Educating Providers Without Prescriptive Authority About Psychopharmacology Basics: Bridging the Interdisciplinary Work Among Psychotropic Prescribers and Psychologists

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Educating Providers Without Prescriptive Authority About Psychopharmacology Basics: Bridging the Interdisciplinary Work Among Psychotropic Prescribers and Psychologists

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Educating Providers about Psychopharmacology Basics: Bridging the Interdisciplinary Work Among the PMHNP and Psychologists

**Background:** The purpose of this evidence-based change in practice is to increase the fund of knowledge among psychologists, licensed clinical social workers, and talk therapists in outpatient psychiatric settings by educating clinicians about psychopharmacologic basics and the role and work of a psychiatric nurse practitioner during group supervision meetings. This can help bridge the gap of psychopharmacologic knowledge between mental health providers with and without prescriptive authority.

**Problem:** Evidence shows that psychologists with non-prescribing capabilities are not often trained or educated about the very medications that their clients are often taking. Currently, psychotropic medication education is not a standard aspect of psychology student training. There supervision hours are comprised of time spent with patients and supervisors. If education is provided to bridge the gap and promote interdisciplinary conversations between those with prescribing capability and knowledge, the likelihood for understanding and supporting clients who are undergoing talk therapy and psychopharmacologic treatment yields more cohesive patient care.

**Methods:** Databases including PubMed, World Cat, Ebsco Host, Google Scholar, and CINAHL were used to assemble recent literature from 1990 to present. An expanded search to include literature from 1990 to present to allow for a more robust sample of literature given the sparse quantity of literature on the topic. A review of the literature regarding the current levels of pharmacologic training for psychologists and the collaboration between prescribing and non-prescribing healthcare clinicians was appraised. These articles were further narrowed by those that were in the English language, and the articles used were those that pertained to the subject matter the closest.
**Intervention:** An educational presentation was provided to 8 psychologists working in an outpatient private practice setting in the Southern California region. A pre-and post-survey was provided to assess the utilization and necessity of pharmacologic education. In addition, a toolkit containing this information as well as weekly interdisciplinary team meetings, subjects and further opportunities for cross-collaboration were established as part of the psychologist supervision.

**Results:** Results show a 231% increase in the average confidence levels of providers in their overall knowledge and education of psychopharmacology based on post-presentation assessment results compared to pre-test results. Overall confidence on average between all questions and all providers increased by 313% after the presentation based on pre and post test results, indicating a significant positive impact of implementation.

**Conclusion:** There is a lack of knowledge regarding psychotropic medications among psychology students. Education from mental health practitioners with prescribing capability and knowledge can bridge the gap and promote interdisciplinary conversations between those with prescribing capability and knowledge and those without. Through increased knowledge of psychotropic medications psychology students provide more cohesive patient care.

Educating Providers about Psychopharmacology Basics: Bridging the Interdisciplinary Work Among the PMHNP and Psychologists

Background

Professions that have the ability to prescribe psychotropic medication in California include Psychiatrists, Primary Care Physicians, Psychiatric Pharmacists, Family Nurse Practitioners and Psychiatric or Mental Health Nurse Practitioners because of their training which allows them to do so. However, the Psychology Licensing Law provides that the practice of psychology does not include the prescribing of drugs and does not authorize a psychologist to prescribe drugs or write prescriptions. In fact, existing law additionally makes the encroachment of these provisions a crime and unprofessional conduct, citing them as reason for disciplinary action by the Board of Psychology (National Alliance on Mental Illness, 2020). Although psychologists may not be able to prescribe, their practice guidelines may additionally create a fearfulness around psychologists pursuing further learning about psychotropic treatment.

Given the lack of ability for psychologists to prescribe psychotropic medication, although they often interact with patients on psychotropic medications and fellow prescribing clinicians, there is a lack in provision of education for psychologists often due to the argument of whether psychologists should prescribe or not. Conversely, ignoring this gap in education and opportunity for interdisciplinary team building around patients can have negative repercussions for patients and providers alike. This paper will discuss the positive effect that education about psychotropic medication has on psychologists and ultimately the work they do and patients they serve.
Problem Description

Approximately 1,500 psychologists in the United States have fulfilled formal postdoctoral training in psychopharmacology (Ax, Fagan, & Resnick, 2009). Given this gap in exposure or extensive knowledge of the subject, it is clear why psychologists may hold an array of opinions toward medications and what roles psychologists might have when it comes to psychotropic medication. (Hayes, Walser, & Bach, 2002). Although many psychologists understand the benefits that medication can provide their patients, there is a gap and often concern around the potential side effects, abuse, risks, and over prescription of medication among psychologists (Hayes, Walser, & Bach, 2002). This shows that there is a significant knowledge gap to be fulfilled.

Additionally, according to the American Psychological Association Center for Workforce Studies (APA CWS, 2009) Survey of Collaboration and Prescribing 12 Psychology Health Service Providers most psychologists collaborate with psychiatrists (89%), primary care physicians (79%), other medical specialists (50%), nurse practitioners (51%), and over a quarter consult collaborate with physician assistants (27%). Moreover, about 90% of psychologists regularly discuss medications with physicians and the majority provide information about medications to patients (APA CWS, 2009). The evidence reveals that while there is potential for interdisciplinary approaches when it comes to psychopharmacology education, there is still a significant gap between the cross collaboration of psychologists and healthcare professionals with prescriptive authorities.

Setting

This project took place in a virtual meeting setting among outpatient psychiatric care group of psychologists in training, some of which were marriage and family therapists and others licensed clinical social workers who all shared working for a private practice in Pasadena, California.
Meetings took place via zoom and were not recorded to respect the privacy of providers. Meetings and presentations took place as part of weekly supervision requirements for psychologists in training. Two presentations were held and hosted by the PMHNP candidate in training, and continued educational modules were supported PMHNP candidate and in turn facilitated by the psychologists, allowing them opportunities to present on their specialty and subject matters including talk therapeutic models and approaches.

**Specific Aim**

Evidence shows that psychologists with non-prescribing capabilities are not often trained or educated about the medications that their clients are prescribed in their training or school curriculum. There is no standardized practice for psychology students in training gaining their hours aside from assigned supervision hours to be completed with patients and supervisors. The provision of education around psychotropic medication can promote interdisciplinary conversations between those with both prescribers and non-prescribing psychologists who often work with the same patients, but in unique capacities.

An initiative to educate clinical providers regarding basic psychopharmacologic principles and create a pathway for interdisciplinary discussion between prescribing providers and non-prescribing providers was completed. Two educational presentations were provided to 8 psychologists working in outpatient private practice setting in the Southern California region. A pre-and post-survey were provided to assess utilization and necessity of pharmacologic education. In addition, a toolkit containing this information as well as weekly interdisciplinary team meetings, subjects and further opportunities for cross collaboration were established as part of the psychology student supervision. The goal was to increase non-prescriber knowledge about basic knowledge of psychopharmacology during supervision time. Congruently, the goal was to increase
competence and education of psychologists surrounding psychotropic medication. This was done by measuring their level of education about the topic, their comfortability to ask questions about the matter, and their comfortability to seek out further resources on the topic. This was done with the goal of improving patient outcomes, increasing interdisciplinary communication, and creating a fruitful learning experience between prescribing and non-prescribing mental health practitioners.

Available Knowledge

**PICOT Question**

Among non-prescribing mental healthcare providers including therapists, LCSW’s, MSW’s and therapist associates, does the implementation of basic psychopharmacologic principles education and training increase interdisciplinary communication and knowledge compared to the standard without such training throughout the course of supervision trainings?

**Search Method**

Databases including PubMed, World Cat, Ebsco Host, Google Scholar, and CINAHL were used to assemble recent literature from 1995 to present. A review of the literature regarding the current levels of pharmacologic training for psychologists and the collaboration between prescribing and non-prescribing healthcare clinicians was appraised. The following primary terms were used in the search: ‘Psychologists’, ‘psychopharmacology’, ‘training’, ‘education’, ‘collaboration’, ‘health care providers’, and ‘prescribing. Searches were limited to complete, peer-reviewed articles in English only. Articles from 1990 to present were used to provide ample literature to select from. This yielded 32 articles which were further narrowed according to justifiability to this project. A total of 14 articles were further examined for their framework to teach psychopharmacology, the cross collaboration, and benefits of providing pharmacological education to psychologists.
Critical Appraisal of the Evidence

Appraisal Tool

All articles were appraised using the John Hopkins Research Evidence Appraisal Tool (Dang & Dearholt, 2017) to conclude the level of evidence.

Integrated Review of the Literature

The Benefits of Bridging the Interdisciplinary Gap

Sammons and Brown (1997) compiled data from a program conducted by the Department of Defense in 1991 which was designed to train doctorate level psychologists to prescribe psychotropic medications. Trainees received didactic instruction and clinical training with the goal to train psychologists to become proficient in the independent use of psychopharmacologic agents. Because the foundational goal of this program was to train licensed psychologists to prescribe psychotropics rather than create a new profession, there was an overall welcoming sense by other prescribing professionals.

Prior to the initiation of this program, the narrative in the field included the sole emphasis on whether a provider had prescriptive authority or not. However, this program leveled the playing field as it exemplified that the implementation of sound, science-based training programs for psychologists could yield an increase in confidence of the subject matter for non-prescribers. This study exemplifies that psychotropic education for psychologist can decrease some of the animosity which may be provoked by prescribing vs. non-prescribing mental health practitioners. The study acknowledged the common interest and goal for prescribing and non-prescribing mental health practitioners as excellent patient centered care.

In a similar study conducted by Wiggins and Cummings (1998), data was gathered from a clinical operations company that was a practitioner driven managed behavioral care system.
Results of this study showed that 68% of patients who presented for treatment with a psychologist were already on psychotropic medication prior to coming in. Ultimately, only 22% of patients seen in treatment were continued on their medications at the end of the 4-year compilation of the data and 16% of participants had had their medication or dosages changed by their psychiatrist following recommendations and interdisciplinary team meetings including the recommendations by their treating psychologists or case managers. This showed that including and overlaying both the therapist and prescribing care provider in the care affected the outcome and allowed room for dialogue and planned individualized care of each patient based on their management, progress, and tracked changes by the psychologist.

These older studies which were foundational for a significant call to action which took place as an Ad Hoc Task Force Team assembled by the American Psychological Association which called for more formal training in psychopharmacology. The Practice Guidelines Regarding Psychologists’ Involvement in Pharmacological Issues created and revised by the American Psychological Association in 2011 recognized that by 2000, an estimated 43% of patients seen by psychologists were actively using psychotropic medications as part of their therapy. Additionally, when this call to action and document was created, appropriately trained psychologists had recently been granted prescriptive abilities in the states of Louisiana, New Mexico and the military following the earlier findings of Sammons and Brown (1997). This document recognized and clarified that psychologists interact specifically with psychotropic prescriptions at three different levels: 1) When the psychologists is also the prescriber such as in the states of Louisiana, New Mexico or in the military after specific training to do so, 2) As active collaborators in medication decision making and lastly 3) Their provision of information which is relayed as relevant to pharmacotherapy decision makers.
Providing Education Equates to Increased Psychotherapy Knowledge

In a primary research study conducted among a group of psychology interns who were given a brief educational course in psychopharmacology, follow-up questionnaires from the participants indicated increased knowledge and confidence in their collaboration with physicians (El Mallakh, 1994). Although this study was nonrandomized and small in sample size, 93% of participants felt that the seminar should be continued, with over half of participants feeling that the seminar had a positive effect on their clinical practice. This study exemplifies on a smaller scale that brief psychopharmacology knowledge provision for psychologists is useful.

