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DNP Final Project Report

Evaluation of Depression Screening Practices in Comorbid Patients in the Primary Care Setting

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College of Nursing

Fall 2017

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EVALUATION OF DEPRESSION SCREENING PRACTICES

Dedication

This DNP Project is dedicated to all of the family, friends, and faculty who have helped me achieve success during this journey. My husband, John, and two children, Layla and Asher, who have made innumerable sacrifices in order to support this endeavor. My parents, Steve and Joyce, and sister, Kelly, who have always supported me and helped me become the strong-willed person I am today. My 'Tripod' members, Cherry and Whitney, I couldn't have completed this program without them beside me every step of the way. Thank you all for your part in my journey.

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Abstract

SPECIFIC AIMS: To evaluate the current rates of depression screening using the PHQ-2/9 in patients with comorbid conditions at a single, urban primary care office; to explore barriers to depression screening among providers.

METHODS: A retrospective chart review was completed on a sample of 188 patients seen between January and June 2017. Patients were equally divided among four comorbid diagnoses- COPD, obesity, hypertension, and type 2 diabetes. A provider interview was conducted to identify depression screening barriers and typical treatments regimens.

RESULTS: A total of 70.2% of patients had a documented depression screening. Of 67 patients diagnosed with depression, 11.9% had follow up specific to depression, 13.4% had documentation of side effects education, and 19.4% received further mental health services. Among the comorbid groups there was no difference in the rate or degree of depression. Diabetic patients with depression had higher hemoglobin A1C levels than those with diabetes and no depression ($p=0.00$). Provider interviews identified the following barriers to depression screening: time constraints, difficulty with patients not following up, and lack of access/timeliness for mental health services.

CONCLUSION: In this clinic depression screening rates were above the average reported in the literature. Patients with diabetes were found to be at risk for worsening hemoglobin A1C levels with depression. There is a need for increased education regarding medications and timelier follow-up. Barriers still exist in completing screening and initiating treatment and referral to mental health services. An electronic medical record alert would be helpful in reminding providers to screen.

Introduction

Depression, characterized by an overwhelming feeling of sadness or loss of pleasure in usual activities, is one of the most common mental health disorders in the world (Anxiety and Depression Association of America, 2016). In 2015, over 16 million adults in the United States experienced a debilitating episode of major depression (National Institutes of Health, 2015). Evidence has demonstrated that people with chronic conditions, such as diabetes or cardiovascular disease, are three to four times more likely to experience depression or other mental health problems (Naylor et al., 2012). An assessment of current practice will determine if further measures need to be implemented to improve the rate of depression screening and treatment in adults with comorbid conditions. The purpose of this study was to evaluate current depression screening rates in a primary care setting and identify barriers to depression screening and treatment.

Background

In the United States, depression is set to become the second leading cause of disability by the year 2020 (Centers for Disease Control, 2013). Depression affects approximately five to thirteen percent of patients in the primary care setting and accounts for more than \$43 billion in medical costs and \$17 billion in lost productivity annually (Maurer, 2012). Depression is often not adequately treated and, even when it is, depression symptoms recur in up to seventy five percent of patients. Depression also leads to poorer outcomes in patients with various comorbidities, such as diabetes mellitus, cardiovascular disease, and obesity (Maurer, 2012). Without adequate screening, estimates show that only fifty percent of patients with depression are identified. Due to the frequent stigmatization that accompanies mental health disorders, many patients will suppress symptoms of depression or are not fully able to recognize what is

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causing their mood changes (Gerontoukou, Michaelidou, Rekleiti, Saridi, & Souliotis, 2015). Earlier identification and treatment of depression in patients can lead to increased compliance with medical care, reduction in comorbidities and costs associated with care, and improved clinical outcomes.

The United States Preventative Services Task Force (USPSTF) has made specific evidence-based recommendations for depression screening in the adult population to identify those affected in a more timely manner. Noted as a Grade B recommendation, the USPSTF recommends depression screening in the general adult population. There is little evidence to support optimal timing for screening, therefore, the USPSTF suggests a pragmatic approach of screening all who have not been previously screened or using clinical judgement in consideration of risk factors and life events. Screening should be implemented with adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up (Siu & USPSTF, 2016).

