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Bridging the Gap: Psychopharmacologic Education and Side Effect Screening for Non-Prescribing Mental Health Professionals

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Abstract

Problem: The United States is experiencing a growing demand for pediatric mental health support. Surges in mental health diagnoses and psychotropic medication prescriptions have occurred, compounded by a shortage of psychiatric providers. Non-prescribing mental health professionals are well-positioned to recognize psychotropic medication side effects. However, psychologists and counselors lack formal pharmacology education.

Methods: The quality improvement (QI) initiative was guided by the Plan-Do-Study-Act (PDSA) model. The evidence-based psychopharmacologic education for non-prescribers utilized a quasi-experimental pre- and post- test design. Data collected from clinicians included knowledge, confidence, and skill concerning psychotropic medications. The Psychotropic Medication Monitoring Checklist (PMMC) screen clients aged 3-17 years presenting to an outpatient multidisciplinary clinic within an eight-week period. Data collected from clients included age, race, gender, and number of psychotropic medications prescribed. Clinicians use the PMMC to identify medication side effects and subsequent care collaborations with caregivers and/or prescribers.

Results: The brief education was statically significantly in improving clinician knowledge, confidence, and skill about psychotropic medications in eight out of nine measures, and all survey results proved clinically significant. Seven clients were screened with the PMMC for psychotropic medication side effects, resulting in the identification of eight medication side effects and two interdisciplinary care collaborations.

Implications for Practice: Psychopharmacology education and screening for non-prescribing mental health professionals could increase clinical knowledge and care collaboration.

Psychopharmacologic Education and Side Effect Screening for Non-Prescribing Mental Health Professionals

In the United States, children and adolescents are experiencing an increasing need for mental health support. According to the Centers for Disease Control and Prevention (CDC), one in six children, aged 2-8 years, have a diagnosed mental health disorder (Centers for Disease Control and Prevention [CDC], 2023a). Between 2016 and 2020, rates of childhood anxiety and depression grew by 29% and 27% respectively (CDC, 2023a). The COVID-19 pandemic has exacerbated these rates and alarming counts of youth suicide have emerged. The 2021 National Survey on Drug Use and Health reported suicide as the second leading cause of death for children aged 10-14 years CDC, 2023b). These frightening statistics illuminate the need to strengthen mental health support for our nation's youth.

The rise in pediatric mental health conditions has led to increases in psychotropic medication use. According to a national multi-payer pharmacy claims database, a statistically significant rise (+20,110 patients/month, $p = 0.003$) in psychotropic medication prescriptions occurred March 2020 to June 2022 (Sanborn et al., 2023). The 2021-2022 National Survey on Children's Health reported 8.6% of U.S. youth aged 3-17 years take medication for mental health, compared to 7.6% in 2019 (Child and Adolescent Health Measurement Initiative, 2023). Unfortunately, psychotropic medication non-adherence is consistently reported at high rates, complicating treatment outcomes. Several authors reported medication side effects, insufficient patient provider communication, and poor health literacy as leading factors of psychotropic medication non-adherence (Baryakova et al., 2023; Semahegn et al., 2020).

Additionally, access to pediatric psychiatric services varies by location with more than 150 million individuals residing in federally designated mental health professional shortage regions (Pheister et al., 2022). Many rural areas lack a single mental health provider, and researchers estimate the country will lack 32,000 psychiatrists within the coming years (Pheister et al., 2022). The scarcity of mental health providers leads to decreased access to care, greater wait times between appointments, and reduced quality of care.

Several first line treatments for psychiatric conditions include the simultaneous use of psychotropic medication and psychotherapy. Because psychotherapists and other non-prescribing mental health professionals see patients more frequently than prescribing providers, they are well-positioned to recognize medication side effects and enhance medication adherence (Marvasti et al., 2018). However, recent data shows that pediatric non-prescribing mental health professionals lack knowledge about psychotropic medications which may result in decreased medication adherence, increased duration of care, and increased cost of treatment (Foltz et al. 2023; Tomba et al., 2018). Improving psychopharmacologic knowledge of non-prescribing mental health providers may increase care collaboration, patient satisfaction, and medication adherence while decreasing the length and cost of care (Shahidullah at al., 2018).

