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Detection of Depression with Different Interpreting Methods Among Chinese and Latino Primary Care Patients: A Randomized Controlled Trial

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Abstract

Background—Language barriers may contribute to the under-detection of depression in Latinos and Asians.

Methods—782 English, Spanish, and Chinese-speaking primary care patients were enrolled in a randomized controlled trial. Language discordant patients were randomized to Remote Simultaneous Medical Interpreting (RSMI) or usual and customary (U&C) interpreting. The Beck Depression Inventory-Fast Screen (BDI-FS) was administered. Patients were tracked for one year.

Results—462 patients completed the BDI-FS. 33% had a positive (≥4) screen. 27% of BDI-FS positive patients were diagnosed with depression. Among BDI-FS positive patients, Chinese-speakers were less likely to be diagnosed compared with English speakers (31% vs 10%, $P<.05$). There was a trend towards greater diagnosis with RSMI (27% detection with RSMI versus 20% U&C, $P=.41$).

Discussion—The diagnosis of depression among BDI-FS positive patients in our population was low, particularly among Chinese-speakers. RSMI could be an important part of a multi-faceted approach to improving the detection of depression.

Keywords

Depression; Language; Medical interpretation; Chinese; Latino

Background

Major depression, the most common mental illness in the United States, is a significant public health problem. The lifetime prevalence of depression among adults in the US is estimated to be 16.2%, and 6.6% for a 12 month period (1). Depression is usually associated with severe symptoms, comorbid conditions, and role impairment, and is frequently

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inadequately treated (1). Worldwide, depression was the fourth leading cause of disease burden, and the leading cause of non-fatal burden in the year 2000 (2). Healthy People 2010 has selected mental health as a Leading Health Indicator; increasing the proportion of adults with recognized depression who receive treatment is one of its objectives (3–4).

Depressive disorders are highly prevalent in primary care settings, with a prevalence rate of approximately 5–10% (8). The need to improve detection and treatment of these disorders has been well documented (5–7). Some authors have examined the prevalence and recognition of depression in ethnically diverse primary care patients (5–7, 9–12). In Latinos and Asians, the two fastest growing populations in the US (13), some studies have found the prevalence of depression to be higher than in the general population (9, 12). Yeung et al. estimated the prevalence of major depression to be 20% among Chinese-Americans seeking care at an urban primary care clinic (9). Olfson, et al. found the prevalence of depression to be 22% among Hispanic patients in an urban general medicine practice (12).

Under-recognition of depression among Latinos and Asians has also been described (5, 7). Reasons for under-recognition may include language and health literacy barriers, acculturation levels, and/or somatic presentations (7, 10). Language discordance between patients and their medical providers has been demonstrated to be a major factor impeding the effective provision of health care (14–22). In the diagnosis of psychiatric illness, the accuracy and efficiency of the interpreted patient-provider encounter is of unique importance, as there are no laboratory or radiological tests upon which to rely.

The language gap is typically bridged by several types of interpreting methods. In the medical encounter, interpreting can be consecutive or simultaneous. Consecutive interpreting is more commonly used, where the interpreting is provided once a speaker has finished speaking (23), requiring the speakers to pause periodically for the interpreter. During simultaneous interpreting, the interpreter interprets at the same time as s/he is hearing the original speech (23). Medical interpreting can also be proximate or remote. During proximate interpreting, the interpreter is physically present where the encounter takes place. In remote interpreting, privacy is improved because of the audio, without visual, nature of the encounter, as the interpreter is outside the room of the encounter (24). Medical interpreting is typically proximate consecutive (PCMI) or over-the-telephone consecutive (Remote Consecutive Medical Interpreting). The newer method of Remote Simultaneous, so-called United Nations-style, medical interpreting (RSMI) has only recently become commercially available and is not yet widely utilized. It is currently provided at two New York City hospitals and their satellite facilities. RSMI is similar to a voice-over in which interpretation is provided within milliseconds of the original speech. Providers and patients wear wireless headsets with microphones to communicate with remotely located trained medical interpreters (24).

No studies have evaluated the impact of different interpreting methods on the detection and treatment of depression. In this study, the first randomized controlled trial of RSMI in adult care, we use the Beck Depression Inventory-Fast Screen (BDI-FS) and physician diagnoses to assess differences in the detection and treatment of depression between interpreting methods. We also describe the prevalence of depression in Latinos and Asians in a primary

care setting, as well as associations between primary language and the detection of depression.

