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Anxiety Treatment in Health Science and Medical Students

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Anxiety Treatment in Health Science and Medical Students

by

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Abstract

Health professionals are seeing a rise in anxiety among health science and medical students, which can be multifactorial. The purpose of this review is to investigate the use of pharmacological, non-pharmacological, and a combination of the two that can be utilized to treat patients with anxiety. A comprehensive literature review was performed using a variety of electronic search databases and included many different keywords. Articles were limited to the past 10 years to include the most recent changes in this last decade. Exclusion criteria included periodicals, editorials, and articles published before 2011. Research studies were further narrowed by limiting the target population to medical and health science collegiate students, and eliminating articles without specific discussion of anxiety, intervention, or therapy. After removing research articles that met the exclusion criteria, 25 studies met the inclusion criteria. The studies focused on pharmacological and nonpharmacological treatment for anxiety, combination of interventions, and provider and patient preference of the different treatments. Many of the articles focused on the different pharmacological and non-pharmacological treatments that are currently being used for these patients. Upon conclusion of the literature review, a gap in the literature was found when comparing pharmacological and non-pharmacological treatments. Further research needs to be carried out in this area, specifically looking at using the two treatments together.

Keywords: anxiety, pharmacological interventions, non-pharmacological interventions

Anxiety Treatment in Health Science and Medical Students

Anxiety among health science and medical students is an increasing issue health professionals are seeing more often in clinical settings. It is especially common in those who choose to pursue the medical field for their future career. A combination of things can lead to a student's building anxiety, but typically the pressure to perform at a higher level of education is what leads them to their breaking point. Whether that student is treated with pharmacological, non-pharmacological, or a combination of treatments is up to the provider. There are many options for treatment; however, it is imperative the provider is selecting a treatment regimen that is beneficial for the patient. Listening to the concerns of each patient and selecting a specific, individualized regimen is of utmost importance.

Background

The percentage of college students taking psychotropic medications has been on an upward trend for some time. In 1994 about 9% of students who were participating in counseling at a collegiate level were on some type of psychotropic medication, this has since increased to 20% in 2003, and 26% in 2008 (Kirsch, Doefler, Truong, 2015). A pattern of non-psychotropic class of beta blocker medications for test anxiety has also been discovered through studies performed on students. At least 80% of students given a beta-blocker prescription for testing anxiety will fill the prescription. Looking at prescription information could also help identify psychologically vulnerable students (Butt, Dalsgaard, Torp-Pedersen, Køber, Gislason, Kruuse, & Fosbøl, 2017). The number of individuals with anxiety is a growing public health concern among college students (Zemestani, Davoodi, Honarmand, Zargar, & Ottaviani, 2016). This is an ongoing issue for many students and the significance of this information is only becoming more prevalent as time goes on.

The impact of anxiety on students can be difficult to measure since it is very different for every individual. It is common for students with anxiety to experience restlessness, trembling, sweating, feeling weak or fatigued, increased heart rate, gastrointestinal problems, and having trouble controlling worry. These symptoms can also lead a student to having symptoms of depression as well. Often, they feel ashamed of feeling the way they are feeling, and they are not sure they should reach out. People who are closest to the student are the ones who start to notice the impact of anxiety. These are the people that students tend to reach out to first for support and advice. Usually with the advice and support from these peers and support systems students will seek help. This can mean speaking to a counselor or reaching out to their primary provider. Long term treatment and management will typically involve more sessions with a counselor as well as pharmacological treatment (Brahmbhatt, Richardson, & Prajapati, 2021).

It is common practice for a provider to prescribe a beta-blocker, selective serotonin reuptake inhibitor (SSRI), or a serotonin-norepinephrine reuptake inhibitor (SNRI) for a patient seeking help with anxiety due to stress from academics (Brahmbhatt, Richardson, & Prajapati, 2021). Propranolol is by far the most commonly prescribed beta-blocker usually used to help ease testing anxiety. Fluoxetine is a commonly prescribed SSRI for students suffering from anxiety and in some cases is utilized to help treat depression symptoms as well. Duloxetine is a commonly prescribed SNRI for students and it covers generalized anxiety disorder as well as depression (Brahmbhatt, Richardson, & Prajapati, 2021). Most medications for anxiety cover depression as well because it is not uncommon for them to occur simultaneously (Brahmbhatt, Richardson, & Prajapati, 2021). It is up to the provider and the patient to figure out which medication is best for their situation.

