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Detection of Depression in Primary Care and the Assessments Available that can assist in Diagnosis

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Abstract
Because of the frequency which primary care physicians see their patients, they are in a unique position to recognize depressive symptoms. The primary care environment is missing one out of every two patients with depression. This literature review will examine the accuracy of diagnosis by primary care physicians and the measures that could be used to increase accuracy. Three diagnostic measures are reviewed. The first is the Patient Health Questionnaire, which is easy to administer and can be given in different languages. The next is the Hamilton Depression Rating Scale, which would be useful during the treatment of depression to assess the progress of individuals, because of the high reliability. The final is the Mini International Neuropsychiatric Interview, which is a good option available as a second tier diagnostic measure after high-risk patients have been recognized. Poor recognition and misdiagnosis could be improved with the implementation of diagnostic measures.

Key Words:
primary care, accuracy, diagnostic measures

Henry Wadsworth Longfellow (1854) once said, "Every man has his secret sorrows which the world knows not; and often times we call a man cold when he is only sad". According to the World Health Organization (2017), depression is one of the most common mental illnesses and affects more than 322 million people worldwide. Depression is actually a broad class of disorders that vary in severity and duration. Some depressive disorders are chronic in nature while others occur for far shorter episodes. Comorbidity of depressive disorders and health challenges, or other psychiatric conditions is also very prevalent, especially when dealing with anxiety and substance abuse (Hanel et al., 2008; Verhaak, Schevellis, Nuijen, & Volkers, 2006). Although there are differences between depressive disorders, there is a common symptomology to all of them, which can lead to impairment in daily life. The symptoms of Major Depressive Disorder can range from being hardly noticeable to those close to the individual, to severely debilitating and obvious to others (American Psychiatric Association, 2013). As reported by the World Health Organization (2017), depression is one of the leading causes of disability worldwide and is also one of the major contributors to suicide. Additionally, suicide is currently ranked as one of the top 20 causes of death both nationwide and throughout the world (Heron, 2016; WHO, 2017).

The impact of depression can be shown in documented in rates and figures globally, but it can also be seen on a personal scale through the individual's quality of life. There are many different options available to treat depression: psychotherapy, pharmacotherapy, cognitive behavioral therapy, and life style changes. However, before depression can be treated it must first be recognized and diagnosed. Because of the frequency with which primary care physicians see their patients, they are in a unique position to recognize depressive symptoms.

The US Preventative Task Force (2009) has recommended scanning for depression regularly in the primary care setting. There are many methods that may be employed to diagnose depression, including: clinical instinct, self-report

surveys, and physician or nurse-administered assessments. Some methods of diagnosis are found to be more effective than others and therefore, primary care physicians have been seen to under-diagnose or misdiagnose a large number of cases (Vermani, Marcus, & Katzman, 2010). This literature review will examine the accuracy of diagnosis by primary care physicians for depressive disorders and reviewing the diagnostic measures that could be used to increase this accuracy.

Accuracy of Diagnosis

The diagnosis of depressive disorders may be problematic because of its disparate symptomology, which includes both somatic and emotional symptoms. Most of those suffering from these disorders seek to alleviate the somatic symptoms through primary care advice, instead of recognizing the connection between those symptoms and mental illness (Malhi et al., 2014). This may lead physicians to overlook psychiatric disorders in pursuit of a more easily conceptualized diagnosis. A meta-analysis done by Mitchell, Vaze, and Rao (2009) cited 41 different studies, which evaluated the unassisted (not evaluated by a mental health professional) diagnosis of depression by primary care physicians. They found a range of diagnostic accuracy between 47.3%-50.1%. The difficulty of identification has been seen in these low rates of accurate diagnosis among primary care physicians. Other studies that have been conducted since this meta-analysis have found similar results. A study conducted in Australia compared the unassisted assessment by primary care physicians to that of using the Patient Health Questionnaire (PHQ-9) and found a sensitivity (identify those *with* the disorder (true positive rate) of 51% (Carey et al., 2014). This shows that the overall diagnosis in the primary care environment is missing one out of every two patients with depression.

