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Implementation of a Screening Protocol to Improve Provider Assessment of Depression in Patients with Psoriasis

Marlee Bryant
mrbryant1@liberty.edu

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IMPLEMENTATION OF A SCREENING PROTOCOL TO IMPROVE PROVIDER
ASSESSMENT OF DEPRESSION IN PATIENTS WITH PSORIASIS

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Marlee Rachel Bryant, BSN, RN

Liberty University

Lynchburg, VA

August, 2018

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Scholarly Project Chair Approval:

Dr. Shanna W. Akers, EdD, MSN/MBA-HC, RN, CNE

Date

ABSTRACT

Patients with psoriasis are at an increased risk for depression. Despite this risk, many dermatology care providers do not screen for depression in practice, including providers at the target practice for this project. This evidence-based practice pilot project was purposed to increase dermatology providers' assessment of depression in patients with psoriasis. This project involved implementing a depression screening protocol at one private dermatology practice and educating providers on the use of the protocol including the embedded depression screening tool, the Patient Health Questionnaire-9. The project leader used a quasi-experimental design and collected data utilizing retrospective chart reviews completed pre- and post-intervention. The measurable outcomes for this project included the number of depression screenings documented versus the number of patients with psoriasis seen during a 30-day period pre- and post-intervention. This project revealed both clinical and statistical improvement of depression screening post-intervention supporting that provider assessment of depression in patients with psoriasis was enhanced with the implementation of a screening protocol. The results of this project have important implications for enhancing depression screening for patients with psoriasis in dermatology care settings.

Keywords: Psoriasis, depression, suicidality, screening protocol, dermatology, Patient Health Questionnaire-9

IMPLEMENTATION OF A SCREENING PROTOCOL TO IMPROVE PROVIDER
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Dedication

This scholarly project is dedicated to every person who has ever experienced depression or has been impacted by suicide in some way, shape, or form – to every mother, father, grandparent, sibling, spouse or significant other, friend, coworker, or child who has lost a loved one to suicide. Depression is a disorder. It is not something to be taken lightly and certainly not something a person can simply *just get over*. My hope is that this project will help to shed light on the importance of addressing depression and other mental health disorders for all ages and all patient populations.

Acknowledgements

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List of Abbreviations

Diagnostic and Statistical Manual of Mental Disorders V (DSM-5)

Doctor of Nursing Practice (DNP)

Electronic medical record (EMR)

Evidence-based practice (EBP)

Health Information Portability and Accountability Act (HIPAA)

Institutional Review Board (IRB)

Liberty University (LU)

Major depressive disorder (MDD)

Patient Health Questionnaire-2 (PHQ-2)

Patient Health Questionnaire-9 (PHQ-9)

Psoriasis (PSO)

Psoriatic arthritis (PsA)

Quality of life (QoL)

Statistical Package for the Social Sciences® (SPSS®)

United States (U.S.)

U.S. Preventative Service Task Force (USPSTF)

Introduction

Psoriasis (PSO) is a common chronic inflammatory skin condition characterized by skin lesions that can cause pain, itching, burning, and irritation (Menter & Ryan, 2017). There are varying degrees of severity in PSO, which can be further complicated by non-cutaneous comorbidities such as inflammatory arthritis and cardio-metabolic disorders (Singh, Taylor, Kornmehl, & Armstrong, 2017). The burden of PSO as a disease goes far beyond dermatologic considerations. The physical, psychosocial, and financial burden of PSO can have a profound negative impact on a patient's quality of life (QoL) and place the patient at a significant risk for psychological conditions such as depression (Singh et al., 2017).

Though many dermatology practitioners acknowledge the risk of depression in patients with dermatologic diseases, it is uncertain how often dermatologists screen at-risk patients for secondary psychiatric disorders (McDonald, Shelley, & Jafferany, 2018). Clinical practice guidelines and expert recommendations on treating and managing PSO acknowledge the importance of addressing comprehensive care for this patient population including the assessment of depression (Burden et al., 2010). This evidence-based practice (EBP) pilot project provided a depression screening protocol and education on the use of the protocol to providers in a dermatology clinic in efforts to enhance the quality of care delivered to patients with PSO.

Background

Background on Psoriasis

Epidemiology. PSO is one of the most common chronic dermatologic conditions and affects more than 125 million people worldwide (Menter & Ryan, 2017). It is estimated that 7.4 million adults in the United States (U.S.) have PSO (Rachakonda, Schupp, & Armstrong, 2014). The reported incidence is approximately 59.9 per 100,000 people per year (Menter & Ryan,

2017). In adults, men appear to have a higher incidence of the disease than women, and the prevalence of PSO is lower in non-Caucasians (Menter & Ryan, 2017).

Characteristics and risk factors. There are many different types of PSO. The most common type is plaque-type psoriasis or psoriasis vulgaris, which accounts for 90% of the cases of PSO (Menter & Ryan, 2017). PSO can occur on any part of the body but commonly affects the scalp, trunk, and extensor surfaces which are often visible parts of the body (Menter & Ryan, 2017). Some notable risk factors for PSO include family history, infection, certain medications, stress, smoking, alcohol use, sunburn, and trauma (Menter & Ryan, 2017).

Physical impact. Plaque psoriasis generally causes well-demarcated symmetrical erythematous plaques with variable adherent scaling and thickness typically involving elbows, knees, trunk, scalp, sacrum, buttocks, and genitals (Menter & Ryan, 2017). Many people with chronic PSO will report intermittent disease exacerbations with pain, itching, and burning (Menter & Ryan, 2017). Though predominately affecting the skin, PSO can have a greater health impact than what can be seen by the human eye. Due to the nature of systemic inflammation, PSO is associated with an increased prevalence of cardio-metabolic diseases such as atherosclerotic cardiovascular disease, diabetes, obesity, and future vascular events (Menter & Ryan, 2017). In addition to these serious comorbidities, psoriatic arthritis (PsA) occurs in up to 30% of people with PSO and can cause significant disability (Longo, Ritchlin, Colbert, & Gladman, 2017).

Psychosocial impact. PSO by nature affects the appearances of individuals and as mentioned, is often present on parts of the body that are visible to others (Nazik, Nazik, & Gul, 2017). Many patients with PSO fear stigmatization because of their disease and report that their condition negatively impacts their body image and sexuality (Hrehorów, Salomon, Matusiak,

Reich, & Szepietowski, 2012; Nazik et al., 2017). Some of the most common feelings of stigmatization described by patients are the anticipation of rejection and feelings of guilt and shame (Hrehorów et al., 2012). Many people also report that their PSO affects their ability to perform daily activities (Nazik et al., 2017).

Financial impact. An additional burden of PSO is the financial impact of patient costs associated with the disease. Successful treatment and management of PSO is often associated with increased healthcare resource utilization and increased patient costs (Yu et al., 2009). Consequently, on average, a patient with PSO will spend \$11,498 over a lifetime for the relief of symptoms (Brezinski, Dhillon, & Armstrong, 2015). Newer long-term medications on the market for PSO can cost patients as much as thousands of dollars each month. With respect to the potential physical, emotional, psychosocial, and financial impact of PSO, there are comparable degrees of disability caused by PSO to other chronic diseases such as diabetes, heart disease, and cancer (Burden et al., 2010).

Background on Depression

Epidemiology and disease definition. In the U.S., major depression is one of the most common psychological disorders (National Institute of Mental Health [NIMH], n.d.). It is estimated that 16.1 million adults ages 18 and older had at least one major depressive episode in the past year, accounting for 6.7% of adults in the U.S. (NIMH, n.d.). According to the diagnostic criteria based on the Diagnostic and Statistical Manual of Mental Disorders V (DSM-5), major depressive disorder (MDD) consists of five or more specific symptoms that must be present for at least two weeks and signal a change from previous functioning (American Psychiatric Association [APA], 2013). Some of these symptoms include a depressed mood, diminished interest or pleasure in activities, significant unintentional weight loss or weight gain,

a decrease or increase in appetite, insomnia or hypersomnia, psychomotor agitation, fatigue or loss of energy, feelings of worthlessness, diminished concentration, and recurrent thoughts of death (APA, 2013).

Impact of depression as a disease. In the U.S. and worldwide, depression has indirect and direct effects on morbidity and mortality (Smithson & Pignone, 2017). Significant available research demonstrates the negative effects of depression on an individual's quality of life (Sivertsen, Bjørkløf, Engedal, Selbæk, & Helvik, 2015). Furthermore, MDD accounted for an economic burden of more than \$210 billion in 2010 alone (Greenberg, Fournier, Sisitsky, Pike, & Kessler, 2015). In efforts to reduce morbidity, mortality, and healthcare costs associated with depression, healthcare providers play an important role in identifying patients with depression and those at risk for mental health disorders.