In a multidisciplinary pediatric mental health clinic, an opportunity for improvement in psychotropic medication knowledge and side effect screening among pediatric clinicians presented itself. The instance occurred at an urban mental health facility specializing in play therapy, occupational therapy, and speech therapy. Clinicians at the facility express a desire for psychotropic medication knowledge. The facility lacks

policies to track medication side effects, adherence, and methods of communicating with prescribing providers. A quality improvement (QI) initiative at the facility was guided by the Institute for Healthcare Improvements Model of Improvement using the PDSA cycle. The purpose of the initiative was to evaluate the effectiveness of a brief psychopharmacologic education session and the use of the PMMC on side effect identification and interdisciplinary care collaboration. The aim is to improve the monitoring of psychotropic medication side effects by 30% in a multidisciplinary setting through education and the PMMC within an eight-week period. The primary outcome is the identification of psychotropic medication side effects in pediatric patients. The secondary outcome is the number of interdisciplinary collaborations between therapist, caregivers, and prescribing providers. The third outcome measure is the effectiveness of psychopharmacologic training on therapist knowledge, skills, and confidence. The study question is: Among non-prescribing pediatric mental health professionals, how does psychopharmacologic education and side effect screening, when compared to standard care, affect side effect identification and interdisciplinary communication within an eight-week period?

Review of Literature

The following search engines were utilized in the literature search, CINAHL, PubMed, APA PsycINFO, and MEDLINE. Key search terms and phrases included *play therapist, psychopharmacology, side effect(s), collaboration, therapy, psychotropic medication, psychotropic drugs, children, adolescent, youth, child,* and *teenager.* Boolean operators AND and OR accompanied the search, and the total number of initial publications generated was 770. To refine the search, inclusion criteria included studies

from 2018-2023, peer reviewed, academic journals, and published in the English language. The CINAHL search utilized the major subheadings *antipsychotic agents, psychopharmacology, mental disorders, psychiatry, psychotic disorders, psychotropic drugs, antidepressive agents, autistic disorder, bipolar disorder, psychiatric patients, treatment outcomes, adolescent psychiatry, child psychiatry, fluoxetine, health care delivery, mental health, mental health services, nursing practice evidence, pharmacogenetics, practice guidelines, prescriptions, drug, psychiatric nursing, advanced practice registered nurses, adverse childhood experiences,* and *anxiety disorders*. Exclusion criteria consisted of case studies and dissertations. The number of publications generated after inclusion and exclusion criteria totaled 118. Abstracts from these articles were reviewed and 11 publications were selected for the literature review.

One concept to emerge in the reviewed literature was psychotropic medication non-adherence. Psychotropic medication compliance is a fundamental but challenging aspect of managing patients with psychiatric disorders. Studies investigated medication adherence rates among patients with depression. The authors found 30-60 percent of patients stopped their antidepressant within three months, leading to relapse, symptom recurrence, poor psychosocial outcomes, and increased rates of suicide (Solmi et al., 2021). Similar negative outcomes of medication non-adherence were found in a 2020 systematic review, including illness exacerbation, reduced treatment effectiveness, re-hospitalization, poor quality of life, increased comorbidities, depletion of health care resources, and increased suicide rates (Semahegn et al., 2020). Reasons for medication non-adherence include individual, clinical, and health system related factors. Aspects that hindered adherence were lack of psychotherapy, long-treatment duration without

adequate follow up, inadequate/lack of medication knowledge among health professionals, poor therapeutic alliance, and decreased access to psychotropic medications (Semahegn et al., 2020). Several strengths in the systematic review were findings similar to like studies and the use of sound scientific methods. The study by Solmi and colleagues provided recommendations for future studies and suggestions for collaboration among mental health professionals (Solmi et al, 2021). These results should be interpreted with caution due to the risk of selection bias and lack of explanation regarding the formulated recommendations.

