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The Development and Psychometric Assessment of Instruments to Measure Depression
Knowledge and Attitudes Toward Depression and its Treatments in Patients Suffering
from Non-Psychotic Depression

By

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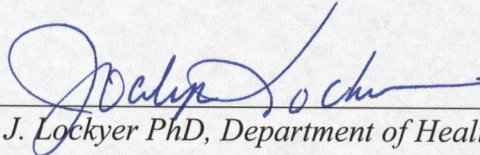
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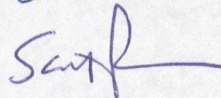
The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled “ **The Development and Psychometric Assessment of Instruments to Measure Depression Knowledge and Attitudes Toward Depression and its Treatments in Patients Suffering from Non-Psychotic Depression**” submitted by ADEL GABRIEL in partial fulfillment of the requirements of the degree of MASTER OF MEDICAL SCIENCE.



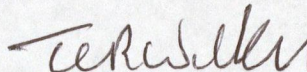
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ABSTRACT

Statement of Problem: The present thesis is an examination of depression literacy in patients who have suffered from depression. Depression literacy includes knowledge of depression and attitudes towards depression.

Objectives: To develop and psychometrically assess instruments to:

1) Test knowledge of depression, 2) examine patient attitudes to depression, biological and psychological treatments, and seeking professional help, 3) assess adherence to antidepressants, and 4) examine knowledge-seeking of patients with depression.

Methods: A total of 63 stable, depressed non-psychotic outpatients and 12 psychiatric experts participated in the study. Based on empirical evidence from review of literature and in consultation with psychiatry experts, a table of specifications and four instruments were developed.

Results and Conclusion: There was adequate reliability and evidence for content, convergent, divergent, and criterion-related validity for the instruments. Future research should employ a larger and more heterogeneous sample from both psychiatrist and community samples, than did the present study.

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Dedication

This work is dedicated to my wife, Amal and my son, Anthony.

Without whom this process would be meaningless

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List of Symbols, Abbreviations and Nomenclature

Symbol	Definition
APP	Application
C	Component
COM	Comprehension
D	Discrimination Value
DIS	Diagnostic Interview Schedule
ECA	Epidemiologic Catchment Area Study
HAM-7	Hamilton Rating Scale for Depression
K	Key Response
KNO	Knowledge
M	Mean
MCQ	Multiple Choice Questions
MDD	Major Depressive Disorder
n	The number of all patients who tried this item, sample size
P	Difficulty Index
P (H)	The proportion of patients in the high performance group who answered the item correctly
P (L)	The proportion of patients in the low performance group who answered the item correctly
p	Probability
Q	Question
R	Correlation
RDC	Research diagnostic criteria of depression
S	Subscale
SD	Standard Deviation
SPSS	The Statistical Package of Social Science
WHO	World Health Organization
WWW	The World Wide Web

CHAPTER I: INTRODUCTION

Unlike normal emotional experiences of sadness, loss, or passing mood states, clinical depression is persistent and can significantly interfere with an individual's thoughts, behavior, mood, activity, and physical health. (1).

Depression is a major epidemiological concern, not only because of its high prevalence in the community, but also because of its association with elevated risks of hospitalization and suicide. Over the last two decades, methods have been available to make valid and reliable assessments of the extent of depression in the community (2). The development of the epidemiological approach in mental health, however, is still hampered by a number of methodological difficulties. First, there are problems of case definition. The subjectivity of ratings and inter-rater issues may make it difficult to draw a sharp line between cases and non-cases of depression. Second, there are problems in classifying mental disorders because of the complex network of co-morbidity and dual diagnoses, which are common among psychiatric population (3).

Two large community-based epidemiologic studies in the United States, the Epidemiologic Catchment Area Study (ECA) (4), and the National Co-morbidity Survey (5) as well as a large Canadian study (6), have reported 4.9% to 17.9% lifetime prevalence rates for MDD, with women about twice as likely as men to suffer from MDD. This estimate does not include other types of depression such as dysthymia, bipolar depression, and mood disorders not otherwise classified, which if included, would increase the lifetime prevalence to more than 20.8% (5).

Among all medical illnesses, major depression is the leading cause of disability in the U.S. and many other developed countries. Major depression is projected to be the second leading cause of disease burden by the year 2020 (7). The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* Mood Disorders Field Trial (8) reported that 79% of those with dysthymic disorder also met the criteria for a lifetime diagnosis of MDD (9). Furthermore, data reanalysis of the ECA Study (10) found that over only a one-year period, 5% to 20% of persons with dysthymic disorder developed MDD (i.e., exhibited the so-called *double depression*).

Differences in the Major Socio-Demographic Risk Factors

Considerable evidence shows that depression decreases with age, but increases in older age groups. For example a large Canadian survey (n=1393) reported that those under 35 years of age had higher rates of depression than those over 35 (2). It was also noted that having been previously married (i.e. divorced, separated, or widowed) or never having been married was associated with elevated rates of depression compared with those currently married (2). Finally, there were increased rates of depression among patients of lower socio-economic status and among those engaged in semi-skilled and unskilled occupations (11).

Chronicity of Depression

For most people, MDD is a lifelong episodic disorder with multiple recurrences, averaging one episode every 5 years. Approximately 20% to 35% of persons with MDD experience a chronic, unremitting course of the disorder (12). Chronicity is a major problem, particularly among persons with poor inter-episode recovery from recurrent MDD. Furthermore, there is a growing body of evidence that the longer the depression lasts, the more difficult it may be to treat (13, 14).

Studies have shown that MDD is very disabling (10). The Medical Outcomes Study (15) showed that patients who meet criteria for MDD function more poorly than other primary-care outpatients in three domains: 1) limitations in physical activities, 2) limitations in occupational or role responsibilities, and 3) limitations in social activities because of health problems. A World Health Organization report (16) ranked depression as the fourth most disabling medical condition worldwide based on disability-adjusted life years, which expresses years of life lost to premature death and years lived with a disability of specified severity and duration.

Lack of knowledge about mental illness, including depression, is a major barrier to seeking help and adhering to treatment. Offering education to patients suffering from depression may improve adherence to antidepressant medications and bring about a positive clinical outcome. It is likely that the stigma attached to the disorder and the low level of depression literacy prevent depressed individuals from seeking appropriate help.

Community perceptions and beliefs play a role in determining the help-seeking behavior and successful treatment of the mentally ill (17). Whereas teaching the public is

essential for changes in attitudes toward mental illness, educating patients is crucial not only for changing attitudes but also for improving adherence to treatment. Equally important, if we agree that seeking help and adhering to treatment are important goals for achieving favorable outcomes in cases of depression, behavioral tasks such as seeking knowledge, seeking help, and adherence should be examined, evaluated and analyzed.

Mental-Health Literacy and Depression Literacy

Mental-health literacy is defined as the knowledge and beliefs about mental disorders that aid their recognition, management, or prevention and is an important determinant of seeking help (18, 19). Mental health literacy, therefore, consists of several components: the ability to recognize specific disorders or different types of psychological distress, knowledge and beliefs about risk factors and causes, knowledge and beliefs about self-help interventions, knowledge and beliefs about professional help available, attitudes which facilitate recognition and seeking appropriate help, and knowledge of how to seek information about mental health (18).

Similarly, depression literacy consist of the following components: knowledge about depression, the ability to recognize depression, the beliefs and perceptions about depression and its treatments, the public knowledge and beliefs about self-help and professional help interventions, and positive attitudes to co-operate with professionals in the course of treatment. Although the majority of the public consider people with mental illness as in need of help, a substantial part perceives them as unpredictable and sometimes as dangerous (19).

For many patients, maintenance on antidepressants is the primary method for preventing relapse.

There are many barriers to patient adherence to antidepressant therapy, including literacy issues. It was concluded in a review of educational interventions, that educational interventions to enhance adherence failed to demonstrate a clear benefit on adherence and depression outcome. However, collaborative care interventions tested in primary care demonstrated significant improvement in adherence during the acute and continuation phase of treatment and were associated with clinical benefit, especially in patients suffering from major depression who were prescribed adequate dosages of antidepressant medication (20).

There are number of claims that the introduction of educational interventions tends to enhance adherence to antidepressant therapy in primary care, especially in patients with major depression who have been prescribed adequate dosages of antidepressant medication. These claims need to be examined critically. Several studies claimed that patients who received systematic patient education and ongoing monitoring of medication adherence and depressive symptoms had high rates of adherence to maintenance pharmacotherapy when compared with patients under standard care (20-26). However, most of these studies neither used comprehensive educational instruments to measure and assess changes in knowledge or attitudes as a result of education delivered to patients nor examined empirically the relationship between these educational measures and the adherence achieved by patients. More research is required to systematically and empirically assess knowledge of and attitudes to depression and their relationship to adherence to treatment and clinical outcomes.

Many rating scales have been developed over the last 50 years to serve many purposes in psychiatry. These include scales to assist in diagnosis and assess the severity of an illness, as well as scales that can be used to screen for specific behavioral and psychological variables. There are very few, if any, reliable and valid instruments to assess patient knowledge of or attitudes toward depression and its treatment or instruments to assess patient adherence to treatments.

The main purpose of the present study, therefore, was to develop and to psychometrically assess four instruments for measuring knowledge, attitudes, adherence to treatment, and knowledge-seeking behavior in patients suffering from depression.

Statement of the Problem and Specific Objectives

The major problem addressed in this thesis is to examine empirically the domains of depression literacy in patients who have suffered at least from one episode of depression. The following specific objectives are undertaken in the present thesis:

1. To develop and psychometrically assess an instrument to test knowledge of depression and its treatments in patients suffering from depression.
2. To develop and psychometrically assess an instrument to examine attitudes to depression and its treatments in patients suffering from depression.
3. To assess patient adherence to antidepressant treatment, and examine the relationship between adherence and depression literacy (knowledge and attitudes).

4. To assess patient knowledge-seeking behavior about depression and its treatments as measured by their educational activities since they were diagnosed with depression.

To achieve these objectives, four instruments were developed to measure knowledge, attitudes, adherence to antidepressants and depression knowledge-seeking behaviour: 1) a Multiple Choice Questionnaire (MCQ) instrument to test the knowledge of patients suffering from depression, 2) an instrument to assess attitudes toward depression in patients suffering from depression, 3) an instrument to measure patient adherence to antidepressant treatment, and 4) an instrument to measure patient educational activities in seeking knowledge about depression.

Chapter II contains a detailed review of the relevant literature pertaining to depression literacy, in particular the literature related to knowledge of and attitudes toward depression and its treatments among patients. Chapter III contains a description of the methods employed, and Chapter IV is a presentation of the results. Finally, Chapter V is a discussion of the findings together with the limitations and implications of the results.

CHAPTER II: LITERATURE REVIEW

The objective of the literature review in this chapter was to address the following specific questions:

1. What are the prevailing attitudes and knowledge among patients and the public regarding depression and its treatment?
2. Does depression literacy improve over time?
3. Does improved depression literacy lead patients with depression to seek professional help?
4. Does improved depression literacy influence patient adherence to treatment?
5. Does psycho-education using multiple educational methods lead to positive clinical outcomes?
6. Are there any published results of reliability and validity for instruments to objectively assess patient depression literacy, including instruments to assess patient knowledge of depression, attitudes to depression and its treatments, patient adherence to antidepressants and knowledge-seeking behavior in patients suffering from depression?

A systematic literature search was undertaken to address the foregoing questions.

See **Appendix A** for a description of the search process.

The Prevailing Attitudes and Knowledge Among Patients and the Public Regarding Depression and its Treatment

Although the benefit of public knowledge of physical diseases is widely accepted, knowledge about common mental disorders has been comparatively neglected. It was demonstrated that many members of the public including those who had personal experience with depression, cannot recognize depression in vignettes, can't differentiate depression from normal sadness, their knowledge about its causes is distorted and over half of the subjects who met the Research Diagnostic Criteria (RDC), of depression do not seek treatment for the episode (27-30). Also, among those who suffer from depression, only 40 % consider antidepressants as helpful (27), few recommend treatment from a counselor, telephone service or psychologist, and more consider that a psychiatrist as harmful (28).

Recognition of Depression by Patients and the Public

In reviewing the literature, I found that mental health literacy is poor among both patients and the public in terms of recognizing depression in vignettes. Significant proportions of respondents were not able to identify depression correctly in community surveys or structured interviews of both young people and adults (19, 27-32). They were also misinformed about the causes of depression, were less able to differentiate MDD from normal sadness, and were less likely to seek professional help (33-37). For example, it was noted that in a vignette depicting a depressed individual, only 39% of respondents (n= 1010) correctly labeled the case as depression, and when various professionals were

rated as likely to be helpful or harmful for the person described in the vignette for depression, only 51% rated a psychiatrist as helpful (18). For example, in a survey comparing knowledge among old (n=300) and young (n=521) people, older subjects were more likely to be seeing a practitioner for depression and to be receiving treatment, but their ability to recognize depression was poorer than that of younger subjects. Older subjects were more likely to perceive psychiatrists as harmful and clergy as helpful (28). Many standard psychiatric treatments (antidepressants, antipsychotics, electroconvulsive therapy, and admission to a psychiatric ward) were more often rated as harmful than helpful, and some nonstandard treatments (increased physical or social activity, relaxation and stress management, reading about people with similar problems) were rated as more helpful (18). Correctly recognizing the diagnosis of the person depicted in the vignette, however, was associated with a positive attitude toward pharmacological treatment (36).

Patient and Public Knowledge About the Causes of Depression

It appears that there are many imprecise beliefs about the causes of depression among both patients and the public, which appear to influence the perceptions of the effective treatment modality. In a number of studies (33-35, 37) there is evidence to suggest that, especially among less educated individuals, there is an enduring belief system that depression is primarily caused by psychosocial stresses such as occupational and family stressors or by weakness of character or losing self-control. This was more obvious among those who were not able to recognize the illness in vignettes. For example, when participants (n=873) were presented with a vignette depicting a man with

depressive symptoms, only 14.1% attributed these symptoms to depression, while more than half considered family difficulties, occupational difficulties, or other traumatic factors as the main causes for the symptoms (34). Poor knowledge of the causes of depression and its biological aspects was prominent in patients with depression. Social and environmental factors were often seen as likely causes of depression, and genetic factors attracted more support as a cause of schizophrenia than depression (35). Also, when depressed patients (n=102) completed a questionnaire examining their attitudes regarding causes of depression, stress and negative life experiences were the most highly endorsed as causes (37).

Knowledge of Depression and its Causes Influence Treatment Choices

A number of studies showed that imprecise knowledge of depression and its causes negatively influence the decision to seek help and influence treatment choices. For example, in a number of studies, the most frequently endorsed reasons for depressed individuals delaying or not seeking professional help or treatment was related to lack of knowledge about mental illness and available treatments (29, 30, 38, 39). Moreover, a community survey (n=3010) found that people with personal experience of depression viewed depression as more disabling than other medical conditions, yet 40% of those with major depression considered antidepressants harmful (27, 32) and psychiatrists not very helpful for depressed individuals (27, 28, 32, 40-43). People with depression turned to the lay support system first, followed by the family physician if the former failed to help (44). Also in an international comparison of the public attitude to professional help in three European countries, psychotherapy was the most favored treatment modality

(45). In a cross-sectional population interview study (n= 844), only 39.8% of respondents were able to correctly recognize depression in a vignette, and 60.2% considered the person depicted as having a crisis. However, a positive attitude towards psychopharmacology was associated with the correct recognition of the depression vignette (46). In telephone interviews, only half of community participants (n=900) were able to differentiate depression from normal sadness (32). However, correct recognition of depression and attribution to biological causes was associated with a positive attitude toward psychopharmacology (18, 31, 46, 47).

Research has fallen short of examining patient knowledge of different modalities of treatments and antidepressants and their side effects. However, the domain of attitudes toward treatments, help-seeking, and professional help have been extensively investigated. This is discussed in the following paragraphs.

Depression Knowledge and Attitudes Toward the Illness and its Treatment: The Relationship Between Knowledge and Attitudes

Attitudes of the Public to Depression and to Depressed Individuals

There is strong evidence that negative attitudes to depression and depressed patients are prevalent. This is associated with the lack of knowledge and stigma against depressed individuals. A telephone survey reported that there was a strong correlation between knowledge of depression, higher education, and positive attitudes towards psychopharmacology (36). Other authors reported that respondents (n= 5025) who were familiar with mental illness were less likely to believe that people with schizophrenia or depression are dangerous. Weaker perceptions of dangerousness corresponded closely

with less fear of such people, which in turn was associated with less social distance (48-53). However, one of these studies demonstrated that a public education campaign did not lead to significant change in neighbors' knowledge of mental illness, although there were positive attitude changes and enhanced social integration of patients (48, 49).

Attitudes to Biological and Psychological Modalities of Treatment

Negative attitudes and irrational beliefs about psychotropic drugs, including antidepressants, are widespread among the public, and this influences patient adherence to treatment. For example, compared with cardiac drugs, psychotropic drugs are believed to cause more significant side-effects, to be addictive, and to provoke more fear of losing control (41). About a quarter of participants in a survey (n=999) considered that antidepressants would be harmful for a person who is depressed and suicidal. These participants were less educated, had less exposure to depression, showed poor recognition of depression, were less in favor of other standard treatments such as psychological ones, and were more likely to see depression as resulting from weakness in the character and not to be under the individual's control (54). Other research found that respondents considered psychotropic drugs and treatment by a psychiatrist to be harmful, especially for cases of depression (42,43). When comparing professional attitudes to the public's attitudes (general practitioners = 872, psychiatrists = 1128, clinical psychologists = 545, members of the public = 2031), professionals gave much higher ratings than the public on the helpfulness of antidepressants. Conversely, the public tended to give more favorable ratings to vitamins and minerals and special diets for both depression and schizophrenia (55).

Attitudes to Professional Help: An Associated Stigma

Attitudes toward professional help vary and are affected by many variables, including knowledge of and attitudes toward different models of help and the stigma associated with treatment by mental health professionals. For example, in a postal survey of adults (n=3109), respondents were presented with a vignette describing a person with depression. They were asked to rate the likely helpfulness of various types of professional and non-professional help and of pharmacological and non-pharmacological interventions for the person described in the vignette. A three-factor model was found to fit the helpfulness ratings, with factors reflecting beliefs in medical, psychological, and lifestyle interventions. Authors noted that people who had sought help for depression from professionals were less likely to believe in the helpfulness of lifestyle interventions and more likely to believe in medical interventions (56). In telephone interviews of a random community sample (n=900), it was found that 58% of interviewees or members of their families had experienced depression, and many viewed depression as more disabling than other chronic medical conditions. However, only half of the respondents differentiated depression from normal sadness, the awareness of common risk factors versus protective factors was limited, most people indicated a preference for self-help and non-pharmacological treatments and general practitioners were identified as the preferred point of first contact among health care professionals (32). Also, it was noted that psychotropic drugs were believed to cause significantly more severe side-effects and provoke more fear of losing control compared with cardiac drugs, and it was argued that other sources of information such as negatively tainted reports in the mass media have a

significant impact on opinions about psychotropic drugs. The authors also recommended that educational and information measures must be enacted to achieve a balanced presentation of psychotropic drugs and their therapeutic effects and side-effects in the mass media (41).