Depression and psoriasis. The risk of depression amongst patients with PSO is well-documented; however, the exact relationship between the two is still unknown (Singh et al., 2017). According to Dowlathshahi, Wakkee, Arens, and Nijsten (2014), patients with PSO are 1.5 times more likely to have depression and more than 4 times as likely to use antidepressants as patients without PSO. A recent meta-analysis study reports that patients with PSO have a significantly higher likelihood of suicidal ideation, suicide attempts, and completed suicides (Singh et al., 2017). Patients with PSO who suffer from PsA have been found to be at an even greater risk for depression than those without the comorbidity (McDonough, 2014). The knowledge of the risk of depression and suicidality in patients with PSO points to a need for appropriate screening methods in practice for early identification and treatment of depression for this patient population.

Background on Depression Screening

Use of screening. Healthcare providers play an important role in assessing their patients for depression. Depression screening is not a new concept, and a growing body of literature supports the benefits of screening in combination with resources for disease management in the treatment of depression (Smithson & Pignone, 2017). Screening patients with chronic disease for depression is not a new consideration either and is well documented in patients with other chronic diseases such as chronic obstructive pulmonary disease and congestive heart failure (Julian et al., 2009; Buckley, 2015).

Currently, the U.S. Preventative Service Task Force (USPSTF) recommends depression screening for all adults and especially for those adults with chronic disease (USPSTF, 2016). While primary care offices are generally the target areas for systematic depression screening, rates of depression screening in primary care remain low (Akincigil & Matthews, 2017). Specialty care providers must not assume depression is being addressed in primary care and should take this into consideration when caring for at-risk patients.

Challenges with screening. Though depression screening tools offer many benefits, barriers to utilizing depression screenings in practice exist. Some cited barriers in utilizing depression screenings are time constraints, competing demands, and prior knowledge about the patient's depression status (Fuchs et al., 2015). Knowledge regarding the barriers in using depression screening tools in dermatology is limited (McDonald et al., 2018). Potential barriers may include a lack of clear guidelines, lack of time, or perception that secondary psychiatric disorders, such as depression, are outside of the dermatology domain (McDonald et al., 2018).

This EBP project aims to utilize a protocol that incorporates an already validated depression

screening tool that can be delivered quickly to minimize barriers to the implementation of depression screening at the target dermatology practice.

Opportunities for the Project

There are many opportunities for this EBP project. Currently, depression screenings are recognized for reimbursement by Medicare and some private insurances in primary care on an annual basis (Savoy & O'Gurek, 2016). Codes for annual depression screenings generate approximately \$15-\$18 per patient per year (Savoy & O'Gurek, 2016). With that being said, specialty care providers, such as those in dermatology, currently have little financial incentive to perform depression screening. This presents a problem as some patients are often only or at least more frequently seen by specialty care providers, and depression screening in primary care remains low (Akincigil & Matthews, 2017). This project may help to further demonstrate the benefits and importance of depression screening for patients with chronic illnesses in specialty care areas like patients with PSO in dermatology.

This EBP project may also help to improve the care delivered to patients with PSO at the target dermatology practice. Though this project did not look specifically at patients who screen positive for depression or how patients identified with depression were managed, providers who utilize the depression screening protocol may identify practice patients who could benefit from psychiatric services to promote overall health and could determine high-risk patients for depression not otherwise recognized. This notion has implications for improving comprehensive care and enhancing collaboration among healthcare specialties such as between dermatology, psychiatry, and primary care services.

Problem Statement

Though patients with PSO are at an increased risk for depression, many providers do not screen this population for depression in practice, which may lead to failure in the recognition of patients with depression requiring treatment.

Purpose of the Project

The purpose of this project is to increase dermatology providers' assessment of depression in patients with PSO. The significance of increasing depression screening in patients with PSO is to allow for early recognition and referral for treatment of this common psychological comorbidity.

Clinical Question

Will the implementation of a depression screening protocol and education on the use of the protocol enhance provider assessment of depression in patients with PSO?

Population

The target population for this project was providers who care for patients with PSO at one private dermatology practice.

Intervention

The primary intervention of this project was the implementation of a depression screening protocol and education for the providers on the use of the protocol in practice.

Comparison

The project leader utilized chart reviews to compare depression screening prior to (control group) and after the intervention (comparison group).

Outcomes

The primary outcome was to increase provider assessment of depression in patients with PSO by increasing the use of depression screening (PHQ-9) for this patient population.

Literature Review

Search Strategy

The project leader completed a search of CINAHL, PUBMED, JAMA, and ProQuest. The keywords used for the literature review were *psoriasis, depression, suicidality, screening, depression protocol, PHQ-9, dermatology, comorbidities, self-esteem, body image, stigmatization, and quality of life*. All articles were limited based on those written in the last fourteen years including a date range from 2004-2018. A majority of these articles were written in the last six years. All articles gathered were in the English language, and a majority were full-text articles with abstracts. The project leader reviewed over 70 abstracts for relevance and selected 22 articles for the literature review.

Critical Appraisal

Evidence demonstrating the links between depression and PSO as well as the factors contributing to the risk of depression in patients with PSO were important focuses of this review. Besides why patients with PSO are at risk for depression, implications for depression screening in dermatology are supported by available research including the depression screening tool embedded in the protocol implemented for this project. The project leader reviewed and ranked the literature according to strength utilizing a rating system for the hierarchy of evidence (Melnik & Fineout-Overholt, 2015). Out of the 22 studies included, there were two systematic reviews and meta-analyses, nine controlled trials without randomization, six case-controls or cohort studies, two single descriptive studies, and three expert opinions. Common limitations

among the available research included small sample sizes for controlled trials, convenience sampling, and non-randomization of subjects (see Appendix A for evidence table).

Psychosocial Factors Linked to the Risk of Depression in Patients with Psoriasis

Throughout the literature, research studies highlighted multiple psychosocial factors contributing to the risk of depression in patients with PSO. The most common factors identified throughout the review were self-esteem, body image, stigmatization, and perceived quality of life. In the subsequent paragraphs these factors are discussed as they relate to patients with PSO.

Self-esteem and body image. As compared to patients without the disease, patients with PSO have been found to have lower levels of satisfaction with body image and self-esteem (Nazik et al., 2017). In particular, one study found that women with PSO report stronger beliefs in the influence and importance of body image or physical appearance on self-worth (Wojtyna, Lakuta, Marcinkiewicz, Bergler-Czop, & Brezezinska-Weislo, 2016). Recognizing the relationship between body image and depression, researchers have found that improving body image in patients with PSO may contribute to the prevention of depression, especially in women (Wojtyna et al., 2016).

Stigmatization. Patients with PSO may fear stigmatization because of the appearance of their disease. Hawro et al. (2017) acknowledged PSO and stigmatization but aimed to more clearly define the links among lesion distribution and severity of the disease to stigmatization. They found that PSO lesions on the back of hands were related to higher levels of stigmatization (Hawro et al., 2017). Furthermore, people who were not able to hide lesions by clothing reported higher levels of stigmatization and women demonstrated a greater sensitivity to stigmatization (Hawro et al., 2017). In this same study, the strongest predictor of QoL impairment was

stigmatization suggesting that greater feelings of stigmatization result in reductions in an individual's reported QoL (Hawro et al., 2017).

Quality of life. PSO can be a debilitating skin disease with a significant negative impact on health-related QoL. As previously cited, degrees of disability caused by PSO may be similar to other chronic diseases such as diabetes, heart disease, and cancer (Burden et al., 2010). A large portion of the burden on the QoL of patients with PSO centers on the psychosocial burden of the disease. Throughout the literature search, multiple studies on PSO and QoL highlighted psychosocial factors as having a negative impact on patients with PSO (Hawro et al., 2017; Nazik et al., 2017; Wojtyna et al., 2016). For example, one study found that patients with PSO have greater levels of loneliness and social isolation compared to those without the disease translating into reductions in reported QoL (Kouris et al., 2016). Acknowledging decreased QoL reported in patients with PSO, Korman, Zhao, Pike, and Roberts (2016) further studied the relationship among severity of PSO and QoL and found that patients with more severe disease experienced greater reductions in reported QoL.

Factors linked to depression. A noteworthy study in Poland examined the importance of psychosocial factors in relation to depressive symptoms in patients with PSO (Wojtyna et al., 2016). Certain factors addressed were gender, the age of onset of disease, the extent of disease, perceived social support, subjective distress, and beliefs regarding the importance and influence of appearance (Wojtyna et al., 2016). At the conclusion of the study, researchers found that depressive symptoms and distress were higher in women than in men with women placing greater value in appearances (Wojtyna et al., 2016). Despite these differences, psychological distress was an important risk factor for depression in both men and women regardless of disease severity (Wojtyna et al., 2016). Such findings have important implications for clinicians to take

into consideration. Clinicians should assess patients with PSO for their subjective levels of distress and recognize the role this chronic disease plays in psychological health (Wojtyna et al., 2016).

Risk of the Additional Burden of Comorbidities in Patients with Psoriasis

Multiple comorbidities are associated with PSO including PsA, obesity, hypertension, malignancies, metabolic syndrome, and cardiovascular disease (Feldman et al., 2017). Costs for medical conditions associated with PSO are estimated at an additional \$36.4 billion annually (Feldman et al., 2017). Comorbidities can place significant distress among patients with PSO adding to the potential burden of disease.