In another larger sample study example of how psychologists’ knowledge and training of psychotropic medication improved patient outcomes, a randomized group of school psychologists (N=320) were assessed for more information around their caseload and the percent of their children and adolescent clients on psychotropic medication as well as their level of training in child and adolescent pharmacology (Carlson et. al., 2006). The results of this study revealed that although 23% of the children and adolescents that they worked with on average were on psychotropic medication at the time of the study, most of the training that the psychologists had in child and psychopharmacology appeared to be from independent reading (96%). 80% of psychologist participants stated that they had never taken a university-based course on psychopharmacology, with 76% of those stating that a psychopharmacology course was not available at their school. 90% of participants also felt they were between not well trained and somewhat well trained in psychopharmacology. Additionally, results revealed that 90% of school psychologists would not opt to seek prescription privileges. Results from this study imply that school psychologists are attentive to the gap between their formal training and their responsibilities related to medication treatments, and moreover addresses the lack of confidence that psychologists in this study had
when speaking with their clients about psychopharmacology. When surveyed, this study found that 90% of participating psychologists would not opt to seek prescription privileges if they were given the option.

Similarly, the literature review by Merla Arnold (2008) confirms that knowledgeable psychologists can help reduce the frequency and severity of complications that occur among the geriatric population such as falls or mental status changes often due to polypharmacy. This notes that psychologists can serve as a touchpoint by developing a collaborative relationship between the patient and prescriber. As the American Psychological Guidelines for Practice with Older Adults (2004) notes, “It is important for any psychologist to be familiar with current information about biological and health-related aspects of aging.” This can be extended and applied to medication management as pharmaceuticals can have very distinct effects on these unique populations, especially amid complications that Arnold notes can occur with polypharmacy in aging adults.

**Perspectives on Prescribing**

Robiner et. al. (2003) advise caution and suggest that psychologist’s scope of practice should not include prescribing given that their data reveals key gaps as well in psychologists’ training and limitation of their knowledge. Their research consisting of 49 doctoral level psychologists who completed surveys in form of a quiz which assessed knowledge of psychopharmacology and related medical information. Regarding knowledge of adverse drug effects and contraindications, participants obtained an average of 30% as a whole group of participants, 29% regarding knowledge of drug related clinical syndromes, and 36% average group scores on the psychopharmacology quiz. Psychologists also reported reading significantly less than psychiatric residents who were studied psychopharmacology. However, Carlson et., al. (2008) in
the previous study had found that most of the training that the psychologists had in child and psychopharmacology appeared to be from independent reading (96%), and Robiner et. al. (2003) found that psychologists read an average of 0.35 books and an average of 7.5 articles about choosing and using psychoactive medications, this shows the significant gap in foundational knowledge and access to psychopharmacology foundational information for psychologists when compared to those with prescribing authority despite their work with often the same patients.

Tompkins and Johnson (2016) conducted a similar study in Oregon where 397 selected psychologists were surveyed online regarding their attitudes and knowledge about prescriptive authority. While this study did not assess the direct knowledge of psychologists as it pertains to psychotropics, it did examine their knowledge and feelings around the prescriptive authority for psychologists’ movement (RxP). Findings revealed an overall lack of awareness of guidelines regarding training qualifications to be able to pursue RxP, a significant knowledge deficit of which states and territories currently have prescriptive authority, and a lack of knowledge to ender an APA psychopharmacology training program. Additionally, the study addressed the large division that exists between scope of expansion, with 43% of participants supporting improved access and expansion of prescriptive authority, 32% of participants opposed to it, and 25% who remained undecided. This further exemplifies that in addition to a lack of access to education about psychopharmacology, the emphasis on whether psychologists should have prescriptive authority can further complicate access aside from formal training with the aim to pursue prescriptive authority across the board for psychologists to psychotropics education which not all psychologists may want to consider or could do given the state in which they practice.

Aston et. al. (2021) studied the role that clinical psychologists in the United Kingdom have in their client’s psychotropic medication by having 147 participants complete an online survey and
specify involvement such as having the ability to impact a change in the client’s medication regime. 98% of participants reported recent involvement with the clients’ use of psychotropic medication and all reported being willing to have some form of involvement if given the opportunity. Participants also participated in interviews in which their role as advocates and wanting to seem knowledgeable was a noticeable trend in the resulted data. This shows that in addition to their close work around medications with clients, participant sentiment about wanting to seem well-informed while recognizing not having a full grasp of why the person may be taking medication can create conflict, and hesitation which can in turn affect the care clients receive. Because psychologists may often see the clients that the PMHNP does, but in a different capacity, they may be trusted vessels and touchpoints of communication for the patient to interface with the conversation of medication-based therapy.

**Involving the Psychologist**

In a similar study conducted by Vanden Bos and Williams (2000), 569 practicing psychologists conducted a survey which reported the types of professional activities in which they regularly engage with clients. Results showed that 99% of participants reported that they had collaborated with physicians who prescribed psychotropics and other types of medication, with only 1% of participants indicated that they had never worked with a prescriber. Moreover, 96% of participants reported having at least one patient taking psychotropic medication. The data reflects the high involvement the psychologist has in the process of psychotropic medication administration and maintenance. Additionally, Vanden Bos and Williams (2000) confer that prescribers and psychologists may already have high involvement and interaction rates. However, as prior studies have shown, psychologists may lack education, knowledge, and training around
psychotropic medication and thus the cross-collaboration across disciplines may not be as robust as it potentially could be for the benefit of the patients and providers alike.

**Room for Cross Collaboration Between Disciplines**

Robiner et. al. (2013) discusses that collaboration may be a compelling alternative to RxP. While prior articles, discussions, and studies focus on the premise of increasing the knowledge of psychologists around psychotropics and the argument of whether they should be allowed prescriptive authority, Robiner et. al. (2013) argues that growing psychologists’ learning connected to clinical psychopharmacology is recognized as having beneficial effect. In an analysis completed by the APA Center for Workforce studies, over 90% of psychologists commonly review medications with physicians with the majority also providing knowledge about psychotropics to patients (APA CWS, 2009). The data reveals that cross-collaboration and interprofessional care enriches the patient experience but do not rely on whether psychologists have prescriptive authority. Additionally, to further those channels of communication between providers, opportunities that can serve as both educational and collaborative spaces for clinicians and psychologists alike are a tangible goal that shifts the focus from who has prescriber ability to room for cross-collaboration between the various disciplines that work to improve the mental health and wellbeing of those served.

**What should be taught**

Tomba et al. (2017) established what psychologists need to know about psychotropic medications based on the domains of clinical psychopharmacology, noting that psychotropic drugs may also affect the clinical presentation of mental disorder such as in the case of withdrawal symptoms, which is also critical for the psychologist to note. It is argued that clinicians should have familiarity with psychopharmacology, particularly the potential side effects in their patients,
with an emphasis on the key domains of clinical psychopharmacology: 1) Psychological effects of psychotropic drugs, 2) Likelihood of responsiveness, 3) Assessing side effects, 4) Behavioral toxicity, 5) Interaction of Medical drugs with behavioral variables and psychotherapy.

Similarly, Ingersoll (2000) notes that psychologists should understand how taking medication or the non-compliance of medication can affect a patient’s progress in their counseling and therapy, as this can help them decide when to raise these concerns to the professional who prescribed the client’s medication. As someone who taught and designed an elective course for post-masters students in his study, APA guidelines which were established in 1995 were used to denote Level-1 (established to train non-medical students of psychology and mental health clinicians, more broad and generalized), Level-2 guidelines (training for working with particular populations such as children or older adults who may take psychotropic medication) and Level-3 guidelines (meant to train psychologists for prescriptive opportunities depending on their level of education and state practice guidelines). By taking parts of all training levels, Ingersoll (2000) emphasized the following teaching principles: 1) Biological bases, 2) Principles of Psychopharmacological Treatment, 3) Introduction to Clinical Psychopharmacology, and 4) Classes of Psychotropic Medication. Teachings were didactic with visual aids and metaphors as conceptual aids to help with the learning. Additionally, quizzes were given in small groups to allow for learning.

Ingersoll (2000) also highlights the importance of who should teach the course, given that the ACA (1995) Code of Ethics and Standards of Practice states that professionals should practice within the boundaries of their competence, based on their education, training, supervised experience, state and national credentials and professional experience. Thus, this role is suited for the nurse practitioner in training given the knowledge, experience, and formal course training with
medication management. Ingersoll (2000) notes that expanding the preparation, skills and knowledge of non-prescribers who often interface with the same patients as prescribers on different levels to help clients understand treatment options especially as medication based and therapeutic based treatment often occur simultaneously.

**Summary/Synthesis of the Literature**

The articles chosen concentrated on the advantages of cross collaboration between psychologists and their knowledge, understanding, and abilities around psychotropic medication. The objective was to gather information about teaching psychopharmacology to psychologists, the experience of psychologists with psychopharmacology, and the role that educating and cross-collaborating with psychologists could play for optimal patient-provider outcomes.

**Rationale**

The Psychobiosocial Model of Care (BPS) as explained by McGrath and Moore in their work Integrating Pharmacotherapy and Psychotherapy (2010) consists of three key aspects which provide the context for the execution of this project to help to bridge the gap of psychopharmacologic knowledge that exists among mental health providers without prescribing capabilities who may otherwise go without this knowledge. The first aspect of the BPS asserts that psychologists via their training are taught a specialized skillset for addressing mental health concerns via the psychological aspect of their patient’s lives and thus education and training in pharmacology could add to extend their knowledge to be better prepared to address mental health concerns. The second key aspect of the model asserts that psychologists could help patients choose the least invasive and most biologically efficacious treatment based on their knowledge of the patient and unique relationship with them in alignment with the prescriber. The third key aspect of the model asserts that the social aspects of a patient’s dynamic such as interpersonal factors or
the social interactions they may have shared with their psychologist or therapist which hold motivational abilities given their patient provider relationship. BPS highlights the correlation between biological, psychological, and socio-environmental aspects which, when applied to the education and knowledge of mental health providers without prescribing capabilities, demonstrates the impact that the provision of psychopharmacology education allows for an increase in knowledge, confidence, and non-prescriber and prescriber alliance.