Low depression sensitivity can be seen even more starkly in cases involving mild depression. In another meta-analysis conducted by Mitchell, Vaze, and Rao (2010), they emphasized the accuracy of unassisted diagnosis of patients with mild depression and distress in the primary care setting. This meta-analysis showed an accuracy of 56.7% for a correct diagnosis in moderate to severe depression, but only 33.8% accuracy in those with cases of mild depression (Mitchell et al., 2010). Therefore, physicians are better able to recognize severe depression over mild depression.

Those individuals, who visit their physician with the purpose of seeking help for mental health have a greater chance of receiving a diagnosis of an affective disorder than those who do not (Hanel et al., 2009; Piek et al., 2011; Verhaak, et al., 2006). This finding can be troubling because other studies have shown that individuals prefer not to seek help from their primary care physicians for these types of issues (Bell et al., 2011; Veerhak et al., 2006). Studies have shown that patients feel stigmatized by being labeled with depression and often were not well informed about other avenues of treatment besides pharmacotherapy (Bell et al., 2011; Veerhak et al., 2006). Non-disclosure of symptoms by patients in primary care due to fears of stigma could be a relating factor to the low rates of diagnostic accuracy.

Even though unassisted diagnostic sensitivity has been found to be relatively low in measuring depression, physicians are more accurate (81.1%) at depression *specificity* (identify those *without* the disorder (true negative rate (Joling et al., 2011; Mitchell et al., 2009). This is consistent with the idea that the majority of patients seen by primary care physicians are not suffering from depression. However, there are still cases of false positives, as shown by Mitchell, Vaze, and Rao (2009). When patients had a previous history of depression or anxiety, they were more likely to receive an incorrect diagnosis (Cameron et al., 2010). Another possible reason for the false positives was a misdiagnosis of a depressive disorders when patients had anxiety or other affective disorders (Cameron, Lawton, & Reid, 2010). When physicians rely alone on clinical judgment, severity, and history of mental illness, this may lead to a diagnosis of depression, whether accurate or not. A way of limiting false positives and misdiagnoses would be to have multiple

assessments performed and referrals to mental health professionals when appropriate.

Diagnostic Assessments

A common theme in the research done on the accuracy of diagnosis by primary care physicians is the lack of assistance in diagnosis. There are many assessments available that could be used to aid in diagnosis. These include the Patient Health Questionnaire, the Hamilton Depression Rating Scale, and the Mini International Neuropsychiatric Interview.

The Patient Health Questionnaire (PHQ). The PHQ is a modification of the Primary Care Evaluation of Mental Disorders (PRIME-MD). Although used in a research capacity, this assessment has had limited use in the primary care setting (Spitzer, Kroenke, & Williams, 1999). It was found to take too much time because the assessment was not fully self-administered (Spitzer, Kroenke, & Williams, 1999). Spitzer et al. (1999) modified the PRIME-MD to be completely self-administered, making it more feasible for use in the primary care setting. The PHQ was developed to assess depressive disorders, panic, anxiety, alcohol abuse or dependence, and eating disorders. The PHQ can be modified and split up into a variety of different lengths that include any number of the disorders. Today there are two lengths that are most commonly used to assess depression. These modified versions of the PHQ are named for the number of questions used.

Both the PHQ-9 and PHQ-2 have questions that evaluate the symptoms of Major Depressive Disorder (MDD). The PHQ-9 has nine questions that address change in appetite, suicidal ideation, energy level, concentration, depressed mood, anhedonia, guilt or self-worth, sleep disturbances, and psychomotor agitation or retardation (American Psychiatric Association, 2013; Gilbody, Richards, Brealy, & Hewitt, 2007). Whereas the PHQ-2 only uses two questions, which addresses only anhedonia and depressed mood. The patient scores each question on a scale from zero to three, relating each to the frequency that the symptom is experienced. Both measures are quick to fill out and also fast to score, which makes them more ideal for use in the primary care setting.