Methods

This randomized controlled trial was conducted at the Primary Care Clinic at a large New York City municipal hospital. Most of the hospital's patients prefer to communicate in languages other than English, most commonly, Spanish, Mandarin, or Cantonese.

This nested cohort study investigated the impact of RSMI compared with Usual and Customary (U&C) interpreting methods on physician diagnosis and treatment of depression. U&C methods include Proximate Consecutive Medical Interpreting (PCMI) and Remote Consecutive Medical Interpreting (RCMI). PCMI methods included both trained interpreters from the Hospital Interpreter Services as well as ad hoc "interpreters" (e.g. family, friends, untrained hospital staff and volunteers). The RCMI method used was a commercial language line accessed via a regular telephone. Medical encounters were considered language discordant if RSMI, PCMI, or RCMI were utilized, or when the provider and patient spoke different languages, without using an interpreter.

Participants

Primary Care Clinic patients were recruited between November 2003 and June 2005, and were followed for a year. Eligible patients were all English, Spanish, Mandarin, and Cantonese-speaking adults (over 18 years old) who were new patients being seen at the clinic for the first time between the hours of 9AM and 5 PM.

Trained bilingual research assistants identified eligible patients prior to their encounters with the provider. All participants consented to voluntary, uncompensated participation. Research assistants ascertained Spanish or Chinese concordance by asking patients if they preferred an interpreter for their medical visit. Patients comfortable speaking English without an interpreter as well as non-English speaking patients scheduled for visits with providers fluent in their primary language were considered language concordant, and were not randomized to any interpreting method. Patients categorized as language discordant were randomized to RSMI or U&C interpreting, using SPSS v.12 for Windows.

Study Procedure and Measures

All patient interviews were conducted in the patients' primary language by bilingual interviewers using instruments in that language. A questionnaire with extensive demographic and self-reported health information, including any history of depression, followed by the seven items of the Beck Depression Inventory-Fast Screen (BDI-FS), was administered to all study participants. The demographic questionnaire included an 8-item acculturation scale adapted from an existing instrument validated for use in immigrants in New York City (25).

The Beck Depression Inventory (BDI) is a 21 item self-report instrument used to assess the presence and severity of depression (26). The Beck Depression Inventory-Fast Screen (previously known as the Beck Depression Inventory for Primary Care) consists of seven

items drawn from the updated version of the BDI, the Beck Depression Inventory II (27). The BDI is widely used in clinical and research settings and has been validated in both Spanish and Chinese (28–30). The BDI-FS has previously been used in Spanish-speaking populations (31). Each of the seven items of the BDI-FS consists of four graded psychological statements describing symptoms of depression on a scale ranging from zero to 3. Participants are asked to select the statement that best describes how he or she had been feeling during the past 2 weeks, the BDI-FS is then scored by summing the ratings of each item (27). Among primary care patients, Steer et al. demonstrated a BDI-FS cut-off score of four and above to have a sensitivity of 97% for detecting major depression, and a specificity of 99% for identifying patients without depression using the Mood Module from the Primary Care Evaluation of Mental Disorders as the ‘gold standard’ (32).

Ideally, after completing the demographic questionnaire and BDI-FS, participants proceeded to their visit with their medical provider. If they were called in to the physician before completion, the remaining sections were left incomplete. Research assistants gave the physician a set of RSMI headsets if the patient was randomized to RSMI. If a patient was randomized to U&C, the physician selected an interpreter (Hospital Interpreter Service, commercial over-the-telephone interpreting service, or ad hoc ‘interpreter’), or proceeded without one, as he/she routinely would. Enrolled patients were followed for a one-year study period. At each visit research assistants facilitated patient receipt of their randomized method of interpretation, and medical charts were abstracted. Abstracted data included information on new physician diagnoses of depression and other medical problems, prescribed medications, and referrals to mental health services. A physician chart notation of depression and/or a prescription for a depression medication were considered a depression diagnosis. Research assistants also abstracted data on past medical history to ascertain whether patients had a diagnosis of depression prior to the onset of the study period. A comorbidity score was calculated for each patient by summing the number of diagnoses (other than depression) documented on each patient’s list of medical problems during their first clinical visit; scores were then tabulated into quartiles for analysis.

Analysis

Analyses of differences between interpreting methods and the detection and treatment of depression were performed using both the interpreting method to which the patient was randomized (intention to treat/randomization analysis), and the interpreting method the patient actually received (exposure analysis). The Chi square test was used to test for sociodemographic differences between groups in both the intention to treat and exposure analyses.