In efforts to better understand the additional burden of PsA as a comorbidity, one study found that patients with PsA reported poor work productivity, worse pain and fatigue, and a greater morbidity burden than those with PSO alone (Strober et al., 2017). It should also be noted that in the same study 24% of patients with PSO and PsA reported depression as opposed to 16% of those with PSO alone (Strober et al., 2017).

Increased risk for comorbidities in patients with PSO warrants greater medical monitoring to ensure overall health and quality of life (Kimball et al., 2008). The National Psoriasis Foundation suggests dermatologists must play an active role in educating patients on the potential negative health effects of their PSO as they relate to other aspects of their health and consider screening tests, preventative exams, and referrals for comorbidities (Kimball et al., 2008).

Risk of Depression in Patients with Psoriasis

A link between PSO and depression exists throughout the literature. In a hospital-based, case-control study in Iran, patients with PSO reported significantly higher degrees of depression

than the control group, supporting a relationship between PSO and depression (Golpour et al., 2012). Cohen, Martires, and Ho (2016) investigated the association of PSO and MDD in the U.S. population and found that 16.5% of patients with PSO met the criteria for a diagnosis of MDD.

A meta-analysis study on the prevalence of depressive symptoms and clinical depression in patients with PSO further supports the relationship between PSO and depression by revealing that more than 10% of patients with PSO suffer from clinical depression and roughly 20% have depressive symptoms (Dowlathshahi et al., 2014). Another more recent meta-analysis study regarding the suicidality of patients with PSO found that compared to the general population, patients with the disease are at increased risk for all aspects of suicidality (Singh et al., 2017).

In comparing depression in patients with other dermatologic diseases such as melanoma and allergies, patients with PSO have an increased risk for psychiatric comorbidities and suicidal ideations (Pompili et al., 2017). Of the patients with PSO, one study found that the risk for MDD is significantly higher in women and patients with a severe clinical disease, comorbidities such as PsA, and previous psychiatric conditions (Lamb et al., 2017). It should also be noted that patients with PSO who are younger (age < 20) at the age of disease onset are often significantly more depressed than patients with late-onset PSO (Remröd, Sjöström, & Svensson, 2013). The literature supports that patients with PSO are at an increased risk for depression, and healthcare providers should take this into consideration when caring for this population.

Implications for Depression Screening in Dermatology

The medical community generally recognizes the common occurrence of psychiatric disorders among patients with physical diseases or chronic illnesses. Recently more studies have demonstrated the prevalence of depression specifically among patients with dermatologic diseases (AlShahwan, 2015). But though there are documented risks of depression for patients

with dermatologic diseases, there is limited literature regarding the assessment of depression in clinical dermatologic practice (McDonald et al., 2018). In the research studies that do address depression screening in dermatology practice, assessment techniques included provider clinical judgment, questionnaires, diagnostic criteria, and disease codes (Korman et al., 2016).

McDonald, Shelley, and Jaffernany (2018) acknowledge that patients and dermatologists could benefit from a screening tool to identify secondary psychiatric conditions and recommend standardized screening for depression and suicidal ideation.

While questionnaires are cited to be more commonly used in research studies, the most commonly used method for assessing depression in patients with PSO in clinical practice is clinician judgment (Dowlathshahi et al., 2014). The sensitivity and specificity of dermatologists' clinical judgment for depression in patients with PSO has been found to be 60% and 21% (Richards, Fortune, Weidmann, Sweeney, & Griffiths, 2004). The same study found that agreement between dermatologists and patients with PSO regarding the presence of psychological distress was low (Richards et al., 2004). Beyond this, the study also found that the majority of times that patients were identified as being depressed, no further actions were taken (Richards et al., 2004).

PHQ-9 For Depression Screening

Screening tools have been established as a cost-effective intervention to promote early identification and treatment of depression used in a variety of healthcare settings (Jiao, Rosen, Bellanger, Belkin, & Muennig, 2017; Wilkinson, Anderson, & Wheeler, 2017). This project utilized the Patient Health Questionnaire-9 (PHQ-9). The PHQ-9 is a brief and useful multipurpose instrument used to screen, diagnose, monitor, and measure depression severity (Pfizer, 1999).

While controversy exists over which depression screening tool is most reliable in clinical practice, the PHQ-9 is a validated instrument in screening for MMD and depressive symptoms (Suzuki, Kumei, Ohhira, Nozu, & Okumura, 2015). In one of the largest validation studies on the PHQ-9, the sensitivity and specificity of the PHQ-9 was 74% and 91% (Arroll et al., 2010). Compared to shortened versions of the PHQ-9, this tool is more specific for identifying depression (Arroll et al., 2010). Unfortunately, a review of the literature revealed limited studies on the use of depression screening tools specifically in dermatology practices. Though this gap in the literature exists, the PHQ-9 has been used in studies for both depression and PSO (Lakshmy, Balasundaram, Sarkar, Audhya, & Subramaniam, 2015). This notion highlights the need for enhanced routine screening of patients with PSO as early detection of depression as a psychiatric comorbidity (Lakshmy et al., 2015; Cohen et al., 2016).

Depression Screening Protocols

Screening patients for depression is important, but what providers do with positive screenings after is just as important. To expedite the identification and treatment of depression among different groups of patients, depression screening protocols are often used in practice settings. One study examined the use of a depression screening protocol among patients with acute stroke to determine if the protocol improved early detection and treatment of post-stroke depression (McIntosh, 2017). The study utilized the PHQ-9 and found that the protocol improved early detection and treatment of depression prior to hospital discharge for patients post-stroke (McIntosh, 2017).

Another study examined the role of training in implementing a depression screening and treatment protocol in outpatient internal medicine clinics (Loeb, Sieja, Corral, Zehnder, Guiton, & Nease, 2015). Loeb et al. (2015) found that training attendance was associated with increased

compliance with protocol procedures, highlighting the importance of training in the implementation of practice changes. Considerations for this scholarly project recognize the value of a screening protocol over a screening questionnaire alone and education on the use of the protocol to promote appropriate use. Though this project did not specifically look at what providers did with any positive depression screenings, the protocol did make recommendations for follow up screenings based on individual PHQ-9 scores.

Conceptual Framework

The conceptual framework utilized in this EBP pilot project was the Iowa Model of Evidence-Based Practice to Promote Quality Care (Iowa Model Collaborative, 2017). This model is used throughout nursing research and is an effective model in leading an EBP change (Hall & Roussel, 2014). The Iowa Model is a step-wise approach to addressing important steps in a clinical question and determining evidence available to support clinical decisions (Hall & Roussel, 2014). This model served as a map regarding the course of actions taken throughout the implementation of this project to enhance provider assessment of depression in patients with PSO.

Project Triggers

According to the Iowa Model, triggers must first be identified (Hall & Roussel, 2014). The knowledge-focused trigger identified in this project was that patients with PSO are at a significant risk for depression and suicidality (Singh et al., 2017). Many dermatology practices, including the target private practice for this project, do not screen patients with PSO for depression. This trigger presented an opportunity for improvement in comprehensive patient care by assessing psychological health often not previously addressed.

Organization Priority

This project addressed a priority for the private practice in which this project was intended for implementation. The dermatology practice in question sees a variety of patients with varying degrees of PSO on a daily basis. As a part of the mission statement, the practice strives to offer patient-centered comprehensive care. Depression screening addresses psychological care which is an important aspect of comprehensive care. Providing necessary supplies and educating providers on the use of a depression screening protocol for patients with PSO may help the practice to provide higher quality comprehensive care. The practice agreed that this project was important and supported it.

Project Team and Research Assembly

The next steps of the Iowa Model include forming a team, assembling relevant research, critiquing and synthesizing the research, and determining a sufficient base for the project (Hall & Roussel, 2014). The team for this practice project consisted of one Doctor of Nursing Practice (DNP) student or project leader, one graduate faculty advisor or project chair, and one provider at the target practice. As outlined in the literature review, there was sufficient evidence for this practice project and an identified need for depression screening tools in dermatology practice. Though the use of depression screening tools in dermatology practice is limited, the screening method chosen for this practice project has been used in such a setting, and clinical guidelines call for a greater assessment of depression in patients with PSO.

Project Design, Piloting Change, and Evaluation

The fifth step of the Iowa Model calls for designing and piloting the practice change. This EBP project involved implementing a depression screening protocol for patients with PSO at a small private dermatology practice and educating providers on the use of the clinical tool. The

dermatology providers caring for patients with PSO were the target population for this practice project. Prior to piloting the practice change, the project leader developed an evaluation plan and gathered baseline information on the average number of patients with PSO seen at the office as well as provider use of depression screening pre-intervention. The promotion of practice change adoption took place at one monthly provider meeting, and the DNP student was available throughout the implementation phase by email or phone to answer questions from providers and staff on the suggested practice change. Approximately two months after the suggested practice change was introduced, the project leader gathered data on whether or not the intervention improved the assessment of depression in patients with PSO. Whether or not this practice change is appropriate for long-term adoption will depend on the providers' perceptions of the usefulness of the tool in practice and addressing any barriers to long-term implementation.