Public opinion clearly favors the lay support system and favors involving general practitioners (GPs) only if the former resource is exhausted. Of all health care professionals, GPs were identified as the preferred point of first contact (31, 32, 36, 38, 39). Counselors and family or friends were the most commonly cited forms of best help for depression, with the younger age groups preferring family or friends. General practitioners, however, were considered more helpful for depression, whereas psychiatrists and psychologists were considered more helpful for psychosis (31, 38, 39). Willingness to discuss mental health problems with a GP was predicted by the perceived helpfulness of the GP and by no other variable. Causal attributions and perceived stigma, rather than participants' levels of knowledge about symptomatology and disability, influence attitudes to help-seeking for mental health problems (47). In a German survey, it was reported that whereas the lay public generally held psychotherapy in high esteem, the vast majority of respondents rejected pharmaco-therapy. This pattern was observed for all of the mental disorders. While the public's image of psychotherapy is largely determined by popular views on psychoanalysis, public opinion about psychotropic drugs is strongly influenced by characteristics associated with tranquilizers. Among the different psychotherapeutic approaches, psychoanalysis is the preferred method among respondents in the western part of Germany, while the lay public in the eastern part tends to endorse group therapy (57).

In summary, non-psychiatric physicians play a prominent role in locating help for depressed individuals, which suggest the need to educate primary physicians.

Predictors of Attitudes to Depression and its Treatment

Little knowledge of mental illness and negative attitudes toward it were associated with older age groups, those of lower social class, those with children, and non-Caucasians (32, 58). When a factor analysis of a survey's responses was used to examine preferences of respondents (n= 1737), four components of different treatment models were extracted, each characterizing a specific therapeutic approach: 1) psychopharmacological proposals (that is, psychotropic drugs), 2) therapeutic counseling (from a psychologist or psychiatrist or psychotherapist), 3) alternative suggestions (such as homeopathy), and 4) social advice (for example, from a social worker). It was noted by the authors that medical treatments were proposed by people who had a higher education, who had a positive attitude toward psychopharmacology, who correctly recognized the person depicted in the vignette as being ill, who were presented with the schizophrenia vignette (not depression), who kept social distance, and who had contact with mentally ill people (51). It was also noted that people younger than 55 and people who had family or personal experience with depression viewed depression as more disabling than other medical conditions (32, 51). Across three European countries, endorsement of a brain disease as the cause of an individual's depression was associated with a greater willingness to seek help from medical professionals (e.g., a psychiatrist or GP) and a tendency to recommend treatment with psychotropic drugs. Cultural differences, on the other hand, appeared to have little effect on attitudes (45).

Does Depression Literacy Tend to Improve Over Time?

Although the public's knowledge of and attitudes toward depression and its treatment has been demonstrated to improve over time, and although these literacy changes seemed to be associated with increased willingness to accept and recommend psychiatric treatments, public responses to people with depression did not change significantly over time. In particular, the public continued to express fears and to maintain social distance from patients (40, 59-62). For example, in a study that examined changes in the acceptance of psychiatric treatment by the public, two surveys were conducted among the adult German population, one in 1990 (n= 5025) and the other in 2001 (n=2118), using the same sampling procedure and interview. The willingness to recommend a psychiatrist increased substantially by 14.6%, whereas the probability of recommending to turn to a GP or a priest for help concerning major depression decreased over the time period under study (59, 61). However, in the same survey, the respondents' attitudes to people with depression were inconsistent. While there was an increase in the readiness to feel pity (as measured by the desire to help and expression of empathy), the expression of fear, feelings of insecurity, and the desire to maintain social distance from people with major depression remained unchanged (59). However, the authors found that public attitudes towards psychotropic drugs improved somewhat over time and that the public became more ready to acknowledge beneficial effects of drug treatment (61). It was also reported that there was significant improvement in Australian depression literacy during the period from 1998 and 2004 (60).

The Royal College of Psychiatrists, UK, ran a radio, television, and print media campaign to educate the public about depression and its treatment. Surveys were carried out before (in 1991) and after (in 1995 and 1997) the "Defeat Depression Campaign" was launched. Investigators reported small but significant changes in the percentage of the public who believed that antidepressants are effective and who would be willing to seek professional help. The authors concluded that positive changes were of the order of 5%-10 % (62).

In another study, a psycho-educational program was conducted to educate the public in a neighborhood where a group house for those with mental illnesses was being established. In this study, one neighborhood received an education campaign, while another acted as a control. The campaign consisted of an educational package with information sheets and a video, social events to establish contact with the group house, a formal reception, and informal discussion sessions. Pre- and post-surveys in the experimental and control neighborhoods showed only a small effect on public knowledge, but revealed less fear and more social contact with the group house residents in the experimental neighborhood (48, 49, 63).

Overall, there is emerging evidence to suggest that mental health literacy can be improved with education campaigns. If the public's mental health literacy is not improved, public acceptance of evidence-based mental health care may be hindered. There is still much to be done to provide an empirical basis for evidence-based interventions to reduce misconceptions about mental illness and to improve attitudes toward people with mental illness (19, 64). Such studies should include the appropriate educational measures to evaluate the effectiveness of psycho-education.

Does Improved Depression Literacy Lead Patients to Seek Professional Help?

People with depression are reluctant to seek professional help, with estimates indicating that over half of people with major depression in the community do not consult a health professional (38, 65).

The Size of the Problem

When the data from a large Canadian community survey (n = 1563) was examined, it was estimated that only 63.9% of respondents with MDD used some type of help in the past 12 months, and that approximately 21% of respondents with either MDD or manic episodes used natural health products specifically for emotional and mental health or drug or alcohol use problems. Respondents who reported co-morbid anxiety disorders and long-term medical conditions were more likely to have used conventional mental health services (65). It was also noted that 46.7% of those with a major depressive episode sought help and that the rates for help-seeking increased from 20.3% for one diagnosis to 42.8% for patients with more than one diagnosis (66).

In the National Co-morbidity Survey, it was estimated that the delay among depressed individuals who eventually make the initial treatment contact ranges from 6 to 8 years for mood disorders. This was associated with early age of onset of the illness and a number of socio-demographic characteristics (male, married, poorly educated, racial / ethnic minority). These preferential attitudes among the public and patients should be taken seriously in psycho-educational programs for depression (67).

In a Norwegian study examining help-seeking behavior, only 13% of those with depression and 13% with anxiety disorders were described as help-seekers, and individuals with mild or moderate severity of symptoms were found to be less likely to seek treatment. Among those who eventually did seek help, non-psychiatric physicians and friends were most frequently cited as the first point of contact (38, 68). These findings indicate that the majority of individuals with depression or anxiety do not seek help.

Poor Knowledge of and Negative Attitudes to Depression Influence the Choice of Treatments and Help-Seeking

It was reported that 55% of subjects who fulfilled the Research Diagnostic Criteria of Major Depression did not seek help. The non-help seekers did not consider the episode serious or recognize it as an illness and believed that they could handle the episode themselves. On the other hand, those who sought help felt that their experience of the episode was too painful, lasted too long, and disrupted their interpersonal and role functioning (29). The relationship between depression literacy *per se* and behavioral change, such as help-seeking, among patients was examined in a number of studies, all of which support the conclusion that patient lack of knowledge of and negative attitudes toward depression play a role in stigmatizing people with depression and influence the choice of treatment modalities, especially medication with antidepressants (27-30, 39, 44). For example, respondents (n=2010) who had poor knowledge, as shown by not recognizing health problems in a vignette, were less likely to recommend treatment from a counselor, psychologist, or a psychiatrist, and some considered psychiatrists to be

harmful (28). Also, in a cross sectional national German survey (n=1564), authors found that public opinion considers mental health professionals not helpful in treating depression. The authors found problem definition to be one of the key determinants. If the distress described by the vignette was conceptualized in terms of a psychiatric disorder, interviewees were more likely to recommend a psychiatrist, a psychologist, or a GP. Furthermore, the authors found that the decision as to whom to ask for help was substantially influenced by the respondent's perception of the cause of the psychiatric disorders. Interviewees who perceived mental disorders to be caused by uncontrollable influences such as biological factors or supernatural influences were more likely to advise professional help and less likely to recommend support by a trusted lay person. The anticipated prognosis was found to be important in the following way: if the prognosis was seen to be rather pessimistic, interviewees were less likely to recommend a confidant for help. Interviewees who had no resentment regarding mental health professionals (psychiatrist, psychotherapist) were found to be more likely to advocate professional mental health services (44). Conversely, another study demonstrated that despite increased professional contact by those with major depression and suicidal ideation, there were few differences among those with depression and suicidal behavior, those with depression without suicidal behavior, and a control group on either open-ended or direct questions related to mental health literacy. This suggests that increased professional contact in itself was not related to increased mental health literacy and that more specific psycho-educational programs are required for suicide prevention (30). However, it was noted that the most frequently endorsed reasons for the delay in seeking help was related to the lack of knowledge about mental illness or available treatment (39).

To identify attitudes that influence patient help-seeking behavior and aspects of treatment that influence patient preferences for management of depression, one study held group discussions with three focus groups: two patient groups classified by race (black or white patients) and one professional group. Black Patients made more comments than professionals regarding the impact of spirituality, social support systems, coping strategies, life experiences, patient-provider relationships, and attributes of specific treatments. The authors discussed the role these factors played in patient help-seeking behavior and adherence to treatment (69).

Other Predictors of Help-Seeking

The Severity of Depression

It was reported that among help-seekers (n=364), past treatment and living alone were significantly associated with treatment. The total number of symptoms and several individual symptoms correlated with treatment in the bivariate analyses, but regression analysis found that "unfounded self-reproach" and "hopelessness" interacted with social support to predict the best treatment (70).

From both national and international community surveys, there is a strong body of evidence to suggest that those with significant psychopathology, increased illness severity, associated suicidal ideas, or co-morbidity and those with long-term medical conditions are more likely to perceive the need for professional help and use conventional mental health services more frequently (39, 65, 67). Female sex, belonging to younger

(under 45) age groups, and co-morbidity with other psychiatric and medical conditions, were also found to be significant predictors of help-seeking (66).

Socio-Demographic Factors

Failure to make initial treatment contact and delay in seeking help in those who eventually make contact, were found to be associated with early age of onset of illness, being in an older cohort, and a number of socio-demographic characteristics, including being male, married, poorly educated, or belonging to a racial/ ethnic minority (67, 69). Another study found that younger people were less likely than older people to seek help from every professional source except counselors. Men were less likely than women to seek help from counselors and complementary practitioners. People with 12 years of education were less likely than people of lower and higher educational levels to seek help from counselors, and people with higher education levels were less likely to seek help from complementary practitioners (67). Although older subjects did not report greater levels of current depression than younger subjects, they were more likely to have seen a medical practitioner in the last 12 months and be taking antidepressants. However, their mental health literacy in terms of recognition of a mental health problem in a vignette was somewhat poorer than younger subjects. Fewer recommended treatment from a counselor, telephone service, or psychologist and more considered that a psychiatrist would be harmful. Older subjects also more often perceived the clergy as helpful (28).

Cultural factors

Cultural factors may also play an important encouraging role in seeking help. For example, in a randomized, psycho-educational intervention follow-up study, only 13.1%

of subjects received encouragement from others to seek treatment, and in some cultures and religions, symptoms of psychiatric disorders are attributed to possession by the devil (71-73). Also, black patients raised more concerns than white patients regarding spirituality and stigma (69).

Stigma and Help Seeking for Depression

Stigma was found to be associated with misinformation regarding mental illness among the public. Stigma influences attitudes toward the preferred treatment modality and negatively influences adherence to antidepressants. In contrast, having known a person with mental illness facilitates a positive relationship and results in less fear and less social distance from people with mental illness (48-50, 53, 74, 75).

Both types of stigma, perceived stigma and self stigma, were associated with reduced the likelihood of seeking help from all sources (17). People are frequently reluctant to seek professional help for depression, especially from mental health professionals. This may be because of the impact of stigma, which can involve people's own responses to depression and help-seeking (self stigma) as well as their perceptions of the negative responses of others (perceived stigma)(17). For example, respondents (n=1312) from the Australian community completed a questionnaire providing a depression vignette and measures of self- and perceived-stigmatizing responses, source-specific help-seeking intentions, and current depressive symptoms. Many people reported that they would feel embarrassed about seeking help from professionals and believed that other people would react negatively to them if they sought such help. Also, some respondents expected professionals to respond negatively to them. Self-stigma varied

according to the source of help: greater embarrassment was associated with seeing mental health professionals, especially psychiatrists. Forty-four per cent of respondents said they would feel embarrassed to see a psychiatrist, compared to 29% in seeing a general practitioner. Perceived stigma was clearly evident, as 46% of respondents believed others would think less of them for seeing a psychiatrist, whereas only 14% believed others would think less of them for seeing a psychologist or counsellor (17). In contrast to the above, lower perceived stigma and biological, rather than person-based, causal attribution for the illness predicted positive public attitudes toward seeking professional help (38).

Psychiatric Diagnosis of Depression and Stigma

Diagnoses of depression affect respondents' reactions less negatively than diagnoses of other psychiatric disorders, such as schizophrenia. Depressed individuals are less frequently considered dangerous and unpredictable; the public considers mental-health professionals less helpful in treating depression than in treating schizophrenia (42, 47, 53, 72, 73, 75).

Self- and perceived-stigmatizing responses to help-seeking for depression are prevalent in the community and are associated with reluctance to seek professional help. Interventions should focus on minimizing expectations of negative responses from others and negative self-responses to help-seeking.

The Impact of Literacy on Adherence to Treatment

The Size of Non-Adherence

Non-adherence to antidepressants is prevalent, and the barriers are many and complex. It was reported that 42% of patients discontinued their antidepressant treatment during the first 30 days and 72% had stopped within 90 days. Partial non-adherence was present in 75% of depressed individuals, culminating in an average of 40% of days without dispensed antidepressants being taken. Early discontinuation of antidepressants was significantly more common among Hispanics than non-Hispanics, patients with fewer than 12 years of education, and among patients with low family incomes. Patients were significantly more likely to continue antidepressant treatment beyond 30 days if they received psychotherapy (68.0% versus 43.7%), completed 12 or more years of education, or had private health insurance (76, 77).

The Causes of Non-Adherence

It was estimated that one-third of patients stop taking drugs after feeling better three months after beginning treatment, and it was reported that about half of depressed individuals believe they can stop their antidepressants as soon as they begin to feel better and that drugs can be taken as required (78, 79).

Barriers to and causes of non-adherence are multi-factorial and may include patient's factors, non-patients' factors, and factors related to patient- clinician relationship. Examples of patient factors are those related to the illness (the depression) such as cognitive impairments, which could lead to forgetfulness about taking the medication. For example, it was found that forgetting to take medication is the most

important reported reason for non-compliance (80). Other important patient factors include patient literacy. The lack of knowledge about antidepressants and the negative attitudes towards them were a significant determinant of patient adherence. Non-patient factors may include the variables related to the nature of the treatments, such as unpleasant side-effects (20). For example, it was found that approximately 28% of patients stopped taking antidepressants during the first month of therapy, and 44% had stopped taking them by the third month of therapy, even when these patients had received five specific educational messages about adherence. However, patients who received specific instructions about how to resolve questions regarding antidepressants were more likely to comply during the first month of antidepressant therapy. Authors reported that side-effects, only at severe levels, were associated with non-compliance (21). Another survey (n = 344) also found that the most common reasons for less-than-perfect adherence were side-effects followed by forgetting to take drugs (81). Side-effects are common, but health professionals sometimes do not ask or teach patients about them (82). Although the newer selective serotonin-reuptake inhibitors are claimed to have a better profile of side-effects than the older antidepressants, 59% of users reported side-effects, the most troubling being sexual dysfunction, weight gain, and drowsiness (83). This may have resulted in fears and negative attitudes among both patients and the public towards antidepressants. It was demonstrated that psychotropic drugs are believed by the public to cause significantly more severe side-effects and provoke more fear of losing control compared with cardiac drugs (41).

Finally, there are factors that are attributed to the patient-doctor educational relationship. For example, in a large community survey (n=3010), only 40% of those

with major depression considered antidepressants helpful, whereas 40% considered them harmful and addictive (27, 84). In contrast, medication adherence was found to be associated with lower perceived stigma, higher self-rated severity of illness, age over 60 years, and an absence of personality pathology (74). Also, in a survey of adults (n = 829), who initiated antidepressants, antidepressant continuity beyond 60 days was significantly associated with fair or poor pretreatment self-rated mental health and physical health (76). The reason why most depressed patients have difficulty following treatment advice has been unclear. The chance of discontinuation is 61% less in patients who are simply told to take drugs for at least 6 months compared with those who did not recall being told this information (85). Doctors' communication style, patient satisfaction and adherence are interlinked. It has been demonstrated that collaborative communication by the clinician enhances patient knowledge of the drug, improves their satisfaction with treatment, and increases reliability of drug use and follow-up attendance (86). There has been an assumption that non-adherence could be attributed in the main to some illness factors, such as cognitive impairments leading to forgetfulness. Gradually, however, we are realizing that patient adherence decisions are mostly a rational balance of perceived risks versus benefits from information available to them (87). Therefore patient perceptions of and attitudes toward antidepressants can have a significant impact on adherence. Barriers to adherence can be surmounted by using approaches based on principles of good medical management, including use of a multidisciplinary treatment-team education of patients and their families regarding the nature of depression and its treatment (88).

The above examples of poor adherence to antidepressants treatments are by no means comprehensive. However, an alternative and simpler approach to address the assessment of different causes of poor compliance to hypertensive drugs has been demonstrated. This consists of a four-item self-reported questionnaire to measure medication-taking behavior in patients suffering from hypertension (89). The theory underlying measuring adherence is that drug errors or omissions could occur for several reasons: forgetting (80), carelessness (87), stopping the drug when feeling worse (81), or stopping the drug when feeling better (78, 79). The internal consistency reliability of this instrument was reported as 0.61, and recent research has provided evidence for the validity of its items as shown in the above literature. The same scale could be modified and applied to patients suffering from depression, based on the fact that depression is also a chronic disorder and will pose very similar challenges to adherence.

Psycho-Education for Depressed Patients: Does Psycho-Education Using Multiple Educational Methods Lead to Favorable Clinical Outcome?

Educational materials may play a significant role in improving depression treatment outcomes in the primary-care setting. Despite positive evidence about the efficacy of self-help materials and psycho-educational interventions, use of educational materials is receiving little attention in present depression initiatives.

The use and evaluation of three educational materials by depressed primary-care patients was described in a study. Depressed primary care patients were randomized in a clinical trial exploring the effects of psycho-education. Patients (n=108) assigned to this method of treatment received a package of educational materials at the time of the

baseline interview. These materials included two brief interactive booklets (medication booklet, behavioral health booklet) and a short video. Intervention patients were interviewed on the telephone one week after they received the package of educational materials. Approximately three-quarters of the subjects reported that they read or viewed all of the educational products. The majority rated the products as somewhat to significantly helpful: medication booklet 81%, behavioral health booklet 82% and video 69% (90).

Other studies found significantly better medication adherence and improved clinical outcomes for those patients with major depression who received a primary care intervention that included the educational products. For example, patients who received systematic patient education and ongoing monitoring of medication adherence and depressive symptoms had high rates of use of maintenance pharmacotherapy when compared to standard-care patients (20-26). In a popular study for treating patients with depression, it was demonstrated that there was an increase in the remission rates from 3 to 12 months among outpatients who were treated with a medication algorithm and patient/family education package. This package included a comprehensive patient education manual, a video, a guide for patients and families, a medication fact sheet, and regular interactive educational sessions and discussions with a therapist over a 12-week period (26).