The second theme to emerge in the literature was inadequate psychopharmacology training in mental healthcare. Despite the common use of psychiatric medications, most psychology and psychotherapy academic programs do not require a psychopharmacology course. The American Psychological Association (APA) evaluated the number of APA-accredited doctor of psychologist programs with a required psychopharmacology course. Sixty-six of 216 programs required a psychopharmacology course in their curriculum, leading to significant knowledge gaps in training programs (Foltz et al., 2023). Furthermore, psychotherapists reported high numbers of patients taking psychotropic medications (80.9%), asking questions about medications (86.9%), and conversing with the therapist about stopping or withdrawing from medications (92.8%) (Blair et al., 2021). Therapists reported feeling underprepared when supporting clients taking psychotropic medications and welcomed professional guidance on caring for these patients (Blair et al, 2021). These studies identified gaps in knowledge for psychotherapists, but the study holds limitations including risk of response bias and researcher bias.

Several authors evaluated the success of psychopharmacologic training programs on behavioral health professionals and caregivers. Brief and interactive training sessions led to increased knowledge, interprofessional collaboration, identification of medication side effects, and better treatment outcomes (Dahl et al, 2020; Cox et al., 2022). Psychopharmacologic education of parents and teachers who care for children with attention-deficit/hyperactive disorder (ADHD) improved medication adherence which resulted in fewer ADHD symptoms (Dahl et al., 2020). Cox and colleagues discovered psychopharmacologic training sessions for behavioral analysists positively contributed to interdisciplinary care collaboration (Cox et al., 2022). Both studies included recommendations for future research, although results are limited by response bias and small sample sizes.

The 2018 article *Psychopharmacology for Play Therapists* illuminated the importance of psychopharmacologic training for non-prescribing mental health clinicians (Marvasti et al., 2018). The author provided a psychotropic educational framework for play therapists and ways play therapy can be tailored in response to medication side effects. Marvis et al. highlighted several mental health disorders, an update of psychotropic medications, and common medication side effects. Marvis and colleagues provided a much-needed psychopharmacology update for play therapists, for 22 years had passed since literature was published on this topic.

In addition to training sessions, non-prescribing mental health professionals were evaluated on their use of the PMMC. The PMMC was developed to track psychotropic mediation side effects in children. Residential care staff in a tertiary mental health center utilized the PMMC over an eight-week session. Use of the PMMC significantly

influenced staff awareness about medication side effects and marginally improved interdisciplinary communication between staff and providers (Ninan et al., 2014). The researchers concluded that the PMMC is a useful educational monitoring tool for non-prescribing mental health staff and recommended its use in other healthcare settings. Ninan and colleagues' results are limited by pre-, post-test and self-report bias; but it provides ample suggestions for future research.

The Institute of Healthcare Improvement uses the Model for Improvement to investigate small scale changes via the Plan-Do-Study-Act (PDSA) cycles. The PDSA method consists of four steps: plan, do, study, and act. The *plan* phase includes a small and focused statement of what will be evaluated; the outcome to be achieved; a description of the population; and the length of the study (Agency for Healthcare Research and Quality [AHRQ], 2020). The *do* phase contains the study implementation, and the *study* phase analyzes results. Finally, the *act* phase learns from the cycle and recommends aspects for future cycles and settings (AHRQ, 2020). These cycles guide QI measures and allow for accelerated improvement in real work settings (Institute of Healthcare Improvement [IHI], 2023). The PDSA cycle will guide the quality initiative via project preparation and staff education, implementation of the PMMC, observation of the outcomes, and applying gathered knowledge to future patients/settings. The PDSA method will encourage use of the PMMC among similar organizations in hopes to identify mediation side effects and improve interdisciplinary collaboration.