The Chi-square test was also used to test for sociodemographic differences between the BDI-FS positive, negative, and missing groups, and to examine associations between patients’ primary language and new physician diagnoses of depression among BDI-FS positive (score ≥ 4) patients. Prior diagnoses of depression were removed in the analyses of BDI-FS positive patients, as we aimed to assess the new detection of depression by physicians in patients with psychiatric distress at the time of their visit as measured by the BDI-FS.

Differences between interpreting methods and new physician diagnoses of depression were also analyzed among BDI-FS positive patients using the Chi-square test. As well, we assessed differences between interpreting methods and physician treatment (prescription of depression medications or referral to mental health services) of all (regardless of BDI-FS status) newly diagnosed patients using the Chi-square test. In these analyses, the intention to treat analysis compared RSMI with U&C interpreting. In the exposure analysis, we compared three groups, RSMI, U&C, and language concordant.

All tests were two-sided and the conventional $P < .05$ was considered statistically significant.

Results

Patient Enrollment and Randomization

782 patients were enrolled. 255 were initially screened as language concordant, and therefore not randomized to either interpretation mode. Among the 256 patients randomized to RSMI, 144 (56%) actually received RSMI; of the 271 randomized to receive U&C, 153 (56%) actually received U&C. Compliance with randomization assignment reflects that a significant proportion of patients (33% of those assigned to RSMI and 39% of those assigned to U&C) were deemed language concordant by their physicians after the initial screening. Most of these providers were bilingual by self-identification, so the encounters were non-English language concordant. There were 446 patients in total that were considered language concordant and, hence, did not receive interpretation. (Figure I)

Patient Characteristics

Randomized patients were mostly younger than age 40, had not completed high school, had resided in the US for 10 years or less, and had 'fair' to 'poor' self-reported health status. Sixty-six percent spoke primarily Spanish, and 29% spoke primarily Chinese. There were no significant differences in sociodemographic characteristics between the two modes of interpretation at a level of $P < .05$. (Table I)

Sociodemographic characteristics of patients in the exposure analysis [RSMI ($n=153$), U&C (177), language concordant (443)] differed in that concordant patients were more highly educated (35% had some college education vs 8% of RSMI and 10% of U&C patients, $P < .001$) and were more likely to report 'excellent' or 'good' health status (37% vs 19% of RSMI and 14% of U&C patients, $P < .001$).

Results of Beck Depression Inventory-Fast Screen (BDI-FS)

Of 782 enrolled patients, 462 completed the Beck Depression Inventory-Fast Screen (BDI-FS). 153 (33%) had a positive (4) screen. 309 patients had a negative screen, and 320 did not complete the screen secondary to timing (the screen was at the end of the intake questionnaire and the patients were called into the provider before the screen could be completed). Demographic characteristics were similar among patients with BDI-FS status positive, negative, or missing, except for the ability to speak English and self-reported health status. More BDI-FS positive patients reported not speaking English at all compared with BDI-FS negative and BDI-FS missing patients (36% vs 29% vs 29%, respectively, $P = .04$).

BDI-FS positive patients were also more likely to report fair or poor health status compared to BDI-FS negative and BDI-FS missing patients (69% vs 52% vs 26%, respectively, $P<.01$).

Prevalence of Depression

Among all enrolled patients, 96 (12%) had a diagnosis of depression, 81 (84%) of whom had new diagnoses of depression recognized during the course of the study period. Among the 153 BDI-FS positive patients, 42 (27%) had a diagnosis of depression; 35 (83%) had new diagnoses.

Primary Language and the Detection of Depression

The BDI-FS had similar screen positive rates across language groups: 36% among primarily English speakers, 33% among Spanish speakers, and 33% among Chinese speakers. Among BDI-FS positive patients, 31% of primarily English speakers received a new diagnosis of depression compared with 27% of Spanish speakers and 10% of Chinese speakers ($P=.09$ comparing all 3 groups, $P=.03$ comparing Chinese and English speakers, and $P=.05$ comparing Chinese and Spanish speakers).

Interpreting Method and the Detection and Treatment of Depression

Results by Intention to Treat (Randomization Analysis)—Results by intention to treat showed similar trends towards improved results with RSMI. RSMI patients who were BDI-FS positive were more likely to be newly diagnosed with depression (27% RSMI vs 20% U&C, $P=0.41$); and RSMI patients with new depression diagnoses were more likely to have been given a new depression medication or mental health referral (67% RSMI vs 52% U&C, $P=0.28$).