Methodology

Project Design

This was an EBP pilot project that consisted of implementing a depression screening protocol for providers in dermatology to utilize in practice when caring for patients with PSO (See Appendix F for depression screening protocol). This project took place over two months at a private dermatology practice that sees approximately 15 patients with PSO per week. The implemented screening protocol utilized one validated depression screening tool, the PHQ-9 (See Appendix G for screening tool). As a quasi-experimental approach, the design of this project allowed for the project leader to assess the impact of the intervention on provider assessment of depression in patients with PSO by looking at pre- and post-intervention measures.

Because a screening protocol offers providers recommendations and interventions based on patient outcomes, the project leader chose a screening protocol over the implementation of a

depression questionnaire alone. This was an important consideration to help the project team who recognized the gravity of depression and potential for positive screening warranting further assessment. Though this project did not focus on how many positive screenings there were, a plan on what to do if depression was identified was a significant consideration to the implementation of this project at the target practice. A written document with suggestions for how to address positive screenings and contact information for local mental health resources was provided to each participating provider. Though the project leader offered suggestions, the providers were able to address any positive depression screenings at their own discretion.

Adapted from Korman et al. (2016), the depression screening protocol encouraged providers to screen patients with PSO at initial diagnosis or those patients previously diagnosed with PSO that have never been screened for depression at the office. The original protocol suggested the Patient Health Questionnaire-2 (PHQ-2) be used initially, which is a shortened version of the PHQ-9. In efforts to streamline the depression screening protocol for the target practice and for the purposes of this project, the project leader removed the PHQ-2 from the protocol and recommended the PHQ-9 as the only screening questionnaire to be used.

According to the protocol, patients who scored less than or equal to ten on the PHQ-9 should be recommended for repeat depression screening in one year (Korman et al., 2016). For those patients who scored between eleven and fourteen, a repeat PHQ-9 was recommended at the following visit (Korman et al., 2016). Lastly, those patients who scored greater than or equal to fifteen were recommended for referral for psychiatric evaluation with repeated PHQ-9 screening suggested at the next office visit (Korman et al., 2016). Though patients who scored fifteen or greater were recommended for referral based on the protocol, providers were made aware that

any patients identified with depression could also be referred and that referrals were ultimately up to the discretion of the individual provider.

This project did not address specific patients directly. The intervention did not look at how many positive depression screens there were or how treatment was carried out, but rather how having this protocol available in practice and educating providers on the use of the protocol impacted provider assessment of depression in patients with PSO.

Measurable Outcomes

Measurable outcomes were important to this EBP project as they helped to define how the depression screening protocol and provider education impacted the assessment of patients with PSO for depression at the project site. The measurable outcomes for this project were the number of patients with PSO screened for depression compared to the total number of patients with PSO seen at the office pre-and post-implementation of the depression screening protocol. The time frame of interest was a 30-day period before the intervention and a 30-day period after the intervention. The number of depression screenings documented and the total number of patients with PSO seen during the pre-intervention 30-day time frame by all participating providers served as the before measures. The number of depression screenings documented and the total number of patients with PSO seen during the post-intervention 30-day time frame by the participating providers served as the after measures.

Setting

The setting for this EBP project was a private dermatology practice caring for patients with a variety of dermatologic needs. The practice strives to provide comprehensive and quality healthcare which aligned with this project's aim. The organizational structure of the practice includes physician practice owners, managers, providers, a nurse, clinical assistants, and non-

clinical staff. The clinical assistants and the nurse involved in direct patient care likely played an important role in providing patients with depression screening questionnaires based on identified depression screening needs as determined by the providers. The support of practice administrators was crucial to the success of the project implementation.

Population

The target subjects for this EBP project were nine dermatology providers within the same dermatology practice including four physicians and five advanced practice providers. The advanced practice providers consisted of four physician assistants and one nurse practitioner. Though there were nine providers at the practice, two physicians and one physician assistant were excluded from this project as they do not manage care for patients with PSO but instead work in surgical or aesthetic areas of the practice. Each of the other six providers serve different roles within the practice but all six provide care for patients with PSO, some more than others.

Ethical Considerations

For the protection of subject rights, no personal information regarding the participating providers or place of practice was disclosed. The participating providers were also not penalized for choosing not to screen patients with PSO for depression. Though the office also cares for pediatric patients, the project leader told providers to avoid screening anyone under than age of 18 using the protocol provided, and no data was collected from patients under the age of 18 or over the age of 90. Providers were not compensated for participating in the project; however, the project leader provided a meal to the practice at the conclusion of the project in gratitude for provider and staff participation.

The project leader has completed research ethics training to ensure protection of human subjects (see Appendix C for CITI certificate). The committee-approved project proposal was

submitted to Liberty University's (LU's) Institutional Review Board (IRB) and received exemption from further review as this project fell under an exemption for involving the collection of information in such a manner by the investigator that subjects cannot be identified, directly or through identifiers linked to the subjects (see Appendix B for IRB approval documentation). There was no IRB at the project site. Though LU's IRB waived formal written consent from individual providers for this project, the project leader obtained written consent from the practice administration for project implementation and use of the electronic medical record (EMR) for data collection (see Appendix D for site approval).

Data Collection

The project leader performed retrospective chart reviews for a 30-day period four weeks before the intervention and four weeks after the intervention to obtain data for this project. The project leader reviewed charts for patients with a diagnosis of PSO as well as the documentation of depression screening in the form of the PHQ-9. The number of patients with PSO who were seen within the 30-day time frames pre- and post-intervention and the number of depression screenings, in the form of the PHQ-9, were recorded.

Though the project leader performed chart reviews on patients throughout this project, the leader did not utilize any identifying patient or provider information. As mentioned, the primary focus of this project was whether or not provider assessment of depression was enhanced with the implementation and education of a depression screening protocol rather than how this screening would affect patients with PSO. The project leader reviewed charts during data collection based on those patients with PSO cared for by participating providers, equal or greater than 18 years old and equal or less than 90 years old, and those seen at the office within a 30-day period prior to and following the intervention. The data was grouped as "pre-

intervention” or “post-intervention” according to the date of the visit and “yes” or “no” for whether or not depression screening was documented. This data was later coded for statistical analysis as the following: “pre-intervention” = 1, “post-intervention” = 2, “no” = 1, and “yes” = 2.

There was no personal health protected information written or stored outside of the EMR that was used to track the number of patients seen with PSO and the number of depression screenings documented. The data collection was reserved to the project leader who upheld compliance with the Health Information Portability and Accountability Act (HIPAA). The data was kept on a password-protected computer only accessible to the project leader in a Microsoft Excel® spreadsheet. This spreadsheet will be kept for three years following the completion of the project. After three years, the electronic documents will be placed into the computer trash bin and permanently removed from the bin in order to support further privacy.

Tools

The main tools necessary for this EBP project were the depression screening protocol and embedded screening questionnaire, the PHQ-9. The project leader gave the providers copies of the tools and placed more copies in most exam rooms within a file folder under a tab labeled “Depression Screening.” Along with these tools, the project leader also provided laminated copies of the suggested course of action for patients identified with depression and handouts on how to interpret PHQ-9 results to the participating providers.

In order to complete the chart reviews, the project leader used the practice’s established EMR. Sorting tools within the office’s established EMR allowed for the identification of patients seen within a specified time frame. The project leader reviewed charts for all participating providers during each 30-day pre- and post-intervention period for a diagnosis of PSO and

whether or not depression screening was documented. Microsoft Excel® was the data collection tool used to manually track the date of visits for patients with PSO and whether or not screening was documented in the EMR. This tool was accessed on a password protected computer only accessible to the project leader.

Intervention

The intervention for this EBP project was the depression screening protocol in combination with education to providers on use of the screening tool in practice (See Appendix F for depression screening protocol). This protocol was adapted and modified from an article on the evaluation and management of depression in patients with PSO (Korman et al., 2016). The tool or questionnaire utilized in the depression screening protocol, the PHQ-9, is publicly available for providers to use in practice as well as in this project (Pfizer, 1999).

The intervention, including the depression screening protocol and education to providers on the use of the protocol, was delivered at one monthly provider meeting. The project leader educated providers on the prevalence of depression among patients with PSO, the depression screening protocol itself including the embedded PHQ-9, and where to find resources for this protocol at the office. In addition to these topics, the project leader gave providers the suggested course of action to take for any patients identified with depression and contact information for local mental health resources. The day following the provider meeting marked the introduction of the protocol in practice.