In conclusion, the increased incidence of mental illness is rapidly becoming a public health crisis. The chronic shortage of mental health prescribers gives non-prescribing mental health clinicians opportunities to increase their knowledge and

interdisciplinary collaboration. Non-prescribing mental health clinicians are an essential part of the clinical team in any health care setting. The time patients spend with prescribing providers is brief in comparison to time spent with non-prescribing mental health care professionals. Therefore, non-prescribing health care personnel are well-positioned to recognize psychotropic medication side effects. The reviewed literature has identified a need for psychopharmacologic education for non-prescribing mental health professionals. Gaps in the literature include lack of psychopharmacology education and guidance for non-physician therapists, therapists' beliefs/self-bias regarding psychotropic medication, ways to improve interdisciplinary communication, and treatment adherence as an outcome (Marvasti et al., 2018; Blair et al., 2021; Dahl et al., 2020) The PDSA cycle will guide the QI initiative via educational planning, PMMC implementation, analyzation of results, and dissemination of study findings. With the proper education and tools, non-prescribing mental health clinicians will monitor and identify medication side effects, increase care collaboration, and improve patient outcomes.

Methods

Design

The evidenced based QI project was guided by the PDSA model. The purpose of the QI project was to evaluate the effectiveness of an evidence-based checklist on identifying psychotropic medication side effects, improving interdisciplinary collaboration, and improving clinician knowledge within an eight-week period. A quasi-experimental pre-, post-test design assessed clinician's knowledge, confidence, and skill of psychopharmacology. Convenience sampling during client sessions assessed psychotropic medication side effects using the PMMC. Clients were assessed for

psychotropic medication use and side effects as indicated by the PMMC. Clinicians documented identified side effects and communication with caregivers or prescribers. To protect client information, deidentified demographic information was used, including age, race, gender, and number of psychotropic medications prescribed.

Setting

The setting for the project implementation is Come Play, STL, a multidisciplinary pediatric center serving children and families in St. Louis. Come Play, STL provides play therapy, occupational therapy, and speech therapy to children of all ages, ranging from infancy to age 17. Come Play, STL serves children with anxiety, depression, bipolar disorders, sensory processing disorders, autism spectrum disorder, obsessive compulsive disorder, attachment issues, life transitions, and various learning disabilities. Currently, Come Play, STL has 15 employees: four occupational therapists, two psychological examiners, seven play therapists, one speech language pathologist, and one adult/couples' therapist. Come Play, STL performed 12,900 client sessions in 2023.

Sample

The client sample included all clients presenting to Come Play, STL. Inclusion criteria included clients aged 3-17 years taking psychotropic medications and receiving services from Come Play, STL. Exclusion criteria will include clients receiving services from Come Play, STL who are less than three years and greater than 17 years, and clients aged 3-17 years who are not taking psychotropic medications. The desired sample size is greater than 10 clients.

Implementation Plan

All clinicians at Come Play, STL were provided with a brief psychopharmacologic education guided by the Association for Play Therapy and a pre- and post-survey (Marvasti et al., 2018). The pre-, post-education survey (see Appendix A) collected perceived clinician confidence, knowledge, and skill regarding psychotropic medication effects and side effects. The survey assessed perceived level of confidence, knowledge, and skill on a scale of 1-5, with 5 indicating strong confidence, skills, and knowledge and 1 indicating low confidence, knowledge, and skill. The voluntary survey was given prior to and immediately after psychopharmacology education to assess changes in confidence, knowledge, and skill from baseline.

After the brief education, a second educational opportunity regarding PMMC instruction was offered. Clients were instructed on PMMC side effect screening, and when to notify caregivers or prescribers. The training was guided by the PMMC user manual. After participating in the two education sessions, clinicians completed the PMMC screening with each client once per session. If a common, infrequent, or rare but serious side effect was identified, the clinician will notify the caregiver. If a rare but serious side effect was identified, the clinician was encouraged to notify the caregiver and prescriber. Clinicians documented the number of psychotropic medication side effects identified and subsequent contact with caregivers or prescribers.