Multiple depression screening tools are available to fit a wide range of patients, however this study will focus on the Patient Health Questionnaire-2/9 (PHQ-2/9). The PHQ-2/9 is a self-administered tool of 2 or 9 items that assesses the frequency of depressed mood and anhedonia over the past two weeks. Scores range from 0-27 and identify the severity of depression as none (0-4), mild (5-9), moderate (10-14), moderately severe (15-19), or severe (20-27; Bienenfeld, 2016). The PHQ-2/9 is shown to have slightly higher sensitivity and specificity for detecting depression (97% sensitivity/67% specificity) when compared to other screening tools and is also more useful for monitoring response to treatment (Maurer, 2012).

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Literature Review

A comprehensive review using the search tool InfoKat Discovery, which includes popular healthcare databases like CINAHL, PubMed, Ovid, and MEDLINE, was conducted to assess the effect of depression on patients with comorbidities. Search terms included “depression”, “depression screening”, “primary care”, “comorbidities”, and “randomized controlled trial (RCT)”. Inclusion criteria encompassed articles that were: written in English, available in full text, were published in the last five years, were peer-reviewed, and were RCT’s. Qualitative or case studies, studies on patients under the age of eighteen, and studies conducted outside of the United States were excluded. Of the 919 available articles, many were reviewed until the point of information saturation was reached.

Based on the relevant studies, it seems clear that depression rates are significantly higher in patients with comorbidities. This is associated with increased mortality, poorer health outcomes, and decreased quality of life and functional status (Park, Katon, & Wolf, 2013). Evidence also shows that depression in patients with comorbidities is associated with decreased compliance with care, more frequent hospitalizations, and increased length of stay, leading to increased healthcare costs (Pumar et al., 2014). In order to reduce these negative effects, current research supports the importance of earlier identification of depression in patients with comorbidities (Stoop, Nefs, Pommer, Pop, & Pouwer, 2015).

Reviewed studies were all Level I or Level II studies per the Johns Hopkins Nursing Evidence-Based Practice model, which provide the highest level of quality for evidence-based practice (Ryan et al., 2017). Most study designs included large sample sizes and employed adequate randomization and blinding. Rigor of data was strong and confounding variables were

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controlled using strict methods and measurement practices. Findings were statistically significant and efforts were made to reduce limitations in a majority of reviewed studies.

Although the literature confirms the harmful effects of depression amongst those with comorbidities, there are still flaws in the available research. Available data are somewhat limited and there is no true consensus on the approach to depression screening and the benefits of treatment in those with comorbidities (Pumar et al., 2014). More high quality studies are needed to enhance screening and treatment in relation to chronic disease management. Further studies are needed to more strongly support USPSTF recommendations and fill knowledge gaps with regard to the benefits of earlier diagnosis and treatment outcomes in the comorbid population (Thombs, Ziegelstein, Roseman, Kloda, & Ioannadis, 2014).

Purpose

The purpose of this study was to evaluate the current rates of depression screening and treatment in patients with comorbidities (COPD, obesity, hypertension, or type 2 diabetes) at a single Norton Healthcare primary care office. This study aimed to assess the percentage of patients who are being screened for depression by primary care practitioners in accordance with current depression screening recommendations for the adult population. Demographic variables were examined to explore their relationship to depression. The study also examined other variables including family history of depression, screening tool used, years diagnosed with depression, depression medications and side effects, follow-up visits, and body mass index, blood pressure, and hemoglobin A1C measurements.

Methods

This study was a retrospective chart review of patients seen at a single primary care office location. Patients with a diagnosis of COPD, obesity, hypertension, and/or diabetes were

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targeted for the chart review. Included was an interview amongst providers to assess for any potential barriers to depression screening and treatment in current practice. Approval was given by the University of Kentucky Institutional Review Board (IRB) and the Norton Healthcare Office of Research and Administration (NHORA). Consent for chart review was waived as there was no active participation on behalf of the subjects, whose rights and welfare were protected under the Health Insurance Portability and Accountability Act (HIPAA).