The majority of the intervention studies used multiple approaches, and educational approaches were parts of many other interventions such as counseling and psychotherapy, all of which had the same objectives of improving adherence to antidepressants to reduce relapses through enhancing the learning experiences and using

educational packages such as interactive booklets, self-help materials, and short videos, and telephone counseling (91). For example, in a large psycho-educational intervention study, patients with recurrent major depression ($n=386$) were randomized to a relapse prevention program. Patients in the intervention group received two primary-care visits with a depression specialist and three telephone visits over a one-year period, aimed at enhancing adherence to antidepressant medication and recognition of prodromal symptoms, and their symptoms were monitored. Those in the intervention group showed significantly greater adherence to adequate dosage of antidepressant medication for 90 days or more within the first and second six-month periods and were significantly more likely to refill medication prescriptions during the 12-month follow-up compared with usual care controls. Intervention patients had significantly fewer depressive symptoms, but not fewer episodes of relapse/recurrence over the 12-month follow-up period (24). Also, in a collaborative care-management program for the elderly, patients ($n=1801$) were randomized into an intervention group and a usual care group for up to 12 months, with the intervention group being offered education, antidepressant management or brief psychotherapy, and problem-solving for depression. Authors reported that intervention patients had a 50% or greater reduction in depressive symptoms from baseline, less functional impairment, and better quality of life compared with 19% of usual care participants at 3, 6, and 12 months (23).

Limitations of Psycho-Educational Programs in Improving Adherence

These programs had a common theme of improving adherence to antidepressants using multiple and variable psycho-educational methods including psychotherapy,

telephone monitoring, and counseling. However, in terms of explaining the positive clinical outcome as a result of education, the evidence remains weak.

First, there is difficulty in assessing the effectiveness of psycho-educational programs in improving clinical outcomes or in reducing relapses of depression. The main questions are: to what extent does psycho-education, as shown in knowledge or attitudes, contribute to improving symptoms; to what extent has psycho-education *per se* resulted in knowledge and attitude change, and to what extent has it contributed to the changes in adherence and clinical outcomes? One deficiency of many psycho-educational programs is that they did not use instruments to evaluate and measure the main aspects of depression literacy, such as changes in knowledge of and attitudes toward depression. Examining the relationship between psycho-education, literacy and clinical outcome more closely is crucial to better understanding of our positive clinical outcomes. Developing and applying appropriate assessment and monitoring tools, which measure literacy, may assist in testing more closely the hypothesis about the efficacy of education and will allow the examination of the relationship between psycho-education, and clinical outcomes.

Second, although educational intervention programs have consistently demonstrated in a number of randomized trials to improve adherence, they failed to demonstrate a clear benefit on long-term depression outcomes and relapse prevention, and the long-term clinical outcomes were less impressive. For example, in one educational intervention study it was found that the intervention group had significantly greater adherence to adequate dosage of antidepressant medication for 90 days or more within the first and second 6-month periods and were significantly more likely to refill

medication prescriptions during the 12-month follow-up compared with usual care controls. Intervention patients had significantly fewer depressive symptoms, but not fewer episodes of relapse/recurrence over the 12-month follow-up period (24). Also, in a large 12-month educational intervention follow-up study, high relapse-risk patients in primary care were randomized to an intervention group or a standard care group to compare success of a relapse prevention program. This program included systematic patient education and ongoing monitoring by telephone of medication adherence. The authors reported that at 12 months, 45% of intervention patients had a 50% or greater reduction in depressive symptoms from baseline compared with 19% of usual-care participant. However there were inconsistent effects of the intervention for disability outcomes on one of the three-disability measures. The inconsistent effects of the intervention for disability outcomes were explained by, the high rates of maintenance pharmacotherapy among usual care patients, the relatively mild levels of depressive symptoms among both intervention and control patients at baseline, the absence of a specific relapse prevention effect of the intervention, and the resultant modest differences in depressive symptoms between intervention and control patients in this trial (25). There were major inconsistencies in outcomes in a number of these studies and it was not clear as to what extent education made a difference. For example, in an extensive review of interventions that aimed to improve adherence to antidepressant medication in patients with unipolar depression, authors concluded that the effectiveness of educational interventions needs more evidence (20). If we accept that any of these psycho-educational programs contributed to adherence or clinical-outcome measures among depressed patients, then one should be able to demonstrate changes in depression literacy,

e.g. improved depression knowledge, and positive changes toward depression and its treatment, as a result of educating patients.

Educating patients is crucial, not only to impart knowledge and change attitudes but also to improve adherence to treatment. Psycho-educational programs should be based on empirical evidence from educational measures, and should follow a multi-faceted teaching approach to target the three educational domains of knowledge, attitudes, and behavioral change with the goal of appropriate help seeking and adherence to medication. Last but not least, increasing the public's awareness of and familiarity with depression and its causes and treatment is an essential step in changing attitudes and reducing the stigma of depression. Educational methods delivered to patients with depression should be tailored to their needs and be based on empirical evidence guided by educational measures for their effectiveness. The outcomes of delivering psycho-educational programs should also be evaluated and reviewed in the light of their effectiveness.

Web Sites for Public Education

The World Wide Web was examined for client and public educational sites and super-sites on depression, using the "e Med-guides 2000" book to review the most relevant websites. In consulting the World Wide Web. I included a sample from major university departments of psychiatry, national sites, and mental health organizations. There were, however, many web sites for support groups, clients' screening sites for depression, pharmaceutical companies' sites, and non-profit and fund-raising organizations' sites. There were also many sites developed individually to report experiences about depression as well as non-professional sites to promote herbal

treatments for depression. Most of the major websites cover all the pertinent areas of etiology, clinical presentations, biological and psychological treatments in variable details. Seven recognized web sites were selected as a representative sample for the purpose of this review.

The Canadian Network for Mood and Anxiety Treatments

(<http://www.canmat.org/>) is one of the most comprehensive in mood disorders and reflects the opinion of Canadian psychiatrists. It is very well written and user-friendly as a client resource. Another popular Canadian website for patient education is that of the Canadian Psychiatric Association (<http://www.cpa-apc.org/>). Among the most valuable international sites that have examined the issue of patient education using more extensively such multi-method approaches as video clips, role models, and self-administered assessment questionnaires, are the National Institute of Mental Health (<http://www.nimh.nih.gov/>), the American Psychiatric Association (<http://www.psych.org/>), the Star-D Patient Educational Program (<http://www.edc.pitt.edu/stard/>), the International Society for Affective Disorders (<https://www.isad.org.uk/>), and the Royal College of Psychiatrists, UK (<http://www.rcpsych.ac.uk/>).

Presence of Instruments to Assess Patient Knowledge and Attitudes to Depression

The instruments used in previous research were brief, not comprehensive, and measured only aspects of clinical presentation of depression in vignettes. Although some instruments examined patient knowledge and attitudes, they were not assessed psychometrically (17, 48, 49). Overall, there are much more published research which

examined knowledge of and attitudes to depression in public, than in patients suffering from depression. Vignettes were the most commonly used instruments for this purpose (27-37). No comprehensive reliable instruments were utilized to examine patients knowledge of depression.

No reliable and valid instruments were found to measure adherence *per se*. However, in one study, authors developed a valid and reliable instrument to measure attitudes to antidepressants treatments, and attitudes to professionals (58).

Although there are many websites of patient psycho-education, especially depression education, there are no developed instruments that measure patient knowledge-seeking behavior. When the following words were used singly or in combination, "patient education, depressive disorder, instruments, knowledge, seeking, learning, material, educational, reading, surfing, audiovisual," there were no instruments found in the current search to measure patient knowledge-seeking behavior. However, a number of interventional research studies have demonstrated positive clinical outcomes of utilizing a single or combination of educational intervention methods for depression to enhance adherence to antidepressants.

Conclusions of the Literature Review

There are widespread low levels of depression literacy among the public including misconceptions about the biological nature of depression and negative attitudes toward treatment, with psychiatrists viewed as the least helpful in treating persons with depression. Knowledge may improve with education, and there is evidence that attitudes may improve over time. This in turn may reverse the stigma associated with depression

and positively affect help-seeking behavior and adherence to treatments. However, over the last decade, there have been no published studies that explored the effect of psycho-education on improving knowledge or changing negative attitudes to depression and its treatment. Also, there are no studies using instruments to empirically measure the effect of psycho-education on behavioral changes involving help-seeking for depression or on improving adherence to treatment.

Objectives of the Present Study

Based on the forgoing review, the present study has four main objectives:

1. To develop and psychometrically test an MCQ instrument to measure patient knowledge of depression and its treatments.
2. To develop and psychometrically test a self-report Likert scale questionnaire instrument to examine patient attitudes toward depression as an illness, biological treatments, and seeking professional help.
3. To measure patient adherence to antidepressants treatment, and examine this relationship to depression literacy (Knowledge and attitudes).
4. To measure knowledge-seeking behaviour in patients with depression as determined by their educational activities since they were diagnosed with depression.

CHAPTER III: METHODS

Participants

Patients

Participating in the study were (n=63) both male and female consenting patients 18 to 65 years of age. All participants were treated as outpatients following referrals by their family physicians. The referring physicians made the initial diagnosis, and the “Mini-International Neuropsychiatric Interview” (M.I.N.I. screen 2001-2005) was used to confirm the diagnosis of major depressive or dysthymic episodes (92). Patients were included if they had at least one episode of major depression, dysthymia, or bipolar disorder. Patients diagnosed with bipolar disorder were included if they had suffered from at least one major depressive episode. All patients were clinically stable (i.e. not acutely depressed or exhibiting suicidal ideas or suicidal intentions, and those who scored less < 4 on the Hamilton Rating Scale for Depression (HAM-7) (93).

All patients were prescribed antidepressant medication for at least four weeks prior to recruitment and had seen their clinicians on at least two occasions for standard treatment and standard psycho-education as a part of standard clinical care prior to recruitment.

Standard patient education included discussions with the treating psychiatrist and receiving brochures about depression. Some patients who had access to the Internet were provided a selection of websites to read about depression and its treatment. There was an emphasis on adherence to antidepressant treatments and medication teaching, which is

believed to be an integral part of the psycho-education. Patients with chronic or recent alcohol and illicit drug abuse, patients suffering from all degrees of mental handicap, patients suffering from psychotic symptoms, and patients with poor insight into their illness were excluded from the study.

Psychiatry Experts

Both male and female experts, practicing psychiatrists and clinical psychologists who had a minimum experience of 10 years in the field of psychiatry and had been working with patients suffering from mood disorders were, invited to participate in the present study. Two groups of experts ($n=12$) volunteered in the process of the formal validity assessment and rated each developed instrument with regard to its relevancy in measuring literacy in patients suffering from depression. Each expert served an invaluable role in reviewing and providing comments on the relevance of the instrument to be developed before testing the instruments with patients suffering from depression.

Responses from psychiatry experts were used to provide evidence for face and content validity for each of the four instruments, while patient responses and patient performances on each of the four instruments were utilized to provide evidence for internal consistency, reliability, and convergent, discriminant and criterion-based validities for each developed instrument.

English-Language Specialist Consultation

I consulted a secondary schoolteacher of English literature who volunteered to perform a specific English-language review of the four instruments for grammar and sentence construction.

Ethics

The conjoint scientific and ethics board of the University of Calgary granted approval for the study (**Appendix B**).

Procedure

The design involved the development and the psychometric assessment of the four instruments based on our objectives.

The domains defining the essential educational elements based on Bloom's taxonomy (94, 95), namely the cognitive, the affective or attitudinal, and the psychomotor components were applied to develop instruments to measure changes in depression literacy (knowledge, attitudes, adherence to treatments, and knowledge-seeking behavior) in patients suffering from depression. The educational objectives in this research were to develop an instrument to measure patient knowledge of depression and its treatments (cognitive domain), an instrument to measure patient attitudes towards depression and its treatments

(affective domain), and two instruments to measure patient adherence to antidepressant treatment and knowledge-seeking behavior (psychomotor domain).

Bloom's taxonomy specifies six domains, which assess incrementally higher levels of cognitive function: knowledge, comprehension, application, analysis, synthesis, and evaluation. Only the first four of these domains can be assessed using the MCQ format (92). For the purpose of the current study, the following three levels – knowledge, comprehension and application—were used to categorize items of the cognitive objectives. The taxonomy of the attitudinal objectives was applied using the following four levels of the affective domain: 1) awareness, 2) willingness to accept, 3) preference for a value and 4) commitment (96).

The procedure of this study is summarized in the following five steps:

1. Development of tables of specification
2. Writing the four instruments
3. Obtaining evidence for face and content validity
4. Administering instruments to patients
5. Data collection and analysis

Step One: Development of Tables of Specification

The initial items of the tables of specification were developed based on empirical evidence from an extensive review of literature, theoretical knowledge, and in consultations with psychiatry experts. Items were categorized into three educational

dimensions, defining the essential educational elements, according to Bloom's taxonomy (cognitive or knowledge, attitudinal/affective, and behavioral/performance scales).

The content of the test items were prepared after a detailed literature review and informal interviews with experts and patients nationally and internationally. The literature review included both published research and reviews of the most acceptable and popular websites for the psycho-education of patients with depression, such as the sites of the Canadian Psychiatric Association, the Canadian Network for Mood and Anxiety Treatments, the American Psychiatric Association and the National Institute of Mental Health. The details and the comprehensiveness of teaching about depression and its treatments varied significantly from one website to the next.

Tables of specifications with the initial items was created to plan and lay out the blueprint to guide the question construction for testing knowledge of depression instrument (items=27, **Appendix C**) and for constructing the items of the attitudes scale (items=27, **Appendix D**). The intended queries and objectives set in the left column of the tables present the main educational domains as the main titles, with the main objectives to be tested for each domain in the tables of specifications. The table of specification (items=4) for the adherence domain instrument (**Appendix E**) was also prepared after reviewing the literature on adherence, selecting, and modifying a four items instrument used in measuring adherence in patients with high blood pressure (89). The knowledge-seeking behavior (items =3) was measured by developing an instrument to measure learning activities of patients in three educational methods: reading, surfing the Internet, and using audio-visual materials (**Appendix F**).

Knowledge (cognitive domain)

An MCQ instrument is considered the most suitable to test this domain, and an MCQ test can be much more comprehensive than a simple vignette to cover as much as possible of the knowledge of depression and its treatment. For the purpose of this study, three levels of cognition were used to categorize the items of the specification list: knowledge, comprehension, and application (**Appendix C**).

Attitudes (affective domain)

Unlike the cognitive domain, the affective domain measures attitudes. Applying a scale such as a five-point Likert scale best assesses this domain. Various attitudinal items towards depression, its treatment modalities, and attitudes to mental health professionals were classified according to the degree of internalization hierarchy of this domain. For the purpose of this study, the list of attitudinal objectives toward depression and its treatments was developed at four levels of the taxonomy of attitudinal objectives: awareness, willingness to respond, preference and conceptualization for a value, and commitment (**Appendix D**). This was adapted from Krathwohl (96).

Behavioral changes (psychomotor domain)

The taxonomy of the psychomotor domain also provides a list of objectives. However, unlike the cognitive or attitudinal domains, it is neither static nor inert. It is the domain which confirms the “acted upon” by some external influence. This influence could be represented in the first two domains, namely knowledge and attitudes. For the purpose of this study, I selected behavioral adherence to antidepressants and patient

knowledge-seeking about depression. Assessing and measuring the behavioral aspects of adherence and knowledge-seeking (i.e., instruments 3 and 4) among patients is considered an integral part of literacy, because it will indicate that patients not only possess sufficient knowledge and hold the appropriate attitudes to the illness and its treatment, but also that they have internalized and acted on the same. The behavioral (i.e. psychomotor) aspect represents an essential learning domain.

From reviewing literature, the theory underlying the measuring of adherence is that drug errors or omissions can occur via several mechanisms: forgetting, carelessness, stopping the drug when feeling worse, or stopping the drug when feeling better (89). The validity of this hypothesis was also supported in the current literature review (78-88).

The psychomotor objectives used in this study as a basis for writing the adherence instrument are based on these four underlying mechanisms of adherence (**Appendix E**).

The theory underlying measuring patient educational activities of seeking depression knowledge could also be summarized in three methods of learning: reading written material, surfing the Internet or watching and listening to audio-visual materials. (**Appendix F**).

Step Two: Writing the Four Instruments

Four main instruments were developed in the current study: a Multiple Choice Questions (MCQs), a 5-point Likert attitudinal self-report scale, a 4-item self-report questionnaire to measure adherence to antidepressants, and a 3-item self-report questionnaire to measure patient motivation to seek depression knowledge. The items in

the table of specification were translated into the first three instruments. The number of items for each instrument was generated in such a way as to represent relevance to patient needs to learn about depression based on objective evidence from the emphasis given in literature and in educational sites for depression.

MCQ Knowledge Test of Depression and its Treatment

The items of the knowledge dimension of cognitive taxonomy were converted into MCQs. Based on the educational objectives, the instrument items were divided into the following five subscales:

1. Definition, the size of the problem of depression	5 items
2. Risks for relapse	2 items
3. Etiology	2 items
4. Presentation and Symptoms	6 items
5. Biological and psychological treatments	12 items
Total items	<u>27</u>

The MCQ items were written following basic rules for item construction (Appendix G) so as to avoid common technical item flaws (97-100).

In writing the items (n=27), the investigator reviewed all items to ensure that there was a relative emphasis given to each objective and each content area to be assessed, as they appear on the knowledge list of specification. This instrument is presented in **Appendix H.**

Attitudes to Depression, to its Treatment, and to Professional Help

The items of the attitudinal domain of affective taxonomy were converted to a 5-point Likert questionnaire, resulting in the second instrument, which consists of four subscales:

1. Patient's attitude to the illness	11 items
2. Patient's attitude to biological treatments	8 items
3. Attitude to psychological treatments	3 items
4. Attitude and perceptions of professionals	5 items
Total items	<u>27</u>

In writing the items for this instrument, a 1-5 Likert scale (1=strongly agree, 2=agree, 3=neutral, 4=disagree, 5=strongly disagree). Items were written in such a way as to ensure the patients' interpretability of the items. The basic rules of writing items were followed, including checking the language level and avoiding vague, ambiguous items, double-barreled items, and technical jargon. Items were made as short as possible. the instrument was tested in four patients and revised again after a language teacher reviewed it for grammar mistakes. The reading level for the instrument did not exceed Grade 9. This instrument is presented in **Appendix I**.

Depression Adherence Scale

To test patient adherence to prescribed medication, a third instrument was developed. This instrument is a modified from another instrument that was developed by Morisky et al. (89). The original instrument, developed to examine adherence to anti-hypertensives in patients treated for high blood pressure, has an internal consistency

reliability of ($\alpha=0.61$) and showed evidence for its concurrent and predictive validity ($p>0.01$) when administered to patients suffering from high blood pressure. This instrument consists of four items, and was developed to elicit categorical responses (Yes or No).

1. Do you ever forget to take your medication?
2. Are you careless at times about taking your medication?
3. When you feel better, do you sometime stop taking your medication?
4. Sometimes, if you feel worse when you take your medication, do you stop taking them?

The modification involved converting the question items of the original instrument so that responses to each item would elicit a continuous numerical response instead of a categorical response (Yes or No). The objectives and advantages of this modification include the following: 1) An attempt to improve the reliability of the original instrument. Limited responses (Yes or No) may increase the chance of error and reduce reliability as a result of dichotomizing a continuous variable. 2) The elimination of error caused by patients having different ideas about what constitutes a positive or negative response, and 3) the development of a timesaving, reliable, and valid screening instrument, which could be used in a busy outpatient sitting.