Methods

Context

Psychopharmacology knowledge is often provided as part of the curriculum for future prescribers such as psychiatrists, psychiatric nurse practitioners, and some psychologists depending on their respective state prescriber laws and level of education. Psychologists in the state of California, practicing psychologists cannot legally prescribe medication as established in section 2904 of the California Board of Psychology’s Business and professions Code (California, Can California Psychologists Prescribe? 2014). However, this same code establishes that a psychologist may discuss medications with a patient and may engage in collegial discussion with a patient’s physician or prescriber regarding the appropriateness of medication for the condition being treated. Additionally, it is noted that psychologists should in fact maintain a close consultative connection with the prescribers to assure appropriate overall treatment of the patient. Due to a lack of education and knowledge about psychotropic medication, psychologists and their patients alike do not reap the benefits of the potential for improved outcomes that can exist with increased knowledge about psychopharmacology to improve interdisciplinary care and care outcomes.
**Intervention**

This project aimed to increase this psychopharmacology education and knowledge for a group of non-prescribing psychologists working with outpatient patients ages 5 and up as therapists to improve their mental health and wellbeing as part of a private practice psychological services group in Pasadena, California. A two-hour presentation that covered psychopharmacology basics was provided by a Psychiatric Nurse Practitioner Doctoral Candidate Student at the site to 8 psychologists working in outpatient private practice setting via the telehealth platform doxy.me for patient privacy and data compliance purposes. One hour and a half consisted of the presentation and the remaining 30 minutes during the session was allotted for a 10 question pre- and post-survey to assess utilization and necessity of pharmacologic education by assessing provider confidence level in the topic, in addition to time for questions and discussions. A toolkit containing this information in the form of an established resource library where providers could access this presentation again was also provided at the conclusion of the project. The first presentation took place in January of 2022 and the second took place in March of 2022. Data was collected, analyzed, and was presented based on the educational presentation, however, this project sparked dialogue and further presentations on other topics of interest to the psychologist team after initial presentations took place. The ongoing presentations by other members of the team based on their expertise continues to be implemented on a weekly basis.

To gain primary stakeholder support (Appendix F), a letter via email was sent to the two directors and co-founder psychologists of the practice. After introducing the concept, a follow up meeting was held to introduce the concept and discuss how this would benefit the practice. During this initial presentation, co-founders were provided an outline of the proposed project, the project outcomes, a cost analysis breakdown, and the proposed timeline of the project. Co-founders were
also provided a copy of the pre and posttests as a form of self-assessment and to assert the need for this project’s implementation. After this presentation, co-founders appeared on board and had strong interest in the project as they noted it would increase their providers’ knowledge. Co-founders provided a letter of support to initiate this project (Appendix B). Timing of when the project would occur for providers was also discussed, and it was determined that weekly company meetings and weekly scheduled supervision time for associates could be re-allotted for this project.

After gaining stakeholder support, the 8 psychologists were briefed on what to expect before the first educational presentation to gain their support and trust. By introducing herself prior to the implementation of the educational presentations, Psychiatric Nurse Practitioner Doctoral Candidate Student was able to establish a relationship with non-prescribing providers in the practice. Additionally, the presentation was tailored to the learning styles, comments, and requests which were provided by the psychologists during this preliminary meeting. The final versions of both presentations consisted of a brief overview of basic psychopharmacologic principles and key domains of clinical psychopharmacology as established by Tomba et. al. (2017). The primary topics included: Psychological effects of psychotropic drugs, 2) Likelihood of responsiveness, 3) Assessing side effects, 4) Behavioral toxicity, and 5) The interaction of medical drugs with behavioral variables and psychotherapy. The presentation provided an opportunity for the Psychiatric Nurse Practitioner Doctoral Candidate Student to serve as a knowledge base for non-prescribing providers and bridge the knowledge gap which providers expressed wanting to learn more about.

The presentation created and adapted from knowledge learned in courses throughout the Psychiatric Nurse Practitioner Doctoral Candidate Student’s educational journey as part of the Psychiatric Mental Health Nurse Practitioner Curriculum at the University of San Francisco, with
an emphasis on adaptations from learnings conducted through the psychopharmacology course. Pre and post questionnaires were conducted before and after the presentation to assess the confidence levels of providers in these topics before and after the intervention. Additionally, the presentation was electronically distributed to the team via google drive with the formal establishment and initiation of a company resource library so that providers could have access to them as needed for reference. This led to a space for future presentations which were incorporated by members of the team based on their expertise and the library of resources for providers in the practice continues to evolve after the implementation of this initial project.

**Gap Analysis**

Evaluation and appraisal of the evidence shows that there is a significant gap between what psychologists know and are taught regarding psychopharmacology, and the expectation that is part of their role in the state of California establishes that although a psychologist may not prescribe, they can and thus should discuss medications with a patient and may engage in collegial discussion with a patient’s physician or prescriber regarding the appropriateness of medication for the condition being treated. Additionally, although psychologists should in fact maintain a close consultative connection with the prescribers to assure appropriate overall treatment of the patient, studies show most psychologists may never have taken a university-based course on psychopharmacology, in large part because a psychopharmacology course may not have been available at their school. Moreover, most psychologists in studies have also expressed that they were between not well trained and somewhat well trained in psychopharmacology (Carlson et. al, 2008). Similarly, the pretests provided to non-prescribers for this project also showed low confidence in core psychotropic and psychopharmacologic principles (Appendix M). Additionally, the practice did not appear to have a toolkit or resource library which could make this knowledge
available for clinicians prior to this project. The educational presentations were aimed to increase knowledge, confidence, and ultimately bridge the psychopharmacologic gap among prescribers to ultimately produce improved patient provider experience and prescriber- psychologist interdisciplinary collaboration as described in the Gap Analysis for this project (Appendix E).

Gantt Chart

Appendix G notes that this project initially began with the gaining an understanding of what the need was for a project implementation at the student’s clinical site. Once a need and gap analysis were conducted, a literature review and further analysis of the research began in March of 2021. Upon completion of gathering of the evidence, an initial outreach email to coordinate a meeting with the co-founders of the company was sent in September of 2021. In October of 2021, the project goals in alignment with the research were established and compiled into a presentation which during an initial meeting allowed the student to express project interest, connect with co-founders, and allow time for any questions they had. A letter of support was received in November of 2021. Once their approval was gained, the project gained additional approval from primary academic advisor Dr. Trinette Radasa at the University of San Francisco upon a virtual meeting which took place with the student implementing the project to further discuss the project’s details in November of 2021. In December of 2021, the student attended a preliminary introductory meeting with non-prescribing psychologists of the company. Following their feedback and this initial meeting to meet with psychologists, research was compiled to create the educational presentation along with the pre and posttests. The educational presentation and administration of the pre and post tests for non-prescribing clinicians took place in January of 2022. Data was collected and compiled between February and April of 2022. The student attended a follow up meeting with the entire company team including the co-founders for further questions, findings,
and production as well as distribution of the resource library were provided in late April 2022 at a follow up meeting with all members of the company, including co-founders. The written presentation of this project took place thereafter.

**Work Breakdown Structure**

The Work Breakdown Structure (WBS) for this project allowed for the timely implementation of this project (Appendix H). The WBS classified 14 steps which were pivotal in the planning, implementation, and evaluation of the project. The WBS planning phase included gaining stakeholder support, creating a timeline and draft of the goals for the project, and gathering all materials and supplies. The Implementation phase included the actual presentation and creation of a virtual space for the presentations to be accessed. Lastly, the evaluation phase sought to compile the data from the surveys throughout the project and the reporting of results back to the key stakeholders as well as participants for their feedback. Additionally, the final phase and part of the WBS of this project included the gathering of this written report.

**Responsibility/ Communication Plan**

An initial meeting with program advisor and Doctor of Nursing Practice (DNP) chair at the University of San Francisco was held to discuss the project in its infancy stage. The student and Dr. Radasa communicated via email, zoom meetings and text message. Additionally, exchanges between the key stakeholders and co-founders of the psychiatric company also took place via email, zoom meetings, and text messages (Appendix I). Once the project was established, communication about these presentations to the non-prescribing psychologists and providers of the company took place during the weekly group session time that all providers of the company attend on a weekly basis. In efforts to establish trust between the presenting student and providers, an introduction of the student by the co-founders was made to the group at one of these group
meetings prior to the actual presentations. Email invitations were also sent to providers via the company google calendar and company emails. The presentations were held via zoom. To facilitate communication, providers were also given the student’s company email, company phone number, and the presentations were provided as part of the project in the form of a google drive folder which facilitated the beginning of the building out of the company’s resource library which has since grown.

**SWOT Analysis**

A SWOT analysis was conducted to measure the strengths, weaknesses, opportunities, and threats at the psychological services company (Appendix J). This SWOT analysis identified key areas in which the educational presentation could improve overall performance, particularly on the non-prescriber clinician end. One major strength of this project which made it feasible for the company was the overall cost. Because the student who presented was completing clinical hours, unpaid, and the project itself consisted of using digital mediums of distribution which the company already had implemented prior to the project, the cost of development, materials and time was supportable. Additionally, because the presentation was distributed to providers for further viewing or resourcing after via the creation of a digital resource library on the company’s Google Drive, unlimited access appeared to be another major strength. However, this was also an apparent weakness given that the project outcomes are only as good as the providers using, reinforcing, and ultimately dedicating time to learn the information. Additionally, given that previous provider education and interest on the topics varied, the enthusiasm to learn may have as well. An opportunity of the project included the start of a virtual resource space for providers of the company which has since the implementation of this project expanded by the contributions of providers according to their expertise and knowledge. This project also serves as an opportunity
for other providers to implement their knowledge and education to other members of the team. A threat appears to be that psychopharmacology and the learnings provided in this project require time and continued education. While this was a great start for providers to be exposed and to peak provider interest as well as provide an opportunity for cross collaboration within the company personnel, providers may also benefit from continuous learning and presentations.

**Budget and Financial Analysis**

The implementation project sustained a higher initial development cost when compared to the projected long-term savings to be produced for the company. The budget created for this project consisted of a projected cost assuming the company would not cover certain items and an actual adjusted cost which excluded the items provided by the company, given that these presentations were held virtually. The initial startup cost of the project, which included two educational presentations was appraised at a projected cost of $14,350 and an actual adjusted cost, excluding the items provided by the company of $5,800 (Appendix K). This significant cost reduction was due to the provision of technological materials supplied by either each provider or the company, including electronic devices, Wi-Fi and internet access, as well as a zoom subscription. This budgeted for the materials used in the training and the cost of labor to produce the presentations in form of time and the costs of materials. While the student was not paid as this time was factored into clinical hours, if the student would have been paid for this project, it was budgeted at $65/hour. Ultimately, the compensation for the student’s project would amount to 68 hours at $65 per hour for a total of $4,420 in labor costs. Although these estimates provide a rough budget and breakdown based on projections, it is estimated that the projected return of investment is projected to surpass the initial startup costs given that it would ultimately result in a long-term savings of an estimated $5,000 annually via improved provider collaboration and patient care outcomes.
Study of the Interventions

In efforts to conclude the influence of the educational project implementation, a 7 question pre and posttests as a form of self-assessment was provided to each clinician (Appendix D). These assessments indicated the baseline knowledge based on confidence in the subject matter and knowledge gained after the educational presentation intervention. The change in scores from the pre to post test was a form of evaluating the knowledge growth of participants. Additionally, this form of assessment aligned with the work of prior researchers in the field (Carlson et. al, 2008).

Outcome Measures

In efforts to quantify the outcomes of the implementation of the project, a 7 quantitative pre and posttest were provided to each non-prescribing physician. Multiple opportunities for clinicians to provide feedback were also included as part of the periodic meetings and between the presentation to implement said feedback. Feedback was also collected at the conclusion of each pre and posttest which were administered via a google survey.