Statement of Problem

It is common for pharmacological interventions to be utilized as the frontline treatment for patients, but that does not mean it is the correct path for every patient. It is possible for a patient to utilize non-pharmacological interventions to help them cope with anxiety. Students may suffer from side effects or find pharmacological interventions do not benefit them like they were hoping. While other students may find that non-pharmacological interventions are not giving them the relief or results they were looking for. Medical providers need to be informed on the latest studies that show which treatments are most beneficial for patients in these high pressure educational programs. The purpose of this study is to reveal the most effective treatment for anxiety in health science and medical students.

Research Question

Are non-pharmacological interventions or pharmacological interventions more beneficial in treating anxiety in health science and medical students?

Method

A comprehensive literature review was performed using electronic search databases, including PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Clinical Key. Keywords included pharmacological interventions & anxiety, nonpharmacological interventions & anxiety, anxiety & treatment or intervention therapy, provider, and patient. Articles found after searching were limited to the past 10 years to include the most recent changes in this last decade. The literature review yielded a total of 3,169 articles. Exclusion criteria included periodicals, editorials, and articles published before 2011. Research studies were further narrowed by limiting the target population to medical and health science collegiate students, and eliminating articles without specific discussion of anxiety, intervention, or therapy.

The types of studies included were randomized controlled trials, chart review, retroactive cohort study, prospective studies, peer-reviewed journal articles, and systematic reviews. After removing research articles that met the exclusion criteria, 25 studies met the inclusion criteria. The 25 remaining studies focused on pharmacological and nonpharmacological treatment for anxiety, combination of interventions, and provider and patient preference of the different treatments.

Literature Review

A review of the literature demonstrates that both pharmacological and non-pharmacological interventions have been studied heavily in relation to treatment of anxiety. There have been many studies of how different non-pharmacological treatments can be beneficial for patients. Current literature shows that pharmacological and non-pharmacological treatment can be beneficial on their own. However, upon researching, it was found there is a gap in the literature when comparing pharmacological and non-pharmacological treatments for patients with anxiety. More research needs to be conducted in the comparison of treatments to ensure the best treatments are being used for patients with anxiety. Along with that, research should be conducted to determine what provider and patient preferences are for treatment.

Impact of COVID-19

The focus of this paper is anxiety in health science and medical students as a whole during a regular collegiate experience. However, under the circumstances in order to do justice to the topic, recent events must be taken into consideration as well. This section will cover students struggles with mental health during the COVID-19 pandemic, but that is not the focus of this paper. This section will discuss impact on students during the COVID-19 pandemic; however, subsequent sections will not take that into consideration.

College students were faced with many challenges during the pandemic including course interruptions, delayed final exams, clinical or internship interruptions, graduation delays, and uncertainty of employment (Meng, Liu, Wang, Feng, Liu, Huang, & Li, 2021). These factors led to significantly increased anxiety levels among students, especially when compared to previous studies performed in the country. Students who are married and in higher education were at a more increased risk for anxiety or depression. This demonstrates how crucial it is for schools to offer psychological support including emotional regulation, professional counseling, and a hotline. The need for this extra support brought to light where our educational facilities are falling short. There is abundant room for improvement in the support services offered to students in order to combat the increased incidence of anxiety. Providing knowledge on how to regulate emotions and offering counseling will lead to more stable mental health status for students (Meng, Liu, Wang, Feng, Liu, Huang, & Li, 2021).

Wang, Hegde, Son, Keller, Smith, & Sasangohar, (2020) surveyed 2031 participants and roughly forty percent showed mild to severe levels of anxiety. Female participants reported higher scores and seventy percent of the overall participants stated their stress and anxiety levels increased during the pandemic. This information shows the pressing need for support of vulnerable students to learn to manage their mental health. Psychological stress and anxiety can lead to multiple pitfalls in the academic process most significantly losing future medical providers and workers. In order to keep these students from leaving healthcare education, we need to offer them all the resources possible to support their mental health. Offering this support is more important now than it has ever been if we want to keep having future providers that can help patients (Wang, Hegde, Son, Keller, Smith, & Sasangohar, 2020).