The accuracy of the PHQ-9 and PHQ-2 have been examined and analyzed by a variety of studies. In a meta-analysis by Gilbody et al. (2007), 17 studies were compiled on the accuracy of the PHQ-9. These studies showed the specificity to be 80% and sensitivity to be 92%. The assessment has a maximum score of 27 and a cut off score of 10, which has been shown to be optimal for this high level of sensitivity (Gilbody et al., 2007). With the PHQ-9, the majority of studies showed similar results for sensitivity and specificity with only a few outliers (Gilbody et al., 2007). Comparatively, a different meta-analysis conducted on the PHQ-2 showed that the sensitivity and specificity could not be ascertained because of disparate findings within the literature (Manea, 2016). The PHQ-2 may appear more appealing for use in primary care because of its brevity; however, lack of consistent results from studies may show that it is less reliable.

The PHQ-9 is a measure with a high sensitivity and a specificity that is comparable to current unassisted physician specificity (Gilbody et al., 2007; Mitchell et al., 2009; Joling et al., 2011). The PHQ-9 is not as brief as the PHQ-2 but it could be incorporated into paperwork done before visiting with a physician in order to minimally disturb normal routines within the practice. This measure has also been used with a variety of languages and cultures and found to be consistent with the original in regards to sensitivity and specificity (Gilbody et al., 2007). The PHQ-9 has a high sensitivity, is self-administered, easy to score, and can be given in different languages when needed, making it an ideal routine screening measure in primary care settings.

Hamilton Depression Rating Scale (HAM-D). The HAM-D is a physician-administered measure that is also relatively short to administer and score. The HAM-D was originally designed for use by psychiatrists or other mental health professionals for those already diagnosed with a depressive disorder (Hamilton, 1960). The questions in the HAM-D cover a variety of emotional and somatic

symptoms of MDD and help to determine the severity of the disorder. The reliability of the HAM-D was studied in a meta-analysis of 409 studies conducted between 1960-2008. This meta-analysis demonstrated that the overall reliability was good, with a .79 alpha coefficient (Trajkovic et al., 2008). The inter-rater reliability was also very high, along with the test-retest reliability (Trajkovic et al., 2008). The reliability is dependent on the assessor and their interviewing skills and this could be a challenge in the primary care setting because physicians do not have as extensive training in psychiatry and psychology (Hamilton, 1960; Trajkovic et al., 2008).

Although the HAM-D was not originally designed for use in primary care setting, a study conducted in the United Kingdom by Morriss, Leese, Chatwin, and Baldwin (2008) examined the use of this assessment in this setting. To achieve the high inter-rater reliability that they had during their study, modifications were made to the scoring guidelines of the HAM-D and a detailed interview was developed (Morriss et al., 2008). With appropriate training and guidelines, the reliability of the HAM-D in primary care as shown by this study would be acceptable. The use of this assessment would be best during the treatment and management of depression to assess the progress of individuals because of the high reliability over an extended period of time.

The Mini International Neuropsychiatric Interview (MINI). The MINI is a physician-administered assessment that was developed due to the disproportional amount of time that traditional structured interviews took to administer. These consultations could take anywhere between one and a half to three hours to conduct (Lecrubier et al., 1997; Pinninti, Madison, Musser, & Rissmiller, 2003). Common use of structured measures in a clinical setting could also be impractical for the physician and for the individual (Lecrubier et. al, 1997). However, structured interview questions have an advantage because they are considered to be more accurate than open clinical interviews (Pinniti et al., 2003). The need to create a shorter and more easily administered measure influenced Lecrubier et al. (1997) to develop the MINI.

The MINI has overcome the challenge of length and can be administered in an average of 15-21 minutes depending on the setting (de Azevedo Marques & Zuardi, 2008; Lecrubier et al., 1997; Pinninti, Madison, Musser, & Rissmiller, 2003). Similar to longer structured interviews, the MINI facilitates the diagnosis of many different psychiatric disorders, including depressive disorders, psychosis, anxiety, mania, Post-Traumatic Stress Disorder, substance or alcohol abuse, and eating disorders. The interview consists of screening questions that help narrow down diagnosis and then when necessary, follow up questions are provided to confirm the diagnosis. In a study conducted to discover the clinical utility of the MINI, researchers found that compared to open clinical interviews, the MINI was able to detect more comorbidity (Pinninti et al., 2003). As mentioned in the same study, the management and treatment of psychiatric disorders can differ or change dramatically when there is knowledge of comorbidity (Pinninti et al., 2003). The ability to screen for a variety of disorders in a short amount of time aids in the recognition of comorbidity.