Data Collection/Analysis

Data collected and analyzed included clinician level of confidence, knowledge, and skill regarding psychopharmacology on a scale of 1-5, with 5 indicating strong confidence, knowledge, skill and 1 indicating low confidence, knowledge, and skill. The

survey was collected prior to and after the brief education session to assess a change from baseline.

To protect patient information, retrospective deidentified demographic information was collected, including age, race, gender, and number of psychotropic medications prescribed. The clinicians documented the number of psychotropic medications taken by the clients and any contact with caregivers or prescribers. The aforementioned information was documented on the study record document (see Appendix B). As the clinicians identified medication side effects, they were documented via the PMMC. The clinicians reported medication side effects to caregivers, and a copy of the PMMC was provided to the client/family if requested. The Statistical Package for the Social Sciences (SPSS) assessed pre- and post- knowledge gained via paired t-test; and descriptive statistics were gathered to account for identified side effects and care collaborations.

Results

Brief Psychopharmacology Education

The total number of non-prescribing mental health professionals participating in the brief pharmacological education was 11 (n = 11). The respondents consisted of eight (n = 8, 73%) play therapists and three (n = 3, 27%) pediatric occupational therapists. Of the 11 participants who completed the pre-education survey, 10 (91%) participants completed the post-survey resulting in an attrition rate of 9% (n = 1). The participant's confidence, knowledge, and skill were measured before and after the brief psychopharmacological education.

A paired samples *t*-test was conducted to compare confidence, knowledge, and skill of non-prescribing mental health professionals before and after the brief psychopharmacologic education session. The results show participants have an increased confidence discussing psychotropic medication with clients between the pre-test (*M* = 2.20, *SD* = 1.03) and post-test (*M* = 3.70, *SD* = 0.67); *t* (-4.03), *p* = .003. There was a significant difference indicated with participants reporting confidence answering questions about psychotropic medications with clients between the pre-test (*M* = 1.60, *SD* = 0.70) and post-test (*M* = 3.40, *SD* = 0.69); *t* (-5.01), *p* = <.001. Another significant difference was reported among respondents' confidence with identifying psychotropic medication side effects between the pre-test (M = 1.60, SD = 0.84) and post-test (M = 3.60, SD = 0.69); t (-6.71), p = <0.001 (Appendix C).

The results showed respondents had an increase in knowledge about psychotropic medications from the pre-test (*M* = 3.0, *SD* = 1.15) and post-test (*M* = 4.00, *SD* = 0.47) for *t* (-2.37), *p* = 0.04. Question five screened respondent knowledge regarding the justification for using psychotropic medications in children and adolescents. This was the only question where a statistically significant increase was not found. No significance was found in participant knowledge about the justification for use of psychotropic medications with child and adolescents between the pre-test (*M* = 3.60, *SD* = 0.96) and post-test (*M* = 4.5, *SD* = 0.53); *t* (-2.07), *p* = 0.07. The final measure of respondent knowledge showed a significant difference in knowledge about psychotropic medication effects and side effects between the pre-test (*M* = 2.90, *SD* = 0.99) and post-test (*M* = 3.90, *SD* = 0.32); *t* (-3.35), *p* = 0.01 (Appendix C).

The results showed increased skill discussing psychotropic medications with clients between the pre-test (M = 2.70, SD = 1.25) and post-test (M = 3.90, SD = 0.32); t (-3.09), p = 0.01. There was a significant difference in respondent skill answering client questions regarding psychotropic medications between the pre-test (M = 2.00, SD = 0.81) and post-test (M = 3.7, SD = 0.67); t (-5.08), p = <0.001. The final survey question indicated a significant difference in participant skill identifying psychotropic medications side effects in clients amid the pre-test (M = 2.40, SD = 1.07) and post-test (M = 4.00, SD = 0.47); t (-3.75), p = 0.005 (Appendix C).