Ferreira, Amorim, Melo Campos, & Cipolotti, (2021) discovered that nearly forty percent of newly graduated medical doctors reported diagnosed psychiatric illness in relation to being on the front line of the COVID-19 pandemic. Thirty percent of the participants used psychotropic medications; a majority of these participants kept the same prescription dose while few increased their dosage in order to get the relief they were wanting. Some of these new doctors dealt with their internship being modified with a loss of a graduation ceremony or early graduation in order for them to enter the highly demanding workforce early. This resulted in eighty one percent of new doctors suffering from anxiety, and using multiple things to cope including alcohol use. Those who worked directly with COVID-19 patients were more likely to utilize psychotropic drugs to control their anxiety or depression (Ferreira, Amorim, Melo Campos, & Cipolotti, 2021).

Pharmacological Interventions

There are many pharmacological interventions which can be utilized for patients experiencing anxiety. It is important for providers to understand that each patient will require a different pharmacological intervention or possibly a combination of pharmacological interventions to help treat their anxiety. Many studies have been conducted to determine which medications are helpful for patients with anxiety (Butt, Dalsgaard, Torp-Pedersen, Køber, Gislason, Kruuse, & Fosbøl, 2017; Kirsch, Doefler, & Truong, 2015; Nalcakan, Sahin, Yalcinkaya, & Ak, 2021; Pottie, Thompson, Davies, Grenier, Sadowski, Welch, Holbrook, Boyd, Swenson, Ma, & Farrell, 2018).

Kirsch, Doefler, and Truong (2015) performed a chart review study of all students who were referred by college counseling centers for psychopharmacologic evaluation, and found it was not uncommon for students to be prescribed medication prior to evaluation by the college

counseling center. Eggink, Taylor, Judkins, and Taylor (2021) found it common for medical students training in the emergency department to use prescription medication to help manage stress and anxiety.

Butt, Dalsgaard, Torp-Pedersen, Køber, Gislason, Kruuse, and Fosbøl (2017) completed a nationwide retroactive cohort study that uncovered a pattern in beta-blocker use for test related anxiety and confirmed that beta-blocker use during exam periods was associated with increased psychiatric outcomes. This could also help identify psychologically vulnerable students who need special attention. Alternatively, Pottie, Thompson, Davies, Grenier, Sadowski, Welch, Holbrook, Boyd, Swenson, Ma, and Farrell (2018) found benzodiazepine receptor agonists to be beneficial; however, these can be associated with serious harms and the therapeutic effects may be short lived. The recommendation is to slowly begin tapering the medications after four weeks of use for individuals between the ages of 18 and 64 years of age (Pottie, Thompson, Davies, Grenier, Sadowski, Welch, Holbrook, Boyd, Swenson, Ma, & Farrell, 2018).

Melatonin and benzodiazepine were found to be the most common medications used by students training in the emergency department for sleep, stress, and anxiety (Eggink, Taylor, Judkins, & Taylor, 2021). While benzodiazepines can help individuals quickly, caution should be used with the medications. They should not be prescribed for individuals who have respiratory depression and need to be tapered off around one month due to serious side effects that can occur (Scrandis & Duarte, 2019; Wyatt, 2020). Providers should consider utilizing a selective serotonin reuptake inhibitor (SSRI) or a serotonin-norepinephrine reuptake inhibitor (SNRI), which have been shown to be effective in treating anxiety disorders. Benzodiazepines can also be used to bridge the gap when beginning a patient on an SSRI or SNRI (Scrandis & Duarte, 2019; Wyatt, 2020).

While there are many options available for pharmacological treatments in patients with anxiety, the research supports the use of beta-blockers, benzodiazepines, SSRIs, or SNRIs. The treatment of choice for providers is SSRIs or SNRIs due to the severe side effects long-term use of benzodiazepines can cause in individuals. In students, it would be appropriate to utilize an SSRI or SNRI along with a beta-blocker to be used prior to an exam for test anxiety.