The MINI has been shown to be a valid and reliable measure when compared to the CIDI and the SCID, which are structured interviews (de Azevedo Marques & Zuardi, 2008; Lecrubier et. al, 1997). In the original study by Lecrubier et al. (1997) individuals were given the CIDI, SCID, and also the MINI. The results were then evaluated and it was found that the only disorder that lacked good reliability for the MINI was Generalized Anxiety Disorder. A later study showed that the reliability improved for generalized anxiety disorder and that all of the disorders screened have a reliability ranging from acceptable to excellent (de Azevedo Marques & Zuardi, 2008). The MINI is now used commonly for research purposes and is available in a variety of languages.

This assessment is not only confined to research, but has also been used in the primary care setting. A study conducted by de Azevedo Marques and Zuardi (2008) investigated the use of the MINI in the primary care setting. Physicians

were trained to administer and score the measure over the course of several continuing education classes. Part of the study evaluated the opinions of the physicians regarding the utility of the MINI. The assessment was found to be easy to administer but not ideal for use with every patient (de Azevedo Marques & Zuardi, 2008). The MINI may not be optimum for use with all patients, but it is a good option available as a second tier diagnostic measure after high-risk patients have been recognized.

Conclusion

As treatment of psychiatric disorders in primary care becomes more common, the need to accurately diagnose these disorders increases. The unassisted recognition of depression by primary care physicians has been shown to be low. A meta-analysis by Mitchell et al. (2009) showed that physicians are only accurately diagnosing half of those with depression. Other studies found similar sensitivity of unassisted diagnosis by physicians (Carey et al., 2014; Mitchell et al., 2009; Mitchell et al., 2010). The major limitation common to all of the studies on accuracy was how they assessed whether the physician had diagnosed a depressive disorder or not. Some studies asked the physician directly if they believed their patient had depression, which could increase recognition. Other studies evaluated the medical records and codes used by the physician, which underestimates correct diagnosis of physicians (Joling et al., 2011). Even with these limitations and different methods of assessment the accuracy of unassisted diagnosis by physicians is still approximately 50-60% (Carey et al., 2014; Mitchell et al., 2009; Mitchell et al., 2010).

These missed cases of depression are also seen along with physicians giving incorrect diagnoses of depressive disorders to some patients (Mitchell et al., 2009). These false positives were most commonly a misdiagnosis of a depressive disorder when the patient was suffering from another affective disorder (Cameron et al., 2010). This poor recognition and misdiagnosis could be improved with the implementation of diagnostic measures.

There are several challenges to using diagnostic measures in a primary care setting. Some of theses challenges include the time it takes to administer the assessment, training needed to be able to obtain consistent results, and the validity. The three diagnostic measures reviewed for use in primary care were the HAM-D, the PHQ, and the MINI. The HAM-D would not be the most useful in the detection of depression as it is best used to ascertain severity. This assessment would be more useful during the treatment of depression because of its test retest reliability (Trajkovic et al., 2008). The use of the PHQ-9 would be more ideal for routine use with every patient because it has a high sensitivity of 92% (Gilbody et al., 2007), is self-administered, and easy to score. Even with the use of the PHQ-9, there is still the possibility of false positive results, which would make having a second tier diagnostic measure available once high-risk patients have been identified. The MINI would be a good resource as this second tier diagnostic measure because it is a reliable, valid, and could help increase the recognition of comorbidity (de Azevedo Marques & Zuardi, 2008; Lecrubier et al., 1997; Pinninti et al., 2003). The MINI is also brief to administer so it could be fit into an average appointment in a primary care setting. The PHQ-9 and the MINI would be the best to implement to increase recognition and accurate diagnosis of depression. In primary care there is a need to emphasize the use of diagnostic measures so that recognition of depression can improve. As more cases of depression are identified, there is a possibility to help more people overcome this debilitating disorder and improve their quality of life.

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