Results by Actual Interpreting Method Received (Exposure Analysis)—As there was a significant proportion of patients who did not participate in the randomization arm to which they were assigned, because they were deemed language concordant by their physicians after the initial screening, we focused our results on the analysis by actual interpreting method received. Among BDI-FS positive patients, there was a trend towards RSMI patients being more likely to be newly diagnosed with depression (29% RSMI vs 23% U&C vs 22% language concordant); however, these differences were not statistically significant (Table II). Among all patients with new depression diagnoses (including BDI-FS positive, negative, or missing), there was a trend showing RSMI patients to be more likely to be given a new depression medication or mental health referral (63% RSMI vs 56% U&C vs 53% language concordant, $P=.81$) (Table III).

Discussion

With the rapid growth of the foreign-born population in the United States, determining the impact of different interpreting methods on medical outcomes is of great consequence. It is of particular importance in the detection of depression, given its prevalence and as it is completely dependent upon communication for diagnosis. The recent availability of Remote Simultaneous Medical Interpreting, with its potential for fewer errors and improved

efficiency (33) and patient satisfaction (24), compelled studying its impact in relation to Usual and Customary interpreting.

The overall incidence of new physician diagnoses of depression in our study population was 12%, lower than the 20–22% found in other studies of Latino (12) and Chinese (9) patients, but comparable to the 5–10% reported among the general population in primary care settings (8). Thirty-three percent of patients had a positive BDI-FS; however, less than a third of these patients were diagnosed with depression. Perez-Stable et al. described similar findings; among 265 medical outpatients, physicians recognized as depressed only 36% of Diagnostic Interview Schedule (DIS)-depressed patients (6).

Our analysis of the detection of depression across language groups among BDI-FS positive patients revealed interesting differences. The BDI-FS positive rate was similar across language groups. Therefore, the differences in depression diagnoses across language groups seem likely related to some aspect of the communication between patient and provider. Providers had the lowest diagnosis rates with Chinese speakers. Chung et al. also found that primary care providers were significantly less likely to recognize Asians (97% Chinese) as psychiatrically distressed in comparison to Latino patients (7). This may be due to factors other than language, such as culture and attitudes. There is a lack of awareness of depression among many Asians and Asian-Americans who often subscribe to traditional medical beliefs which conceptualize depression differently than in the West, and can be more reluctant to report depressive symptoms or receive treatment (9). Chung et al. hypothesized this may have been due to Asians being more likely to present with somatic complaints, making it less likely that clinicians would consider that psychiatric symptoms may be present, or Asian physicians being more cautious in asking about psychiatric symptoms for fear of stigmatizing the Asian patient (7).

We demonstrated trends showing that RSMI was associated with greater rates of detection and treatment of depression; however, the results were not statistically significant. The apparent superiority of RSMI may have been due to practical issues such as time and efficiency. The improved efficiency (33) of RSMI may have allowed for sufficient time to assess mental health issues, which may have been foregone in a typical language discordant encounter brokered by usual and customary interpreting methods. RSMI is more private (24) and simulates a natural conversation between language discordant participants; non-verbal cues may also be more obvious without a distracting third party in the room. As language and culture are interrelated, perhaps patients felt a diminished sense of cultural differences with the apparent removal of the language divide, allowing patients to speak more freely about sensitive topics such as mental health. Further studies are warranted with larger sample sizes across a variety of settings to further investigate this finding, which has the potential to have tremendous impact on the diagnosis and treatment of depression in populations with limited English proficiency.

Our study has limitations. Poor charting may have contributed to the apparent under-diagnosis of depression seemingly demonstrated in our study population. Due to time constraints in the clinical setting, we used the outcome of physician diagnosis of depression as our ‘gold standard’, instead of in-depth psychiatric interviews. Self-report instruments

measuring affective distress and chart review of physician diagnoses of depression have produced more variable results than studies using diagnostic interviews (8). In addition, again due to time constraints, we used the shorter BDI-FS, instead of the 21-item BDI, which has been validated in Spanish and Chinese (28–30). Physicians themselves also may have varied significantly in their ability and training in mental health, their orientation towards psychosocial issues, and their ability and willingness to both diagnose and treat depression; we did not collect data on this. In subsequent studies it may be useful to include simulated patients in order to evaluate physicians' abilities in assessing and treating depression.