Non-pharmacological Interventions

Providers should also consider non-pharmacological interventions for their patients, as not everyone wants to take medication and patients may not react well to medications. There are several different options available to use for non-pharmacological interventions. Many studies have found different non-pharmacological interventions to be effective in treating anxiety in patients (Byrom, 2018; Glennon, McElroy, Connelly, Lawson, Bretches, Gard, & Newcomer, 2018; Howell, Rheingold, Uhde, & Guille, 2019; Klausenitz, Hacker, Hesse, Kohlmann, Endlich, Hahnenkamp, & Usichenko, 2016; Lattie, Adkins, Winkquist, Stiles-Shields, Wafford, & Graham, 2019; Lemary, Hoolahan, & Buchanan, 2019; Saeed, Cunningham, & Bloch, 2019; Zemestani, Davoodi, Honarmand, Zargar, & Ottaviani, 2016).

It is common for students to reach out to peers for support with their mental health. Reaching out to peers gives students an informal approach to mental health, and may possibly avoid some barriers that come with seeking help in the first place (Byrom, 2018). Byrom (2018) found that peer lead support sessions increased mental wellbeing in students. These sessions offered an opportunity for students to share different self-care strategies, focus on behavior change, and setting up implementation plans for these changes (Byrom, 2018). However, these sessions are unlikely to have an effect on students seeking earlier preventative intervention by a

professional. Similarly, Kirsch, Doefler, & Truong (2015) found counseling sessions with professionals to be quite effective for students.

Zemestani, Davoodi, Honarmand, Zargar, and Ottaviani (2016) completed a study comparing metacognitive therapy and behavior treatments for depression and anxiety. Both treatments were found to be effective in decreasing depression and anxiety symptoms in patients. The treatments did differ in their effects on specific aspects of emotional regulation with metacognitive therapy being more effective when compared to behavioral activation. It was also found that behavioral activation displayed a stronger relapse at follow-up especially in regards to acceptance and planning. Additional studies should be completed examining the effectiveness over time with these therapies (Zemestani, Davoodi, Honarmand, Zargar, & Ottaviani, 2016). These treatments are cost effective and should be offered to students as an option for decreasing depression and anxiety.

The advancements in technology and the ability to provide treatment through telehealth has allowed providers the opportunity to care for patients in a variety of manners. Additionally, there are many virtual and digital platforms available to help in caring for patients without them having to physically go to an office. Having digital mental health interventions as an option has the potential to improve access to college students who are trying to seek mental health treatment. Glennon, McElroy, Connelly, Lawson, Bretches, Gard, & Newcomer (2018) completed a study examining the effects of virtual reality interventions on pain and anxiety in patients. They found no statistically significant ($p < 0.05$) difference between the control and intervention group; however, additional research and a bigger sample size should be completed.

Howell, Rheingold, Uhde, & Guille (2019) utilized web-based cognitive therapy (webCBT) with four different modules to determine if it helped with anxiety. Those in the

webCBT group reported experiencing less anxiety and were more apt to seek face-to-face treatment than the individuals in the control group. The study also showed that students who started webCBT preceding the academic year reported less anxiety at follow-up than those who were in the control group. While this study shows promise, additional research should be completed to determine if it helps with students and academics (Howell, Rheingold, Uhde, & Guille, 2019). When completing a systematic review, Lattie, Adkins, Winkquist, Stiles-Shields, Wafford, and Graham (2019) found many digital interventions to be delivered via a website that involves some type of internet-based cognitive behavioral therapy. It was found that digital mental health interventions can be beneficial for improving psychological well-being among college students. Additional studies should be completed to evaluate the effectiveness of the many different types of these interventions and how to improve these digital interventions to make the experiences more beneficial (Lattie, Adkins, Winkquist, Stiles-Shields, Wafford, & Graham, 2019).