The four items reflecting the common mechanisms of adherence omissions (forgetting, carelessness, stopping the drug when feeling worse, or stopping the drug when feeling better) were converted to a self-report questionnaire to measure the frequency of any or all these omissions during the four weeks following outpatient

consultation and the prescription of antidepressants. This instrument is presented in **Appendix J**.

Depression Knowledge-Seeking

This is a three-item, self-reported questionnaire that measures the extent of patient psycho-educational activities. Patients were asked to report their educational activities since they were diagnosed with depression. The theory underlying this measure was to develop a user-friendly, short instrument for testing patient motivation to seek knowledge about depression using items to measure the number of hours spent in one or more of the three most commonly used methods of learning. These include reading written materials, such as literature, brochures and books, or surfing the WWW, or by using different audio-visual materials commonly used in hospitals and in public education. This instrument is presented in **Appendix K**.

Format, Layout, and Language Review of Instruments

All items of the four instruments (instrument #1: test of knowledge of depression and its treatments; instrument #2: attitude of patients towards depression and its treatments; instrument #3: the adherence scale; and instrument #4: depression knowledge-seeking scale), were reviewed by an English literature teacher for clarity and grammatical corrections. After the four instruments were written, the Microsoft Word computer program was used to assess both the grammar and reading levels so that the reading level would not exceed Grade 9. This was carried out to ensure that most patients could easily understand and interpret the questions.

Step Three: Obtaining Evidence for Face and Content Validity

Face and content validity for each item of the four instruments were determined by panel discussions and review followed by a formal validity assessment.

Panel Discussions and Review of Items

A volunteer panel of experts, which consisted of three psychiatrists of the 12 experts from University of Calgary (a professor and two associate professors of psychiatry with special interest in mood disorders), met on three occasions to review instrument #1 (a MCQ knowledge test of depression and its treatments). The MCQs items (n=27) were systematically reviewed with regard to the clarity of questions, their format, and their technical relevance for a patient population suffering from depression. Each item was reviewed individually for the following: 1) ensuring the appropriateness of its difficulty and relevancy for the ability of patients as examinees, 2) ensuring that the question was communicated in concise, clear language of the appropriate language level (Grade 9) and was as much as possible without medical or psychiatric jargon, 3) ensuring that each item, has an objective, and requires patient knowledge to be demonstrated in a specific area of depression or its treatment, and 4) ensuring that there was agreement among the three experts on the right answer for each question.

Formal Validity Assessment

The remaining nine experts clinicians and psychiatry experts, from both local and international institutions participated in the formal validity assessment of the four instruments. All experts had extensive and wide range of clinical and research experience, especially in mood disorders. There were six experts at the academic level of professor, one of whom is a clinical psychologist; two associate professors, and one assistant professor of psychiatry. The demographics of the participating experts are shown in Table 1.

Table 1: Demographics of Experts

Variable	Mean \pm SD
Age: (years)	52 \pm 11.6)
Sex: Male/Female	8/2
Years of Experience as Independent Consultants	22 \pm 12.5
Professorial Ranks	Number
Professors of Psychiatry (international)	2
Professor of Clinical Psychology, PhD	1
Professors of Psychiatry (University of Calgary)	6
Associate Clinical Professors	2
Assistant Professors	1
Total	12

The package that was sent to each expert with a covering letter (**Appendix L**) consisted of the following instruments, with directions to complete each.

Psychiatry experts were asked to rate on a 5-point Likert scale (from 1=irrelevant to 5= highly relevant) the relevance of each item of the four instruments in sampling patient knowledge of depression and its treatment (Instrument #1), patient attitudes to depression and its treatment (Instrument #2), patient adherence to antidepressants

(Instrument #3), and patient educational activities in seeking depression knowledge (Instrument #4).

Data were collected by mail in eight weeks and responses were entered and tabulated.

Step Four: Administering Instruments to Patients

The four instruments were initially pilot tested in four patients to assess the interpretability of the instruments. The patients were selected from the same research clinic as representatives of the study sample, interviewed, and subjected to verbal probing. Patient concerns and feedback were sought in the following aspects of the instruments:

1. Clarity of questions, identifying and reporting any ambiguous items and items difficult to interpret.
2. Difficulties with language, technical jargon, or any offending language.
3. Reactions and responses to the format and layout of the questions.
4. Time needed to complete the four instruments.

After slight modification based on expert and patient input, the four finished instruments were administered to 63 patients suffering from depression, selected from consenting volunteers at the clinical psychiatric practice or from patients referred for psychiatric consultations. Patients were given 15 to 20 minutes to complete the responses for the four instruments in the same controlled environment. They were not given the chance to look for answers in books or take questions home.

Patients were also required to provide demographics including age, sex, marital status, occupation, and ethnic background, and were asked whether they had any children below the age of 12 living at home. Patient's charts were examined for details of the following illness variables:

1. The duration of depression (in years)
2. The length of the most recent episode (in months)
3. The presence or absence of psychiatric and medical co-morbid conditions
4. The number of visits and therapy sessions with their a psychiatrist during the last 6 months

The investing psychiatrist completed the HAM-7 scale of depression to ensure that the score did not exceed 4 to satisfy the inclusion criterion of stable mood.

Step Five: Data Collection and Analysis

The Statistical Package of Social Sciences was used to analyze data, which included expert and patient responses, as the main sources of data. The question or issue addressed, the data source, and the type of data analysis employed is summarized in Table 2.

Table 2: Methods of Data Analysis

Question / Issue	Data Source	Analysis Method
1. Patient Demographics	Patients	Frequencies & Descriptive Statistics to describe the sample of participants
2. Content Validity	Expert Responses	Descriptive Statistics Experts' responses are utilized to examine the degree of agreements between them about the relevancy of each item in sampling patients' knowledge, attitudes and in measuring adherence and knowledge seeking behavior.
3. Reliability	Patient Responses on Instruments	Patients' responses were utilized to compute the internal consistency reliability employing Cronbach's alpha value for each instrument.
4. Psychometrics of MCQs and Attitude questionnaire	Results from Patients	Item Analysis of MCQ test (n= 27 items, administered to 63 patients): The difficulty (P), discrimination (D) and distracter effectiveness was determined. Additionally descriptive statistics were derived for items on all instruments (MCQ, attitudes, adherence, knowledge seeking).
5. Criterion Related Validity	Patient Responses from all Instruments	Bivariate correlations are used to examine the relationship between various subscales and other dependent variables. Between group differences were determined by ANOVA.
6. Convergent and discriminant Validity 7. In between group differences	Patient Responses from all instruments	Correlational analyses are utilized to examine the four instruments for evidence of validity (both convergent and discriminant). The relationships between subscale, and component scores and demographic variables, are examined. Between group performances on the MCQ, adherence, knowledge seeking instruments, and demographic variables are examined further employing ANOVA. Factor analyses employing principal component extraction with varimax rotation are applied to patients' responses on the MCQs (n=27), the attitudinal 5 point rating scale questionnaire (n=27), the attitude instrument, are carried out to examine the internal structure of the instruments, and the relationships between their subscales

CHAPTER IV: RESULTS

The Statistical Package for Social Science was used to analyze data. The data are described in terms of means and standard deviations for continuous variables, and as frequencies and percentages for the non-continuous variables, for the demographic data.

Patient Demographics

Sixty-three patients (mean age of 43 years) enrolled in and completed the study. All patients were recruited from both the male and female outpatient population who were attending the investigator's office for psychiatric treatment from depression. The demographics of participating patients are described in Table 3.

There were three major psychiatric diagnostic categories: major depression, bipolar depression, or dysthymia. The co-morbid, medical and psychiatric conditions are summarized in Table 4. Forty-eight per cent of patients received a diagnosis of one or more co-morbid psychiatric conditions, most commonly generalized anxiety (17%). Thirty-one per cent of the total sample had co-morbid medical disorders, most commonly cardiovascular disorders (11%). The majority of patients were Caucasian (86%) and 67% held either skilled or non-skilled occupations. All patients were receiving antidepressant treatment at the time of the study, and all of them received standard medication teaching during their visits with their psychiatrist. The number of visits with a psychiatrist as an outpatient ranged from one to ten visits (mean \pm SD = 5 ± 2.5) during the six months prior to the commencement of the study. Sixty-four per cent of patients were receiving

monotherapy with one antidepressant and 36% were receiving more than one antidepressant treatment.

Table 3: Demographics of Participating Patients (n= 63)

Non-continuous variables	Frequency	Percentage %
Sex		
Male/ Female	22/41	35 / 65
Marital Status		
Single	15	24
Married	33	52
Divorced	12	19
Separated	3	5
Ethnicity		
Caucasian	54	86
Non- Caucasian	9	14
Occupation		
Professional	14	22
Entrepreneur	7	11
Skilled	26	41
Non-skilled	16	26
One or more children at home	16	23.5
More than one child	47	76.5
Continuous Variables	Min / max	Mean \pm SD
Patient age	19/65	43 \pm 11.3
Duration of depression (years)	1/25	8.9 \pm 6.3
Duration of the most recent episode (months)	1/20	6.8 \pm 3.8
Times of visits over last 6 months	1/10	5 \pm 2.4
HAM-D 7 score at enrolment	0/4	2.38 \pm 1

Table 4: Diagnoses and Co-Morbidities

Variable	Frequency	Percentage (%)
Diagnosis		
Major depression	44	70
Bipolar depression	14	22
Dysthymia	5	8
Co-Morbid Axis I Psychiatric Disorders		
Generalized Anxiety	12	17
History of substance abuse (alcohol, hypnotics & analgesics)	7	12
Obsessional compulsive disorder	3	5
Panic disorder	4	6
Post- traumatic stress disorder (PTSD)	2	4
Attention deficit hyperactivity Disorder, in Adults (ADHD)	2	4
Total	31	48
Co-Morbid Axis III, Medical Disorders		
Cardiovascular (e.g. high blood pressure, lipids, blood disorders)	7	11
Metabolic (e.g. Diabetes)	2	3
Thyroid disease	2	3
Gastrointestinal (peptic ulcer, ulcerative colitis)	2	3
Chronic fatigue syndrome	2	3
Chronic pain conditions (e.g. arthritis, Migraine, post traumatic)	4	6
Chest, Asthma	1	1.5
Total	20	31

The mean score of performance on the MCQs was 20.8 (SD=3.1). The performance score ranged from 12 to 26 out of a possible score of 27. For the purpose of item analysis, patient performance was categorized into the following three groups:

1. Low performers, with a score range of 12-16 (n=6 patients)
2. Average performers, with a score range of 17-21 (n=22 patients)
3. High performers, with a score range of 22-26 (n=35 patients)

There were no significant differences among the high and the poor knowledge-performers in the three groups with respect to age distribution, durations of illness, the duration of the current episode, and the number of visits with a psychiatrist over the last six months.

MCQ Knowledge Test of Depression and Its Treatment

Internal Consistency Reliability

Cronbach's alpha was 0.68 for the 27 items on the MCQ. The internal consistency for each subscale is summarized in Table 5.

Content Validity

On a scale of 1-5, experts (n=9) rated the relevance of each item for meeting the objective of measuring and testing patient knowledge of depression. Items were rated as follows: 1 as irrelevant, 2 as slightly relevant, 3 as moderately relevant, 4 as significantly relevant and 5 as highly relevant. There were no significant differences in ratings among experts based on their length of experience. There was an overall agreement (88%) among experts about the relevance of the MCQs to test patient knowledge on depression and its treatments. The majority of the items were rated as highly or significantly relevant. The frequencies for the MCQ item ratings by experts are summarized in Table 6.

Table 5: Expert Agreement, Patient Responses and the Reliability of the MCQ Knowledge Subscales

Knowledge Subscales	Items	Agreement (%)	Reliability Cronbach's	Correct Responses (%)
1. Definition, the size of the problem	5	80	0.11	75
2. Risks of relapse	2	97	0.32	75
3. Etiology, causes, and triggers of depression	2	91	0.70	86
4. Presentation and symptoms	6	86	0.44	77
5. Biological and psychological treatments	12	86	0.61	81
Overall Content Validity & Reliability	27	88	0.68	78.8

Table 6: Frequency of Ratings by Experts on the MCQ Knowledge Instrument

MCQ items		1: Strongly Irrelevant, 2: Irrelevant, 3: Neutral, 4: Relevant, and 5: Strongly Relevant					Mean \pm SD	
1.	Which of the following statements about clinical depression is False?	0	0	0	2	7	4.7 \pm 0.4	
2.	What is the risk of dying by suicide among depressed patients?	1	0	1	4	3	3.8 \pm 1.0	
3.	What are the lifetime chances of becoming clinically depressed?	0	1	1	3	4	4.0 \pm 1.0	
4.	Which of the following is true about the age of onset of depression?	0	1	2	4	2	3.8 \pm 0.9	
5.	Which of the following about sex differences in depression is true?	0	1	3	3	2	3.6 \pm 1.0	
6.	Which of the following is FALSE about the relapse of clinical depression?	0	0	0	7	2	4.8 \pm 0.4	
7.	Which of the following behavior is associated with poor outcome?	0	0	0	8	1	4.9 \pm 0.3	
8.	What factors may trigger the onset of clinical depression?	0	0	0	2	7	4.8 \pm 0.4	
9.	Depression may be triggered by all the following EXCEPT	0	0	1	4	4	4.3 \pm 0.7	
10.	The following are indications of clinical depression EXCEPT:	0	0	1	2	6	4.6 \pm 0.7	
11.	Which is NOT true about the differences between depression and a passing blue mood?	0	0	3	3	3	4.0 \pm 0.9	
12.	All of the following are recognized symptoms of depression EXCEPT:	0	0	0	1	8	4.8 \pm 0.3	
13.	Which of the following is NOT a symptom of clinical depression?	0	0	2	1	6	4.4 \pm 0.9	
14.	All of the following are typical of patients suffering from clinical depression EXCEPT:	0	1	2	3	3	3.8 \pm 1.0	
15.	Which is NOT a common symptom of clinical depression?	0	0	0	5	4	4.4 \pm 0.5	
16.	Which of the following statements about treatment with antidepressants is FALSE?	0	1	1	1	6	4.3 \pm 1.0	
17.	If medication does not improve depressive symptoms, one should:	0	0	0	2	7	4.8 \pm 0.4	
18.	Which is NOT a recognized treatment for clinical depression?	0	1	2	4	2	3.8 \pm 1.0	
19.	Which is NOT a common side effect antidepressant drugs?	0	0	1	7	1	4.0 \pm 0.5	
20.	Which is FALSE about the effectiveness of antidepressant medications?	0	0	0	3	6	4.7 \pm 0.5	
21.	What should one do if one's first antidepressant medication fails?	0	0	3	2	4	4.0 \pm 0.9	
22.	Which is FALSE about Electric Convulsive Therapy (ECT) for treating clinical depression?	0	1	3	3	2	3.6 \pm 1.0	
23.	If one feels better during the course of treatment, one should	0	0	1	1	7	4.7 \pm 0.7	
24.	Which is NOT a common occurrence during treatment with antidepressants?	1	0	1	5	2	3.8 \pm 1.0	
25.	Which is FALSE about the response to treatment with antidepressants?	0	0	0	1	8	4.9 \pm 0.3	
26.	Which is FALSE about selecting the right antidepressant?	0	0	0	4	5	4.4 \pm 0.5	
27.	Psychotherapy can help many people with depression. Which of the following statements about psychotherapy is FALSE?	0	0	1	3	5	4.4 \pm 0.7	

Item Analysis of the MCQ Knowledge Instrument

Table 7 summarizes the results of item analysis. The first column is the “item number” of each MCQ question and the second column is the percentage of correct and wrong answers of the entire group of patients. The performance of the total patient group was sub-divided to reflect the responses of the Low, Average, and High performers on the MCQ. However, for the purpose of summarizing results and obtaining the item analysis variables, only the responses of High and Low performers are shown in Table 7. Columns A-D are the percentage responding to each possible answer for each question. Under the ‘Total’ column heading are three important variables: K, which refers to the Key (correct) answer; P, which refers to the item difficulty index (the percentage of patients who answered this item correctly); and D, which refers to the discrimination power of the item (how well this item distinguished between the poor and the high performers on the MCQ test). This was calculated as follows:

$$\text{Discrimination} = \frac{P(H) - P(L)}{n}$$

P (H) represents the proportion of patients in the High performance group who answered the item correctly, P (L), represents the proportion of patients in the Low performance group who answered the item correctly, and n is the number of all patients who tried this item.

Items that yielded a discrimination index of 0.3 or more were considered relatively good in discriminating between knowledgeable and less knowledgeable patients. The following is a summary of the discrimination values for the MCQ (items=27) in the patient sample (n=63):

$D = 0.5 - 1.0$ High discrimination (items $n=4$)

$D = 0.3 - 0.5$ Moderate discrimination (items $n=7$)

$D = 0.1 - 0.3$ Some discrimination (items $n=13$)

$D = < 0.1$ Poor discrimination (items $n=3$)

Table 7: MCQ Distribution and Item Analysis of the Knowledge MCQ

Item	Percentage of High and Low Patients Responding to Each Option								Total		
	A		B		C		D		K	P	D
	High	Low	High	Low	High	Low	High	Low			
1	4	9	95	45	0	36	0	9	B	0.87	0.40
2	12	18	58	54	16	18	12	9	B	0.46	0.13
3	4	0	12	81	83	9	0	9	C	0.56	0.80
4	0	9	91	72	4	18	4	0	B	0.87	0.20
5	0	0	95	72	4	27	0	0	B	0.92	0.27
6	0	0	4	27	4	36	91	36	D	0.65	0.47
7	0	0	0	9	0	18	100	72	D	0.92	0.27
8	0	9	0	9	0	9	100	72	D	0.92	0.20
9	0	9	100	45	0	18	0	27	B	0.81	0.47
10	41	54	0	18	0	18	58	9	D	0.41	0.67
11	62	36	37	54	0	9	0	0	A	0.65	0.33
12	0	9	0	9	0	0	100	81	D	0.95	0.13
13	20	9	0	0	79	63	0	27	C	0.71	0.33
14	0	0	0	0	0	18	100	81	D	0.97	0.13
15	0	0	95	81	4	9	0	9	B	0.95	0.13
16	95	54	4	27	0	0	0	18	A	0.89	0.33
17	4	0	95	90	0	0	0	9	B	0.94	0.00
18	0	0	0	9	0	18	100	72	D	0.90	0.20
19	8	54	4	0	4	18	83	27	D	0.68	0.67
20	4	9	0	0	0	18	95	72	D	0.92	0.13
21	100	100	0	0	0	0	0	0	A	0.95	0.07
22	8	18	4	27	50	9	37	45	C	0.32	0.40
23	0	0	100	100	0	0	0	0	B	0.98	0.00
24	0	9	70	18	12	36	16	36	B	0.41	0.53
25	0	9	0	9	0	9	100	72	D	0.90	0.20
26	4	18	0	0	0	18	95	63	D	0.90	0.20
27	0	9	0	0	100	63	0	27	C	0.90	0.27

K, Key (correct) Response; P, Difficulty Index; D, Discrimination Value

A, B, C, & D, Response choices to each possible answer for each item in the High and Low performer groups.

Factor Analysis

Principal component analysis applied on the 27 MCQs item collected from the psychiatric out-patient setting revealed seven principal components that explain 57.6% of the variance related to patient's responses on knowledge about depression and its treatments (Table 8).