Setting

Norton Healthcare is the leading healthcare provider in the Louisville, KY area (Norton Healthcare, 2017). This study population consisted of patients who were seen by a primary care provider at NCMA Lakeview between the months of January and June in 2017. NCMA Lakeview is one of several primary care locations within the Norton Healthcare system. This practice, located on the east side of Louisville, consists of four medical doctors and two nurse practitioners who provide comprehensive primary care and endocrinology services. This site was chosen based on clinic interest and the high volume of type 2 diabetic patients seen at this office.

Sample

Inclusion criteria consisted of adult patients over the age of eighteen years diagnosed with one or more comorbidities that included obesity, hypertension, type 2 diabetes, and chronic obstructive pulmonary disease (COPD; see Table 1 for a list of ICD-10 diagnosis codes used for inclusion criteria). Patients were seen in January through June of 2017. Exclusion criteria were non-English speaking patients and those under the age of eighteen years. The charts were randomized from a selection of 4036 medical records provided by data analysts that met criteria for review. Fifty medical records were obtained from patients in three different comorbid

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categories; obesity only; obesity and hypertension; and obesity, hypertension, and type 2 diabetes. Of the patients with COPD only, 38 patients met the criteria for review, bring the total number of study participants to 188.

For the provider interview, inclusion criteria were status as a primary care provider at NCMA Lakeview and willingness to participate in the survey. The only exclusion criteria for providers was a lack of willingness to participate in the interview. Half of the providers (3/6) participated in the interview; one provider declined to participate and two others were not available.

Data Collection

Approval was obtained through the University of Kentucky IRB and the Norton Healthcare Office of Research and Administration (NHORA) prior to data collection. The medical records for the retrospective chart review were obtained from the electronic database of patients seen at the NCMA Lakeview office. Charts were identified using the ICD-10 codes listed in Table 1. Charts were randomly selected to provide an equal representation for patients with each comorbid condition of interest. For the data collection process patient records were accessed through EPIC, Norton Healthcare's electronic medical records system, and data were abstracted according to the variables listed in Table 2. The data were then transferred to a password-protected electronic spreadsheet. A crosswalk table was developed to link the medical record number to a unique patient study number, and this was stored in a separate, secure location from the abstracted data. Interview responses were transcribed by the PI during a brief, in-person interview with willing providers.

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Data Analysis

Univariate and bivariate statistics were used to describe the demographic characteristics of the sample patients. These included parametric independent t-tests with means and standard deviations for continuous variables and frequency distributions for nominal variables. When comparing two nominal variables, nonparametric chi-square tests of association were used to assess the relationship between the two variables. All tests were conducted using SPSS Version 23 and an alpha level of $p < 0.05$ was used to determine statistical significance. Provider interviews were analyzed for common themes.

Results

Sample Characteristics

A total of 188 patient charts were reviewed. Patients ranged in age from 22 years to 94 years, with a mean age of 57.6 years. A large majority of patients were Caucasian (87.8%), and over half were female (60.1%). In total 70.2% (n=132) of patients had documented depression screening using the PHQ-2/9 tool. A documented family history of depression was noted in 10.1% (n=19) of the sample. The PHQ-2/9 was the screening tool used in 100% of the cases with documented depression screening in the medical record. No other depression screening tools were used. Demographic and clinical characteristics of the study sample can be seen in Table 3.

A statistical comparison of patient variables was explored between the screened (n=132) and non-screened group (n=56). Using chi-square tests of association, the only significant differences between the groups was in the “age” category. Those above the age of 59 were found more likely to be screened for depression ($p=0.03$), but the differences were not clinically significant. No other statistically significant differences in depression screening rates were

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found in any of the other variable groups based on gender, ethnicity, or family history. Results from the chi-square tests can be seen in Table 4.

Of the 132 patients who were screened for depression, 51% (n=67) were diagnosed with depression based on screening results (PHQ score of five or greater). Using chi-square tests of association among those with and without depression diagnosis, significant differences were found based on 'gender' and 'family history'. Of the 67 patients with depression, 84% were female (n=56), and 16% were male (n=11), while the non-depressed group was more evenly split at 47% female (n=57) and 53% male (n=64). This is statistically significant with a p-value of 0.000. Of the 67 patients diagnosed with depression, 18% (n=12) had a family history of depression, while just 6% of those without depression had a positive family history (p=0.017). There were no significant differences for gender within each comorbid diagnosis. The demographics of those diagnosed with depression is presented in Table 5.