Auricular acupuncture was examined to determine if it would help reduce exam anxiety (Klausenitz, Hacker, Hesse, Kohlmann, Endlich, Hahnenkamp, & Usichenko, 2016). Students who participated in the study received auricular acupuncture, some received the placebo, and others no intervention at all. After the student received their treatment, they were to complete an oral anatomy exam. This process was then repeated three different times with three different oral anatomy exams. There was one month between the exams and the interventions. Auricular acupuncture was performed with indwelling fixed needles bilaterally one day prior to the exam. Placebo needles were used as a control for the study. Students' levels of anxiety were then measured using visual analogue scale before and after each intervention as well as before each exam. Anxiety levels were reduced after auricular acupuncture and the

placebo intervention when compared to each participant's baseline. They found that auricular acupuncture was better at reducing exam anxiety when used the night before an exam. This is just another option students can utilize to help with their test anxiety instead of not having any kind of intervention (Klausenitz, Hacker, Hesse, Kohlmann, Endlich Hahnenkamp, & Usichenko, 2016).

Lemary, Hoolahan, and Buchanan (2019) conducted a 6-week pilot program using yoga to determine its impact on stress perception, anxiety levels, and mindfulness skills in college students. The study found yoga to significantly decrease anxiety and stress levels in students, and increase mindfulness. A larger study should be completed utilizing yoga; however, this does provide evidence that examining alternative methods of treatment including non-pharmacological interventions can have a lasting impact (Lemary, Hoolahan, & Buchanan, 2019). Similarly, a systematic review examining the impact of exercise, yoga, and meditation on depression and anxiety was completed by Saeed, Cunningham, and Bloch (2019). While they did not find any significance with exercise, they did find that yoga had more benefits for patients who experience severe symptoms of anxiety or depression. Providers should be suggesting a variety of exercises in conjunction with medications or psychotherapy to help patients with depression or anxiety (Saeed, Cunningham, & Bloch, 2019).

The research provides several examples of non-pharmacological treatments which have shown to be effective in patients with anxiety. The digital options would be beneficial for patients who are not close to a healthcare facility, but need to have the opportunity to complete therapy to help with their anxiety. Alternative forms of medicine such as exercise, yoga, and acupuncture not only had an effect on anxiety, but are lifelong skills that provide the patient with

the opportunity to implement healthy options that will have an impact throughout every aspect of their health, not just their mental well-being.

Combination Interventions

While research has shown both pharmacological and non-pharmacological interventions to be effective in treating anxiety on their own, providers should consider the option of combining these interventions. Oftentimes, patients may be placed on more than one pharmacological intervention, which can impact them over time. Furthermore, while a non-pharmacological intervention may have an impact on a patient, a combination that includes both pharmacological and non-pharmacological interventions have the potential to have a bigger impact on the patient. Several studies have been completed showing these combinations have an impact on patients (Aderka, Beard, Lee, Weiss, & Björgvinsson, 2015; Rani, Sharma, Advani, & Kumar, 2020; Shulman, Dueck, Ryan, Breau, Sadowski, & Misri, 2018)

Aderka, Beard, Lee, Weiss, and Björgvinsson (2015) completed a study looking at depressive symptoms and anxiety symptoms. These symptoms were studied during cognitive-behavioral and pharmacological treatments. The study aimed to compare the relationship of the symptoms during these specific treatments. The study found that changes in depression symptoms did lead to changes in anxiety symptoms; however, changes in anxiety symptoms did not necessarily lead to changes in depression symptoms. This can help providers when treating patients with depression and anxiety, as the findings indicate treating for depression has the potential to help with anxiety (Aderka, Beard, Lee, Weiss, & Björgvinsson, 2015).

Non-traditional students and those seeking higher education can face many obstacles including dealing with underlying conditions while they are trying to further their education. Patients with osteoarthritis using acupressure therapy and pharmacological treatments were

studied to examine pain improvement (Rani, Sharma, Advani, & Kumar, 2020). Previous research has found that depression, anxiety, and stress are linked to knee osteoarthritis. Findings indicate a statistically significant ($p \leq 0.0001$) decrease in pain for patients using both treatments versus those who only used pharmacological treatment. This suggests that acupressure should be used in conjunction with pharmacological interventions for patients who are experiencing pain. Along with the possibility of pain relief, this combination also has the potential to help patients with their wellness (Rani, Sharma, Advani, & Kumar, 2020).