The study aimed to increase identification of medication side effects by 30%, which was exceeded after comparison of pre-and post-test means. The post-test mean indicates a 42.3% increase in identifying psychotropic medication side effects in clients. The independent samples t-test revealed a significant difference in test scores between the pre-test survey (M = 2.4, SD =1.07) and post-test survey (M = 4.0, SD = 0.47), t = 3.75, p = .005. The effect size, measured by Cohen's d was d = 1.35 indicating a large effect.

PMMC Screenings

After completing the brief psychopharmacologic education, the non-prescribing mental health professionals had the opportunity to screen clients for medication side effects using the PMMC. There were seven (N = 7) clients screened over the eight-week study period. The sample of clients taking psychiatric medications consisted of seven (n = 7, 100%) male clients; six (n = 6, 85.7%) White clients, one ((n = 1, 14.3%) Black or African American client; and one (n = 1, 14.3%) five-year-old, one (n = 1, 14.3%) six-year-old, one (n = 1, 14.3%) seven-year-old, two (n = 2, 28.6%) eight-year-olds, one (n =

1, 14.3%) nine-year-old, and one (n = 1, 14.3%) 10-year-old (N = 7) (Appendix D, Table 2).

Within the sample, six clients were taking one psychiatric medication, and one client was taking two psychiatric medications (N = 7). The sample of clients taking psychiatric medications were screened for medication side effects, and one (n = 1, 14.7%) respondent reported one side effect, one (n = 1, 14.7%) respondent reported four side effects, and two (n = 2, 28.6%) respondents reported two side effects, (N = 7). Two interdisciplinary collaborations (n = 2, 28.6%) occurred following side effect identification (Appendix D, Table 3). Due to the small sample size of the study, all results should be interpreted cautiously.

Discussion

The literature emphasized the need for psychopharmacology education among pediatric non-prescribing mental health clinicians. This QI project aimed to improve clinician knowledge, confidence, and skill about psychotropic medications while increasing side effect identification and interdisciplinary collaboration. The brief psychopharmacologic education was effective at improving knowledge, confidence, and skill regarding psychotropic medications. Following the brief education, a significant increase occurred in respondent confidence discussing medications with clients (p = .003), answering client questions about medications (p < .001), and identifying medication side effects in clients (p < .001). There was a significant increase in respondent knowledge regarding psychopharmacology terminology (p = .04) and effects/side effects of psychotropic medications (p .008). There was no statistically significant change in respondent knowledge (p .07) regarding the justification for using

psychotropic medications in children and adolescents after the brief education, but the large effect size (Cohen's $d = 1.37$) was clinically significant. The brief education led to significant increase in respondent skill discussing medication with clients ($p = .01$), answering questions about medications ($p < .001$), and identifying medication side effects ($p = .01$).

The side effect screening of pediatric clients taking psychotropic medications resulted in the identification of eight ($n = 8$) medication side effects among the screened clients ($N = 7$). The side effect identification led to two ($n = 2$) interdisciplinary collaborations with prescribing providers. During the eight-week study period, seven clients were screened, falling short of the stated goal of screening at least 10 clients. During week one of the study, only one PMMC was completed. This led to increased correspondence with clinicians regarding their upcoming scheduled clients who are taking psychotropic medications. Notifying clinicians this way led to an increase in screened clients during week two of the study. This PDSA cycle could be improved during subsequent cycles by better understanding what motivates and deters clinicians from screening clients.

Several study limitations were identified. One limitation of the study included the required change from in-person psychopharmacologic education to an online education format via two prerecorded PowerPoints. The inability to provide real time education led to a loss of group dialog in the form of clinician questions, comments, or concerns. Future PDSA cycles can secure in person education so rapport can be gained, and study details can be discussed. Further limitations of the QI project included a short eight-week

study length due to coordination with the study site. Future PDSA cycles could be improved by earlier communication with the study site to extend client screening time. Another limitation was the small study sample size. Because the PMMC client screening was optional, there was little motivation for clinicians to screen clients. Future PDSA cycles may benefit from clinician incentives for screening patients, and/or required protocols for screening clients taking psychotropic medications.