In terms of follow-up for their depression (n=67), only 12% had a follow up visit specific to the diagnosis. However, 48% did have an unrelated office visit within 4-8 weeks where medication and follow-up to the depression diagnosis were discussed in addition to their primary concern. There was documentation of medication adjustment or effective dose in 40% (n=27) of depressed patients. Similarly, only 13% (n=9) of those with depression had documentation of depression education or the potential side effects of depression medication. Referral to mental health care services was provided to 19% (n=13) of the group. These frequencies are documented in Table 6.

Within the patient group diagnosed with depression (n=67), comparisons were made between the comorbidities (COPD, obesity, hypertension, and type 2 diabetes). There was no statistically significant difference in the distribution of depression diagnosis among the

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comorbidities. Nor was there any statistical difference in the severity of depression. The average PHQ-2/9 score among those diagnosed with depression was 7.6, which classified a majority of patients with ‘mild’ depression.

Comparing within each comorbid condition, the patients with and without depression were evaluated to identify differences in their biometrics (BMI, blood pressure, and hemoglobin A1C). Among all the comorbid conditions there were no statistically significant differences except among those with type 2 diabetes. In independent t-tests, hemoglobin A1C levels were significantly lower in those diagnosed with depression ($p=0.00$). The mean A1C in the depressed group was 6.5; in the non-depressed group the mean A1C was 7.87. There were no statistically significant differences noted among obese or hypertensive patients in conjunction with depression diagnosis or treatment. Results of the t-tests can be seen in Table 7.

Provider Interviews

Three out of six total provider interviews were completed (see Appendix for the interview guide). Those responding reported using the PHQ-2/9 screening tool most often as it is readily available in EPIC and easy to use. They also felt that an electronic medical record (EMR) alert would aid in recognizing the need for depression screening. Efforts were made to screen every patient but some screenings were missed due to time constraints or acute visit status. Follow-up was often hampered due to patient cancellations and no-shows for scheduled mental health appointments.

In general, each provider described a similar practice in screening, treatment, and follow-up for depression. For example, they described the primary use of medications such as selective serotonin/norepinephrine reuptake inhibitors (SSRI/SNRI’s) that coincide with current guidelines. When deciding to refer a patient for mental health care, determining factors were

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patient willingness, insurance, severity of symptoms, and ability to provide timely and accessible mental health care services. They also agreed that an improved database of mental health services would be beneficial to themselves and to patients.

Discussion

As depression can often be present for up to three years prior to being identified, depression screening is essential to earlier identification and treatment (Beblo et al., 2012). The mental health of patients is an important aspect of primary care, especially in patients with comorbidities (Kang et al., 2015). By recognizing and adequately treating depression, providers can work towards better outcomes in patient health. This project has identified the need for increased patient education, more thorough follow-up, and a better integration with mental health services.

The demographic distribution of the study sample is representative of the geographical location of the study site. The project site is located in the east end of Louisville in an aging, predominately Caucasian area of the city. At this location, women were diagnosed with depression more frequently than men at a ratio of 5:1. This is consistent with current evidence that women are more than twice as likely to experience depression (Mayo Clinic, 2016). Yet the sample for this project included more women than men, which may have skewed these results.

The PHQ-2/9 was the primary screening tool used. Use of this tool by the providers could be attributed to ease of use and availability as it is the primary screening tool in the EPIC computer system. Some patients were screened using the PHQ-2/9 multiple times within a year, not in relation to depression diagnosis or reason for visit. This could demonstrate some overuse and may result in either overtreatment or responder fatigue. Recommendations indicate

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completing a yearly screen for those without documented depression or more frequently for those being treated for depression (New York Department of Health, 2016).

Several documentation issues were noted from the chart review. Fewer than 15% of patients with depression had documentation regarding the timeline of diagnosis. The timeframe allows providers to identify past treatments, recognize the severity of depression, and have a more complete clinical history of the patient. Not only will entering the full history populate the EMR for future visits, it will also help patients feel that their history is important.