It is not uncommon for collegiate students to become pregnant during their schooling especially when they are a non-traditional student or in more advanced programs such as graduate school. Shulman, Dueck, Ryan, Breau, Sadowski, and Misri (2018) completed a study with women who were experiencing postpartum depression and/or anxiety. Adding education on top of dealing with postpartum depression or anxiety only compounds the situation. Pharmacotherapy has been a treatment for women experiencing this; however, some women will not take medication due to the potential impact it can have on their infant. Women participating in the study completed an eight-week mindfulness-based cognitive therapy intervention. The study found that depression and anxiety decreased, while mindfulness increased in women who participated in the cognitive therapy intervention group, while those that did not participate did not see a difference. Providers should consider the possibility of using therapies such as this before going directly to prescribing medication for postpartum patients (Shulman, Dueck, Ryan, Breau, Sadowski, & Misri, 2018). Scrandis and Duarte (2019) suggest providers offering patients psychotherapy in conjunction with SSRI or SNRI when they are tapering off their benzodiazepines.

Kirsch, Doefler, and Truong (2015) found that many students were placed on a psychotropic medication after they had completed a counseling session; furthermore, students would continue their counseling sessions for ongoing pharmacological treatment. The long-term effectiveness of pharmacological interventions often relies on the patient continuing to be cared for by a provider.

The evidence provided in the research suggests a combination treatment may be beneficial for patients. The combination treatment chosen will have to be completed with the provider and the patient to ensure the patient is ready and willing to follow the plan. This will also provide more flexibility for the patients with their treatment options.

Preferences of Providers and Patients

It is well known providers have a preference when it comes to treating patients with any type of illness. Providers need to ensure they are following best practice when deciding on which pharmacological interventions to prescribe. However, providers have to be open to the option of utilizing non-pharmacological interventions as well. Along with this, it is imperative they include the patients wants and desires when formulating the plan of care. If the patients are included in their plan of care, they are more apt to follow it.

Hurtado, Villena, Vega, Amor, Gomez, & Morales-Ascencio (2020) completed a qualitative study using focus groups with people who have a diagnosis of generalized anxiety disorder. The results were analyzed and five different themes were pulled, including onset of the disorder symptoms and course, daily life with the disorder, coping with the disorder, demand of healthcare for anxiety, and treatment options and decision-making. Among these it was found that many patients experience symptoms of anxiety and do not have social support. It was also

found that pharmacological treatment is almost always the first line of treatment (Hurtado, Villena, Vega, Amor, Gomez, & Morales-Asencio, 2020).

The study also revealed that patient preferences are not often elicited when caring for them. In general, this causes providers to treat with pharmacological options instead of providing them with the information and options for the opportunity to learn how to cope with their anxiety. Patient-centered care needs to be at the forefront of caring for patients, including those with anxiety. Providers should ensure patients have all the information needed to choose the treatment that best fits them. Allowing the patient to try coping mechanisms has the potential to decrease or not need the pharmacological interventions (Hurtado, Villena, Vega, Amor, Gomez, & Morales-Asencio, 2020).

Shepardson, Minnick, and Funderburk (2020) completed an online survey with primary care behavioral health providers to examine their treatment of patients with anxiety symptoms. A total of 209 providers participated and used 17 different interventions when treating patients for anxiety in their recent sessions. The most common interventions utilized included psychoeducation, relaxation training, and supportive therapy. Interventions not commonly used included cognitive therapy and exposure.

The findings of this study indicate the need for additional research and training. Additional qualitative studies should be completed looking at implementing more evidence-based practice interventions for anxiety. This study provided information on what providers are currently using with patients who experience anxiety, as well as what can be completed in the future to help individuals with anxiety. There is more work to be done to find treatments that work for patients (Shepardson, Minnick, & Funderburk, 2020).

Results

The literature review provided much research examining pharmacological, non-pharmacological, and combination treatments, as well as provider and patient preferences. There is a variety of options available when treating patients with anxiety; however, finding the right treatment is patient dependent, and will vary between patients. It is imperative providers and patients have good communication and discuss the plan of care to ensure everyone is willing to adhere to the chosen plan. The patient's ability to cope with their illness is an important part of the treatment; however, most providers begin with pharmacological treatments and do not approach the subject of coping or other non-pharmacological treatments available for anxiety (Hurtado, Villena, Vega, Amor, Gomez, & Morales-Asencio, 2020).