Component 1: The presenting profile

This component consists of 5 items, has an internal consistency of 0.79 and explains 15.7% of the observed variance. This component refers to the knowledge of the antidepressants and their delayed action, especially in patients with significant symptoms, such as melancholic features and cognitive impairments.

Component 2: Etiology

This component consists of 6 items, has an internal consistency of 0.33, and explains 9.5% of the observed variance. This component refers to the fact that despite that the lifetime chances of becoming clinically depressed is high and that there are many life stresses that can trigger depression, there is hope for recovery with treatment using antidepressants.

Component 3: Symptoms' Response to Treatments

This component consists of 6 items, has an internal consistency of 0.60, and explains 8.2% of the observed variance. This component refers to the knowledge about the expected patient's behavior in order to achieve clinical response and improvements in symptoms, and better prognosis.

Component 4: Psychotherapy

This component consists of 2 items, has an internal consistency of 0.64, and explains 7% of the observed variance. It refers to correct knowledge about psychotherapy and the challenges associated with selecting the right antidepressant for a particular patient.

Component 5: Subtle Symptoms of Relapse

This component consists of 2 items, has an internal consistency of 0.46, and explains 6.2% of the observed variance. This component refers to the knowledge about the risk factors and symptoms associated with relapse of the illness.

Component 6: Challenges to adherence

This component consists of 4 items, has an internal consistency of 0.13, and explains 5.4% of the observed variance. This component refers to the patients' ability to recognize the normal from the abnormal mood states and what is expected from them to do when they feel depressed or when antidepressants fail.

Component 7: Biological treatments and its side-effects

This component consists of 3 items, has an internal consistency of 0.51, and explains 5.2% of the observed variance. It refers to the awareness of the common side-effects of antidepressants and the efficacy of electro-convulsive treatment.

Convergent Validity

Tables 9 and Table 10 summarize the correlations between the subscales and the components of the knowledge instrument. There were a number of significant correlations between some of the subscales and some of the components.

Table 8: Rotated Factor Matrix for the MCQ Instrument

Items (n=27) of the MCQs (Instrument #1)	Component Loadings						
	C1	C2	C3	C4	C5	C6	C7
Which of the following statements about the speed of response to the treatment with antidepressants is FALSE?	.75						
Which of the following about sex differences in depression is true?	.75						
All of the following are recognized symptoms of depression EXCEPT:	.73						
Which of the following is true about the age of onset of depression?	.69						
All of the following are typical of patients suffering from clinical depression EXCEPT:	.64		.43				
What are the lifetime chances of becoming clinically depressed?		.75					
Which is FALSE about the response to treatment with antidepressants?		.63					
What factors may trigger the onset of clinical depression?		.61					
Depression may be triggered by all the following EXCEPT		.50					
Which of the following statements about clinical depression is False?		.49					
If medication does not improve depressive symptoms, one should:			.78				
Which is FALSE about the effectiveness of antidepressant medications?			.75				
Which of the following behavior is associated with poor outcome?			.67				
Which is NOT a common symptom of clinical depression?			.44				
Which of the following is NOT a symptom of clinical depression?			.42				
Psychotherapy can help many people with depression. Which of the following statements about psychotherapy is FALSE?				.87			
Which is FALSE about selecting the right antidepressant, for someone with depression?		.44		.68			
Which is NOT a recognized treatment for clinical depression?					.73		
The following symptoms are indications of clinical depression EXCEPT:					.57		
Which of the following is FALSE about the relapse of clinical depression?					.47		
What should one do if one's first antidepressant medication fails?						.46	
What is the risk of dying by suicide among depressed patients?						.59	
Which is NOT true about the differences between depression and a passing blue mood?						.57	
If one feels better during the course of treatment, one should						.48	
Which is NOT a common occurrence during treatment with antidepressants?							.82
Which is FALSE about Electric Convulsive Therapy (ECT) for treating clinical depression?							.49
Which is NOT a common side effect of antidepressant drugs?							.45
Internal Consistency	.79	.33	.60	.64	.46	.13	.51
Proportion of Observed Variance (%)	15.7	9.5	8.2	7	6.2	5.4	5.2

Principal Components Extraction, Varimax Rotation with Kaiser Normalization, Rotation Converged in eight iterations.

Table 9: Correlations Among Subscale Scores of the Knowledge Instrument

	S1	S2	S3	S4	S5
S1	1	-0.03	0.01	0.08	0.1
S2	-0.03	1	0.18	0.35**	0.33**
S3	0.01	0.18	1	0.13	0.3*
S4	0.18	0.35**	0.13	1	0.27*
S5	0.1	0.33**	0.30*	0.27*	1

S: Subscale

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 10: Correlations Among the Components of the Knowledge Instrument

	C1	C2	C3	C4	C5	C6	C7
C1	1	0.29*	0.2	.07	0.1	0.05	0.02
C2	0.29*	1	0.15	0.30*	0.1	- 0.2	0.29*
C3	0.2	0.15	1	0.2	0.2	-0.07	0.25*
C4	0.07	0.30*	0.2	1	0.19	0.06	0.22
C5	0.14	0.11	0.21	0.18	1	0.17	0.17
C6	0.06	- 0.22	- 0.07	0.06	0.17	1	-0.08
C7	0.03	0.29*	0.25*	0.22	0.17	- 0.08	1

C: Component

* Correlation is significant at the 0.05 level (2-tailed).

Attitudes Toward Depression and Its Treatment

Instrument #2, “Patient attitudes to depression, to its treatments, and to professional help” has 27 items and 4 subscales.

Internal Consistency Reliability

Sixty-three outpatients completed this instrument. The number of items (n=27) for the final scoring were used to derive the final perception scale score, specifically its internal structure and scoring system.

Cronbach's alpha was 0.79 for the 27 items. The internal consistency for each subscale is summarized in Table 11.

Table 11: Internal consistency of each subscale for the Attitude Instrument

Subscale	Subscale Name	Number of items	Cronbach's
1	Negative perception of depression as an illness	11	0.67
2	Negative perceptions of biological treatment	8	0.67
3	Positive perceptions of psychological treatments	3	0.43
4	Negative attitudes toward professionals	5	0.48

Content Validity

Table 12 summarizes patient responses, and the ratings for each items, by experts (n=9). This includes the mean ratings of experts on a Likert scale (1 to 5), with 1 as not relevant and 5 as highly relevant.

The ratings for all items on the scale ranged from a minimum of 3.7 to a maximum of 5 and an average rating for all the instrument items of 4.3. This yields an 88% agreement among experts about the items being relevant for examining patient attitudes towards depression.

The content validity for each subscale is as follows (expressed in terms of the percentages of agreement among experts):

1. Attitude to the illness	11 items	85%
2. Attitude to biological treatments	8 items	89%
3. Attitude to psychological treatments	3 items	89%
4. Attitude towards professionals	5 items	89%
Overall agreement		88%

Factor Analysis

Principal component analysis applied to the 27-item questionnaire data collected from the psychiatric outpatient setting revealed five principal components that accounted for 51.5% of the variance in responses related to patients' attitudes and beliefs about depression and its treatments (Table 13).

Component 1: Acceptance of Treatment

This component consists of 9 items, has an internal consistency of 0.76, and explains 19.34% of the observed variance. It refers to understanding of depression as a multifactorial illness and therefore accepting psychological or biological treatments or both, as professionals recommend them.

Component 2: Perceived Stigma and Shame

This component consists of 8 items, has an internal consistency of 0.76, and explains 12% of the observed variance. The component refers to feeling stigmatized by the illness and by receiving psychiatric treatments.

Component 3: Negative attitude to Antidepressants

This component consists of 5 items, has an internal consistency of 0.78, and explains 7.8% of the observed variance. This component refers to negative attitudes toward and concerns about the possible effects of antidepressants.

Component 4: Self Stigma

This component consists of 5 items, has an internal consistency of 0.64 and explains 7.2% of the observed variance. The component refers to the perceived stigma, negative attitudes toward biological treatments and the preference for the lay support system in seeking help.

Component 5: Preference for Psychotherapy

This component consists of 4 items, has an internal consistency of 0.58, and explains 6% of the observed variance. The component refers to the preference for psychotherapy to psychiatry and for seeking help from primary care physicians, which may be related to the belief that depression is psychologically not biologically determined.

Component scores were obtained by the sum of the scores of the individual items divided by the number of items of each component. The distribution of components scores is summarized in Table 14.

Table 12: The Distribution of Expert and Patient Responses on the Attitude Instrument

Scale Items	Min-Max	Responses (Mean \pm SD)	
		Experts	Patients
1. Depression is a legitimate medical disorder	5-5	5.0 \pm 0.0	1.4 \pm 1.0
2. I think that depression is a weakness of character	3-5	4.5 \pm 0.7	2.4 \pm 1.6
3. Depression is due to being mentally ill.	1-5	3.7 \pm 1.3	3.1 \pm 1.5
4. I think that depression could be due to a chemical imbalance	4-5	4.5 \pm 0.5	1.7 \pm 1.2
5. Depression is just due to feeling sorry for oneself"	2-5	4.0 \pm 1.0	2.3 \pm 1.4
6. I cannot tell any one that I suffer from depression	3-5	4.5 \pm 0.7	2.5 \pm 1.4
7. I feel stigmatized being diagnosed with depression	4-5	4.5 \pm 0.5	2.9 \pm 1.4
8. I am not alone, many others suffer from depression	4-5	4.8 \pm 0.3	1.7 \pm 1.0
9. People avoid talking to me because am depressed	3-5	4.2 \pm 0.8	2.4 \pm 1.4
10. People in the community see me as dangerous	2-5	2.7 \pm 0.97	2.2 \pm 1.7
11. I feel less ashamed, since I learned more about the illness.	3-5	4.4 \pm 0.9	2.1 \pm 1.3
12. I would not take antidepressants as a first line of treatment.	4-5	4.9 \pm 0.3	2.7 \pm 1.6
13. Psychiatric medications are harmful	4-5	4.9 \pm 0.3	2.0 \pm 1.3
14. I will consider antidepressants only if my symptoms are out of control.	4-5	4.3 \pm 0.5	3.5 \pm 1.7
15. Antidepressants are habit-forming.	2-5	4.5 \pm 1.0	2.3 \pm 1.3
16. Antidepressants make me lose control	3-5	4.2 \pm 0.7	1.9 \pm 1.2
17. People of my culture do not allow me to take antidepressants.	3-5	4.3 \pm 0.9	1.7 \pm 1.2
18. I will take antidepressants, If my doctor is confident about them	2-5	4.0 \pm 1.0	1.7 \pm 1.0
19. I will not accept electric shock treatment for my depression	3-5	4.6 \pm 0.7	3.1 \pm 1.4
20. I will consider psychotherapy as the first choice for my depression	4-5	4.8 \pm 0.4	2.8 \pm 1.4
21. Psychotherapy should be used in combination with antidepressant.	3-5	4.2 \pm 0.7	2.0 \pm 1.1
22. I believe that psychotherapy, or "talk" therapy alone is useful	4-5	4.4 \pm 0.5	2.6 \pm 1.2
23. I will see my family physician if I feel depressed.	4-5	4.7 \pm 0.4	4.0 \pm 1.3
24. I would ask to see a psychiatrist if am depressed.	1-5	3.9 \pm 1.3	1.8 \pm 1.0
25. Psychiatrists are not really helpful for depressed persons.	4-5	4.9 \pm 0.3	2.0 \pm 1.4
26. I will seek help from a psychiatrist if I have doubt about medication.	4-5	4.4 \pm 0.5	1.7 \pm 1.2
27. I would seek help for my depression only from significant others	3-5	4.4 \pm 0.7	2.0 \pm 1.3

Expert Ratings: 1=Irrelevant to 5= Highly Relevant

Patient Ratings: 1=Strongly Agree to 5=Strongly Disagree

Table 13: Rotated Factor Matrix on the Attitude Instrument

Items (n=27) of the Attitude Scale (Instrument #2)	Component Loadings				
	C1	C2	C3	C4	C5
I will seek help from a psychiatrist if I have doubt about medication	.72				
Psychotherapy should be used in combination with antidepressant	.67				
I am not alone, many others suffer from depression	.66			.41	
I will take antidepressants, If my doctor is confident about them	.63				
I would ask to see a psychiatrist if am depressed	.58			-.40	
Depression is a legitimate medical disorder	.58				
Depression may be due to a chemical imbalance in the brain	.56				
I will consider psychotherapy as the first choice for my depression	.46				
I feel less ashamed, since I learned more about the illness	.42				
I would seek help for my depression only from significant others in my life		.69			
Depression is a weakness of character		.68			
Psychiatrists are not really helpful for depressed persons		.68			
I can not tell any one that I suffer from depression		.64			
People in the community see me as dangerous		.54			
Electric shock treatment can damage my brain		.49			
My culture does not allow me to take antidepressants		.45			
Psychiatric medications are harmful			.86		
Antidepressants may make me lose control		.49	.72		
I would not take antidepressants as a first line of treatment			.70		
People avoid talking to me because am depressed			.46		
I feel stigmatized being diagnosed with depression				.73	
I will consider antidepressants when if symptoms are out of control				.46	
Depression is due to being mentally ill				.44	
Depression is due to feeling sorry for oneself					.65
Antidepressants are habit-forming			.45		.62
Psychotherapy, or "talk therapy always useful on its own					.60
I will see my family physician if I feel depressed					.54
Internal Consistency	.76	.76	0.78	0.64	.58
Proportion of Observed Variance (%)	19.3	12	7.8	7.2	6.0

Principal Components Extraction, Varimax Rotation With Kaiser Normalization,
Rotation Converged in eight iterations.

Table 14: Component Scores Distribution on the Attitude Instrument

Perception Component	Min-Max	Mean \pm SD	Component Perception
1. Accepting biological and psychological treatments, despite shame	9-37	16.8 \pm 6	1.8
2. Stigma and shame of receiving psychiatric treatment	7-35	15.8 \pm 6.5	2.25
3. Negative attitudes and fear of antidepressants	4-20	8.6 \pm 4.4	2
4. Self stigma, 'antidepressants are my last resort'	3-15	9.5 \pm 2.9	2.8
5. The preference for psychotherapy and primary care	4-20	11 \pm 3.5	2.75

Convergent and Discriminant Validity

Table 15 summarizes the correlations between scores of the four subscales and the scores of the five components of the attitudes instrument.

Table 15: Correlations Among the Scores of Subscales and Components on the Attitude Instrument

Subscale	S1	S2	S3	S4	
S1	1	0.54**	0.13	0.38**	
S2	0.54**	1	- 0.04	0.38**	
S3	0.13	-0.04	1	0.12	
S4	0.38**	0.38**	0.12	1	
Components	C1	C2	C3	C4	C5
C1	1	0.12	0.22	.07	0.08
C2	0.12	1	0.56**	0.04	0.23
C3	0.22	0.56**	1	0.12	0.33**
C4	- 0.05	0.45**	0.12	1	- 0.05
C5	0.08	0.23	0.33**	- 0.05	1

S: Subscale C: Component

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed).

Depression Adherence Scale

Internal Consistency reliability

The internal consistency of the modified instrument (items = 4) in this study is found to be 0.66, compared to 0.61 (Cronbach's) of the original instrument (80).

Content Validity

This instrument was distributed to experts (n=9) in psychiatry and was administered to 63 patients. Experts rated the relevancy of each item in measuring adherence in patients suffering from depression on a 1- 5 Likert scale (1= irrelevant, 5=highly relevant). There was 90 % mean agreement among experts on the relevance for the four scale items to measure adherence in depressed patients. Expert ratings for each item separately are summarized in Table 16.

Table 16: Experts Ratings of the Depression Adherence Scale

Adherence scale items (during the last 4 weeks)	Mean \pm SD	Agreement %
1. How many times did you forget to take your medication?	4.8 \pm 0.4	94
2. How many times were you careless about taking your medication?	4.2 \pm 0.8	84
3. When you felt better, how many times did you stop taking your medication?	4.6 \pm 0.5	90
4. When you felt worse, how many times did stop taking your medication?	4.4 \pm 0.5	88
Overall agreement among experts	4.5 \pm 0.6	90

Patient Responses

This instrument was administered to 63 psychiatric outpatients suffering from depression. Patient responses to the adherence scale items are shown in Table 17. The

internal consistency of the modified instrument (items=4) in this study was found to be 0.66, which is comparable to the original instrument before modification.

Table 17: Patient Responses on the Depression Adherence Scale

Scale items	During the last four weeks	Min-Max	Mean \pm SD
1	How many times did you forget to take your medication?	0-20	3.5 \pm 4.8
2	How many times were you careless about taking your medication?	0-20	1.5 \pm 3.7
3	When you felt well, how many times did you stop taking your medication?	0-20	0.8 \pm 2.7
4	When you felt worse, how many times did stop taking your medication?	0-5	0.37 \pm 1.1

Patients were categorized as adherent or non-adherent based on their scores: a score of 0-4 was considered as adherent whereas a score of 5-23 was considered as non-adherent. Based on this definition of adherence, there were 23 patients who were described as non-adherent and 40 patients who were described as adherent. Table 17 summarizes patient responses on the Adherence Scale.

Employing analysis of variance, there were no significant differences among different groups of adherence with respect to age, durations of illness, duration of the current episode, and the number of visits to a psychiatrist over the last six months.

Knowledge-Seeking Behaviour

Internal Consistency Reliability

This instrument consists of three items. It was administered to 63 patients. This instrument has an internal consistency of 0.67 (Cronbach's).

Patient Responses

The frequencies of responses to the Knowledge-Seeking questionnaire (patient learning activities in hours) is shown in Table 18.

Table 18: Patient Responses on the Depression Knowledge-Seeking Scale

How many hours did you spend on each of the following, since you were diagnosed with depression?	Min-Max	Mean \pm SD
1. Reading about depression	0 – 60	10 \pm 13.7
2. Surfing the net about for depression educational programs	0 – 30	4.5 \pm 7.8
3. Listening or watching any audio-visual material on depression	0 – 30	2 \pm 5.0

For the purpose of this research, patients were categorized into high or low knowledge-seekers based on their scores, with 5-60 hours being categorized as high knowledge-seekers and 0-4 hours as low knowledge-seekers. There were no significant differences between the high and the low knowledge-seekers with respect to age distribution, durations of illness, the duration of the current episode, and the number of visits with a psychiatrist over the preceding six months.

Content Validity

There is an overall 68 % agreement among experts on the relevance for the three-item scale relevance as a measure for patient's knowledge seeking behavior.

The Relationship Between Educational Domains: (Knowledge, Attitudes, Adherence, and Knowledge-Seeking Behaviour)

To examine the relationship between the three educational domains (knowledge, attitudes, and psychomotor domains), correlation studies and analysis of variance (ANOVA) were utilized to examine patient responses on the four instruments.

The MCQ Knowledge Instrument

The Relationship Between Knowledge and Attitudes

To examine differences among the knowledge groups (high, average and low performers on the MCQs) in attitudes to depression and its treatment, ANOVA was carried out followed by Tukey's post-hoc test. There was a significant difference between the high and the average performers ($p < 0.04$) and between the high and the low performers ($p < 0.01$), but not between average and high performers. Also, there were significant differences ($P = < 0.001$), among knowledge groups in attitude component #4 “Self Stigma” (Table 19).