Timeline of Project Phases

Preparation. The preparation for this project consisted of identifying the problem-focused triggers, determining if the topic was a priority for the organization, forming a team, assembling and synthesizing research, and determining if there was sufficient research to base the practice

change. The steps of this project's preparation reflected the conceptual framework used, the Iowa Model of Evidence Based Practice. The activities that occurred during the preparation phase included the following:

- On September 4th, 2017, the project leader presented the project proposal to a practice owner and key stakeholder.
- On December 20th, 2017, the project leader delivered the project proposal to the project chair and approval was given with minimal edits.
- On April 5th, 2018, the project leader submitted the project proposal to LU's IRB.
- On May 11th, 2018, LU's IRB approved the project proposal.
- On June 1st, 2018, the project leader formed the project team.

Implementation. After preparation and according to the conceptual framework, the implementation phase consisted of the introduction of the depression screening protocol and education to the providers on the use of the protocol. This also consisted of providing necessary supplies for the providers to use for the depression screening protocol in practice. The activities that occurred during this stage included:

- On June 7th, 2018, the project leader placed copies of the depression screening protocol, PHQ-9's, and other protocol documents in most exam rooms for the providers to use or within the shared work areas.
- On June 7th, 2018, the project leader delivered the intervention at one monthly provider meeting.
- June 8th, 2018, marked the introduction of the protocol in practice.
- On July 8th, 2018, the 30-day window period post-intervention began.

- August 1st – August 6th, 2018, the project leader performed chart reviews for pre- and post-intervention.
- On August 6th, 2018, the 30-day window period post-intervention ended.

Evaluation. Following the Iowa Model of EBP, the project leader evaluated the intervention to determine if a change in practice occurred. The activities that occurred during the evaluation stage included the following:

- On August 6th, 2018, the project leader completed all pre-and post-intervention chart reviews.
- On August 7th, 2018, the project leader completed the data analysis.
- On October 1, 2018, the project leader will disseminate project results to the providers at the practice.

Data Analysis

The data analysis for this EBP project took place using IBM® Statistical Package for the Social Sciences® (SPSS®), Version 25.0, to generate statistical and descriptive results. Because the data was nominal in nature, the data collected for this project best fit statistical testing utilizing the Fisher's exact test of independence because of the small sample size (Rao, 2017). This nonparametric statistical test is used when one wants to determine if the proportions for one variable are different among values of the other variable (Rao, 2017). The project leader categorized the data as "pre-intervention" or "post-intervention" and as "no" or "yes" for whether or not depression screening was documented. For analysis purposes, the project leader coded the data in order to run the statistical test ("pre-intervention" = 1, "post-intervention" = 2, "no" = 1, and "yes" = 2). For the Fisher's Exact test, the null hypothesis was that there was no change in the number of depression screenings documented for patients with PSO from pre-intervention to post-intervention ($H_0: p_1 = p_2$). The alternative hypothesis was that there was an

increase in depression screenings documented for patients with PSO from pre-intervention to post-intervention ($H_1: p_1 < p_2$). An alpha of 0.05 was used. For descriptive statistics, the project measures were reported as ratios and percentages for comparison of pre- and post-intervention outcomes. Besides SPSS®, the project leader used Microsoft Excel® to generate figures and a table for the visualization of results pre- and post-intervention.

Feasibility Analysis

The costs of this EBP project were minimal. The costs included office supplies and printing for the depression screenings tools including labeled folders, laminated copies of the depression screening protocol, PHQ-9 interpretation handout, and suggested course of action, and paper copies of the PHQ-9's that were placed in exam rooms. The total costs for the office supplies and printing was approximately \$150. The project leader provided education to the providers at no charge and collected data utilizing an already established EMR. This project was very feasible for the dermatology practice and this aided in the implementation of the project.

Currently depression screening is reimbursed in primary care on an annual basis averaging just under \$20 per screening per person (Savoy & O'Gurek, 2016). Evidence-based guidelines recommend depression screening for all patients with PSO (Burden et al., 2010). Unfortunately, reimbursement for depression screenings in specialty care offices is still lacking, offering an opportunity for the future in policy change to promote quality comprehensive care. Though the project was not targeted to increase financial gain for the practice at this time, the EBP project may offer other beneficial aspects including improvement in mental health screenings among patients with PSO, enhancements in providing comprehensive care, and greater congruency to EBP guidelines for screening depression among patients with PSO. Financial benefits may be seen in the future if the providers utilize depression screening long

term, or the practice considered utilizing depression screening as part of merit-based incentive payment programs. Overall, the potential benefits of this project outweigh the minimal costs.

Results

The project leader utilized statistical testing and descriptive statistics to demonstrate the results of this project. Based on the pre-intervention retrospective chart reviews, there were a total of 57 patients with PSO seen at the office within the 30-day pre-intervention time frame by the participating providers. Of these patients with PSO seen at the office pre-intervention, providers documented 0 PHQ-9 depression screenings in the EMR. The percentage of patients with PSO screened for depression in practice pre-intervention was 0% (Figure 1).

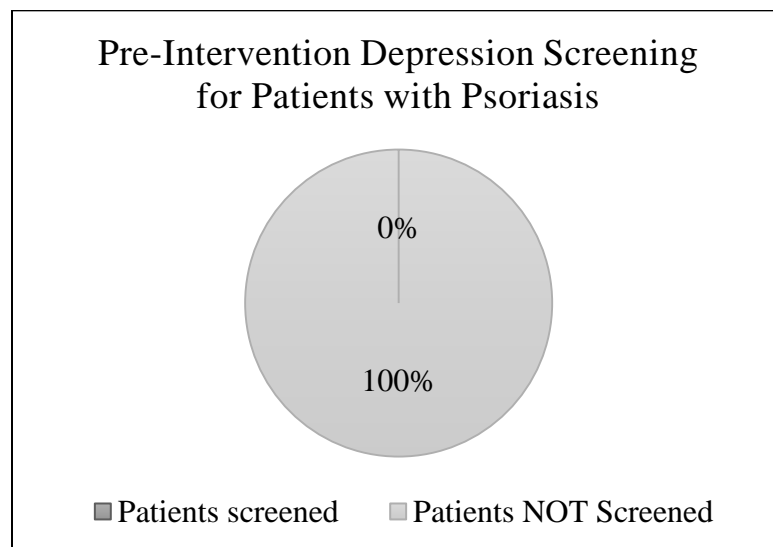


Figure 1. Pre-Intervention Depression Screening for Patients with Psoriasis

Based on the post-intervention retrospective chart reviews, there were a total of 45 patients with PSO seen at the office within the 30-day post-intervention time frame by participating providers. Of these patients with PSO seen at the office post-intervention, providers documented 7 PHQ-9 depression screenings in the EMR. The percentage of patients with PSO screened for depression in practice post-intervention was 15.6% (Figure 2).

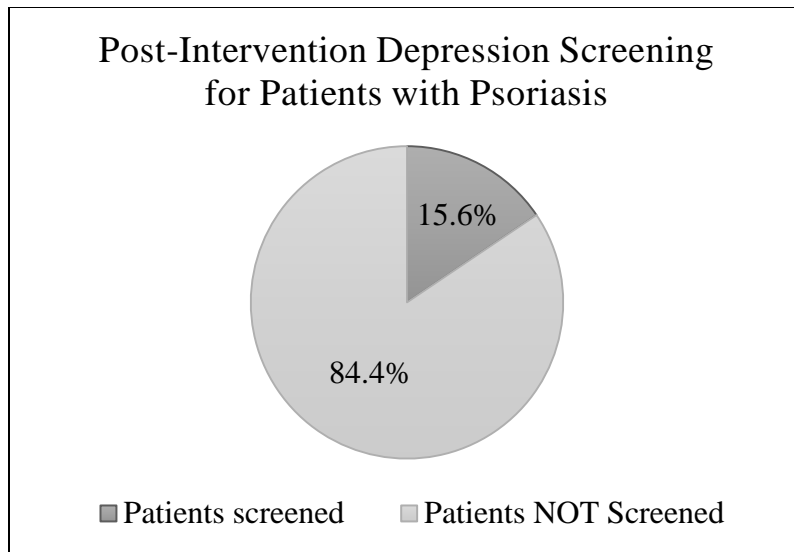


Figure 2. Post-Intervention Depression Screening for Patients with Psoriasis

In order to evaluate whether this change in screening was statistically significant, the project leader applied the Fisher's exact test to the data. SPSS® results for the Fisher's exact test generated a pre- and post-intervention cross tabulation and a p-value of 0.002 (Table 1).

Table 1

Pre- and Post-Intervention Cross Tabulation and Fisher's Exact Test Results

		Depression Screening?			P-value
		No	Yes	Total	
Pre- Intervention	Count	57	0	57	0.002
	Percentage (%)	100.0%	0.0%	100%	
Post- Intervention	Count	38	7	45	
	Percentage (%)	84.4%	15.6%	100%	
Fisher's Exact					

Discussion

By looking at the results from this EBP project, the number of documented depression screenings increased from pre- to post-intervention. Based on the results that 0/57 of the patients with PSO were screened for depression prior to the intervention and 7/45 were screened after the intervention, there was a 15.6% increase in the overall pre-intervention and post-intervention measures for this project.