The pre and posttests contained the same 8 questions with 7 assessing key aspects of the confidence level of non-prescribing psychologists in the fundamental and key topics of psychopharmacology. Additionally, the 8th question was included in the survey to assess for any feedback or commentary. This feedback and commentary were compiled and assessed qualitative data, while the changes in scores from before to after the presentation were assessed as quantitative data. The quantitatively measurable questions measured the confidence of providers on the topic. The 8th question which was a free-form text fillable question allowed providers to share additional thoughts and comments (Appendix D). It is important to note the presentation is a small aspect of psychopharmacology and goal of the presentation was to begin the conversation as well as identify value in psychopharmacology education.
Data Collection Instruments

Quantitative and qualitative data were first captured as responses on a google form and analyzed using Microsoft Excel. Pre and posttests did not include any participant identifiable information. Given that the pre and posttests results were formatted as google surveys, results were automatically populated into a table which aided in data management. The feedback and commentary (qualitative) data from the surveys was captured as a word cloud to notably identify any patterns or similarities between the feedback (Appendix P and Q). Additionally, a Plan-Do-Study-Act model was created for the continual improvement and process of the project given that the implementation of this educational presentation has led the way for other educational endeavors for the company team members (Appendix L).

Analysis

Pre and post-test results were collected via google surveys upon completion of the project presentation. These assessments were then compiled and presented at a later all-staff company meeting, including stakeholders to show the importance and statistically significant benefit of continued education in the realm of psychopharmacology for non-prescribers working at the practice. The responses were also used to show that while non-prescribing psychologists are expected to form opinions and share their knowledge with patients as well as communicate and cross collaborate with prescribing providers in accordance with the California state practice guidelines, they are not necessarily equipped to do so. Additionally, this analysis showed that educational presentations as such not only increase knowledge and confidence of clinicians, but also expands on the need to create space for continuing learning resources and cross collaboration among company mental health practitioners.
Ethical Considerations

Provision 6 of the American Nurses Association Code of Ethics for Nurses establishes that the nurse, through individual and collective effort, establishes, maintains, and improves the ethical environment of the work setting and conditions of employment that are conducive to safe, quality health care (2013). Given that a large part of the Psychiatric Nurse Practitioner’s role is knowledge, familiarity, and prescriptive abilities, providing education to fill the gap that may exist for providers who do not necessarily have prescriptive abilities but work with clients who are taking psychotropic medication is critical in maintaining and furthering a safe practice environment.

Similarly, provision 8 of the American Nurses Association Code of Ethics for Nurses establishes that the nurse collaborates with other health professionals and the public to protect human rights, promote health diplomacy, and reduce health disparities (2013). This educational model also allowed for the collective opportunity for all levels of mental health practitioners working at the company to establish a working relationship with each other and fostered cross collaboration between the distinct roles that practitioners play respectively with patients. Like solidarity and kinship which are both rooted in the Jesuit educational values, it is important that despite our differences in abilities and practice guidelines as providers, that we continue to foster relationships and community with those we work with and ultimately serve as a collective people for others (University of San Francisco, 2018).

A secondary aim of this project is to reduce health disparities for patients. Given the stigmas that may exist with psychotropic medications, along with the hurdles that patients may go through including the correct authorizations and referrals to get to a provider, a psychologist or therapist may be the first encounter and great first step in this process if that patient could ultimately benefit from psychopharmacology. Additionally, many patients served at the practice
where the project took place are Spanish speaking with Spanish being the primary language for many clients. To accommodate for this, most providers at the company also speak Spanish. Thus, incorporating and providing education for these providers who very well may be the first and only touchpoint into the patients’ mental health and wellbeing, it is the ethically correct stance to assure they are well equipped and informed to support the populations served.

**Results**

The results of this pre and post test results were compiled into diagrams to display the vast improvement in knowledge and confidence of non-prescribing psychologists after the implementation of the project (Appendix M, N, O, P, Q). Results show a 231% increase in the average confidence levels of providers in their overall knowledge and education of psychopharmacology based on post-presentation assessment results compared to their pre-test results. There was a 188% increase in average provider confidence in overall knowledge of psychological effects of psychotropic drugs. There was a 333% increase in confidence about overall knowledge of the behavioral toxicity that can occur with psychotropic drug and regarding confidence about overall knowledge of the interaction of medical drugs with behavioral variables of psychotherapy. There was a 550% increase in confidence in provider ability to seek out resources related to psychopharmacology and a 676% increase in the average confidence of provider access to resources. Overall confidence on average between all questions and all providers increased by 313% after the presentation based on pre and post test results, indicating the significantly positive impact that the implementation of the project had.

The pre and posttests contained the same 8 questions. 7 of the questions assessed the non-prescriber clinician confidence about key topics in psychopharmacology before and after the educational presentation intervention. The 8th question allowed providers to fill in commentary,
and feedback which served as a form of qualitative data for the intervention (Appendix P and Q). Results showed that regarding confidence in their overall knowledge and education of psychopharmacology, non-prescribing psychologists before the presentation were on average between not at all confident and somewhat confidence in psychopharmacology. After the educational intervention, providers were somewhere between somewhat and completely confident in their overall knowledge and education of psychopharmacology. Similarly, prior to the intervention, clinicians regarded their confidence on average in overall knowledge of psychological effects that psychotropic drugs can have as somewhere between not at all confident and somewhat confident. The average for this confidence level also appeared to increase after the intervention to somewhere between somewhat confident and completely confident. Regarding their confidence in knowledge of responsiveness and side effects that psychotropic drugs can have, providers rated their confidence on average as slightly confident, while after the presentation, all providers shared in feeling between fairly and completely confident about this. Providers ranged from not at all confident to slightly confident in their knowledge of behavioral toxicity which can occur with psychotropic drugs prior to the intervention, and the average of this response increased to be between fairly and completely confident after the presentation. Provider confidence in knowledge of the interaction of medical drugs with behavioral variables of psychotherapy that can occur with psychotropic drugs was on average slightly confident, while after the presentation, most providers felt between fairly and completely confident in this. Regarding confidence in their ability and access to seek out resources related to psychopharmacological treatments, confidence among providers increased from not at all and slightly confident to fairly and completely confident after the intervention. The 8th question which allowed providers to fill in commentary, and feedback and served as a form of qualitative data for the intervention displayed a variety of comments and
a pattern of terms and phrases including “thank you,” and “great” were included in the word cloud (Appendix P and Q).

The responses from the pretest questions prior to the educational intervention overall depict an overwhelming initial low level of confidence among providers (Appendix M). Conversely, the responses from post-test interventions which were completed after the educational intervention depict an overall increase in confidence, with providers indicating somewhat to fairly confident at the conclusion of the intervention (Appendix O).

**Discussion**

**Summary**

This project emphasizes the need to increase the fund of knowledge among psychologists, licensed clinical social workers, and talk therapists in outpatient psychiatric settings by educating clinicians about psychopharmacologic basics and the role and work of a Psychiatric Nurse Practitioner who is in the prescriber role. As the evidence suggests, psychologists with non-prescribing capabilities are not often trained or educated about the medications that their clients are taking. The practice guidelines for psychologists indicates that they should serve as a liaison between the patient and prescriber and given the interface that psychologists and therapists have with clients. Non-prescribers can serve to promote and establish interdisciplinary care which would improve patient outcomes.

**Interpretation**

If education is provided to bridge the gap and promote interdisciplinary conversations between those with prescribing capability and knowledge, the likelihood for understanding and supporting clients who are undergoing talk therapy and psychopharmacologic treatment yields more cohesive patient care. This can help to bridge the gap of psychopharmacologic knowledge
that exists among mental health provider without prescribing capabilities who may otherwise go without this knowledge.

**Limitations**

Because this project was implemented among a small group of psychologist providers who work solely in an outpatient setting with patients ages 5-90, one major limitation is the small sample size of psychologists who received the intervention and the limited groups of patients they work with. This is a limitation because this intervention was suited to fit medications and treatments most common to outpatients and may not be as generalizable for other pharmacologic treatments in other higher level of care patient provider settings. Additionally, this project was instituted at a practice and among non-prescribers in the State of California, while recognizing that here psychologists do not have the ability to prescribe. Given that practice guidelines for both psychologist and other healthcare practitioners may vary in different states, it is important that this be noted as certain providers or states may already be providing more robust education around psychopharmacology to all mental health providers irrespective of their ability or inability to prescribe.

Given the debate that exists around who should prescribe, much of the research to date pits the prescriber against the non-prescriber and most of the research completed suggests this as a reason to provide or not provide education around psychopharmacology. Instead, research moving forward should focus on assuring that providers are well equipped to serve their patients by having a conversation about psychiatric medication and feel comfortable discussing the topic, rather than pitting the prescriber role as the only beholder of said education.
Conclusion

Although psychologists may not receive standardized education and training about psychopharmacology, it is important that all mental health professionals working with patients to improve their mental health and well-being be provided with foundational education and knowledge for the benefit of the patient. Especially given the stigmas that may exist with psychotropic medications, along with the hurdles that patients may go through including the correct authorizations and referrals to get to a provider, a psychologist or therapist may be the patient’s first encounter. Thus, a psychologist who is well equipped to discuss psychopharmacologic treatment can be a pivotal touchpoint in assuring the patient receives further medication support by a prescriber. Education by a mental health practitioner with prescribing capability and knowledge can bridge the gap and promote interdisciplinary conversations between those with prescribing capability and knowledge.
Funding

This project and student did not obtain any funding from grants in public, commercial or non-profit divisions. Minimal project costs for materials that were not covered were assumed by the clinical facility where the project took place.
References


https://doi.org/10.1097/jcp.0b013e3181603f6b
Appendix A. Non-Research Approval Documents

Doctor of Nursing Practice
Statement of Non-Research Determination (SOD) Form

The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E

General Information

Last Name: Ceja
First Name: Olivia

CWD Number: 20286988
Semester/Year: Spring Semester 5 of DNP PMHNP Post Masters DNP

Course Name & Number: NURS 7008 Population Health Legal Issues and Risk Management

Chairperson Name: Dr. Nnenna Abaeze
Advisor Name: Dr. Trinette Radasa

Project Description

1. **Title of Project:** Educating Providers Without Prescriptive Authority About Psychopharmacology Basics: Bridging the Interdisciplinary Work Among Psychotropic Prescribers and Psychologists

2. **Brief Description of Project** *(Clearly state the purpose of the project and the problem statement in 250 words or less)*:

   The purpose of this evidence-based change in practice is to increase the fund of knowledge among psychologists, licensed clinical social workers, and talk therapists in outpatient psychiatric settings by educating clinicians about psychopharmacologic basics and the role and work of a psychiatric nurse practitioner during group supervision meetings. This can help to bridge the gap of psychopharmacologic knowledge that exists among mental health provider without prescribing capabilities who may otherwise go without this knowledge but still work with the same patient and goals as the PMHNP with prescriptive authority.

3. **AIM Statement: What are you trying to accomplish?**

   Among non-prescribing mental healthcare providers including therapists, LCSW’s, MSW’s and therapist associates, the implementation of basic psychopharmacologic principles education and training can increase interdisciplinary communication and knowledge compared to the standard without such training throughout the course of supervision trainings.