These findings were supported by the significant negative correlation ($r = - 0.26$, $p < 0.05$) between the scores of knowledge subscale #1 “Definition, and the size of the problem,” and the attitudes subscale #1 “Negative attitude to depression as an illness”. There were no significant differences among the knowledge groups in the other attitudes subscales or components scores.

Relationship Between Knowledge and Adherence

To examine the differences in the adherence among the three knowledge groups (high, average, and poor performers) on the MCQ test, an ANOVA was carried out followed by Tukey's post-hoc test. A significant difference was found for item #3 of the Adherence instrument, "During the last four weeks, when you felt better, how many times did you stop taking your medication?" between the high and the low knowledge groups ($p < 0.001$) and between the low and average knowledge groups ($p < 0.01$) in the same item of the adherence instrument. This evidence was also supported by the significant negative correlation between the total scores of adherence instrument and the knowledge scores on the MCQs ($r = -0.043$; $p < 0.01$). Table 20, summarizes the correlations between scores of the adherence items, and the attitude subscale scores.

Relationship Between Knowledge and Knowledge-Seeking Behavior

There were significant differences ($p < 0.04$) between knowledge-seekers and non-knowledge-seekers on component #7 of the MCQ instrument, "Knowledge of the biological treatments and its side-effects." However, there were no significant differences among the three groups of knowledge performers (low, average, or high) in the total or the items scores of the knowledge-seeking instrument (instrument #4). Table 19 summarizes the differences among knowledge groups in attitudes, adherence, and knowledge-seeking behavior.

Table 19: Knowledge Group Differences in Attitudes, Adherence, and Knowledge-Seeking Behavior

Subscale / Component	Instrument	P
	Attitude	
1	Patient attitude to the illness	0.01
2	Patient attitude to biological treatments	NS
3	Attitude to psychological treatments	NS
4	Perceptions of professionals	NS
The mean attitude score (27 items)		<0.01
Component	Self stigma (Component #4)	<0.001
	Adherence	
1	How many times did you forget to take your medication?	NS
2	How many times were you careless about taking your medication?	NS
3	When you felt well, how many times did you stop taking your medication?	<0.03
4	When you felt worse, how many times did stop taking your medication?	NS
The mean adherence score (4 items)		<0.001
	Knowledge-Seeking	
1	Reading about depression	NS
2	Surfing the net about for depression educational programs	NS
3	Listening or watching any audio-visual material on depression	NS
Mean knowledge - seeking score (3 items)		NS
Component #7 of MCQ	Knowledge of biological treatments (Component	<0.04

NS, no significant differences among groups

The Attitude Instrument

Relationship Between Attitudes and Adherence

There was significant correlation ($r = 0.27$, $p < 0.05$) between component #4 score "Self stigma" and the score of item #3 of the adherence scale "During the last 4 weeks, when you felt better, how many times did you stop taking your medication?" There was also significant correlation ($r = 0.32$, $p < 0.05$) between attitudes subscale #3 score "Perceptions of psychological treatments," and item #4 of the adherence scale, "During the last 4 weeks, when you felt worse, how many times did you stop taking your medication?"

Relationship Between Attitudes and Knowledge-Seeking

There was a significant negative correlation among the scores of item #1, "How many hours did you spend reading about depression, since you were diagnosed?" and component #1 "Accepting biological treatments", while there was significant positive correlation between the same item of the knowledge seeking behaviour and component #5 "The preference for psychotherapy " of the attitude scale ($r = - 0.34$, $p < 0.01$, $r = 0.32$, $p < 0.05$). There were no other significant correlations among scores for other components or subscales in any of the other items of the knowledge-seeking instrument.

The Adherence Instrument

The Depression Adherence Scale: Evidence for Criterion-Related Validity

Table 20, summarizes the correlations between the knowledge subscale scores (instrument #1) with the adherence scores of the four items of the adherence instrument.

Inverse relationships (negative correlations) suggest that individuals who are knowledgeable about treatments are likely to be more adherent. Also, the scores for being careless about taking the antidepressants or stopping when feeling better correlated significantly negatively with the performance on the total MCQ score, ($r = -0.43$, $p < 0.001$, and $r = -0.42$, $p < 0.001$).

Table 20: Correlations Among the Adherence Scores and MCQ Test Scores

Adherence items	Total knowledge score	Subscale 1	Subscale 2	Subscale 3	Subscale 4	Subscale 5
Forgot	- 0.2	- 0.13	- 0.14	-0.09	-0.01	- 0.11
Careless	- 0.43**	0.12	- 0.14	- 0.05	- 0.30 *	- 0.36**
Stopped when felt better	- 0.42**	- 0.12	- 0.27 *	- 0.08	- 0.30 *	- 0.36**
Stopped when felt worse	- 0.196	- 0.26*	0.19	- 0.234	-.062	- 0.25*

* Correlation is significant at $p < 0.05$ level (2-tailed).

** Correlation is significant at $p < 0.01$ level (2-tailed).

Adherence Group Differences in Knowledge, Attitudes, and Knowledge-Seeking

Behavior

Table 21 summarizes the differences between adherence groups (Adherent and Non-Adherent) in the total and the subscale knowledge scores, attitudes scores, and knowledge-seeking behavior scores. The performance of groups on the knowledge test (instrument #1) was examined. For the purpose of our study, non-adherence was defined

as the failure to take the medication five times during the last four weeks. Applying this definition, there were 23 patients were defined as non-adherent according to our criteria. There were significant differences in the total MCQ scores ($p < 0.002$), and in subscale #1 scores ($p < 0.03$) 'definition and the size e of the problem, between high and low adherent groups of patients. There were no significant differences between adherence groups in attitudes scores or knowledge-seeking behavior scores.

Table 21: Adherence Group Differences (Adherent vs. Non-Adherent) in Knowledge, Attitudes, and Knowledge-Seeking Behavior

Subscale / Component	Instrument	P
	Knowledge	
1	Definition, the size of the problem	<0.03
2	Risks of relapse	NS
3	Etiology, causes, and triggers of depression	NS
4	Presentation & Symptoms	NS
5	Biological and psychological treatments	<0.001
Mean knowledge (27 items) score		<0.002
Component 4	Psychotherapy	<0.03
Component 7	Biological treatment and its side-effects	<0.01
	Attitude	
1	Patient attitude to the illness	NS
2	Patient attitude to biological treatments	NS
3	Attitude to psychological treatments	NS
4	Perceptions of professionals	NS
Mean attitude score (27 items)		NS
	Knowledge-Seeking	
1	Reading about depression	NS
2	Surfing the net about for depression educational programs	NS
3	Listening or watching any audio-visual material on depression	NS
Mean knowledge – seeking score (3 items)		NS

NS: no significant differences between groups

The Knowledge-Seeking Instrument

Evidence for Criterion-Related Validity

Patients were categorized into “knowledge-seekers” and “non-knowledge-seekers.” Knowledge-seekers are defined as those who score at least 5 hours in any of the educational activities of the instrument. There were 34 patients who fulfilled our criteria of knowledge-seeking, and 25 patients who fulfill our criteria of non-knowledge-seekers.

The Relationship between Knowledge-Seeking and Performance on the MCQ

Knowledge Instrument

There is significant positive correlation ($r = 0.26$, $p < 0.05$) between scores on item #1, "How many hours did you spend reading about depression since you were diagnosed?" and subscale # 5 scores "Knowledge of Biological and Psychological Treatments." This is also supported by the significant positive correlation ($r = 0.26$, $p < 0.05$) between the scores of item #3 of the knowledge-seeking instrument, "How many hours did you spend watching videos or listening to audio materials about depression since you were diagnosed?" with component 7 of the MCQ knowledge test "Knowledge of the biological treatments and their side-effects." This was further supported by the significant differences between ($p < 0.04$) the low knowledge-seekers and the high knowledge-seekers in scores on component #7, "Knowledge of the biological treatments and their side-effects" of the MCQ instrument (Table 20).

Relationship between Knowledge-Seeking and Attitudes

There was significant negative correlation ($r = -0.26$, $p < 0.05$), between item #1, "How many hours did you spend reading about depression since you were diagnosed?" and subscale #3 of the attitudes scale, "Perceptions of psychological treatments."

There were also significant negative correlations ($r = -0.34$, $p < 0.01$, $r = 0.25$, $p < 0.05$) between items #1, "How many hours did you spend reading about depression, since you were diagnosed?", #2, "How many hours did you spend in surfing the net about depression since you were diagnosed?" and attitude component #1 "Stigma and accepting biological and psychological treatments." There was also significant negative correlation ($r = -0.32$, $p < 0.05$) between item #1, "How many hours did you spend reading about depression since you were diagnosed?" and component #5; "The preference for psychotherapy and primary care."

There was no significant difference between the two groups of knowledge-seeking in the attitudes subscale scores of instrument #2, and there were no significant differences between knowledge-seekers and non-knowledge-seekers in the other components of the attitudes scale.

Knowledge-Seeking Group Differences in Knowledge of Depression

Table 22 summarizes the differences between knowledge-seeking groups in performance on the MCQ knowledge test, adherence, and attitudes to depression. There were significant differences in the total scores on the multiple-choice questions of instrument # 1 between the knowledge-seekers and non-knowledge-seekers ($p < 0.01$).

There was a significant difference ($p < 0.028$) between these two groups in the scores on subscale #1 of the MCQ instrument #1 (definition, the size of the problem, suicide risk). There were no significant differences between knowledge-seekers and non-knowledge-seekers on scores of the other MCQ subscales 2, 3, 4, or 5.

Knowledge-Seeking Group Differences in Attitude to Depression

There was also a significant difference between the two groups in the scores of the attitude component #5 of the attitude scale; “Accepting psychotherapy” ($p < 0.01$).

There were no significant differences in the total MCQ score or in individual subscale scores between those who attended a psychiatry outpatient course of standard psycho-education on three occasions or on fewer than three occasions during the preceding 6 months.

Knowledge-Seeking Group Differences in Adherence

There was also a significant difference ($p > 0.05$) between knowledge-seekers and non-knowledge-seekers in the adherence scores of instrument #3 (the depression adherence scale). This difference seemed to account for the significant differences between the two groups in item # 2 of the adherence instrument, “How many times were you careless about taking your medication?” ($p < 0.05$). There were no significant difference between knowledge-seekers and non-knowledge-seekers in adherence scores on the other subscales 1, 3 or 4 of the adherence instrument #3.

There were no significant differences between the two groups of knowledge-seekers in age, duration of depression, and length of the most recent episode or the number of times they received standard psycho-educational visits with a psychiatrist.

There were no significant differences in the total hours of seeking educational activities or hours spent in following each activity in the categories of gender, marital status, occupational backgrounds, belonging to any ethnic groups, having illness co-morbidities or living together or not with children less than 12 years old.

Also, there was no significant difference in the total MCQ score, or in individual subscale scores between those who attended psychiatry outpatient for standard psycho-education on 3 or more occasions, or on less than 3 occasions during the last six months.

In the following chapter, the results pertaining to the evidence about the evidence for reliability and for validity of the four instruments will be discussed in more detail.

Table 22: Knowledge-Seeking Group Differences (low vs. high knowledge-seekers) in Knowledge, Attitudes, and Adherence

Subscale/ Component	Instrument	P
	Knowledge	
1	Definition, the size of the problem	<0.03
2	Risks of relapse	NS
3	Etiology, causes, and triggers of depression	NS
4	Presentation & Symptoms	NS
5	Biological and psychological treatments	NS
Mean MCQ knowledge score (27 items)		<0.01
	Attitude	
1	Patient attitude to the illness	NS
2	Patient attitude to biological treatments	NS
3	Attitude to psychological treatments	NS
4	Perceptions of professionals	NS
Mean attitude score (27 items)	Component 5 (accepting Psychotherapy)	<0.01
	Adherence	
1	How many times did you forget to take your medication?	NS
2	How many times were you careless about taking your medication?	<0.05
3	When you felt well, how many times did you stop taking your medication?	NS
4	When you felt worse, how many times did stop taking your medication?	NS
Mean adherence score (4 items)		<0.05

NS: No significant differences between groups

CHAPTER V: DISCUSSION

The main findings of the present study are summarized below.

First, an instrument to measure knowledge of depression and its treatments in patients suffering from depression was developed. This instrument consists of 27 MCQ items. The overall internal consistency reliability was 0.68 and there was 88% overall agreement among experts on the relevancy of its contents to measure patient knowledge of depression and its treatments. Factor analysis revealed seven components that explain 57.6% of the variance for this instrument. Item analysis showed that among the 27 MCQ items, there were eleven highly or significantly discriminating items. There was strong evidence for convergent and criterion-related validity for the instrument.

Second, attitudes toward depression, its treatment, and professional help were included in a 27-Likert-type item instrument for patients with depression. This instrument had an overall reliability internal consistency of 0.79; there was 88% overall agreement among experts about the relevancy of its contents to measuring patient attitudes towards depression and its treatments. Patient attitudes towards depression and biological treatments were generally negative. Factor analysis revealed five components that explain 51.5% of the variance for this instrument, and there was evidence for convergent, discriminant, and criterion-related validity for this instrument.

Third, two instruments were developed to measure adherence to antidepressants and knowledge-seeking behavior. The instrument to measure adherence to antidepressants consisted of four items and had an internal consistency reliability of 0.66. The most common reported cause of non-adherence to antidepressants was forgetfulness,

which supports what was reported in research (90). There is an improved internal consistency for the modified adherence instrument, from 0.61 of the original instrument (89), there is an evidence for content, convergent, and criterion related validity.

The fourth developed instrument to measure the knowledge seeking, although it is composed of three items, it has sufficient internal consistency reliability of 0.67, and there is evidence of content, convergent and criterion related validity.

Knowledge of Depression

The MCQ knowledge test focused on content that was comprehensive enough to include different aspects of knowledge deemed essential for patients, but the items were easy to understand in lay terms and avoided medical jargon. This may have resulted in developing some “very easy” items, which failed to discriminate between the high- and the low-performing patients. There were 3 poorly discriminating items ($D < 0.1$), 13 slightly discriminating items ($D = 0.1 - 0.3$) and 11 highly and significantly discriminating items ($D = 0.3 - 1$).

The majority of patients did generally well on the test (mean of the test = 78.8%) of patients answered items correctly). This is probably because the questions were easy and because of the patients’ good standard of knowledge. This could be attributed partially to the nature of the sample, which was drawn from chronic psychiatric patients who were exposed to lengthy counseling and psycho-education repeatedly during visits with their psychiatrists and counselors. This is in contrast to published findings that patients, and members of the public failed to recognize depression in vignettes (19, 27-

32), and that their knowledge about its causes appeared to be imprecise (33-37). In the present study, 77% were able to answer questions about recognizing the symptoms of depression correctly, and 86% answered questions about causes of depression correctly. This is also in contrast to a number of studies showing that less than 50% of community participants were able to differentiate depression from normal sadness (47, 60). And in contrast with the results in a number of community survey studies (46, 47, 50, 52), in which there was evidence to suggest that there is an enduring system of belief, especially among the poorly-educated persons, that depression is primarily caused by psychosocial stresses, (e.g. occupational and family stressors) or that it may be due to weakness of character or losing self-control. This was more obvious among those who were not able to recognize the illness in vignettes. Finally, patients in the present study correctly answered 81% of questions about different treatments of depression.

Poorly Functioning Items

Poorly functioning items in the questionnaire included MCQ items 17, 21, and 23 (Table 7). For example, item 17 the stem reads "If my medication does not improve depressive symptoms, I should" To the majority of patients the correct answer was obvious (B), "Talk to a health-care professional." This item was very easy to answer correctly for both the low and the high performing groups; 95% of patients ($p=0.95$) answered this item correctly. Reviewing the distracters of this item, (A), (C), and (D), it appears that option (A), "Stop taking all medication" deserves review, as it appears rather inappropriate and undesirable and very easily excluded, while option (D), "Ask friends about what to do" appears as a good distracter, in that it shows differences between high

and the low performing groups. The high performers made 0 choices for this distracter compared to the low performers, which made 9 choices for the distracter. Also, the distracters C & D in items 21 and 23 did not show any discrimination between the high and the low performing groups. These two items may need to be removed as an option, since there are other items, which serve almost the same objective. Alternatively, changing the distracters to increase the difficulty level of these questions can make these items more discriminating.

It could be argued that the nature of our sample, being drawn from heterogeneous well-educated patients, has contributed to these results. Patients received on average one to five visits to a psychiatrist. These visits included psycho-education about depression. Also, many patients had a long history of the illness, which increased their chances of exposure to psycho-educational activities programs and counseling, leading to acquiring knowledge about depression and its treatment. The mean duration of the most recent episode was 6 months, and the average duration of the depressive illness was 8 years. The high performance for the majority of patients on this instrument therefore could reflect the patients' sufficient knowledge about depression causes, symptoms, and treatments. This can also be explained by having developed and administered items, which were too easy, at least to a highly knowledgeable patient sample. This was supported by the item analysis seems to support this conclusion.

Among a number of the slightly discriminating items, the distracters appeared to be the most commonly encountered reason for the failure of these items. For example, distracter (A) in item #5; distracter (C) in item #12; distracters (A) and (B) in item #14; distracter (B) in item #20, and distracter (B) in items #26 and #27. None of these

distracters seemed to attract any responses from either the high or the low groups of performers. If this instrument is to be re-administered, then a comprehensive review of the poorly or slightly discriminating items should be carried out.

The finding that there is significant difference between the high and the low performers (those who scored less than 16 and those who scored more than 22 on MCQs) in their attitudes, towards depression as an illness, and to its stigma (table 19), is supported by literature which showed evidence that correct recognition of depression and its attribution to biological causes was associated with a positive attitude toward people with mental illness and to help seeking (36, 44, 48, , 49, 50, 61, 62, 64).

Reliability

The test had an internal consistency of 0.68. Although internal consistency for subscales #3, #4 and # 5 were 0.7, 0.44, and 0.61, subscale #1 (items=5) and subscale #2 (items=2) have a much lower internal consistency of 0.11 and 0.32. Some of the items in these two subscales (items = 7) however, have good discriminating values that ranged from 0.4 to 0.8 in three out of the seven items (some of the items were highly discriminating or difficult items). The low reliability could be explained by the poor variability among the individual scores on the items within these subscales.

One method of improving the reliability of these subscales is to decrease the difficulty of items (e.g. item # 3) for which performance was poor in both the high and the low groups and to increase the difficulty of some of the very easy items (items #4 and #5), so that we can elicit performances that score near the middle, thus increasing the variance and leading to improve internal consistency reliability. Also, it is important to

administer the MCQ test to a more heterogeneous and larger group of patients with a varied degree of knowledge about depression, such as including a group from the primary-care clinics who are not exposed to as much knowledge about depression. As a future research objective is to test depressed patient knowledge in different settings. This could be considered a legitimate method of improving internal consistency. The internal consistency of different components varied from (0.52 to 0.79), in six out seven components. However, component # 6, "Behavioral expectations when feeling better," is the only component that has low internal consistency value (0.13).

Convergent Validity

There was significant positive correlation between different subscales, and significant positive correlation between different components of the instrument, which provides evidence for convergent validity, Tables 9, 10.

There is evidence for a significant positive relationship between having the necessary knowledge about the risks of relapse (subscale #2) and being aware of the symptoms of depression (subscale #4), on the one hand, and having knowledge of different biological and psychological treatments (subscale #5), on the other hand. It is obvious to conclude that when patients understand the causes of depression, they will be able to think of treatment options more rationally.