Family history of depression was noted in only 10% of the entire surveyed group. There have been several genetic markers linked to depression and those with a first-degree relative diagnosed with depression are more than three times as likely to develop depression themselves (Ledford, 2015). A well-documented family history can alert providers that the patient may have a predisposition for depression. One consideration is that the burden of stress from living with the moods and behaviors of a family member with depression can increase one's likelihood for developing the condition themselves.

Per American Psychiatric Association (APA) guidelines, it is necessary to follow-up within four to eight weeks to assess the response to medication and any potential side effects (APA, 2010). A depression specific follow-up visit post diagnosis or initiation of medication was evident for 12% of the patients. An additional 48% of patients had visits for an episodic complaint during the recommended time frame for follow-up where depression and medications were discussed, however it would be hard to classify this as a true follow-up visit. The need to increase visits specifically for depression follow-up is present. The National Committee for Quality Assurance reports that only about 25% of patients receive follow-up in an adequate timeframe (National Committee for Quality Assurance, 2017).

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Unfortunately, only 13% of patients had any documentation of medication side effect education. Yet, up to 43% of patients discontinue medications for depression due to adverse effects, most commonly headaches, nausea and vomiting, agitation, sedation, and sexual dysfunction (Anderson, Pace, Libby, West, & Valuck, 2012). Patient education regarding potential side effects and the necessity of follow-up visits can help maintain compliance and achieve the most optimal therapeutic benefit from treatment. It is possible that education was simply not recorded. Thorough documentation is crucial in patient care, not only because it validates that adequate care was provided, but it also benefits subsequent caregivers and helps in the coding and billing process.

Comparisons between the comorbidities (COPD, obesity, hypertension, type 2 diabetes) showed no significant differences in the rate or degree of depression. This finding is not congruent with the literature reviewed, in which type 2 diabetics have slightly higher rates of depressive symptoms (Andreoulakis, Hyphantis, Kandyliis, & Iacovides, 2012). This discrepancy may be due to this study's smaller sample size and/or the lack of correlation to the extent of the disease state. In this project the comorbid conditions were not fully evaluated. Neither the number of complications from the comorbidity nor the extent of the treatment plan was considered.

One interesting finding was the difference in hemoglobin A1C levels between patients with diabetes who were depressed and on treatment versus those without depression. This coincides with the American Diabetic Association which supports treating depression as it can lead to better outcomes in patients with diabetes (Safren, et al., 2014). A consideration is that depression may be due to a complex treatment regimen for the diabetes which should encourage providers to simplify the management plan. The depression may not need to be treated with a

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medication, rather the treatment plan needs to be mutually designed so that it fits the patient's life.

The provider interview served to identify barriers to depression screening and treatment. Although 70% (n=132) of the patients in this study were screened appropriately, responding providers were in agreement that an EMR alert identifying the need for screening would be helpful. This would be easy to implement and it would help ensure that all patients receive depression screening. The barriers identified in response to treatment of depression include lack of patient follow up and lack of access and financial means to obtain mental health services. Only 19% of the patients diagnosed with depression in this study had received further mental health services from a psychiatric specialist.

There was agreement among surveyed providers that an improved database of mental health services would be helpful. Further, information should be made available regarding associated costs and accepted insurance plans for mental health. Forging a stronger connection between mental health services and primary care providers will improve patient care tremendously. One aspect that may affect the efficacy of depression treatment in primary care is that primary care providers have the added difficulty of managing multiple complex issues in a shorter visit than mental health professionals. One trend is to embed psychiatric services within primary care practices. Collaborative, in-office care with a psychiatric specialist, social worker, or other allied health professional has been shown to be a cost-effective way to improve outcomes and increase coordination between much needed community resources (Goodrich, Kilbourne, Nord, & Bauer, 2013).

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Limitations

Several limitations will limit generalizability of these study findings. This was a single practice location with a non-diverse sample and small group numbers. In addition, the extent of the comorbidities was not examined. Each of these may have skewed the results. Further studies with larger sample sizes could more confidently detect relationships between variables.

Data from the provider interviews were limited due to participation. Only half (3/6) of the providers gave responses regarding depression screening. This limits the variety of responses and makes the results less representative of all providers. There also may have been an element of self-selection. The providers who participated may have more of an interest in depression. There is also the limitation of biased response to surveys, wherein one may not respond honestly and accurately or only give responses that show them in a more favorable manner.