Conclusion

This QI project provided psychotropic medication education for non-prescribing mental health professionals. The frequency of play and occupational therapist client meetings creates a necessary touchpoint in supporting patients taking psychotropic medications. Prior to the brief psychopharmacology education and PMMC screening, Come Play, STL had no formal method of monitoring patient medication side effects. The brief psychopharmacologic education improved clinician confidence, knowledge, and skill regarding psychotropic medications. The implementation of the PMMC screening provided clinician guidance in identifying medication side effects and direction for interdisciplinary collaboration.

References

Agency for Healthcare Research and Quality. (2020). *Health literacy universal precautions toolkit, 2nd ed.: Plan-Do-Study-Act directions and examples*. U.S. Department of Health and Human Services. Retrieved July 21, 2023, from https://www.ahrq.gov/health-literacy/improve/precautions/tool2b.html

Baryakova, T.H., Pogostin, B.H., Langer, R., & McHugh, K. J. (2023). Overcoming barriers to patient adherence: The case for developing innovative drug delivery systems. *Nature Reviews Drug Discovery, 22*, 387–409 (2023). https://doi.org/10.1038/s41573-023-00670-0

Blair, L., Heydon-Hatchett, V., Davies, G., Guy, A., & Davies, J. (2021).Therapists' perspectives on working with clients taking psychiatric drugs: Findings from a mixed-methods survey. *Counseling and Psychotherapy Research, 21,* 1008– 1020. https://doi.org/10.1002/capr.12403

Centers for Disease Control and Prevention. (2023a). *Children's mental health: Data and statistics*. U.S. Department of Health and Human Services. Retrieved June 27, 2023, from https://www.cdc.gov/childrensmentalhealth/data.html#ref.

Centers for Disease Control and Prevention. (2023b). *Preventing suicide*. U.S. Department of Health and Human Services. Retrieved June 28, 2023, from https://www.cdc.gov/suicide/pdf/NCIPC-Suicide-FactSheet-508_FINAL.pdf

Child and Adolescent Health Measurement Initiative. (2023). *2020-2021 National Survey of Children's Health (NSCH) data query*. Data Resource Center for Child and Adolescent Health supported by the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Maternal and

Child Health Bureau (MCHB). Retrieved June 30, 2023, from https://www.childhealthdata.org/browse/survey/results?q=9352&r=1

Cox, A. D., Davis, S., & Feldman, M. (2022). Medication training for behavior analysts. *Behavior Analysis: Research and Practice, 22*(1), 130–142. https://doi.org/10.1037/bar0000240

Dahl, V., Ramakrishnan, A., Spears, A. P., Jorge, A., Lu, J., Bigio, N. A., & Chacko, A. (2020). Psychoeducation interventions for parents and teachers of children and adolescents with ADHD: A systematic review of the literature. *Journal of Developmental and Physical Disabilities*, *32*(2), 257–292. https://doi.org/10.1007/s10882-019-09691-3

Foltz, R., Fogel, K., Kaeley, A., Kupchan, J., Mills, A., Murray, K., Pope, A., Rahman, H., & Rubright, C. (2023). The psychopharmacology training gap in accredited clinical psychology programs. *Training and Education in Professional Psychology.* https://doi.org/10.1037/tep0000442

Institute of Healthcare Improvement. (2023). *How to improve*. Retrieved July 5, 2023, from https://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementHowtoImprove.aspx

Marvasti, J. A., Wu, P., & Merritt, R. (2018). Psychopharmacology for play therapists. *International Journal of Play Therapy*, *27*(1), 35–45. https://doi.org/10.1037/pla0000063