Correct recognition of depression and its attribution to biological causes is associated with a positive attitude toward psychopharmacology (44, 61, 62, 64). In the present results, component #2, "Knowledge of the multifactorial etiological factors of depression, and the hope for recovery" were strongly associated with component #4,

"Understanding the objectives for psychotherapy" and with component #7, "Knowledge of the biological treatments and their side-effects." These results provide not only an evidence for criterion-related validity, but also suggest that those patients who are knowledgeable about the causes of depression are more likely to be more aware and more understanding of the treatment objectives.

In the current study, it was demonstrated that sufficient knowledge about depression in a motivated patient might lead to positive attitudes toward treatment and to better adherence to antidepressants in the high knowledge group as compared with the low knowledge group of patients. This was extensively examined and supported in the literature (69). The present study provides at least initial empirical evidence for criterion-related validity of the instrument.

Attitudes Towards Depression, Towards its Treatment and Towards Professional Help

Compared to knowledge, attitudes are more difficult to measure and more difficult to interpret. However some attitude items cluster into constructs, which could be examined and analyzed using factor analysis. In the current study, factor analysis of the attitudes instrument revealed five components, which explained 51.5% of the cumulative variance.

In the current study, patient attitudes toward depression as an illness, biological treatments, and psychiatry professionals were generally negative. Although attitudes in component #1, which explained the largest part of the variance (19%), indicated

willingness to accept treatments as recommended by professionals, patients indicated feelings of shame about being depressed. These findings replicate the findings of many other studies (30, 38, 57, 65).

Evidence for convergent / discriminant validity

From the correlations between the subscales scores and the components scores (Table 15), there is evidence to support convergent and discriminant validity for this instrument. Convergent validity was demonstrated in the positive significant correlations between subscales #1, #2 and #4 of the attitudes instrument. However, the non-significant negative correlation between subscale #2, "Attitude to biological treatment," and subscale #3, "Attitudes to psychological treatment" (-0.04) suggests some discriminant validity.

The findings in the current study are supported by findings from previous research and clinical observations about patient attitudes towards making treatments choices of depression, in that counseling, family support, and psychological treatments were preferred and turned to first (40, 44, 53, 54). The significant correlations between the attitude components provide evidence for convergent and some non-significant discriminant validity. For example, component #1, "Accepting recommended treatments despite the shame," appeared to have no significant relationship with any other components of the scale.

The Relationship Between Knowledge and Attitudes

Findings in the current study suggest that negative attitudes toward depression as an illness, different treatments, and psychiatry professionals correlate negatively with the scores in the knowledge instrument of depression. Although most of the subscales correlations were not statistically significant, there was one exception. This was the significant negative correlation between the total MCQ knowledge scores and the attitudes subscale #1 scores, “Negative perception of depression as an illness.” There were also a negative correlation between the scores on knowledge subscale #1, “Definition and the size of the problem,” and the scores on attitude subscale #1, “Negative perception of depression as an illness”.

The relationship between the scores on knowledge subscale #1 and attitude scores was further confirmed by examining the differences between the high and low scoring knowledge groups with regard to attitudes to depression. Those who scored higher on the MCQ knowledge instrument, especially on subscale #1 “Definition, the size of the problem,” also scored significantly differently in attitudes as compared with those with low or average knowledge scores, Table 19. As well, there were differences among these 3 knowledge groups in attitudes toward biological and psychological treatment and in attitudes to treatment by psychiatry professionals. However these differences were not significant.

The relationship between knowledge of depression and attitudes to illness and its treatments has been examined in depth in the literature, which showed that knowledge of depression, knowing individuals with depression, and attributing its causes to biological

origins were associated with better attitudes and with less stigmatizing of individuals with depression (48, 65-68). Also, it was reported that correctly recognizing the diagnosis of the person depicted in a vignette was associated with a positive attitude towards pharmacological treatment (36). Results from the current study support the finding that better knowledge about depression is associated with more positive attitudes to psychiatric treatments, especially the biological modes of treatments.

Relationship Between Attitudes and Adherence

There was significant correlation between the attitudes to seeking psychological treatments and adherence (stopping medication when feeling worse). There were also significant correlations between attitudes in component # 4, "Self stigma, antidepressants as a last resort," and stopping medications when feeling better. This is a common problem in clinical practice among patients suffering from depression, especially among those who have problems with side-effects of medication. They may discontinue medication when feeling worse due to side-effects or because they are still depressed. On the other hand, these results can be explained in the patients who feel stigmatized by the illness and discontinue the antidepressants as soon as they start feeling better. It was estimated that one-third to one-half of patients stop taking drugs after feeling better 3 months after starting of treatment (78,79). Negative attitudes appear to be a major obstacle to long-term adherence to antidepressants (41, 45). However, several studies reported that correct recognition of depression and its attribution to biological causes was associated with a positive attitude toward psychopharmacology (44, 56, 61, 62).

In conclusion, there is strong evidence from the current study to suggest that, despite the available sufficient knowledge about depression and its treatments, there are widespread negative attitudes towards antidepressants and psychiatry professionals. However, there were positive attitudes toward psychological treatments and primary care. In the present study, both self- and perceived stigma seemed to be prevalent among patients with depression and seemed to be associated with poor knowledge of depression and with stopping or avoiding antidepressant treatment.

Adherence to Antidepressants

The modified adherence instrument in the current study was developed in an attempt to categorize and simplify the complex causes of adherence into four main categories represented in the four items. Each of the four items of the instrument could include many sub-items of causes resulting in poor compliance. However, administering a short, simple four-item instrument will assist researchers and clinicians to narrow their thinking into the main four categories and to explore in a more focused manner the cause of non-adherence in any particular patient in more depth.

The modified adherence instrument in the current study, "Adherence to antidepressants" (items=4), demonstrated improved internal consistency reliability of 0.66, compared with the original instrument developed by Morisky (89), which had an internal consistency reliability of 0.61.

There was an overall 90% agreement among national and international experts about the relevance of the instrument to measure adherence.

The definition of non-adherence employed in this study (>five times failure to take medication over the preceding four weeks) may be considered as a harsh definition. However, the patients in the present study were highly adherent as compared with other samples, for which a less stringent definition could be used. In the current study, forgetfulness was the commonest reported cause of non-adherence, followed by carelessness, stopping when feeling better, and discontinuing the antidepressants when feeling worse.

Forgetfulness was also reported in the literature to be the commonest cause of non-adherence (80). Based on this definition of adherence, there were 23 patients who were described as non-adherent compared to 40 patients who were described as adherent. From the analysis in the present study, it appears that poor knowledge of depression, especially knowledge of treatments (subscale # 5) and knowledge of the presenting symptoms (subscale #4), were associated with non-adherence to antidepressants, Table 20. Being careless or stopping taking the antidepressants when feeling better or stopping taking the antidepressants when feeling worse were associated with poor knowledge of symptoms and their treatments. Also, there is evidence that individuals who were knowledgeable about the biological and psychological treatments were more likely to be more adherent, Table 21. The scores for being careless about taking the antidepressants or stopping when feeling better or feeling worse correlated negatively significantly with the performance, of the total MCQ score.

The Relationship between Adherence and Attitude

Self stigma, negative attitudes toward psychiatry professionals, and the tendency to seek psychological rather than biological treatments were significantly associated with poor adherence and stopping antidepressants, suggesting a strong evidence for criterion-related validity of this instrument. This was emphasized in the literature, which reports that one-third to one-half of patients may discontinue their medication when they feel better (78).

Also, in the present study, patients who were more positive and more perceptive of psychological treatments were more likely to stop taking their medication when they felt worse. This supports a preference for psychological models among many patients, especially those who experience stigma about the illness. It has often been shown in previous research that the lay support systems and general practitioners were considered more helpful for depression, whereas psychiatrists and psychologists were considered more helpful for psychosis (44, 53, 54). It was also demonstrated in the literature that psychotherapy was generally held in high esteem by the lay public, whereas psychopharmacotherapy was rejected by the vast majority of respondents (70).

Seeking Knowledge of Depression

The three-item instrument developed in the current study has the advantage of being short and somewhat reliable (internal consistency reliability of 0.67). There was also evidence for content validity (68% agreement among experts for the items being relevant to measure knowledge-seeking behavior in depressed patients).

The first item, "How many hours did you spend reading about depression?", appeared to carry a 72% agreement among experts. The instrument showed consistent evidence for convergent validity, with high correlations among the three items. There was also strong evidence for criterion related validity. In addition, this instrument is very short and easy to administer in any clinical setting among patients suffering from depression, especially in outpatients. For the purpose of the current study, five hours was the cut-off score to separate the knowledge-seekers from the non-knowledge-seekers.

The instrument showed that patients who sought more knowledge about depression were able to answer significantly ($p > 0.028$) more questions correctly about knowledge on defining depression and its epidemiological aspects (subscale #1) and to have significantly ($p > 0.04$) higher scores on component #7, "Knowledge of the biological treatments and its side-effects," than patients who were described as non-knowledge-seekers.

Also, patients who sought more knowledge about depression were significantly less likely to have preference for psychotherapeutic and primary care treatments (component #5, attitude instrument) than patients who were described as less knowledge-seeking.

If we accept the fact that seeking knowledge is a part of help-seeking, since many patients who seek help from psychiatry professionals do so because they believe that those professionals provide them with the best knowledge about depression, then one may consider knowledge-seekers as help-seekers. The relationship between depression literacy *per se* and behavior change, such as help-seeking, was examined in a number of studies. There is evidence in literature to support that patient knowledge of and attitudes

toward depression and its treatment influence the choice of treatment modalities, especially antidepressant medication, and play a role in stigmatizing people with depression (27-29, 38, 39, 44, 68).

It was demonstrated in the literature that despite increased professional contact by those with major depression and suicidal ideation, there were few differences among three groups (depression with suicidal behavior, depression without suicidal behavior, and a control group) on either open-ended or direct questions related to mental-health literacy. This suggests that increased professional contact in itself was not related to increased mental-health literacy and that more specific psycho-educational programs are required (30). The current study confirmed that more visits to a psychiatrist, as an outpatient was not associated with significant difference in knowledge, attitudes, or adherence to antidepressant medication. However these results need to be examined in larger studies.

Limitations of the Study: the Four Instruments

Patient Sample

The sample size was not large, the sample was homogenous and all patients were recruited from the investigator's practice. Future research should include larger, a more heterogeneous sample from various community clinics.

Limitations of the Knowledge Instrument

The main limitation of this instrument lies in the presence of very easy items leading to poor discriminating power for these items and the comparative lack of difficult

items. Although some of the difficult items had high discriminatory power, they decreased in the reliability of subscale #1 of this instrument in items such as the questions on epidemiology. The instrument can be improved by re-writing or replacing items identified to be functioning poorly psychometrically.

Limitations of the Attitude Instrument

Biases toward faking good could have influenced some of the patients' responses in reporting their attitudes in the attitudes instrument. This could have happened because all the patients drawn for the study were well known to the investigator, so that they may have had the conscious or the unconscious desire to please the investigator, who acts as their psychiatrist. In order to avoid this bias, anonymity could have made the attitude responses more reliable. This was not possible because of the lack of sufficient personnel who could administer the instrument blindly. However, the availability of a sample of patient with whom the investigator had a well-established trust and good rapport may have increased the likelihood of the patients sharing their values and attitudes in an honest fashion.

Limitations of the Adherence Instrument

Although the adherence instrument was very concise and user-friendly and could be completed in a very short time, it could not in itself point to the precise cause of non-adherence. Clinicians have to proceed with further explorations, depending on the patients' initial response on the instrument.

Another difficulty that may face clinicians administering this instrument is the faking good responses from a patient who is trying to please their physician. Finally and to a lesser extent is the recall bias of the number when patient failed to take their antidepressants.

Limitations of the Knowledge-Seeking Instrument

The limitations of knowledge-seeking instrument include the problem of recall bias due to collecting information from the remote past. Since the instrument is based on collecting the number of hours spent in knowledge-seeking since the diagnosis was made, it was difficult, at least for some patients, to recall the exact number of hours that they had spent on any or all of the three educational methods of learning about depression, especially among those who were diagnosed a number of years ago.

There was one area in which the patient's sample was not homogeneous. This is related to the diagnostic heterogeneity of the sample with included patients with bipolar as well as unipolar and bipolar depression. There were significant differences between patients who were received the diagnosis of major depression from those who received the diagnosis of bipolar depression on a number of variables of literacy. For example, patients with major depression were more knowledgeable in some aspects of the illness such as the etiology of depression and had a higher attitudes index score about professionals. Bipolar patients, however, reported significantly higher number of hours spent in reading about depression than the unipolar patients. The significance of these results needs to be interpreted with caution because of the small sample sizes.

Future Directions

A number of future directions are proposed.

First, the instruments should be administered to a larger and more heterogeneous sample of depressed patients from community clinics compared to the present sample. This strategy will ensure a representation of larger sample from primary care, where instruments ideally should be utilized to assess patients' knowledge, attitudes, adherence and knowledge seeking. This may also lead to an improved reliability of the four instruments.

Second in order to deliver a quality psycho-education for patients suffering from depression, reliable educational tools, with demonstrated evidence of validity should be developed.

Third, educational programs developed for patients with depression should be evaluated utilizing reliable instruments with demonstrated evidence of validity.

Conclusion

Four reliable instruments to measure educational domains of knowledge, attitudes, and psychomotor behavioral changes of adherence to antidepressants and knowledge-seeking behavior in patients suffering from depression were developed.

There was evidence for face, content-, convergent- and criterion-based validity for all four instruments. In the knowledge test, the poorly performing items will need to be modified or deleted. The attitudes and adherence instruments should be administered anonymously and blindly to a heterogeneous sample of outpatients suffering from

depression to avoid the limitation of "faking good" bias. The knowledge-seeking instrument should ideally be administered to patients before and after the exposure to a standardized psycho-education program administered in order to explore its predictive power and its capability as an instrument to evaluate educational programs about depression. All four instruments need to be administered to a larger and heterogeneous outpatient sample.

Nonetheless, the present results have demonstrated that instruments to measure knowledge, attitudes, adherence, and knowledge seeking behaviour have been developed and have promising psychometric characteristics.

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APPENDIX A: PUB MED SEARCH

In January 2006, I conducted a preliminary search of Pub Med, covering the period from January 1995 to January 2006. To search Pub Med for articles relating to mental health literacy, I used the following keywords in different combinations:

depression, disorder, knowledge, mental, literacy, help seeking, attitudes, behavior, patients, education, compliance, adherence, antidepressants, instruments, scales, and measurements

Following the electronic search, hand searches of the literature were undertaken in the form of chasing other related articles. This search strategy yielded 348 research articles, reviews and commentaries concerning research examining health literacy (knowledge, attitudes, and help seeking, and adherence to treatment) with regard to different diseases in almost every culture. This output constitutes a gross total; a number of studies appeared more than once (n=35) when the different keyword combinations were used in the search.

Of the 313 references, 89 met the following criteria and were included in our review: 1) articles written in English, 2) articles exploring patient and the public knowledge of and attitudes toward depression and help-seeking behavior and adherence in depression, and 3) study or studies based on random samples drawn from the general population or from primary care services. The authors excluded articles (n=24) on research focusing solely on health literacy of the public toward mentally handicapped individuals, schizophrenia patients, abusers of alcohol or drugs, geriatric patients, those with other psychiatric disorders, and adolescents. Studies exploring the knowledge of and attitudes toward other acute or chronic medical disorders were excluded (n=14). Also

excluded were studies and surveys carried out in the Far East, the Middle East, Latin America and Africa. Because it was beyond the scope of this review to study the different transcultural factors associated with depression literacy, studies solely examining the effect of socio-demographic factors on mental health literacy were excluded (n=24). This review was confined to research articles and reviews from North America, Australia, and Europe. Studies exploring the attitudes and knowledge of specific subgroups (e.g., students [including medical students], police officers, nurses and other mental health professionals, such as pharmacists) were excluded (n=15). We also excluded (n= 52) service utilization, and cost/effectiveness studies relating to depression and diagnostic and co-morbidity studies of mental illness because they were deemed irrelevant to our objectives. All research published before 1995 was excluded (n= 95), because our purpose was to include only the most recent findings, given that attitudes may change over time.

Of the articles identified, 89 met the inclusion criteria: 4 major literature reviews and 86 research papers. Of the reviews, there was a systematic review on the effectiveness of interventions in enhancing adherence to antidepressant therapy (88), a review on public beliefs and attitudes (64), a review on public beliefs about and attitudes toward people with mental illness (19), and a systematic review on studies, and programs that aimed at improving adherence to antidepressants (20). Questionnaires and structured, personal, or telephone interviews were commonly used to assess the knowledge of and attitudes toward depression and help-seeking behavior.

There were no studies that used reliable and valid instrument to objectively and comprehensively test the patient's knowledge of depression, such as multiple choice

question (MCQ) instruments. However there is one study which utilized an inventory to study public attitude to mental illness, prior to the closure of a psychiatric hospital and discharging patients into the community (48, 49). In another study, a 33-item instrument was developed to measure adherence to antidepressants treatment (58). However, this instrument is long and measures mainly patient attitudes to different treatments that they received from their doctors, and patient attitudes to antidepressant treatment.

Vignettes were commonly used in various surveys to test the accuracy of recognition of depression by both patients (27-31) and the public (32-36). The following is an example of a vignette, used in research, for assessment of mental health literacy (27). Participants were presented with vignettes depicting a person with depression or other mental illness and asked to identify the diagnosis or symptoms led to it.

“John (Mary) is 30 years old. He (she) has been feeling unusually sad and miserable for the last few weeks. Even though he (she) is tired all the time, he (she) has trouble sleeping nearly every night. John (Mary) doesn’t feel like eating and has lost weight. He (she) can’t keep his mind on his (her) work and puts off making decisions. Even day-to-day tasks seem too much for him (her). This has come to the attention of his (her) boss, who is concerned about John’s (Mary’s) lowered productivity.”

Although vignettes were commonly used to test patient knowledge, they cannot test patient knowledge systematically about crucial aspects of depression such as causes and important aspects of treatments. Therefore, other patient educational resources on depression on the World Wide Web (WWW) were reviewed to compliment our search and ensure that all areas of valid material on patient education are covered.

APPENDIX B: ETHICAL APPROVAL

FACULTY OF MEDICINE
MEDICINE CALGARY

2007-02-06

Dr. Claudio Violato
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University of Calgary
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Dear Dr. Violato:

RE: The Development and Psychometric Assessment of Instruments to Measure Depression Knowledge and Attitudes of Patients with Depression

Ethics ID; E-20402

Student: Dr. Adel Gabriel

The above-noted proposal including the Questionnaire (A Test of Knowledge of Depression for Patients; A Self reported Questionnaire of Adherence to Medication and Psych-Education; Perception of Patients about Depression and its Treatment). Research Protocol, Consent Form ((Version 1, dated March 2006)), and Letter of Invitation has been submitted for board review and found to be ethically acceptable.

Please note that this approval is subject to the following conditions;

- (1) Access to personal identifiable health information was not requested for this submission;
- (2) A copy of the informed consent form must have been given to each research subject, if required for this study;
- (3) A Progress Report must be submitted by February 06, 2008, containing the following information;
 - i) The number of subjects recruited & ii) a description of any protocol modification; iii) any unusual and/or severe complications, adverse events or unanticipated problems involving risks to subjects or others, withdrawal of subjects from the research, or complaints about the research; iv) a summary of any recent literature, finding, or other relevant information, especially information about risks associated with the research; v) a copy of the current informed consent form; vi) the expected date of termination of this project.
- (4) A Final Report must be submitted at the termination of the project.