Implications for Practice

While the importance of depression screening has been recognized, no current measures or reminders are in place to ensure adequate screening by providers at the study location. Implementation of an EMR alert prompting providers to screen for depression during annual wellness exams would be beneficial. Studies indicate an increase in depression screening and treatment through the use of EMR alerts (Matthews, 2017). Further, an EMR prompt could also be put in place to prevent unnecessary rescreening.

Many of the providers listed time constraints as a barrier to screening. Enlisting the use of the medical assistant for depression screening is tempting. Yet considering the sensitivity of the questions, it may be beneficial for the medical assistant to use an electronic source for the patient to self-screen. One idea is the use of an iPad where the survey results then populate into

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the EMR. This would allow the provider to quickly review the screening and determine if any further inquiry is warranted.

Additional information about the patient's depression and treatment needs to be added in an easy to complete format within the EMR. This could be in the form of check boxes for key points such as medication education and recommendations for mental health services. An important recommendation is to provide available patient mental health resources within the community. This could be recorded on a one page handout with phone numbers and insurance preferences outlined along with copay information. In the spirit of the medical home, embedding mental health services (i.e. mental health APRNs) within a primary care office offers accessibility, convenience, increased coordination, and access to care- all known barriers for the utilization of mental health services.

Recommendations for Future Studies

Further exploration of depression and the extent of the treatment plan within each comorbidity should be conducted. It is possible that within each comorbidity depression is associated with the complexity of the treatment plan. This would be vital not only for identifying who may be at risk for depression, but also for simplifying the treatment plan.

Intrinsic to the problem are sociodemographic variables that were not considered in this project. There may be an association between social support, income, and education that may help to further identify those at risk for depression. Patient responses to evaluate their needs regarding depression treatment must be considered.

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Conclusion

The goal of this study was to evaluate current rates of depression screening and treatment in patients with comorbidities at a single primary care practice. A total of 70% of patients were screened per guideline recommendations, all using the PHQ-2/9 tool. Although only one-third of patients diagnosed with depression had documentation of treatment, improvement within the EMR may capture the full extent of interventions. Improvement is needed in the areas of patient education regarding medication side effects, timely follow-up, and increased collaboration with mental health services. The new emphasis on patient medical homes tasks primary care providers with the responsibility of attending to a patient's holistic needs. Mental health services are an integral part in this model of care delivery.

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Table 1

Inclusion Criteria List of ICD-10 Codes

ICD-10 Codes	Diagnosis Definition
E66.01	Morbid (severe) obesity due to excess calories
E66.09	Other obesity due to excess calories
E66.1	Drug-induced obesity
E66.3	Overweight
E66.8	Other obesity
E66.9	Obesity, unspecified
E11.9	Type 2 diabetes mellitus without complications
I10	Essential (primary) hypertension
J44.0	Chronic obstructive pulmonary disease with acute lower respiratory infection
J44.1	Chronic obstructive pulmonary disease with (acute) exacerbation
J44.9	Chronic obstructive pulmonary disease, unspecified

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Table 2

List of Variables per Category

Category	Variables/Measures
Age	Age of patient in years
Gender	0=male, 1=female
Ethnicity	0=white, 1=African American, 3=Hispanic, 4=Asian, 5=Other/Unknown
Family History of Depression	0=no, 1=yes
Patient Screened for Depression	0=no, 1=yes
Screening Tool Used	0=PHQ2/9, 1=other
Documented on Paper or EMR	0=Paper, 1=EMR
Patient diagnosed with depression	0=no, 1=yes
Length of depression diagnosis	Length in years patient has had depression
Severity of depression	0=mild, 1=moderate, 2=severe
On depression medications	0=no, 1=yes (medication listed)
Referred to further services	0=no, 1=yes (psych)
Follow specific to depression	0=no, 1=yes
Timely follow up	0=no, 1=yes
Meds adjusted or appropriate dose documented	0=no, 1=yes
Medication side effects discussed	0=no, 1=yes
Other medications	List of patients other medications
Office visits in last 12 months	Total number of office visits in last 12 months
Other comorbidities	List of other patient diagnoses
Last 3 BMI's	Last 3 body mass index readings in obese patients
Last 3 BP's	Last 3 blood pressure readings in hypertensive patients
Last 3 A1C's	Last 3 hemoglobin A1C readings in diabetic patients