The diagnosis and treatment of depression in cross-cultural patient-physician interactions likely is related to a constellation of factors including socioeconomic, culture, attitudes, race and ethnicity, comorbid conditions, time, and logistics and quality of the interpreting method (5, 34). RSMI may be particularly useful in clinical situations where patient privacy is paramount, such as the mental health encounter (24). Implementing RSMI could be an important component of a multi-pronged approach to improving the diagnosis and treatment of depression in the interpreted encounter. Cost-effectiveness studies are needed comparing RSMI to other interpreting methods, as cost will be an important determinant of its sustainability. Further research in this area may also benefit from the use of simulated or standardized patients. Simulated patients have been used in medical education and other medical settings for many years to assess doctors' performances and standardize clinical examinations (35). Future potential studies could utilize simulated patients to provide both a 'standard' patient encounter in the comparison of the impact of interpreting methods on medical outcomes as well as a means of assessing physicians' skills.

Both physicians and patients in the interpreted mental health encounter should be trained on how best to work with interpreters and on the potential impact of one's personal culture on symptom presentation and acceptance of therapeutics. Further studies need to be conducted on language, culture, interpreting modalities and the diagnosis and treatment of depression.

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Figure I.
Flowchart of Patient Enrollment, Randomization, and Analysis

Table I

Sociodemographic characteristics of enrolled patients: Randomization analysis, n (%)

	RSMI (n=256)	U&C (n=271)	P value ^a
Age			
18–24	31 (12)	29 (11)	0.22
25–39	113 (44)	115 (43)	
40–49	71 (28)	62 (23)	
50–65	33 (13)	53 (20)	
>65	8 (3)	12 (4)	
Gender			
Male	120 (47)	134 (49)	0.55
Female	136 (53)	137 (51)	
Education			
5th	95 (37)	88 (32)	0.63
Grade 8-some HS	61 (24)	67 (25)	
HS grad	65 (25)	79 (29)	
Some college-post college	30 (12)	28 (10)	
Missing	5 (2)	9 (3)	
Years in US			
0–2 years	51 (20)	46 (17)	0.26
3–5 years	74 (29)	64 (24)	
6–9 years	46 (18)	44 (16)	
> 10 years	75 (29)	102 (38)	
US born	1 (0)	2 (1)	
Missing	9 (4)	13 (5)	
Primary language			
English	2 (1)	1 (0)	0.50
Spanish	172 (67)	175 (65)	
Chinese	68 (27)	84 (31)	
Missing	14 (5)	11 (4)	
Speak English?			
Very well	0 (0)	0 (0)	0.47
Well	5 (2)	10 (4)	
Not well	117 (46)	133 (49)	
Not at all	112 (44)	116 (43)	
Missing	22 (9)	12 (4)	
Acculturation Score (quartiles)			
1 (least, 7–10)	62 (24)	54 (20)	0.78
2 (11–12)	45 (18)	47 (17)	
3 (13–15)	42 (16)	51 (19)	
4 (most, 16–27)	28 (11)	29 (11)	
US born	1 (0)	2 (1)	

	RSMI (n=256)	U&C (n=271)	P value^a
Missing	78 (30)	88 (32)	
Self-reported health status			
Good-excellent	47 (18)	44 (16)	0.45
Fair-poor	132 (52)	148 (55)	
Missing	77 (30)	79 (29)	
Comorbidity Score (quartiles)			
1 (least, 0–2)	59 (23)	50 (18)	0.11
2 (3–5)	89 (35)	78 (29)	
3 (6–8)	46 (18)	57 (21)	
4 (9–48)	62 (24)	86 (32)	

^aP values calculated excluding missing values

Table II

Patients with a positive Beck Depression Inventory-Fast Screen (score ≥ 4) with and without new diagnoses of depression: Actual interpreting method received, n(%)^a

New Diagnosis of Depression	RSMI (n=24)	U&C (n=31)	Language concordant (n=95)
Yes	7 (29)	7 (23)	21 (22)
No	17 (71)	24 (77)	74 (78)

^aNo significant differences comparing all 3 groups or comparing RSMI vs U&C

Table III

All patients with new diagnoses of depression - on new depression medications or referred to mental health?

Actual interpreting method received, n(%)^a

Medication/referral	RSMI (n=16)	U&C (n=18)	Language concordant (n=47)
Yes	10 (63)	10 (56)	25 (53)
No	6 (38)	8 (44)	22 (47)

^aNo significant differences comparing all 3 groups or comparing RSMI vs U&C