The use of medications can be helpful in managing stress and anxiety for individuals working and going to school (Eggins, Taylor, Judkins, Talor, 2021). This includes the use of beta-blockers for exam anxiety could be an indicator for additional psychological needs and bigger problems with the patient. Providers need to be aware of this and ensure they are assessing for any additional treatment needs (Butt, Dalsgarrrd, Torp-Pedersen, KØber, Gislason, Kruuse, & FosbØl, (2017). Providers need to find out why patients do not want to take medications and offer appropriate education. Understanding why will help assist in proposing the best treatment options for the patient (Lemon, Vanderkruik, Arch, & Dimidjian, 2020).

There are a variety of non-pharmacological options available for treatments including peer support, which may help students; however, it may not have the impact needed to improve patients early on (Byrom, 2018). Digital mental health interventions are also available and could possibly help with mental health issues among college students; however, more research needs to be completed (Lattie, Adkins, Winkquist, Stiles-Shields, Wafford, & Graham, 2019). Alternative

forms of therapy, such as yoga and acupuncture, have the potential to help decrease anxiety in patients (Lemary, Hoolahan, & Buchanan, 2019; Saeed, Cunningham, & Bloch, 2019).

Impact on Primary Care

The information provided in the literature review allows medical providers the opportunity to make the safest and most efficacious decision for the patient with anxiety. The provider will be able to help guide the patient through the process of gaining control over their anxiety and getting the patient back to a place where they feel comfortable with their mental health. Primary care providers are commonly becoming a patient's first contact when it comes to verbalizing concern for their mental health. Providers in primary care need to be informed about what treatment options are out there for anxiety in health science and medical students. Keeping our providers informed is the best way to help patients with anxiety, and for some of these patients it may give them a sense of relief to know that this is something a lot of people go through. When it comes to mental health it is not if a patient will experience it, it is when a patient will experience it and how they will be able to cope with it. There are patients out there who are able to go through a mental health break, and make it through it on their own. However, for patients that need extra help in learning how to manage their mental health, or learning how to grasp it and move forward from it we, as providers, should be able to offer them that support. Mental health is ever changing for our patients and providers should continue to change with it.

Future Research and Recommendations

Additional research, including qualitative studies, needs to be completed in regards to the best possible treatment for anxiety in health science and medical students. Studies need to be conducted looking into the combination of interventions and how utilizing both pharmacologic and non-pharmacologic interventions can serve patients. The research in this area is very

limited, and even though some projects have been done, there is still a lot of information we need to discover yet. Telehealth or teletherapy is another aspect that should also be studied comparing the benefits and risks and how it can benefit patients to have access to these resources especially in rural and underserved areas. There is an extreme lack of mental health providers across the United States particularly affecting rural and underserved areas. With all of the changes happening in society having more access to providers through telehealth or teletherapy could offer great benefits to patients.

Further studies should be conducted on provider preferences in treatment, and how they handle a patient that comes in asking for help with anxiety. The longer a provider practices, the more preferences they develop when it comes to treating a certain condition. It would be beneficial to show providers that even though it is good to have preferences, it is also good to keep expanding their knowledge and keep an open mind about treatments, which includes options such as counseling and therapy. It may also be beneficial to offer patients the opportunity to have a standing appointment in order to ensure they are getting care when it is critically needed. Studies examining barriers to the different types of treatments for patients would also be beneficial.

Educational information should be offered to patients, as well as the general public, on the impact of mental health and how treatments can help. This will help everyone gain awareness of what is happening, as well as the options available. Explaining the different treatments, as well as the risks and benefits of each would be useful in helping everyone make decisions about what needs to be completed.

Lastly, genetic testing may be another area of research to consider, specifically pharmacogenomics since medication that works for one family member is likely to work well for

another closely related relative. Having this technology offers providers the opportunity to ensure the medication proscribed can actually work properly for that patient. Research is always going to be ongoing, but these are definitely areas to focus on to better serve patients in the future.

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