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Table 3

Demographic and clinical characteristics of the study sample (N=188)

	Mean (SD) or n (%)
Age	Mean 57.6 (14.9)
Gender	39.9% Male, 60.1% Female
Ethnicity	87.8% White, 10.1% African American, 0.5% Asian, 0.5% Hispanic, 1% Unknown
Family History of Depression	10.1% Yes, 89.9% No
Patient Screened for Depression	70.2% Yes (62.2% within the last year, 8% over one year ago), 29.8% No.
Tool Used for Screening	100% PHQ2/9
Notes: Standard Deviation (SD)	

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Table 4

Associations between demographic and clinical characteristics and screening for depression.

	Screened (n=), Mean (SD) or %	Not screened (n=), Mean (SD) or %	p-value
Age	n=132, 59.7 (13.9)	n=56, 52.7 (16.0)	.003
Gender	n=132, 70.2%	n=56, 29.8%	.093
Ethnicity	n=131, 70.4%	n=55, 29.6%	.071
Family History of Depression	n=132, 70.2%	n=56, 29.8%	0.657
By Diagnosis (COPD, Obese, Obese/HTN, Obese/HTN/DM2)	COPD- n=28, 73.7% Obese- n=30, 60% Obese/HTN- n=41, 82% Obese/HTN/DM2- n=33, 66%	n=10, 26.3% n=20, 40% n=9, 18% n=17, 34%	0.091

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Table 5

Associations between those screened for depression based on depression diagnosis

	Diagnosed with depression n= (%)	No diagnosis of depression n= (%)	p-value
Age By Groups	<35yrs: 4 (6%) 36-45yrs: 12 (18%) 46-55yrs: 13 (19%) 56-65yrs: 24 (36%) >65yrs: 14 (21%)	12 (10%) 12 (10%) 23 (19%) 30 (25%) 44 (36%)	0.087
Ethnicity	Caucasian: 58 (90%) Af. Amer:6 (9%) Hispanic:1 (1%) Asian: 0 (0%)	107 (88%) 13 (11%) 0 (0%) 1 (1%)	0.476
Family History of depression	Yes: 12 (18%) No: 55 (82%)	Yes: 7 (6%) No: 114 (94%)	.017
Gender	Female: 56 (84%) Male: 11(16%)	Female: 57 (47%) Male: 64 (54%)	.000
Average PHQ-2/9	7.6	0.3	N/A

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Table 6

Clinical characteristics among those diagnosed with depression (N=67).

	n (%)
Follow up depression specific	8 of 67 patients (11.9%)
Timely follow-up in accordance to guideline	32 of 67 patients (47.8%)
Meds adjusted or appropriate dose documented	27 of 67 patients (40.3%)
Side effects discussed/documentated	9 of 67 patients (11.9%)
Referral to further mental health services	13 of 67 patients (19.4%)

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Table 7

Associations between clinical characteristics and diagnosis of depression/on depression medications.

	Diagnosis of depression (n=), Mean (SD)	No diagnosis of depression	p-value
Obese (BMI)	n=54, 39.02 (9.02)	n=96, 38.08 (6.59)	.468
Hypertension (BP)	n=36, 128.94 (17.49)	n=64, 128.95 (15.26)	.998
Type 2 Diabetes (A1C)	n=20, 6.5 (.78)	n=30, 7.87 (1.45)	.000

EVALUATION OF DEPRESSION SCREENING PRACTICES

Appendix

Primary Care Provider Questionnaire

1. Describe your standard routine for depression screening in adults.
2. Do you screen all adult patients? Why or why not?
3. Which of the various tools do you use to screen for depression?
4. Describe your standard routine for treatment and follow up of depression.
5. How often do you refer to psychiatry or other mental health services?
6. Do you feel you and your patients would benefit from an improved database of area mental health services?
7. Do you feel there are any barriers preventing you or others from performing annual depression screening in adult patients? What could reduce these barriers?
8. Do you feel it is easy to find and administer depression screening tools, like the PHQ-2 tool, in EPIC?
9. Would an electronic medical record alert help you in recognizing annual depression screening need for adult patients?