Considering the Fisher's exact test with an alpha of 0.05, a $p = 0.002$ caused for the rejection of the null hypothesis in favor of the alternative. The null hypothesis stated that no change in the number of depression screenings documented for patients with PSO from pre-intervention to post-intervention would occur ($H_0: p_1 = p_2$). The alternative hypothesis stated an increase in depression screenings documented for patients with PSO from pre-intervention to post-intervention would occur ($H_1: p_1 < p_2$). Based on the p-value of 0.002 generated from the Fisher's exact test and that $p = < 0.05$, the null hypothesis was rejected and the alternative accepted, demonstrating that the change in depression screening was statistically significant.

The ultimate goal of this project was to encourage practice change. The results from this project demonstrated statistical and clinical improvement in depression screening for patients with PSO at the target practice. This answers the project's clinical question supporting that the implementation of a screening protocol and education to the providers on the use of the protocol did improve the assessment of depression in patients with PSO. Various unforeseen factors arose during the implementation of this project and in subsequent paragraphs, the project leader considers limitations of this project as well as recommendations for future implementation and research considerations.

Project Limitations

There were limitations to this project. First, the sample size for this project was very small totaling only six participating providers who cared for 102 patients with PSO during the project's data collection window: 57 pre-intervention and 45 post-intervention. Because the project's sample size was small, the project design utilized convenience sampling, and the project leader did not collect data randomly, the results from this project cannot be generalized.

Second, shortly after the introduction of the protocol in practice, the practice's administration placed a hold on providers administering the depression screenings as the office's legal advisors considered any legal barriers to implementation. This meant the first four weeks following the introduction of the protocol in practice could not be used for data collection as originally designed, therefore, the providers may have forgotten some of the content provided in the intervention. Providers were notified shortly after the administration agreed to allow the project to proceed, but the intervention was not repeated which may have impacted provider screening rates.

Another limitation of the project is that the project did not address how providers adhered to any follow-up screening based on the individual PHQ-9 results and protocol recommendations. The project looked at a 30-day period after the protocol was introduced to see if patients with PSO were screened for depression utilizing the PHQ-9. Documentation of depression screening did not require any mentioning of follow up screening. Further studies utilizing a similar depression screening protocol should take place over the course of a longer time period in order to study adherence to follow-up screening recommendations on a long term basis.

The final limitation for this discussion was how the data was collected. The data collection was reserved for the project leader who manually reviewed charts from visits during two 30-day time frames for the participating providers recognizing a diagnosis of PSO and whether or not depression screening was documented. The project leader may have missed a patient with a diagnosis for PSO or documentation of depression screening. Sorting tools in an established EMR may be helpful for similar studies or projects in the future in order to more efficiently and effectively review documentation for depression screenings.

Significance and Implications for Practice

The results of this project have important implications for the future in relation to depression screening for patients with PSO in a dermatology care setting and specifically at the project site. While statistically significant improvement in provider screening rates post-intervention was noted, the project did not address whether or not the screenings were from one or multiple providers. It would be beneficial in the future to understand why, if any, providers opted not to screen patients for depression in practice. While 15.6% was an improvement in the overall percentage of patients with PSO that were screened for depression from pre-intervention results, it would also be beneficial to understand why 84.4% were not screened for depression. One could hypothesize some barriers including time constraints, provider experience with screening for depression, visit priorities, length of the PHQ-9, and many others, but without studying provider perceptions of depression screening for this patient population in a dermatology care setting, no inferences can be made.

The project leader recommends future projects or studies to gather insight on the barriers to the implementation of depression screening for patients with PSO in a dermatology. Limiting barriers to implementation specifically in a dermatology care setting may help to enhance

provider assessment of depression in patients with PSO in the future. Another recommendation is to utilize a shorter version of the PHQ-9 in the screening protocol, such as the PHQ-2. Screening protocols incorporating the PHQ-2 do exist and may offer quicker methods to screening for depression in dermatology practice (Korman et al., 2016; McDonald, Shelley, & Jafferany, 2018).

The fact that depression screening improved 15.6% post-intervention is important to acknowledge, especially when considering implications for practice. Providers did not previously screen patients with PSO for depression at the target practice. After the intervention, providers engaged in screening which means they likely found screening important or valuable in a clinical setting and potentially previously lacked the awareness of the risk of depression in this patient population or lacked the tools to screen for depression in dermatology practice. With that being said, one must consider how many other dermatology care providers do not screen patients with PSO for depression and the importance of spreading awareness for this intervention as well as tools for depression screening in other similar settings.

Sustainability

This project demonstrated a change in practice from pre- and post-intervention. Whether this change in practice will be adopted long term will depend on addressing any barriers to the implementation of the protocol at the practice site. This project could be sustainable long term, as the costs for implementation are low and the potential for changes to reimbursement for depression screening in the future could benefit the practice financially. Furthermore, the project leader chose to leave screening materials with the office in hopes that providers would continue to utilize the recommended protocol. However, it will be ultimately up the practice's

administration and the providers as to whether or not they choose to continue to screen patients with PSO for depression in practice.

Dissemination Plan

The findings from this project will be disseminated to the practice providers involved in this project with a report on the results, the lessons learned, and suggestions for enhanced depression screening for patients with PSO. The project leader also seeks to submit a manuscript based on this project for publication to a nursing journal specific to dermatology. The project leader will also upload this project to the LU's Digital Commons where it can be accessed online around the world. The project leader will continue to seek opportunities to share this project in the future and information regarding the importance of assessing patients with PSO for depression in practice.

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Appendix A

Evidence Table

Article title, author etc. (APA format)	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would use as evidence to support a change? (Y/N)
Arroll, B., Goodyear-Smith, F., Crengle, S., Gunn, J., Kerse, N., Fishman, T., & ... Hatcher, S. (2010). Validation of PHQ-2 and PHQ-9 to screen for major depression in the primary care population. <i>Annals of Family Medicine</i> , 8(4), 348-353.	To validate the 2 and 9 question PHQ in primary care	2,642 adult patients attending Auckland family practices	PHQ-9 competed compared to the composite international diagnostic interview depression reference standards	Sensitivity and specificity for the PHQ-9, was 74% and 91%	Level IV	It was completed in new Zealand and may not be generalizable to other populations	(Y) Largest validation study of the PHQ-2 and PHQ-9
Dowlatsahi, E. A., Wakkee, M., Arends, L. R., & Nijsten, T. (2014). The prevalence and odds of depressive symptoms and clinical depression in psoriasis patients: A systematic review and meta-analysis. <i>The Journal of Investigative Dermatology</i> , 134(6), 1542-51	Determine the prevalence and odds of depressive symptoms and clinical depression in psoriasis.	Electronic search yielded 1,815 articles of which 98 were eligible	Search for studies was conducting in Embase, Medline, PubMed, PsychInfo, and Cochrane from inception to August 2012 – Studies were selected based on inclusion and exclusion criteria. Conducted in accordance to PRISMA guidelines for	Prevalence of depressive symptoms was 28% using questionnaires and the prevalence of clinical depression was 12% using ICD codes, 19% using DSM V, and 9% for antidepressant use. >10% of psoriasis patients suffer from clinical depression, and twice as many	Level I	Large number of uncontrolled studies were included in this review and therefore could result in selection bias	(Y) Was largest study to systematically summarize available data on depression and psoriasis

			systematic reviews and meta-analyses	have depressive symptoms.			
Feldman, S. R., Haijun, T., Gilloteau, I., Mollon, P., Meng, S., Tian, H., & Shu, M. (2017). Economic burden of comorbidities in psoriasis patients in the United States: results from a retrospective U.S. database. <i>BMC Health Services Research</i> , 171-8.	To assess the incremental burden of comorbidities on healthcare resource utilization, direct costs and indirect costs associated with short-term disabilities among patients with psoriasis in the United States.	56,406 adult psoriasis patients with at least two diagnoses of psoriasis during the years 2010 and 2011	A retrospective, U.S. cohort analysis was conducted using a large claims database	Psoriasis patients with comorbidities used more healthcare resources than those without comorbidities	Level IV	Analysis was not adjusted for the type of psoriasis treatment noted that the effect of treatment of comorbidities should be studied	(Y) Presence of comorbidities was associated with higher healthcare resource utilization and costs among patients with psoriasis.
Golpour, M., Hosseini, S. H., Khademloo, M., Ghasemi, M., Ebadi, A., Koohkan, F., & Shahmohammadi, S. (2012). Depression and anxiety disorders among patients with psoriasis: A hospital-based case-control study. <i>Dermatology Research and Practice</i> , 20(1).	Investigate depression and anxiety disorders among patients with psoriasis and control group	100 patients with psoriasis referred to dermatology and 100 patients with ENT problem referred to ENT	Beck depression inventory and anxiety scale were administered to patients in both groups	Depression score was 67% for psoriatic patients and 12% for control patients	Level III	Only included the new cases of psoriatic patients with depression and anxiety who referred to the psychiatrist after completing the questionnaire	(Y) Psoriatic patients reported significantly higher degrees of depression and anxiety than controls
Hawro, M., Maurer, M., Weller, K., Maleszka, R., Zalewska-Janowska, A., Kaszuba, A., & ... Hawro, T. (2017).	Investigate involvement of visible	115 patients with	Stigmatization assessment questionnaire,	Lesions on back of hands were related to	Level III	Only hospital patients were used	(Y) Visible lesions from

