1)	
Age group (years)			0.007
Less than 50	137 (26.0)	36 (17.3)	
50 or more	389 (74.0)	172 (82.7)	
Marital Status			0.323
Married	262 (49.8)	99 (47.6)	
All others	264 (50.2)	109 (52.4)	
Gender			0.007
Male	154 (29.3)	42 (20.2)	
Female	372 (70.7)	166 (79.8)	
Ethnic Groups			0.969
Indo-Trinidadian	359 (68.3)	140 (67.3)	
Afro-Trinidadian	152 (28.9)	62 (29.8)	
Mixed/ Others	15 (2.8)	6 (2.9)	
Education level			< 0.001
None	77 (14.6)	53 (25.5)	
Primary	325 (61.8)	130 (62.5)	
Post-primary/School leaving	30 (5.7)	13 (6.3)	
Secondary and above	94 (17.9)	12 (5.8)	
Occupation			0.008
Housewife	236 (44.9)	109 (52.4)	
None/Undetermined	21 (4.0)	12 (5.8)	
Unskilled	106 (20.2)	49 (23.6)	
Semi-Skilled	21 (4.0)	2 (1.0)	
Skilled, professional or student	142 (27.0)	36 (17.3)	
Number of presenting complaints			0.002
One	177 (33.7)	54 (26.0)	
Two	194 (36.9)	64 (30.8)	
Three or more	155 (29.5)	90 (43.3)	
Number of chronic diseases			0.010
One	351 (66.7)	119 (57.2)	
Two or more	175 (33.3)	89 (42.8)	
Presence of arthritis			0.010
Present	28 (5.3)	22 (10.6)	
Not present	498 (94.7)	186 (89.4)	
Presence of diabetes			0.335
Present	242 (46.0)	100 (48.1)	
Not present	282 (54.0)	108 (51.9)	
Ischaemic heart disease			0.038
Present	76 (14.4)	42 (20.2)	
Absent	450 (85.6)	166 (79.9)	

The majority were female (72.3%), and over 50 years of age (76.4%). Four hundred and ninety-nine (70%) were of East Indian descent. Three hundred and sixty-one patients were married (49.2%). Students and skilled or professional workers represented 22.3% of the patients. Housewives made up 47% of the sample. Only 20.3% of the patients achieved higher than a primary school education.

Two hundred and eight (28.3%) patients were depressed. Among patients with diabetes mellitus, ischaemic heart disease and arthritic conditions, the prevalence of depression was 29.2%, 35.6% and 44.0% respectively.

The results of the chi-square analysis indicated that there were statistically significant differences in the level of depression by gender ($p = 0.007$), with females being more likely to be depressed. Similarly, patients older than 50 years were more likely to be depressed ($p = 0.007$). There were also statistically significant differences by the number of presenting complaints ($p < 0.002$), those patients with three or more complaints being more likely to be depressed. With respect to the education level attained, persons who achieve a secondary education or above had lower rates of depression ($p < 0.001$). Other features predictive of depression included the number of chronic diseases ($p = 0.01$), with two or more chronic diseases being associated with depression, the presence of arthritis ($p = 0.01$) and the presence of ischaemic heart disease ($p = 0.038$). Occupation was also associated with depression, with housewives, the unemployed or unskilled workers being overly represented among the depressed ($p < 0.008$).

No significant associations were found with respect to ethnicity ($p = 0.97$; 70% of the sample was of one ethnic group). The presence of diabetes, by itself, did not have a statistically significant association with depression ($p = 0.34$).

Logistic regression indicated that the independent predictors of depression in this chronic disease sample were the level of education achieved, with those with more years of schooling being less likely to be depressed ($p = 0.001$). The number of presenting complaints – as the number of complaints increased the patient was more likely to be depressed ($p = 0.014$), the presence of arthritis ($p = 0.018$) and female gender ($p = 0.04$) were also independent predictors of depression (Table 2).

Table 2: Results of the stepwise logistic regression analysis to determine the independent predictors of depression.

Predictor	Odds Ratio (95% CI)	Significance (*p* value)
Gender		0.038
Male *vs* Female	0.66 (0.44–0.98)	0.018
Presence of arthritis	2.1 (1.1–3.8)	0.014
Number of presenting complaints		
1 *vs* 3 or more	0.60 (0.39–0.91)	
2 *vs* 3 or more	0.60 (0.40–0.88)	
Education		0.001
None *vs* secondary or higher	4.3 (2.1–8.7)	
Primary *vs* secondary or higher	2.7 (1.4–5.1)	
Post-primary *vs* secondary or higher	3.5 (1.4–8.6)	

DISCUSSION

This study found the prevalence of depression among chronic disease clinic patients in Southwest Trinidad to be 28%. This is comparable to other studies (1). The independent predictors of depression included female gender and the level of education achieved, with those of lower than post-primary education being more frequently affected. Patients with arthritis, or greater numbers of presenting complaints had a statistically significant association with depression. This is similar to findings elsewhere (12).

Approximately 31% of patients older than 50 years of age in the study population were depressed. Older patients face many challenges including poverty, isolation, disease and disability. The population of older patients is growing in the West Indies and with the burden of unemployment, migration, drug use or HIV/AIDS, many are required to work later in life through necessity or the nurturing of their grand and great-grand children (13). Depression is another challenge facing this population and clinicians must be alert to the possibility in this group.