4. **Brief Description of Intervention** *(150 words)*:

   An initiative to educate clinical providers regarding basic psychopharmacologic principles and create a pathway for interdisciplinary discussion between prescribing providers and non-prescribing providers was completed. Two educational presentations were provided to 8 psychologists working in outpatient private practice setting in the Southern California region were provided. A pre- and post-survey were provided to assess utilization and necessity of pharmacologic education. In addition, a toolkit containing this information as well as weekly interdisciplinary team meetings, subjects and further opportunities for cross collaboration were established as part of their supervision. The goal was to increase non-prescriber knowledge among therapists about basic knowledge of psychopharmacology during their supervision time.
4a. How will this intervention be implemented?

- Where will you implement the project?
  - A private practice psychological services group in Pasadena, California
- Attach a letter from the agency with approval of your project.
  - I have spoken with my direct supervisor about this who is one of the co-founders of the group and agrees with this project. Meetings with members of the team and other stakeholders to follow.
- Who is the focus of the intervention? (Needs to match population [for whom?] in Aim statement.)
  - Non-prescribers who interface with clients (i.e., psychologists)
- How will you inform stakeholders/participants about the project and the intervention?
  - Meetings will be held during weekly time as set aside by the practice. Educational presentation to take place on zoom.

5. Outcome measurements: How will you know that a change is an improvement?

The results of the pre and posttest after the implementation of the educational presentation will display an improvement in knowledge and confidence of non-prescribing psychologists after the implementation of the project.
**DNP Statement of Determination**

**Evidence-Based Change of Practice Project Checklist**

*The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E*

**Project Title:**
Educating Providers Without Prescriptive Authority About Psychopharmacology Basics: Bridging the Interdisciplinary Work Among Psychotropic Prescribers and Psychologists

<table>
<thead>
<tr>
<th>Mark an &quot;X&quot; under &quot;Yes&quot; or &quot;No&quot; for each of the following statements:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim of the project is to improve the process or delivery of care with established/accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The specific aim is to improve performance on a specific service or program and is a part of usual care. All participants will receive standard of care.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project is not designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does not follow a protocol that overrides clinical decision-making.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does not develop paradigms or untested methods or new untested standards.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does not seek to test an intervention that is beyond current science and experience.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project has no funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., not a personal research project that is dependent upon the voluntary participation of colleagues, students and/or patients.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: <em>This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board.</em></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Answer Key:**
- If the answer to **all** of these items is "Yes", the project can be considered an evidence-based activity that does not meet the definition of research. IRB review is not required. Keep a copy of this checklist in your files.
- If the answer to **any** of these questions is "No", you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.*
To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: http://answers.hhs.gov/ohrp/categories/1569

UNIVERSITY OF SAN FRANCISCO
School of Nursing and Health Professions

DNP Statement of Determination
Evidence-Based Change of Practice Project Checklist Outcome
The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E

☐ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

☐ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:

+-----------------+-----------------+
| Student         | Student         |
| Last Name:      | First Name:     |
| Ceja            | Olivia          |
+-----------------+-----------------+
| Student Signature: | Date:          |
|                 | March 26, 2021  |
+-----------------+-----------------+
| Chairperson Name: | Chairperson     |
| Dr. Trinette Radasa | Signature:     |
|                 | Date:           |
+-----------------+-----------------+
| Second Reader Name: | Second Reader  |
|                 | Signature:      |
|                 | Date:           |
+-----------------+-----------------+
| DNP SOD Review Committee Member Name: |
|                 | Date:           |
+-----------------+-----------------+
| DNP SOD Review Committee Member Signature: | Date: |
+-----------------+-----------------+
Appendix B. Letter of Support from Agency

CALA PSYCHOLOGICAL SERVICES, INC.
inquiry@calapsychologicalservices.org | calapsychologicalservices.org
595 E. Colorado Blvd. Suite 324 Pasadena, CA 91101
Tel. 818.839.1365 | Fax 626.385.4871

LETTER OF SUPPORT

November 29, 2021

This is a letter of support for student Olivia Ceja and the implementation of her DNP project: Educating Providers Without Prescriptive Authority About Psychopharmacology Basics: Bridging the Interdisciplinary Work Among Psychotropic Prescribers and Psychologists.

Dr. Clara I. Aparicio, Psy. D.
PSY28302
## Appendix C. Evidence Evaluation Table

<table>
<thead>
<tr>
<th>Citation</th>
<th>Design/Method</th>
<th>Sample</th>
<th>Variables Studied</th>
<th>Measurement</th>
<th>Findings</th>
<th>Appraisal Worth to Practice</th>
</tr>
</thead>
</table>
**Method:** Author pulls from literature, statistics and data, and clinical experiences to confirm that psychologists play a pivotal role in the decreasing of polypharmacy in older adults as a call to action | N= N/A | Independent: Literature, statistics, and data extrapolated  
**Dependent:** The analysis of the role polypharmacy and psychologists play among older adult populations | Measurement: Psychological services and interventions among geriatric populations experiencing polypharmacy | Interdisciplinary and multidisciplinary approaches can decrease inappropriate polypharmacy and increase health care outcomes. | Strengths: Pulls from various other data sources and studies to build case  
Limitations: Pertains specifically to the geriatric patients; this may not be generalizable to all psychologists outside of this specialty.  
**Critical Appraisal:** Level V, Medium Quality |
**Method:** An online survey and interviews to investigate the role that clinical psychologist | N= 147 psychologists completed survey  
N=11 psychologists completed interviews | Independent: Survey questions  
**Dependent:** Actively practicing psychologists’ responses | Measurement: Percentage of psychologists involved in the care of their patients’ psychotropic medication, the percentage of those providers who have been trained in the subject matter, and subthemes | 98% of psychologist reported recent involvement with their client’s psychopharmacology management. 49.6% of participants stated having | Strengths: Large enough sample size to trust reliability and validity of the study  
Limitations: Study was conducted in the United Kingdom where |

<table>
<thead>
<tr>
<th>Design:</th>
<th>N=320 school psychologists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method:</td>
<td>320 school-based practicing members of the National Association of School Psychologists were surveyed to examine their knowledge and training in pediatric psychopharmacology</td>
</tr>
<tr>
<td>Independent:</td>
<td>Survey questions</td>
</tr>
<tr>
<td>Dependent:</td>
<td>Actively practicing psychologists’ responses</td>
</tr>
<tr>
<td>Measurement:</td>
<td>Each survey revealed the caseload and amount of the psychologists’ patients that were taking medication, the types of training opportunities available to them and the information about how medication consultation occurs in schools.</td>
</tr>
</tbody>
</table>

¼ patients seen by child psychologist in the study were taking psychotropic medication. Results show a lack in training opportunities and educational knowledge in medication treatment.

**Strengths:** Assessed school psychologists practicing at different schools across the United States and among different school age groups.

**Limitations:** The individuals studied are school psychologists specializing in working with pediatric clients; this may not be

**Design:** Non-randomized prospectus study  
**Method:** Psychology interns were given a brief course in psychopharmacology and followed up with 2 Posttest questionnaires at 6 months and 2.7 years after graduation after course intervention  
**Independent:** Brief 5 session course in psychopharmacology  
**Dependent:** Questionnaire scores measuring knowledge and confidence to collaborate with physicians  
**Measurement:** Questions regarding whether seminar was useful, if seminar had positive effect on clinical practice, if seminar altered their interactions with psychiatrists, and if seminar altered their attitudes towards role of medications, if seminar should be continued  
**N=14 psychologists surveyed after intervention**  

86% felt seminar was useful, 57% felt seminar had a positive effect on clinical practice, 93% felt seminar should be continued

**Strengths:** Paved way for future research to be conducted  
**Limitations:** Small sample size, not much detail about questionnaire or group of participant demographics. Research is from 1994.

Ingersoll, E. R. (2000). Teaching a psychopharmacology course to counselors: Justification, structure, and  

**Design:** Descriptive Study; Editorial  
**Method:** Article describes  
**Independent:** Curriculum of psychopharmacology  
**Dependent:** Learning by the students of key psychopharma  
**Measurement:** Who should teach the course, how the course is taught, how to update the course, evaluating  
**N=50 students in a course at one given time**  

Education should include that of psychotropic medication for counselors as this is

**Strengths:** Conducted editorial by current professor who teacher’s psychopharmacology

---

**Critical Appraisal:**  
Level II, High Quality

**Method:**
Psychologists were recruited to complete surveys that assessed educational background, knowledge related to psychopharmacology, readings related to

N=49 Doctorate prepared psychologists

N=20 Psychiatric Residents at least at into year 3 of their psychiatric residency

**Independent:** Survey Questions

**Independent:** Responses of psychologists (non-prescribers) vs. psychiatrist physicians (with prescribing capability)

**Measurement:** Survey scores which measured educational background, knowledge of psychopharmacology and related medical information, reading about psychopharmacology, the effects of this reading and knowledge, estimates of prescribing competence, and

Results show gaps in psychologist training and limitations in knowledge pertaining to psychopharmacology when compared to the scores of psychiatrists.

**Strengths:**
More recent study in the field. Compares two types of clinicians who both work with the same patients for different reasons which promotes consistency in the study

**Limitations:**
There were a far smaller
<table>
<thead>
<tr>
<th>Study</th>
<th>Knowledge?</th>
<th>prescribing and attitudes about psychologist prescriptive authority. They were compared via the same surveys to psychiatric medically trained prescribers and residents.</th>
<th>psychologists’ views on prescriptive privileges for psychologists</th>
<th>number of psychiatrist participants and thus perspectives when compared to the number of psychologist participants</th>
</tr>
</thead>
</table>
**Method:** Articles pulled from that have been peer reviewed and compiled to focus on and assert that interprofessional and teamwork including psychologist collaboration such as with the prescription opportunities (RxP), along with distinctions in psychologist’s education | **Independent:** Literature, statistics, and data extrapolated  
**Dependent:** The analysis of the way inter-collaboration and inclusion of psychologist collaboration | **Measurement:** Projected cost over time after implementation of RxP program. | **Strengths:** Acknowledges RxP as a program available to some psychologists and how much of prescribing abilities depend on state practice guidelines which may vary  
**Limitations:** May not be generalizable to areas or clinicians who do not have the opportunity to pursue RxP. Acknowledges is new program, not... |
<table>
<thead>
<tr>
<th>Design:</th>
<th><strong>Systematic Review; Case Series</strong> Method:</th>
<th>Archival reference to prior programs via review of 3 different curricula and models for training psychologists in field of psychopharmacology</th>
<th>N = 3 curricula reviewed</th>
<th><strong>Type/curriculum model and revisions/variations of curriculums</strong> Dependent: Review of various curriculum models</th>
<th>Courses and contact hours which varied by curriculum model and course</th>
<th>The United States Uniformed Services University of Health Sciences (USUHS) model contains the essential training elements necessary to produce safe and effective prescribers and should serve as an example for psychologists and educators moving forward.</th>
</tr>
</thead>
</table>
| **Strengths:** | Conducted in partnership with the Department of Defense in effort to train more doctoral level psychologists to prescribe psychotropic medications; holds credibility | **Limitations:** | Does not report follow up findings, report is from 1997 and no update found in the literature since | }

**Critical Appraisal:**
- Low Quality, Level V

<table>
<thead>
<tr>
<th>Design:</th>
<th>Articles pulled from that have been peer</th>
<th>N= N/A</th>
<th>Literature, statistics, and data extrapolated</th>
<th><strong>Expert analysis from pharmacology experts and</strong></th>
<th>Domains of clinical psychopharmacology should be</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths:</strong></td>
<td>Pulls from various other data sources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Critical Appraisal:**
- Level IV, High Quality