Lesions on the back of hands and female gender predispose to stigmatization in patients with psoriasis. <i>Journal of the American Academy of Dermatology</i> , 76(4), 648-654.	areas on skin to see if linked to stigmatization	psoriasis vulgaris	dermatology life quality index, and world health quality of life survey were used.	higher stigmatization, all patients reports some stigmatization, higher in patient who could not hide lesions, stigma was strongest predictor of QoL		therefore they were likely severely affected	psoriasis can be debilitating
Kimball, A., Gladman, D., Gelfand, J., Gordon, K., Horn, E., Korman, N., Korver, G., Krueger, G., Strober, B., & Lebwohl, B. (2008). National Psoriasis Foundation clinical consensus on psoriasis comorbidities and recommendations for screening. <i>Journal of the American Academy of Dermatology</i> , 58(6), 1031-1042.	Reviews the current literature and addresses what should be done with this new information by updating the clinician about what health screening tests, preventative exams, and referrals should be considered in this population	NA	NA	NA	Level VII	This was an expert opinion and not a research study which means it is not as strong as a study for evidence	(Y) It offers clinical consensus on screening for comorbidities including depression
Korman, A. M., Hill, D., Alikhan, A., & Feldman, S. R. (2016). Impact and management of depression in psoriasis patients. <i>Expert Opinion on Pharmacotherapy</i> , 17(2), 147-152.	Reviews factors relating to depression in patients with psoriasis, estimates the	Studies from PubMed and google scholar	Systematic search of PubMed and google scholar for 'depression and psoriasis'	Factors caused by depression in psoriasis discussed included sexual dysfunction, suicidal	Level VII	This is an expert opinion which limits strength of evidence	(Y) There is a need for a validated, user-friendly questionnaire for depression screening in

	proportion of psoriasis patients with depression and the effect depression has on adherence to treatment, and management for depression in patients with psoriasis		and ‘factors and depression and psoriasis’ as well as ‘assessment and depression and psoriasis’ and ‘management and depression and psoriasis’	ideation, sleep disturbances. Factors that contribute to depression in psoriasis included pruritus, stigmatization, psoriatic arthritis.			psoriasis patients. An algorithm was presented to help providers screen for depression in psoriasis patients that incorporated the PHQ-2 and PHQ-9
Korman, N. J., Zhao, Y., Pike, J., & Roberts, J. (2016). Relationship between psoriasis severity, clinical symptoms, quality of life and work productivity among patients in the USA. <i>Clinical and Experimental Dermatology</i> , 41(5), 514-521.	To examine how QoL, work productivity and clinical symptoms vary between patients with mild, moderate and severe psoriasis.	694 patients with psoriasis	Multivariate regression was used to explore the relationship between outcome variables	Increased psoriasis severity was associated with increased itching, pain and scaling, and with reduced QoL. Patients with more severe psoriasis experienced more severe symptoms and had a greater reduction in QoL and work productivity	Level III	Patients presenting to their dermatologist during the study period were invited to participate therefore may not represent non-consulting psoriasis population	(Y) Providers must recognize the impact of severe disease on patients quality of life and take steps to address this
Kouris, A., Christodoulou, C., Efstathiou, V., Tsatovidou, R., Torlidi-Kordera, E., Zouridaki, E., & Kontochristopoulos, G. (2016). Comparative study of quality of life and psychosocial characteristics in patients	Compare the quality of life, anxiety and depression,	240 participants - 80 patients with leg ulcers, 80	Quality of life, depression and anxiety, loneliness of	The patients with psoriasis presented statistically significant	Level III	None provided	(Y) Long-term (chronic) skin diseases associated with significant

with psoriasis and leg ulcers. <i>Wound Repair & Regeneration</i> , 24(2), 443-446.	self-esteem, and loneliness in patients with psoriasis and leg-ulcer patients	patients with psoriasis, and 80 healthy controls were included in this study	the patient, and self-esteem were assessed using four different scales including the Dermatology Life Quality Index, Hospital Anxiety and Depression Scale, UCLA loneliness scale, and Rosenbergs Self-esteem Scale.	higher levels of loneliness and social isolation compared to leg ulcer patients and controls			impairment of the patient's quality of life, anxiety, and self-esteem, which are frequently under-recognized – Implications for provider awareness and care that addressing psychosocial factors
Lakshmy, S., Balasundaram, S., Sarkar, S., Audhya, M., & Subramaniam, E. (2015). A cross-sectional study of prevalence and implications of depression and anxiety in psoriasis. <i>Indian Journal of Psychological Medicine</i> , 37(4), 434-440.	Measure the prevalence of anxiety and depression in patients with psoriasis, and to correlate these with severity of psoriasis and quality of life.	90 consecutive patients of psoriasis over a 12-month period in a tertiary care center	Cross-sectional study – PSA index, PHQ-9, GAD-7 and perceived stress scale used to screen for depression, anxiety, and stress	78.9% had depression-quality of life was worse in patients with psoriasis and comorbid anxiety/depression	Level IV	Small sample size, impact of treatment not assessed	(Y) Clinically significant risk for depression, anxiety, and stress – need to consider psychological and dermatological factors simultaneously
Lamb, R., Matcham, F., Turner, M., Rayner, L., Simpson, A., Hotopf, M., & ... Smith, C. (2017). Screening for anxiety and depression in people with psoriasis: a cross-sectional study in a tertiary referral setting. <i>British Journal of Dermatology</i> , 176(4), 1028-1034.	To screen systematically for depression and anxiety in patients with psoriasis as	Consecutive patients attending a single, tertiary centre over a 10-month period	PHQ-9, GAD-7, DLQI Regression models were used to identify at-risk groups for	The risk of MDD or GAD was significantly higher in women and those with severe clinical	Level IV	Collected from one single high need tertiary center	(Y) Systematic screening for anxiety and depression identifies clinically important levels

	routine clinical practice		psychiatric morbidity.	disease, psoriatic arthritis and previous depression/anxiety – 9% screened positive for major depressive disorder			of depression and anxiety
Loeb, D., Sieja, A., Corral, J., Zehnder, N. G., Guion, G., & Nease, D. E. (2015). Evaluation of the role of training in the implementation of a depression screening and treatment protocol in 2 academic outpatient internal medicine clinics utilizing the electronic medical record. <i>American Journal of Medical Quality</i> , 30(4), 359-366.	To examine if a depression screening protocol and training would enhance compliance	58 Providers at University of Colorado Internal Medicine Clinic and Lowry Internal Medicine Clinic	Retrospective data analysis - to assess provider type, clinic site, training, and documentation of PHQ-9	Training was positively associated with documentation of PHQ-9	Level IV	One institution, participants were not randomized	(Y) Offers insights into real-world implementation of screening/treatment for depression
McDonald, K., Shelley, A., & Jafferany, M. (2018). The PHQ-2 in Dermatology-Standardized Screening for Depression and Suicidal Ideation. <i>JAMA Dermatology</i> , 154(2), 139-141. doi:10.1001/jamadermatol.2017.5540	To provide a simple approach for dermatologists to screen and refer patients with psychiatric conditions secondary to skin disease.	N/A	N/A	N/A	Level VII	Expert opinion – lowest level of evidence	(Y) – Suggests that dermatologists and patients can benefit from screening tool to identify emotional distress
McIntosh, C. (2017). A depression screening protocol for patients with acute stroke: a quality improvement project. <i>Journal of Neuroscience Nursing</i> , 49(1), 39.	Determine the efficacy of an evidence-based depression screening	79 hospitalized patients with acute stroke	Retrospective chart review in a convenience sample	Implementation of a EBP depression screening and treatment protocol improved early	Level III	Retrospective chart review design, short implementation phase	(Y) Depression screening protocols can help with early diagnosis and treatment of depression

	protocol in improving early detection and treatment of PSD			detection and treatment of depression			
Nazik, H., Nazik, S., & Gul, F. C. (2017). Body image, self-esteem, and quality of life in patients with psoriasis. <i>Indian Dermatology Online Journal</i> , 8(5), 343-346.	Assess effects of psoriasis on QoL, self-esteem, and body image.	92 patients with psoriasis and 98 control participants	Socio-demographic characteristics were assessed with PASI scores, results from three surveys on quality of life, body image, and self-esteem were evaluated	Self-esteem, body image, and quality of life was found to be more negatively affected in psoriasis patients over control	Level III	Duration of illness, Socio-economic status and income were not accounted for	(Y) links psoriasis to causing psychosocial problems
Pompili, M., Innamorati, M., Forte, A., Erbuto, D., Lamis, D. A., Narcisi, A., & ... Girardi, P. (2017). Psychiatric comorbidity and suicidal ideation in psoriasis, melanoma and allergic disorders. <i>International Journal of Psychiatry in Clinical Practice</i> , 21(3), 209-214.	Examine the risk of suicide and stressful life events in a sample of patients with skin disease	242 dermatology patients, 112 psoriasis, 77 melanoma, 53 chronic allergies	Pts were administered the MINI International Neuropsychiatric Interview, Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, and the Columbia-Suicide Severity Rating Scale	Patients with psoriasis were more likely to have a history of psychiatric disorders compared to patients with allergies and reported past suicidal ideation as compared to those with melanoma and allergies	Level III	Not provided	(Y) Patients affected by psoriasis have an increased risk of psychiatric comorbidities and suicidal ideation compared to those who have other dermatological disorders