The over-representation of females in primary care populations was recognized as far back as 1662 (14). In this study, women outnumbered men by 2.7:1. Women bear the burden of depression in primary care studies; among the depressed persons in this population women outnumber men 4:1. Some authors suggest that it is not that men do not get depressed, but that some may deal with depression through unhealthy means: alcohol and drug use, violence and suicide (15). This risk-taking behaviour has been suggested to account for the average seven-year difference in life expectancy between men and women (15).

Forty-four per cent of patients admitting to arthritic problems were depressed. This was statistically significant and may be explained by the presence of chronic pain and limitations in physical functioning associated with arthritis. Mood disorders have been previously associated with both acute and chronic limitations in physical functioning (16), and among chronic non-cancer pain patients a dose-effect relationship has been demonstrated between severity of depression and health-related quality of life (17). Similarly, patients with rheumatoid arthritis have been shown to have significantly more depressive and anxiety symptoms than age and gender-matched control subjects. Patients with coronary heart disease in this study were more likely to be depressed as previously reported (18).

A review of the literature in 2001 concluded that the presence of diabetes doubles the odds of co-morbid depression (19), but there have been contradictory reports (19, 20). In this study, there was no difference in the prevalence of depression among patients with diabetes and those who were not diabetic. Given that the non-diabetic group of patients consisted of patients with other chronic medical illnesses, this may reflect prior observations that the increased preva-

lence of mood disorders in chronic patients is more related to the general burden of illness rather than the presence of diabetes itself (20, 21). In this study, however, when diabetes was present with another chronic illness, such as hypertension or ischaemic heart disease, the association with depression achieved statistical significance. This observation has been previously reported among low-income primary care adult patients diagnosed with Type 2 diabetes and other chronic illnesses (22). Thomas *et al* suggested that Type 2 diabetes may be a positive contributor to increased rates of depression and/or anxiety disorders in patients with hypertension, asthma and/or arthritis (22).

The impact of depression on the morbidity and mortality of chronic medical illness has been well established, for example, higher levels of depression and severe depression are associated with higher morbidity and mortality due to cardiac events (23). The presence of depression in a patient with a general chronic medical condition therefore has implications for the long term care of that patient. In a study of 367 primary care patients with both Type 1 and 2 diabetes, those with higher depression severity were distinct from those in the lower depression severity by being significantly less adherent to dietary recommendations. They also had a higher percentage of days in non-adherence to oral hypoglycaemic regimens. The more severely depressed had poorer physical and mental functioning, and greater probability of having any emergency department, primary care, specialty care, medical inpatient, and mental health cost, and these costs were usually higher (24).

Among depressed diabetic patients, recognizing and treating the depression leads to improvement in their metabolic state. A randomized controlled trial (RCT) using fluoxetine to treat depression in diabetic patients concluded that fluoxetine effectively reduces the severity of depression in diabetic patients and that after eight weeks, this treatment also produced a trend toward better glycaemic control (25). Similarly, in another RCT to assess the efficacy of cognitive behaviour therapy (CBT) for depression in patients with diabetes in a referral-based academic medical centre, follow-up mean glycosylated haemoglobin levels were significantly better in the CBT group than in the control group (26).

In this present study, the educational level achieved was a strong predictor of the presence of depression with 41% of those admitting to no formal education being found to be depressed. It may be that those with higher educational achievement experience less poverty and have more resources to cope with the costs of living with a chronic disease. Such persons would more likely be able to access and utilize the information necessary to promote self-care.

Patients with three or more presenting complaints are more likely to be depressed (37%) than patients with one presenting complaint (24%). This is a useful clinical marker. Primary care physicians should be wary of the patient who visits with a 'shopping list' of complaints. Taking a psychosocial history early in the consultation with such patients may be useful.

The high prevalence of depression in this population has direct implications on health services policy such as clinic size, human resources, and training issues as well as clinical implications such as patient adherence to therapies, quality of life and ultimately morbidity and mortality. It is important that clinic size in chronic disease clinics be controlled so that the doctor can spend more time to interview each patient (27). There is a need to develop skills and policies to rapidly assess patients for depression since it may impact on the outcome of the chronic disease (6, 7).

Chronic disease represents the greatest burden of healthcare in Trinidad and Tobago (28). The rate of diabetes is one of the highest in the world and coronary heart disease, hypertension and diabetes account for substantial portions of the national health budget. It is possible that the high rates of depression seen among these patients account for the poor adherence to diet and exercise regimes and so directly impact*s* on tight control of blood glucose, lipids and blood pressures. Poor control at this level will have a direct effect on patient morbidity and eventually and on the burden faced at the tertiary care level.

This study population was predominantly of East Indian descent and so is not representative of the Trinidad and Tobago population. Similar studies in other segments of the population will confirm whether the trend demonstrated in this paper is reproduced. There is a possibility of sampling bias since patients were not randomly selected.

These findings open the way for further exploration of depression among patients with chronic illnesses in outpatient clinics. This would include aetiology, detection rates by caregivers, associated differences in clinical parameters and treatment outcomes.

The validation of the interviewer-applied Zung scale represents an important step in studying this condition in the local population and this tool is now available for other researchers to use.

In summary, the prevalence of depression among patients attending chronic disease clinics in Southwest Trinidad was 28%. The presence of depression was independently associated with female gender, presenting with three or more complaints, having arthritis, and post-primary education or lower.

In conclusion, because of the high levels of depression among patients attending these chronic disease clinics, there is a need to review the structures of clinics catering for these patients. Special attention needs to be paid to the length of consultation, the types of consultation, human resources available to deal with the clinics and the training and skills of primary care physicians and ancillary staff who deliver care in these clinics. More psychological and social support may be necessary for these patients.

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