Please note that you have been named as the principal collaborator on this study because students are not permitted to serve as principal Investigators, please accept the Boards' best wishes for success in your research,

Yours Sincerely,
Dr. Godavitch, BA(Hons), LL.B, PhD

Dr. Godavitch, BA(Hons), LL.B, PhD
Joint Health Research Ethics Board

Yours Sincerely
OG/emcg

cc. Adult Research Committee Dr. M. Verhoef (information) Research Services
Dr. Adel Gabriel (Student), Office of Information & Privacy Commissioner

APPENDIX C: TABLE OF SPECIFICATIONS, TAXONOMY OF THE COGNITIVE OBJECTIVES

KNO: Knowledge COM: Comprehension APP: Application Q: Question

Knowledge Objectives	KNO	COM	APP	Total
Definition The ability to understand that depression is not a weakness of the character, but a medical disorder.		Q1		1
The Size of the Problem (Epidemiological facts) Prevalence of depression Having the correct knowledge about the life time chances of becoming depressed approximately	Q3			1
The risk of suicide Awareness of the serious facts about the rates of suicide associated with depression	Q2			1
Age of Onset Recognizing that depression can start in childhood	Q4			1
Sex differences Recognizing that depression is more common in women than men	Q5			1
Relapse risks of, and triggering factors Knowledge of the chances of relapse rates after remission Understanding that stopping antidepressants after recovery may lead to relapse	Q6	Q7		2
Etiology The knowledge that depression could be predisposing or triggered by multiple Biological and Psycho-social factors	Q8	Q9		2
Clinical Presentations				
Distinction from normal sadness Awareness that occasional sadness may not be an indication for clinical depressive disorder. The comprehension that suffering from depression may need more than helping oneself Recognizing that an important difference from normal sadness that depression may last much longer, without treatment	Q10	Q11		2
To recognize the common symptoms of clinical depression, Cognitive deficits Inability to make decisions Abnormal thought content, cognitive abnormalities, and Poor energy	Q12 Q13 Q14 Q15			4
Knowledge of Biological treatments (antidepressants)				
Knowledge of the delayed onset of the action of antidepressants	Q16			1
Ability to act appropriately to failed response to antidepressants			Q17 Q21	2
Ability to act and respond appropriately to positive response to antidepressants			Q23	1
Ability to understand the need for maintenance treatment		Q25		1
Knowledge of different kinds of treatments	Q18			1
Knowledge of the magnitude of therapeutic efficacy of treatments	Q20			1
Knowledge of common side-effects	Q19 Q24			2
Predicting success of treatment with antidepressants	Q26			1
ECT knowledge	Q22			1
Psychological treatments	Q27			1
Total	20	4	3	27

**APPENDIX D: TABLE OF SPECIFICATION, TAXONOMY OF THE
ATTITUDINAL OBJECTIVES**

Attitudinal objectives	Awareness	Willingness to accept or respond	Preference & conceptualization of a value	Commitment	Total
Perception of Depression (attitudes and beliefs about depression)					
The awareness that depression is a legitimate medical disorder	P1				1
The conceptualization that depression is not a weakness of character			P2		2
The conceptualization that depression is a mental disorder			P3		
The beliefs about the causative nature of depression as an illness					
Biological and Psycho-social factors					
Depression could be due to a chemical imbalance in the brain, and		P4			2
Due to feeling sorry for oneself.		P5			
Self Stigma			P6		2
Feeling stigmatized being diagnosed with depression &			P7		
Cannot tell any one that I suffer from depression.					
Perceived Stigma			P9		2
People avoid talking to me			P10		
People see me as dangerous					
Coping with perceived stigma (willingness to accept the illness and possible associated shame)		P8			2
Am less ashamed, since I learned more about the illness		P11			
I am not alone, as many others suffer from depression.					
Attitudes and beliefs towards the biological treatments					
The commitment not to use antidepressants as a first line of treatment				P12	1
Holding a strong concept that psychiatric medications are harmful			P13		1
Accepting to take antidepressants, only if my symptoms are out of control		P14			1
The false belief that antidepressants are habit-forming	P15				1
The false belief that antidepressants can lead to losing control	P16				1
The commitment to follow cultural attitudes				P17	1
The willingness to take antidepressants, the doctor is confident about them		P18			1
The commitment, not accept Electric Shock Treatment, even if it is necessary				P19	1
Attitudes to Psychological treatments					
The preference for psychotherapy alone as the first choice treatment		P20			1
The preference for psychotherapy alone without antidepressants		P22			1
Accepting psychotherapy together with antidepressants		P21			1
Attitudes towards professionals and help-seeking					
The preference to seek help from a family physician			P23		1
Committed to seek help from a psychiatrist when depressed				P24	1
The negative concept that psychiatrists are not helpful for depression			P25		1
Committed to seek help from a psychiatrist if there is doubt about medication				P26	1
The preference for seeking help from significant others			P27		1
Total	3	9	10	5	27

**APPENDIX E: TABLE OF SPECIFICATION, PSYCHOMOTOR OBJECTIVES,
LIST OF ADHERENCE SPECIFICATIONS**

Psychomotor domain (adherence to antidepressants)	Total
Forgetting to take your antidepressants	1
Being careless at times to take them	1
Stopping taking the medication because of feeling well, i.e. did not need them	1
Stopping taking the medication because of feeling worse, i.e. because of side-effects	1
Total items	4

**APPENDIX F: TABLE OF SPECIFICATION, PSYCHOMOTOR OBJECTIVES,
LIST OF KNOWLEDGE-SEEKING SPECIFICATIONS**

Psychomotor domain (knowledge-seeking behavior)	Total
Reading about depression	1
Surfing the net	1
Watching audiovisual materials (e.g. videos, films, CDs)	1
Total items	3

APPENDIX G: RECOMMENDED GUIDELINES FOR WRITING HIGH QUALITY MULTIPLE CHOICE QUESTIONS

Adapted from Tarrant (100)

1. All options should be grammatically consistent with the stem and should be parallel in style and form. Non-grammatically correct options provide cues to the students who easily eliminate distracters that do not flow grammatically with the stem.
2. Each MCQ should have a clear and focused question. Teachers should avoid using MCQs with unfocused stems, which do not ask a clear question or state a clear problem in the sentence completion format.
3. Each MCQ should have the problem in the stem of the question, not in the options. The options should not be a series of true/false statements.
4. The basic format for MCQs is the single best answer. Therefore, ensure that questions have one, and only one, best answer.
5. Avoid gratuitous or unnecessary information in the stem or the options. If a vignette is provided with the MCQ, it should be required to answer the question.
6. Avoid complex, or K-type MCQs. K-type MCQs have a range of correct responses and then ask students to select from a number of possible combinations of these responses. Students can often guess the answer by eliminating one incorrect response and all options containing this response or by selecting the responses, which appear most frequently in all of the options.

7. Questions and all options should be written in clear, unambiguous language.

Poorly worded or ambiguous questions can confuse even knowledgeable students and cause them to answer incorrectly.

8. Make all distracters plausible, as plausible distracters are vital to high quality MCQs. Students who do not know the material increase their chances of guessing the correct option by eliminating implausible distracters.

9. Avoid repeating words in the stem and the correct option. Similar wording allows students to identify the correct option without knowing the material.

10. Avoid providing logical cues in the stem and the correct option that can help the student to identify the correct option without knowing the material. An example of a logical cue is asking students to select the most appropriate pharmaceutical intervention for a problem and only having one or two options, which are actually pharmaceutical interventions.

11. Avoid convergence cues in options where there are different combinations of multiple components to the answer. Question writers tend to use the correct answers more frequently across all options and students will identify as correct the answer in which all components appear most frequently.

12. All options should be similar in length and amount of detail provided in the option. If one option is longer, includes more detailed information, or it contains more complex language, students can usually correctly assume that this is the correct answer.

13. Arrange MCQ options in alphabetical, chronological, or numerical order. (We assess for chronological and numerical, but not alphabetical order).

14. Options should be worded to avoid the use of absolute terms (e.g., never, always, only, all) as students are taught that there are often no absolute truths in most health science subjects and they can therefore eliminate these distracters.

15. Options should be worded to avoid the use of vague terms (e.g., frequently, occasionally, rarely, usually, commonly) as these terms lack precision and there is seldom agreement on the actual meaning of “often” or “frequently”.

16. Avoid the use of negatives (e.g., not, except, incorrect) in the stem as they poorly assess student’s actual knowledge. If teachers wish to assess contraindications, the questions should be worded clearly to indicate that this is what is being assessed.

17. Avoid the use of “all of the above” as the last option. Students can easily identify if this is the correct answer by simply knowing that at least two of the options are correct. Similarly, they can eliminate it by knowing if only one of the options is incorrect.

18. Avoid the use of “none of the above” as the last option as it only measures students’ ability to detect incorrect answers. Furthermore, if “none of the above” is the correct option, the teacher must be certain that there are no exceptions to any of the options that the student may detect.

19. Avoid fill-in-the-blank format whereby a word is omitted in the middle of a sentence and the student must guess the correct word. All options should be placed at the end of the stem.

APPENDIX H: KNOWLEDGE OF DEPRESSION MCQ TEST

INSTRUCTIONS: CIRCLE THE BEST ANSWER FOR EACH QUESTION

- 1. Which of the following statements about clinical depression is FALSE?**
 - A. It is a medical disorder.
 - B. It is a weakness of character.
 - C. It is a common psychiatric disorder.
 - D. It affects both males and females.
- 2. What is the risk of death by suicide among depressed patients?**
 - A. The risk is very minimal.
 - B. The risk is between 15 % and 50%.
 - C. The risk is below 15 %.
 - D. The risk is above 50%.
- 3. What are the lifetime chances of becoming clinically depressed?**
 - A. One in 1000
 - B. One in 50
 - C. One in 3
 - D. One in 1
- 4. Which of the following is TRUE about the age of onset of depression?**
 - A. Depression does not begin in adolescence
 - B. Depression can start in childhood or adolescence.
 - C. Depression appears for the first time in middle-aged people.
 - D. Depression does not affect young children.
- 5. Which of the following, about sex differences in depression is TRUE?**
 - A. Only women get depressed.
 - B. Clinical depression is more common in women than men.
 - C. Clinical depression is more common in men than women.
 - D. Only men get depressed.
- 6. Which of the following is FALSE about the relapse of clinical depression?**
 - A. The number of previous episodes of clinical depression increases the chances of subsequent episodes.
 - B. After the first episode of clinical depression, there is an increased risk of a second episode.
 - C. Maintenance treatment can reduce the chances of relapse.
 - D. After recovery, there is zero risk for recurrence.
- 7. Which of the following behavior is associated with poor outcome?**
 - A. Taking antidepressant treatments regularly
 - B. Being involved in talk therapy (psychotherapy)
 - C. Staying sober
 - D. Stopping antidepressant medications if feeling well

- 8. What factors may trigger the onset of clinical depression?**
- A. Biological factors, such as genes
 - B. Psychological factors such as having marital problems
 - C. Social factors such as losing a job
 - D. All of the above
- 9. Depression may be triggered by all the following EXCEPT:**
- A. Prolonged severe grief over loved ones
 - B. Taking antidepressants
 - C. Certain medical conditions
 - D. The birth of a new baby
- 10. The following are indications of clinical depression EXCEPT:**
- A. Changes in sleep patterns
 - B. Poor concentration
 - C. Frequent crying for no obvious reasons
 - D. Occasional sadness
- 11. Which is NOT true about the differences between depression and a passing blue mood?**
- A. People with depression can "pull themselves together"
 - B. Depression can be much more disabling in day-to-day functioning.
 - C. Patients who are clinically depressed look sad.
 - D. Without treatment, symptoms of clinical depression can last for weeks, months, or years
- 12. All of the following are recognized symptoms of clinical depression EXCEPT:**
- A. Marked loss of interests.
 - B. Excessive sleep
 - C. Loss of energy
 - D. Good concentration
- 13. Which of the following is NOT a symptom of clinical depression?**
- A. Restlessness
 - B. Changes in appetite
 - C. Good decisions making
 - D. Lack of energy
- 14. All of the following are typical of patients suffering from clinical depression EXCEPT:**
- A. Negative thinking that can lead to self-defeating or suicidal behavior
 - B. Mental fatigue and the inability to solve complicated problems
 - C. Marked forgetfulness
 - D. Normal memory
- 15. Which is NOT a common symptom of clinical depression?**
- A. Poor motivation
 - B. Normal energy
 - C. Guilty thoughts
 - D. Fatigue

16. Which of the following statements about the speed of response to the treatment with antidepressants is FALSE?

- A. Symptoms improve immediately after treatment is begun.
- B. Many antidepressants may take several weeks to start to work.
- C. It is important to continue taking medication even if there is initial improvement.
- D. Not all symptoms respond to antidepressants at the same rate.

17. If medication does not improve depressive symptoms, one should:

- A. Stop taking all medication.
- B. Talk to a health care professional.
- C. Double the pills.
- D. Ask friends about what to do.

18. Which is NOT a recognized treatment for clinical depression?

- A. Medication
- B. Talk therapy.
- C. Light therapy (photo-therapy).
- D. Kiekie therapy

19. Which is NOT a common side effect antidepressant drugs?

- A. Upset stomach
- B. Sleep disturbances
- C. Sexual side-effects (e.g. problems with sexual desire or orgasm)
- D. Feelings of depression

20. Which is FALSE about the effectiveness of antidepressant medications?

- A. About 30-40% of patients do not respond to the initial treatment.
- B. Moderate symptom improvement may take few weeks to be achieved in those who will respond.
- C. Using more than one antidepressant may be necessary for some patients.
- D. Recovery of symptom can be achieved in all depressed patients

21. What should one do if one's first antidepressant medication fails?

- A. Consult one's doctors
- B. Take sleeping pills
- C. Drink more alcohol
- D. Use magnetic therapy

22. Which is FALSE about Electric Convulsive Therapy (ECT) for treating clinical depression?

- A. It is proved to be effective.
- B. It is a safe method.
- C. It is no longer used for treating depression.
- D. It is given under general anesthesia.

23. If one feels better during the course of treatment, one should

- A. Stop taking antidepressant medication.
- B. Discuss the course of antidepressants treatment with doctor.

- C. Reduce the antidepressant dose by half.
- D. Start a course of herbal treatment.

24. Which is NOT a common occurrence during treatment with antidepressants?

- A. Gaining weight
- B. Severe continuous headaches
- C. Feeling sleepy
- D. Sweating

25. Which is FALSE about the response to treatment with antidepressants?

- A. Up to 80% of people with depression do get better with the right medication.
- B. Most people with depression need to be treated for at least six to nine months to prevent relapse.
- C. For some people, it is necessary to stay on medication for long-term maintenance therapy.
- D. If the acute depressive symptoms are relieved, the patient should stop antidepressants.

26. Which is FALSE about selecting the right antidepressant for someone with depression?

- A. There are no available laboratory tests to guide doctors' choices for treating clinical depression.
- B. Different people have different responses to antidepressants.
- C. Doctors can tailor antidepressants to suit the symptoms of individual patients.
- D. Doctors can always tell beforehand how a person is going to respond to the medication they prescribe.

27. Psychotherapy can help many people with depression. Which of the following statements about psychotherapy is FALSE?

- A. Both individual and group talk therapy provides an opportunity to express and discuss thoughts and feelings with the therapist.
- B. Therapy may help to resolve life issues that may contribute to depression.
- C. All depressed individuals benefit from psychotherapy.
- D. In psychotherapy, negative, and self-defeating thoughts can be replaced by more positive, realistic thoughts.

Now Tell us About Yourself (Please Circle as appropriate)

Sex: male / female

Marital status: (Single) (Married) (Divorced) (Separated)

Ethnic origin: (Caucasian) / (non – Caucasian)

How long you have been suffering from depression _____ (months) _____ (Years)

How long is the duration of this episode of depression (most recent episode) _____ (Months)

Age: _____

Occupation: _____

**APPENDIX I: ATTITUDES TO DEPRESSION AND ITS TREATMENTS
(INSTRUMENT #2)**

INSTRUCTIONS: Please rate the statements about depression & its treatments below on the following scale					
1= Strongly Agree & 5 = Strongly disagree					
Please rate the statements about depression & its treatments below on the following Scale					
Perceptions of Depression	1	2	3	4	5
1. Depression is a legitimate medical disorder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I think that depression is a weakness of character.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Depression is due to being mentally ill.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I think that depression could be due to a chemical imbalance in the brain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Depression is just due to feeling sorry for oneself."	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I cannot tell any one that I suffer from depression.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I feel stigmatized being diagnosed with depression.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I am not alone many others suffer from depression.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. People avoid talking to me because am depressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. People in the community see me as dangerous.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I feel less ashamed, since I learned more about the illness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I would not take antidepressants as a first line of treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Psychiatric medications are harmful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I will consider antidepressants only if my symptoms are out of control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Antidepressants are habit-forming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Antidepressants make me lose control.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. People of my culture do not allow me to take antidepressants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I will take antidepressants, If my doctor is confident about them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I will not accept Electric Shock Treatment, for my depression even if it is necessary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I will consider psychotherapy as a first choice for my depression	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Psychotherapy should be used in combination with antidepressant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. I believe that psychotherapy, or "talk therapy is always useful on its own	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. I will see my family physician if I feel depressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. I would ask to see a psychiatrist if am depressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Psychiatrists are not really helpful for depressed persons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. I will seek help from a psychiatrist if I have doubt about medication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. I would seek help for my depression only from significant others in my life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX J: DEPRESSION ADHERENCE SCALE (INSTRUMENT #3)

During the last four weeks how many times:	Times
1. Did you forget to take your medication?	
2. Were you careless about taking your medication?	
3. When you felt better, how many times did you stop taking your medication?	
4. When you felt worse, how many times did stop taking your medication?	

APPENDIX K: DEPRESSION KNOWLEDGE-SEEKING SCALE (INSTRUMENT #4)

How many hours did you spend on each of the following since you were diagnosed with depression?	
1. Reading about depression	Hours
2. Surfing the net, for depression educational programs	Hours
3. Listening to or watching audiovisual material on depression	Hours

APPENDIX L: SURVEY LETTER

FACULTY OF | UNIVERSITY OF
MEDICINE | CALGARY**Dear Dr****Will you do us a favor?**

We are conducting a survey among a small number of psychiatrists. This project is for the thesis of a master's degree in medical education, which I am pursuing at this time.

The purpose of this survey is to solicit your professional opinion on the contents of two newly written instruments, to test knowledge and attitude in patients suffering from major depression. These instruments will be used in future studies to test patient's adherence to treatment, and possible clinical outcomes.

We hope that you will review the question items of the instruments, and then rate the relevance of the items of these instruments in sampling patient's knowledge and attitudes towards depression and its related aspects of management and treatments, respectively.

Your response will enable us to gauge expert opinion about the relevance by which our instrument can sample the patients' knowledge of depression and its treatment.

Your opinion as an expert in psychiatry is very important and most relevant in validating this instrument, and your responses will allow us to assess the quality and relevance of the questions for determining content validity.

Your answers are important to us, and will be kept confidential. Your responses will only be used in combination with other responses. The survey is very easy and should take 10-15 minutes to complete.

If you are interested in receiving a report of the results, just write your name and, address at the end of the survey. Please return the survey by 10 days, in the enclosed stamped envelope for convenience.

We appreciate your help

Adel Gabriel