Remröd, C., Sjöström, K., & Svensson, Å. (2013). Psychological differences between early- and late-onset psoriasis: a study of personality traits, anxiety and depression in psoriasis. <i>British Journal of Dermatology</i> , 169(2), 344-350.	Determine whether patients with early-onset psoriasis differ psychologically from patients with late-onset psoriasis, regarding personality traits, anxiety and depression	101 consecutively recruited outpatients with psoriasis	A descriptive cross-sectional study was conducted	Early-onset psoriasis (age < 20 years) were significantly more anxious and depressed than patients with late-onset psoriasis.	Level VI	A selection bias could be contributing to results speculating that individuals with strong traits of detachment would be less likely to seek medical care	(Y) Supports early diagnosis and recognition of depression and screening early on in diagnosis
Richards, H. L., Fortune, D. G., Weidmann, A., Sweeney, S. T., & Griffiths, C. M. (2004). Detection of psychological distress in patients with psoriasis: low consensus between dermatologist and patient. <i>British Journal of Dermatology</i> , 151(6), 1227-1233.	Examine the level of agreement between dermatologists and patients with psoriasis as to the presence of clinically significant psychological distress	Forty-three consultations between dermatologists and patients with psoriasis were assessed	Consisted of two assessments 1) for patients 1) for providers to measure anxiety and depression	The level of agreement between patient rating and dermatologist rating as to the presence of anxiety or depression was low	Level IV	Small sample size, underestimation of prevalence of depression	(Y) Highlights a number of areas for improvement in the psychological management of patients with psoriasis.
Singh, S., Taylor, C., Kornmehl, H. & Armstrong, A. (2017). Psoriasis and suicidality: A system review and meta-analysis. <i>Journal of the American Academy of Dermatology</i> , 77(3), 425-440.	A perform a systematic review and meta-analysis that elucidates the relationship between	18 studies were identified	Systematically searched the PubMed, EMBASE, PsycINFO, and Cochrane databases. Searched literature published	Subgroup analysis showed that patients with psoriasis were more likely to attempt suicides and complete suicide. Those	Level I	There were few studies examining suicidality in conjunction with psoriasis severity	(Y) Patients with psoriasis have a significantly higher likelihood of suicidal ideation, suicide attempts, and

	psoriasis and suicidality		between 1946 and 2017. Applying the Preferred Reported Items for Systematic Reviews and Meta Analyses guidelines	younger and who psoriasis was more severe were found to be at a greater risk.			completed suicides.
Strober, B., Karki, C., Mason, M., Guo, N., Greenberg, J., & Lewohl, M. (2017). Comorbidity burden and characterization of psoriasis patients with concurrent psoriatic arthritis in the Corrona psoriasis registry. <i>Journal of the American Academy of Dermatology</i> , 76(6), AB77. http://dx.doi.org/10.1016/j.jaad.2017.04.314	Characterize the PsO patients with psoriatic arthritis (PsA) and examine association of outcomes with PsA in Corrona, a prospective cohort of patients with PsO.	Adult patients enrolled in Corrona as of May 31, 2016	Multivariate logistic regression was conducted to examine the association of other comorbidities with presence of PsA, adjusted for age, gender, body mass index (BMI) and disease duration of PsO.	Psoriasis patients with PsA had similar disease severity, however, reported poorer work productivity, worse pain and fatigue and were more likely to have comorbidity burden compared to those who did not have concurrent PsA at enrollment in to the registry	Level VI	Regression study	(Y) Increased burden of disease in patients with PsA comorbidity
Suzuki, K., Kumei, S., Ohhira, M., Nozu, T., & Okumura, T. (2015). Screening for Major depressive disorder with the patient health questionnaire in an outpatient clinic staffed by primary care physicians in Japan: A case control study. <i>Plos ONE</i> , 10(3), 1-8.	Examine the utility of PHQ-9 and PHQ-2	574 patients for PHQ-9 and 521 patients for PHQ-2	Administered PHQ-2 and 9	Forty-two patients were diagnosed with major depressive disorders	Level IV	Administered in primary care only	(Y) The PHQ-9 and PHQ-2 were useful instruments for screening for major depressive disorders.

Wojtyna, E., Lakuta, P., Marcinkiewicz, K., Bergler-Czop, B., & Brezezinska-Wcislo, L. (2016). Gender, body image and social support: Biopsychosocial determinants of depression among patients with psoriasis. <i>Acta Dermato-Venereologica</i> , 97(1), 91-97.	To examine psychosocial issues and relationship to depression symptoms in patients with psoriasis	219 patients with psoriasis ages 18-70 yrs old	Depression, appearance, social support, and distress surveys utilized, BSA index for severity of psoriasis. Multivariate logistic regression analysis was performed on results.	49.8% of participants had probable depression; among those, 11.9% presented severe, 18.2% moderate and 19.7% mild depressive symptoms. as defined nearly 21% of respondents reported suicidal thoughts. symptoms and distress were significantly higher in women than in men	Level III	Some participants were from a psoriasis association, study was cross-sectional	(Y) High rates of psychological impairments in patients with psoriasis
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Appendix B

IRB Approval Documentation

LIBERTY UNIVERSITY
INSTITUTIONAL REVIEW BOARD

May 11, 2018

Marlee Bryant
IRB Exemption 3247.051118: Implementation of a Screening Protocol to Improve Provider
Assessment of Depression in Patients with Psoriasis

Dear Marlee Bryant,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46.101(b):

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at [REDACTED]

Sincerely,

[REDACTED]

Administrative Chair of Institutional Research
The Graduate School

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Appendix C

CITI Certificate



Completion Date 02-Jul-2016
Expiration Date 02-Jul-2019
Record ID 17592242

This is to certify that:

Marlee Bryant

Has completed the following CITI Program course:

Human subject - Basic (Curriculum Group)
Nursing (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Liberty University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wb1da9dbb-ffe8-4d77-8671-4deed0e5a637-17592242

Appendix D



Letter of Support from Organization


DERMATOLOGY

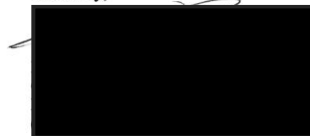
February 21, 2018

Letter of Approval

To Whom It May Concern,

On behalf of RidgeView Dermatology, I, , give Marlee Bryant permission to implement her Doctor of Nursing Practice scholarly project through Liberty University at  Dermatology. She may have full access to the office's electronic medical record. We give her our full support.

Sincerely,





Appendix E

Permission to Use Iowa Model

You have permission, as requested today, to review and/or reproduce *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care*. Click the link below to open.

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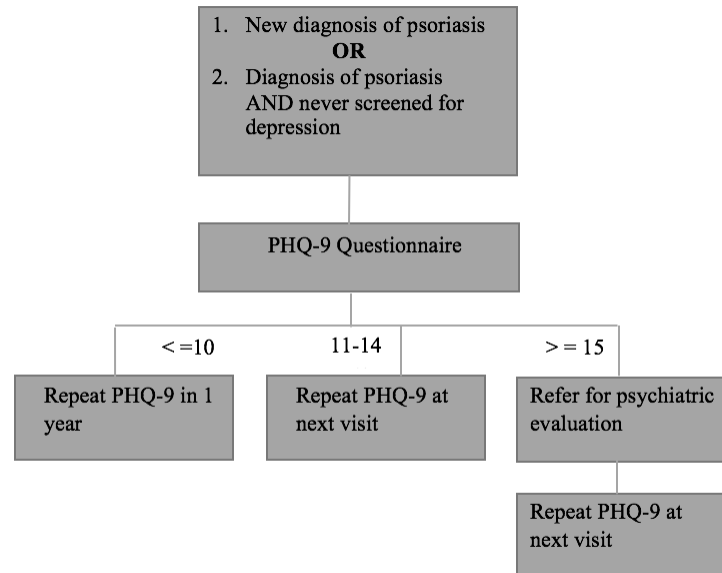
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Appendix F

Depression Screening Protocol



Adapted and modified from:

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Licensed Content Author	Abraham M. Korman, Dane Hill, Ali Alikhan, et al
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Figure identification	Figure 1. Algorithm for screening psoriasis patients for depressive symptoms.
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Appendix G

Patient Health Questionnaire-9

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems?
(Use "✓" to indicate your answer)

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING 0 + _____ + _____ + _____
=Total Score: _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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