<table>
<thead>
<tr>
<th>Design: Randomized Control Trial</th>
<th>Independent: Education and information regarding access, training, legislation, and education</th>
<th>Measurement: Online surveys which assessed the percentage of scope of expansion about attitude and shift of views that Oregon psychologists have around prescriptive authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: Psychologists were surveyed online regarding their knowledge and attitudes of prescriptive authority following Oregon’s decision to veto the</td>
<td>Dependent: The analysis of the most important aspects of teaching psychopharmacology</td>
<td>43% of psychologists were in favor of scope of practice expansion to prescribe, while 32% opposed being in favor of this. 6.3% of participants in the control group knew about which</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strengths: Large number of participants; study occurred right after RxP and this allowed for dialogue between the non-prescriber community with respect to this lack of legislative approval for the program In Oregon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Limitations: Appears written for teachers of those who are capable of prescribing; does not mention teaching the subject matter to those without prescriptive abilities</td>
</tr>
<tr>
<td>Critical Appraisal: Low Quality, Level V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RxPbill. Participants were assigned a control or education group which completed postintervention measures.</td>
<td>states allow prescriptive authority for psychologists and only 7.6% of participants stated they wanted to get involved with legislative action behind this movement.</td>
<td>Limitations: Study completed for psychologists in Oregon; may not be applicable as practice guidelines vary from state to state.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>VandenBos, G. R., &amp; Williams, S. (2000). Is psychologist’s involvement in the prescribing of psychotropics really a new activity? <em>Professional Psychology: Research and Practice, 31</em>(6), 615–618. <a href="https://doi.org/10.1037/0735-7028.31.6.6">https://doi.org/10.1037/0735-7028.31.6.6</a></td>
<td>95% of psychologists worked in settings where psychotropics were routinely used. 99% of psychologists reported having collaboration with physicians who prescribed psychotropic. 96% of psychologists reported at least one patient of theirs taking psychopharmacologic medication.</td>
<td>Strengths: Surveyed randomly selected and recruited actively practicing psychologists across the United States registered as members of the APA in both inpatient and outpatient settings.</td>
</tr>
<tr>
<td>Design: Retrospective Case Controlled Study</td>
<td>Independent: Actively practicing psychologists’ responses</td>
<td>Limitations: Data is from 2000, the number of patients taking psychotropic medication may have since</td>
</tr>
<tr>
<td>Method: 596 practicing psychologists responded to a survey reporting the types of professional activities they engage with patients in the realms of medication and psychopharmacology</td>
<td>Measurement: The percentage of patients that psychologists see and their amount or level of service which resulted in psychopharmacologic engagement with the patient for various services</td>
<td></td>
</tr>
<tr>
<td>N= 596 psychologists</td>
<td>99% of psychologists reported having collaboration with physicians who prescribed psychotropics. 96% of psychologists reported at least one patient of theirs taking psychopharmacologic medication.</td>
<td></td>
</tr>
</tbody>
</table>

**Critical Appraisal:** Level I, High Quality
<table>
<thead>
<tr>
<th>Design:</th>
<th>Retrospective Case Control Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method:</td>
<td>Analysis of episodes of treatment to affirm the extent of experience psychologists have in providing care for patients taking psychotropic medications</td>
</tr>
<tr>
<td>Independent:</td>
<td>Patients with episodes of treatment between July 1988-July 1992</td>
</tr>
<tr>
<td>Dependent:</td>
<td>The level of experience and interface psychologists have with their patients that take psychotropic medication</td>
</tr>
<tr>
<td>Measurement:</td>
<td>1) How much experience psychologists have with patients taking psychotropic medications 2) The level of participations that psychologists have in treatment interventions 3) How effective the management by psychologists of patients taking psychotropic medication</td>
</tr>
<tr>
<td>N=</td>
<td>1,639,802 cases analyzed</td>
</tr>
<tr>
<td>8,000 psychologists were involved in at least 9000,000 psychopharmacological treatment episodes or with patients taking psychotropic medication, or 10% of all licensed psychologists between the 4-year period</td>
<td></td>
</tr>
</tbody>
</table>

**Strengths:**
- Large sample size over the course of many years

**Limitations:**
- Study data pulled from patients in outpatient facilities using Medicate system to report; does not capture beyond this population.

**Critical Appraisal:**
- Level III, High Quality
<table>
<thead>
<tr>
<th>Design: Editorial</th>
<th>Independent: Literature, statistics, and data extrapolated</th>
<th>Measurement: Expert analysis from pharmacology experts and current teachers in the field</th>
<th>Strengths: Pulls from various other data sources and studies to build case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: Articles pulled from that have been peer reviewed and compiled to focus on practical pearls found useful in teaching psychiatric residents and practicing physicians</td>
<td>Dependent: The analysis of the most important aspects of teaching psychopharmacology</td>
<td>Lecture strategies, supervision, teaching pharmacology specific to the patient population, teaching in accordance to guidelines, and teaching the transition of learning to practice, as well as assessing learning are key aspects of teaching psychopharmacology</td>
<td>Limitations: Appears written for teachers of those who are capable of prescribing; does not mention teaching the subject matter to those without prescriptive abilities</td>
</tr>
<tr>
<td>N= N/A</td>
<td></td>
<td></td>
<td>Critical Appraisal: Low Quality, Level V</td>
</tr>
</tbody>
</table>
Appendix D. Pre-Test and Post Test Screening Tool and QR Codes

Pre/Post Test: Psychopharmacology Presentation

This is meant as a screening tool to be utilized for data gathering of a DNP project involving the implementation of an educational psychopharmacology presentation for the non-prescribing team clinicians at CALA Psychological Services. Please do not share any identifiable information. Your emails will not be collected as part of this and your information and responses will be kept non-identifiable.
<table>
<thead>
<tr>
<th>Measures of Confidence (Quantitative Data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first 7 questions are meant to assess your level of confidence in fundamental aspects of psychopharmacology.</td>
</tr>
</tbody>
</table>

1. How confident are you in your overall knowledge and education of psychopharmacology?

- 0- Not at all Confident
- 1- Slightly Confident
- 2- Somewhat Confident
- 3- Fairly Confident
- 4- Completely Confident

2. How confident are you in your overall knowledge of the psychological effects that psychotropic drugs can have?

- 0- Not at all Confident
- 1- Slightly Confident
- 2- Somewhat Confident
- 3- Fairly Confident
- 4- Completely Confident

3. How confident are you in your overall knowledge of the responsiveness and side effects that psychotropic drugs can have?

- 0- Not at all Confident
- 1- Slightly Confident
- 2- Somewhat Confident
- 3- Fairly Confident
- 4- Completely Confident
4. How confident are you in your overall knowledge of the behavioral toxicity that can occur with psychotropic drugs?

- 0 - Not at all Confident
- 1 - Slightly Confident
- 2 - Somewhat Confident
- 3 - Fairly Confident
- 4 - Completely Confident

5. How confident are you in your overall knowledge of the interaction of medical drugs with behavioral variables of psychotherapy that can occur with psychotropic drugs?

- 0 - Not at all Confident
- 1 - Slightly Confident
- 2 - Somewhat Confident
- 3 - Fairly Confident
- 4 - Completely Confident

6. How confident are you in your ability to seek out resources related to psychopharmacological treatments?

- 0 - Not at all Confident
- 1 - Slightly Confident
- 2 - Somewhat Confident
- 3 - Fairly Confident
- 4 - Completely Confident

7. How confident are you in your access to seek out resources related to psychopharmacological treatments?

- 0 - Not at all Confident
- 1 - Slightly Confident
- 2 - Somewhat Confident
- 3 - Fairly Confident
- 4 - Completely Confident
Pre-Test QR Code and Link
https://forms.gle/yLfA9EL4KbJsyM5i8

Post-Test QR Code and Link
https://forms.gle/r9D3jKThYKpPsFbk8
Appendix E. Gap Analysis

<table>
<thead>
<tr>
<th>Problem</th>
<th>Evidence shows that psychologists with non-prescribing capabilities are not often trained or educated about the very medications that their clients are often taking. There is no standardized practice for psychology students in training gaining their hours aside from assigned supervision hours to be completed with patients and supervisors.</th>
</tr>
</thead>
</table>
| Goals | 1. Increase confidence of non-prescribing mental health practitioners about psychopharmacology  
2. Increase knowledge of non-prescribing mental health practitioners about psychopharmacology  
3. Provide interdisciplinary space to foster cross collaboration between prescribing and non-prescribing providers to increase interdisciplinary care |
| Gap | If education is provided to bridge the gap and promote interdisciplinary conversations between those with prescribing capability and knowledge, the likelihood for understanding and supporting clients who are undergoing talk therapy and psychopharmacologic treatment yields more cohesive patient care. |
| Implementation | An educational presentation was provided to 8 psychologists working in outpatient private practice setting in the Southern California region were provided. A pre-and post-survey were provided to assess utilization and necessity of pharmacologic education. In addition, a toolkit containing this information as well as weekly interdisciplinary team meetings, subjects and further opportunities for cross collaboration were established as part of their supervision. |
| Evaluation | In efforts to quantify the outcomes of the implementation of the project, a 10 quantitative pre and posttest were provided to each non-prescribing physician. Multiple opportunities for clinicians to provide feedback were also included as part of the periodic meetings and between the presentation to implement said feedback. Feedback was also collected at the conclusion of each pre and posttest which were each administered via a Google survey. |
Appendix F. Stakeholder Analysis

- Co-Founders
- Prescribers
- Psychologists
- Support Staff
- Patients
- Monitor
- Keep Informed
- Manage Closely
- Keep Satisfied
## Appendix G. GANTT Chart

<table>
<thead>
<tr>
<th>Course of Events</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess need for a project implementation at clinical site</td>
<td>Jan</td>
<td>Jun</td>
</tr>
<tr>
<td>Literature Search Process for DNP Project</td>
<td>Feb</td>
<td>Aug</td>
</tr>
<tr>
<td>Development of Project Goals and Objectives</td>
<td>Mar</td>
<td>Sep</td>
</tr>
<tr>
<td>Outreach Email sent to coordinate meeting with co-founders</td>
<td>Apr</td>
<td>Oct</td>
</tr>
<tr>
<td>Initial Meeting with Co-founders to Express Project Interest</td>
<td>May</td>
<td>Nov</td>
</tr>
<tr>
<td>Approval of Project by Co-Founders (Approval Letter)</td>
<td>Jun</td>
<td>Dec</td>
</tr>
<tr>
<td>Approval of Project by Dr. Radaza University Chair</td>
<td>Jul</td>
<td>Jan</td>
</tr>
<tr>
<td>Initial Meeting to meet with psychologists</td>
<td>Aug</td>
<td>Feb</td>
</tr>
<tr>
<td>Research for Educational Presentation</td>
<td>Sep</td>
<td>Mar</td>
</tr>
<tr>
<td>Creation of Educational Presentation</td>
<td>Oct</td>
<td>Apr</td>
</tr>
<tr>
<td>Creation of Pre and Post Tests</td>
<td>Nov</td>
<td>May</td>
</tr>
<tr>
<td>Implementation of Educational Presentation/Tests</td>
<td>Dec</td>
<td>Jun</td>
</tr>
<tr>
<td>Gathering and compiling of Data/Results</td>
<td>Jan</td>
<td>Jul</td>
</tr>
<tr>
<td>Creation of resource space for continued access</td>
<td>Feb</td>
<td>Aug</td>
</tr>
<tr>
<td>Meeting to share results and resource library with team/co-founders</td>
<td>Mar</td>
<td>Sep</td>
</tr>
<tr>
<td>Writing of Dissertation and Thesis</td>
<td>Apr</td>
<td>Oct</td>
</tr>
<tr>
<td>Cumulative DNP Presentation to University Department Chair(s)</td>
<td>May</td>
<td>Nov</td>
</tr>
</tbody>
</table>
Educating Providers without prescriptive authority about Psychopharmacology

PMHNP Student

Development of a Pre/Post Test

Assess Knowledge

Assess Confidence

Present Training

Development of an Educational Presentation about the basics of Psychopharmacology

Provide Resources for further viewing/knowledge

Evaluation of the Presentation

Collect and compile quantitative data from pre/post test

Collect and compile qualitative data and feedback from pre/post tests

Create visuals to support data analysis

Create visuals to support data analysis

Present Findings
## Appendix I. Responsibility and Communication Matrix

<table>
<thead>
<tr>
<th>Communication</th>
<th>Purpose</th>
<th>Medium</th>
<th>Frequency</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting with program advisor</td>
<td>Introduce project and review objectives and goals; assure aligns with university goals</td>
<td>Via zoom</td>
<td>Once</td>
<td>Program advisor and chair Dr. Radasa</td>
</tr>
<tr>
<td>Stakeholder meeting</td>
<td>Introduce project and review objectives and goals; gain support from co-founders of company</td>
<td>Via Zoom</td>
<td>Once</td>
<td>Co-Founders of CALA Psychological Services</td>
</tr>
<tr>
<td>Introduction to Psychologists and non-prescribing clinician team</td>
<td>Build trust and initial fostering of relationship</td>
<td>Via Zoom</td>
<td>Once, during weekly company meeting</td>
<td>Psychologists and non-prescribing clinical team</td>
</tr>
<tr>
<td>Project Educational Presentation</td>
<td>Completion of project; pre and post tests</td>
<td>Via Zoom</td>
<td>Once, during weekly company meeting</td>
<td>Psychologists and non-prescribing clinical team</td>
</tr>
<tr>
<td>Project Findings, Data and Feedback</td>
<td>Results of project; pre and posttests. Incorporation of materials into resource aid for group.</td>
<td>Via Zoom</td>
<td>Once, during weekly company meeting</td>
<td>Psychologists and non-prescribing clinical team</td>
</tr>
</tbody>
</table>
### Appendix J. SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
</table>
| - Sustainable and low overall cost.  
- Use of digital mediums of distribution which the company already had implemented prior to the project  
- Unlimited access to presentation  
- Established rapport with presenter as is current student completing clinical hours at company | - Project outcomes are only as good as the providers using, reinforcing, and ultimately dedicating time to learn the information  
- Previous provider education and interest on the topics varies; varied enthusiasm to learn |

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
</table>
| - Initiation of resource space for providers expanded by the contributions of providers according to their expertise and knowledge  
- Opportunity for providers to implement their knowledge and education to other members of the team. | - Psychopharmacology and the learnings provided in this project require time and continued education.  
- Providers may also benefit from continuous learning and presentations which requires allotted time |
Appendix K. Proposed Budget

<table>
<thead>
<tr>
<th>Proposed Budget</th>
<th>Per Item Cost</th>
<th>Amount/Hours Needed</th>
<th>Projected Cost</th>
<th>Actual Adjusted Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Excludes items provided by company)</td>
</tr>
<tr>
<td><strong>Material Items Cost Breakdown</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic Device (Every provider supplied their own device)</td>
<td>$350</td>
<td>9 (8 for participants, 1 for presenter)</td>
<td>$3,150</td>
<td>$0</td>
</tr>
<tr>
<td>WIFI/ Internet Access (Every provider supplied their own; budgeted here is an iPad)</td>
<td>$600/year</td>
<td>9 (8 for participants, 1 for presenter)</td>
<td>$5,400</td>
<td>$0</td>
</tr>
<tr>
<td>Thank-you cards sent to participants and co-founders</td>
<td>$1</td>
<td>10 (8 for participants, 2 for co-founders)</td>
<td>$10</td>
<td>$10</td>
</tr>
<tr>
<td>Pens</td>
<td>$1</td>
<td>10</td>
<td>$10</td>
<td>$10</td>
</tr>
<tr>
<td>Paper/journals for notetaking</td>
<td>$1</td>
<td>10</td>
<td>$10</td>
<td>$10</td>
</tr>
<tr>
<td>Zoom Professional Subscription (provided by the company)</td>
<td>$150/year</td>
<td>9 (8 for participants, 1 for presenter)</td>
<td>$1,350</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Time Cost Breakdown</strong> (Aside from clinical and student hours)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment of need for project at clinical site</td>
<td>$65</td>
<td>35</td>
<td>$2,275</td>
<td>$2,275</td>
</tr>
<tr>
<td>Meeting with Co-Founders (Initial)</td>
<td>$65</td>
<td>2</td>
<td>$130</td>
<td>$130</td>
</tr>
<tr>
<td>Introductory meeting to introduce student/project to psychologists</td>
<td>$65</td>
<td>1</td>
<td>$65</td>
<td>$65</td>
</tr>
<tr>
<td>Research for Educational Presentation</td>
<td>$65</td>
<td>15</td>
<td>$975</td>
<td>$975</td>
</tr>
<tr>
<td>Creation of Educational Presentation</td>
<td>$65</td>
<td>2</td>
<td>$130</td>
<td>$130</td>
</tr>
<tr>
<td>Creation of Pre and Post Tests</td>
<td>$65</td>
<td>2</td>
<td>$130</td>
<td>$130</td>
</tr>
<tr>
<td>Project Implementation/Presentation</td>
<td>$65</td>
<td>2</td>
<td>$130</td>
<td>$130</td>
</tr>
<tr>
<td>Gathering of Data/Results</td>
<td>$65</td>
<td>5</td>
<td>$325</td>
<td>$325</td>
</tr>
<tr>
<td>Creation of resources for continued access/resource library</td>
<td>$65</td>
<td>2</td>
<td>$130</td>
<td>$130</td>
</tr>
<tr>
<td>Meeting time to share results with team/gather feedback</td>
<td>$65</td>
<td>2</td>
<td>$130</td>
<td>$130</td>
</tr>
<tr>
<td><strong>Project Total</strong></td>
<td></td>
<td></td>
<td><strong>$14,350</strong></td>
<td><strong>$5,800</strong></td>
</tr>
</tbody>
</table>
Appendix L. PDSA Cycle

- Implement educational presentation to increase knowledge of psychopharmacology among non-prescribers
- Cross collaborate members on the team
- Gather and compile data from the pre and post tests
- Survey trends in data compiled and insight gleaned from project
- Create action plan to present to advisor and co-founders
- Create educational presentation
- Create pre and post test
- Include opportunity for feedback
- Curate educational presentation based on gap analysis of company
- Update resource library available post presentation to providers
- Implement educational presentation to increase knowledge of psychopharmacology among non-prescribers
- Cross collaborate members on the team
Appendix M. Survey Results: Pre-Test Responses

1. How confident are you in your overall knowledge and education of psychopharmacology?
   8 responses

   - 25%: 0- Not at all Confident
   - 37.5%: 1- Slightly Confident
   - 37.5%: 2- Somewhat Confident
   - 25%: 3- Fairly Confident
   - 0%: 4- Completely Confident

2. How confident are you in your overall knowledge of the psychological effects that psychotropic drugs can have?
   8 responses

   - 50%: 0- Not at all Confident
   - 25%: 1- Slightly Confident
   - 25%: 2- Somewhat Confident
   - 0%: 3- Fairly Confident
   - 0%: 4- Completely Confident
3. How confident are you in your overall knowledge of the responsiveness and side effects that psychotropic drugs can have?
8 responses

4. How confident are you in your overall knowledge of the behavioral toxicity that can occur with psychotropic drugs?
8 responses

5. How confident are you in your overall knowledge of the interaction of medical drugs with behavioral variables of psychotherapy that can occur with psychotropic drugs?
8 responses
8. Any additional comments or questions? 8 responses

Please make interactive presentation. Thank you.

interesting topic, never thought of learning more.

Will we have access to the presentation afterward? Where can we learn more?
Will there be other presentations like this?
How can we contact you if we have other questions?
looking forward to this.
such an interesting topic
I want to learn more about this.
Appendix N. Survey Results and Feedback: Post-Test Responses

1. How confident are you in your overall knowledge and education of psychopharmacology?
   8 responses

   - 62.5%: Completely Confident
   - 25%: Fairly Confident
   - 12.5%: Somewhat Confident
   - 0%: Slightly Confident
   - 0%: Not at all Confident

2. How confident are you in your overall knowledge of the psychological effects that psychotropic drugs can have?
   8 responses

   - 62.5%: Completely Confident
   - 25%: Fairly Confident
   - 12.5%: Somewhat Confident
   - 0%: Slightly Confident
   - 0%: Not at all Confident
3. How confident are you in your overall knowledge of the responsiveness and side effects that psychotropic drugs can have?
8 responses

4. How confident are you in your overall knowledge of the behavioral toxicity that can occur with psychotropic drugs?
8 responses

5. How confident are you in your overall knowledge of the interaction of medical drugs with behavioral variables of psychotherapy that can occur with psychotropic drugs?
8 responses
6. How confident are you in your ability to seek out resources related to psychopharmacological treatments?
8 responses

7. How confident are you in your access to seek out resources related to psychopharmacological treatments?
8 responses

8. Any additional comments or questions?
8 responses

super helpful! thanks
it’s great to have you on the team
THANK YOU
this was great, thank you for the resources
I hope we can do this again soon in group
I appreciate you sharing this information and taking the time. It’s important for the work we do with clients.
Many of my clients are on medication. This was a good starting point and now I feel I have more curiosity about the topic.
We should continue doing sessions like this; it’s engaging when it is interactive.
Appendix O. Bar Graph Indicating Confidence Levels on Pre and Post Test
Appendix P. Pre-Test Qualitative Results: Thoughts and Comments Word Cloud
Appendix Q. Post-Test Qualitative Results: Thoughts and Comments Word Cloud
Appendix R. Educational Presentation

Psychopharmacology Overview
By Olivia Ceja RN, MSN, CNL, PHN, DNP-C

Pre-Test Completion
https://forms.gle/yLIA9EL4KhJayMm8B

What is your comfort food?

Outline
1. Neurophysiology
2. Neurotransmission: The Big 6
3. Overview: Mental Disorders
   a. Depression
   b. Bipolar Illness
   c. Anxiety Disorders
   d. Psychotic Disorders
4. Responses/Questions

Neurotransmission
- A chemical response which triggers or modulates action potential in the nervous system
- Potential sites of neurotransmitters are:
  a. Pre-synaptic
  b. Receptor
  c. Reuptake
  d. Diffusion away from the synapse
- Binding to receptors
- Pharmacological agents which: expand neurotransmitters, block them, or prolong their destruction or reuptake
  a. Drugs all affect-ifiers at various stages of neurotransmission: 5-HT, dopamine, EP}
Neurotransmitters: The Big Six

1. Dopamine [Action for Reward]
   - What is it?
     - Regulation of motor behavior, pleasure
     - Related to motivation and also emotional arousal
   - What are its uses?
     - Ex. Reward
     - Ex. Lesions — converted to Depressant in the brain
     - Ex. Parkinson’s — stage dopamine from being taken down before reaching brain
     - Dopamine treat: lathias, depression, motor function, bipolar disorders, Parkinson’s
   - Agonists (which slow up dopamine) used to treat:
     - Parkinson
     - Mood and anxiety
     - Alcoholism treatment

2. Norepinephrine [Fight or Flight]
   - What is it?
     - Involved in arousal, learning, and mood regulation
     - Activated with stress response
     - Involved in the release of NE
     - Involved in the release of epinephrine
     - Shunts supply to muscle increased
     - Shuts brain down
     - Reacts very quickly
     - Mainly brain and help for action
   - What are its uses?
     - Ex. Amphetatine
     - Used for those who need motivation or engagement
     - Ex. Depression, failure to focus, mood disorders
     - Now antidepressants
     - Ex. Norflex
     - Enhances attention and memory function
     - Side effects: chest tightness, drowsiness

3. Acetylcholine [Rest and Digest]
   - What is it?
     - Controls movement to muscles
     - Enhances pupil dilatation
     - Hot = anticholinergic, self-expansion, go
     - Helps rest and form memories
     - Helps control
   - What are its uses?
     - Ex. Anticholinergics
     - In dementia, anticholinergics or cholinergic drugs are used (anticholinergic — ex. donepezil)
     - Drugs that affect cholinergic systems can have very dangerous effects ranging from paralytic to convulsions

4a. GABA [Main Off Dimmer]
   - What is it?
     - Gamma-Aminobutyric Acid: Ability to turn off
     - Ex. Benzodiazepine
   - What are its uses?
     - Ex. Benzodiazepine
     - Anticonvulsant medication
     - Analgesic
     - Chronic pain (opioids) but are self-limiting and halving their own pain response like acetaminophen
     - For pain that is pain killer (sedative properties)

4b. Glutamate [Main On Dimmer]
   - What is it?
     - Excitable neurotransmitter
     - Activates neurons
   - What are its uses?
     - Ex. Nucleus accumbens
     - For manipulation of glutamate levels in different areas of the brain
     - Ex. Nucleus accumbens
     - For manipulation of glutamate levels in different areas of the brain
5. Serotonin (Feel Good/Euthymic)

What is it?
- Used by cells in parts of the brain involved in the regulation of sleep, mood and eating
- Mask is produced by and found throughout the intestines (approximately 98%)
- 
  - 5-HT1A: Inhibits serotonergic transmission
  - 5-HT2A: Agonist for serotonin levels

Functions in appetite, appetite, sleep, memory, learning, temperature, mood, behavior, mood, excitement, and function of the CNS and endocrine system.

What is in it?
- 5-HT
- 5-HT1A: Synapses Serotonergic/Neurotransmitter inhibition
- Neurons of Origin: 5-HT receptor system
- Neurons in Thalamus: Stimulate appetite
- Serotonin in the amygdala
- Important

- Serotonin Synapse: Euphoria
  - 5-HT neuronal activities
  - Serotonin with dopamine
- 5-HT neuronal activities
- Its effects on the generation of serotonin in the CNS and endocrine system.

6. Endorphins (Endogenous Morphine)

What is it?
- Natural opiate receptors and endogenous pain relief
- Inhibit the transmission of pain signals
- Protects the body from pain

Uses: WRIST-motion if necessary
- Opioids are a class of drugs that are used to relieve pain.
- Opioids are used to treat chronic pain, acute pain, and to manage pain following surgery.

What is in it?
- Opioids
- Synthetic opioids are highly addictive and may lead to opioid dependence.
- Natural opioids are derived from opium poppy plants.

Depression

Treatment
- 1. Antidepressants (SSRIs)
- Serotonin (SSRI): Inhibits the reuptake of serotonin
- Increased activity of serotonin in the brain

Important for PRU: Know
- Change weight gain, possible suicidal ideation
- Inhibits the reuptake of serotonin
- Increased activity of serotonin in the brain
- Increased activity of serotonin in the brain

Overview: Medications + Disorders

- Depression
- Bipolar Illness
- Anxiety Disorders

Bipolar Illness

Treatment
- Two pillars: Lithium carbonate and 2 mood stabilizers
- Lithium carbonate: Used to treat episodes of mania and depression
- Mood stabilizers: Used to treat episodes of mania and depression

Important for PRU: Know
- Treatment: Lithium carbonate and mood stabilizers
- Treatment: Lithium carbonate and mood stabilizers
- Treatment: Lithium carbonate and mood stabilizers

Anxiety Disorders

Treatment
- No single treatment approach for all anxiety disorders
- Generalized Anxiety Disorder: Benzodiazepines
- Panic Disorder: Serotonin reuptake inhibitors
- Social Anxiety Disorder: Serotonin reuptake inhibitors

Important for PRU: Know
- Benzodiazepines
- Serotonin reuptake inhibitors
- Social Anxiety Disorder:
- Generalized Anxiety Disorder:
Psychotic Disorders

**Treatment**
- All antipsychotic medications equally effective in ability to reduce positive symptoms
  - Haloperidol or other cholinergics
- Benzodiazepines or mirtazapine

**Disadvantages**
- Parenteral (intramuscular) side effects
- Nausea, dry mouth, sedation
- Agranulocytosis, pancreatitis
- Blood dyscrasias

**Important Points to Know**
- More side effects, especially sedation
- Can be euphoric; may not always reported by patients
- If increase and not treatable, increases risk of non-compliance
- If you notice an increase of restlessness or increase in pain, it is just brainstorming or may not be the wrong thing to be treated
- Avoid polyps and thought as more antipsychotic (more pharmacology)
- Increased appetite, weight, and “puffy” appearance
- Signs of malnourishment
- Cognitive dysfunction, memory, or agitation
  - May be misidentified as negative symptoms

Differential Diagnostics: Medical Mimics

What are some physical, bodily manifestations of anxiety?

Anxiety Symptoms

- Racing heart
- Nausea
- Dizziness
- Lightheadedness
- Cold chills
- Dizziness
- Shortened or irregular breaths
- Dizziness
- Body jitters
- Rapid heart
- Frequent urination
- Frequent urination
- Frequent urination
- Frequent urination
- Frequent urination
- Frequent urination
- Frequent urination

Differentiating the Diagnosis

- May be multifactorial
- In presentation of psychiatric symptoms: physical
- Is psychiatric presentation clinical manifestation of physical illness or substance use?
Labs/Diagnostic Testing: “Rule Out”

- Pulse Oximetry
- Chemistry Panel: electrolytes, blood glucose, liver function tests, blood urea nitrogen, creatinine
- Assessment of therapeutic drug levels
- Urinalysis
- Blood Alcud level
- CBC
- Urine analysis
- Thyroid functioning test
- Electrolyte supplementation rule of thumb observation
- Rapid plasma reagins (RPR) rule of thumb
- HIV, AIDS screening

Pulse Oximetry

- A pulse oximeter measures how much light is absorbed by your blood.
  - It works on the principle that when arteries supply oxygen to the body, the blood becomes a bright red color.

- Used to identify early hypoxia in patients and evaluate the effectiveness of oxygen therapy.
  - Hypoxia and hypoxemia trigger the long-term systemic response (LTSR), which might contribute to brain damage in the absence of blood flow.
  - Conditions during pregnancy and birth, such as birth asphyxia, the shortage of oxygen in the body, are associated with an increased risk for encephalopathy.

Electrolytes

- Electrolytes conduct nerve signals and regulate fluid balance in the brain.
  - Electrolytes may cause neurological disorders that manifest as functional disturbances.
  - Electrolyte levels may accompany hypovolemia, hypokalemia, hypomagnesemia, or hyponatremia.

- Sodium: regulates amount of water in the body. Where sodium goes, water goes (unlike electrolytes).
  - Hypo-: kidney disease, diabetes, adrenal, obesity, fatigue
  - Hyper-: kidney disease, diabetes, adrenal, obesity, burnout

- Potassium: electrical signals in cells carried through kidneys
  - Electrolyte imbalance, fatigue, weakness, or tingling in hands and feet.

- Calcium: Conducts electrical signals, aids in muscle contraction and blood clotting.
  - Calcium is essential for proper muscle function, nerve transmission, and cell communication.

- Magnesium: Expects Rhythm and energy for cells
  - Common deficiency symptoms: muscle weakness, cramps, fatigue, irritability.

- Phosphate: ATP production or energy for cells
  - Common deficiency symptoms: muscle weakness, cramps, fatigue, irritability.
Blood Sugar
- Changes in blood sugar levels can affect a person's mood and mental status.
  - Fluctuations in blood glucose can result in rapid mood changes, including, anxiety and irritability.
  - "Hot and dry, sugar high."
  - "Cold and clammy, need some candy."

Cardiac Conditions
- Depression, anxiety, and PTSD can develop after cardiac events, including heart failure, stroke, and heart attack.
- Affective recovery and increases the risk of further heart attacks.
- Heart attack patients with depression are often less motivated to follow healthy daily routines, which means they may ignore important medications, avoid exercise, and proper diet, and continue harmful behaviors such as smoking and drinking alcohol.
- Recent studies show anxiety may also be a risk factor for heart disease, possibly due to the link between anxiety and unhealthy lifestyles.
- **STATE**
  - Depression: it's more likely after CPT intervention.
  - 36–58% of post heart attack patients meet criteria for MDD, even higher in younger women.

Medical Mimics
**Examples**

UTI's
- "Silent UTI": an asymptomatic, low-grade, often-brief UTI produces changes in behavior.
  - Increased urination, dryness.
  - The patient is found and identified by other culture (using clinic room space).
  - Most common broad-spectrum (levofloxacin, ceftriaxone).
  - Acute UTI: NVD, can't use, difficulty changing.

Thyroid
- Can cause delusions and visual hallucinations.
  - Or course (VHS) lesion
  - Most common Med: Lichenoid + Haiperthyroid (paranoid symptoms)
  - Thymus, thyroid cancer, or other problems in thyroid area (thy.)
  - Hypothyroid (with autoimmune problems or relatives with hypothyroidism)
Lyme Disease
- Bacterial infection you get from the bite of an infected tick. Infections are spread to your joints, heart, and nervous system.
  - Symptoms:
    - Fever
    - Rash
    - Fatigue
    - Arthritis
    - Encephalopathy
- Lyme spirochetes damage nerve cells, trigger inflammation, release cytokines, and disrupt the balance of brain chemicals.

Lupus Erythematosus
- Autoimmune disease; body’s immune system attacks your own tissues and organs.
  - Psychiatric Manifestations:
    1. Cognitive Dysfunction
    2. Mood Disorder
    3. Anxiety Disorder
    4. Psychosis
    5. Acute Confusional State

BPS Recovery

Post-Test Completion
https://forms.gle/r9D8jKThYKpPmF6k8