Ninan, A., Stewart, S. L., Theall, L., King, G., Evans, R., Baiden, P., & Brown, A. (2014). Psychotropic medication monitoring checklists: Use and utility for

children in residential care. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, *23*(1), 38–47. https://pubmed.ncbi.nlm.nih.gov/24516476/

Pheister, M., Cowley, D., Sanders, W., Keeble, T., Lu, F., Pershern, L., Wolf, K., Walaszek, A., & Aggarwal, R. (2022). Growing the psychiatry workforce through expansion or creation of residencies and fellowships: The results of a survey by the AADPRT Workforce Task Force. *Academic Psychiatry: The Journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry*, *46*(4), 421–427. https://doi.org/10.1007/s40596-021-01509-9

Sanborn, M., Ali, M. M., & Creedon, T. B. (2023). National trends in psychotropic medication prescribing before and during the COVID-19 pandemic. *Psychiatry Research*, *325*, 115248. https://doi.org/10.1016/j.psychres.2023.115248

Semahegn, A., Torpey, K., Manu, A., Assefa, N., Tesfaye, G., & Ankomah, A. (2020). Psychotropic medication non-adherence and its associated factors among patients with major psychiatric disorders: A systematic review and meta-analysis. *Systematic Reviews*, *9*(1), 17. https://doi.org/10.1186/s13643-020-1274-3

Shahidullah, J. D., Hostutler, C. A., & Stancin, T. (2018). Collaborative medication-related roles for pediatric primary care psychologists. *Clinical Practice in Pediatric Psychology*, *6*(1), 61–72. https://doi.org/10.1037/cpp0000207

Solmi, M., Miola, A., Croatto, G., Pigato, G., Favaro, A., Fornaro, M., Berk, M., Smith, L., Quevedo, J., Maes, M., Correll, C. U., & Carvalho, A. F. (2021). How can we improve antidepressant adherence in the management of depression? A targeted

review and 10 clinical recommendations. *Brazilian Journal of Psychiatry*, *43*(2), 189–202. https://doi.org/10.1590/1516-4446-2020-0935

Tomba, E., Guidi, J., & Fava, G. A. (2018). What psychologists need to know about psychotropic medications. *Clinical Psychology & Psychotherapy*, *25(2*), 181–187. https://doi.org/10.1002/cpp.2154

Appendix A

Pre-Education Knowledge Survey

Please rate the following information on a scale of 1 to 5, with 1 being "strongly agree" and 5 being "strongly disagree". Questions 1 to 3 assess confidence, 4 to 6 assess knowledge, and 7 to 9 assess skill.	strongly agree	agree	uncertain/ not applicable	disagree	strongly disagree
1. I feel confident discussing psychotropic medications with clients	5	4	3	2	1
2. I feel confident answering questions about psychotropic medications	5	4	3	2	1
3. I feel confident identifying psychotropic medication side effects	5	4	3	2	1
4. I understand common psychopharmacology terminology	5	4	3	2	1
5. I understand the justifications for using psychotropic medications in children and adolescents	5	4	3	2	1
6. I understand the effects and side effects of psychotropic medications	5	4	3	2	1
7. I am able to discuss psychotropic medications with clients	5	4	3	2	1
8. I am able to answer questions about psychotropic medications	5	4	3	2	1
9. I am able to identify psychotropic medication side effects in clients	5	4	3	2	1

Post-Education Knowledge Survey

Please rate the following information on a scale of 1 to 5, with 5 being "strongly agree" and 1 being "strongly disagree". Questions 1 to 3 assess confidence, 4 to 6 assess knowledge, and 7 to 9 assess skill.	strongly agree	agree	uncertain/ not applicable	disagree	strongly disagree
1. I feel confident discussing psychotropic medications with clients	5	4	3	2	1
2. I feel confident answering questions about psychotropic medications	5	4	3	2	1
3. I feel confident identifying psychotropic medication side effects	5	4	3	2	1
4. I understand common psychopharmacology terminology	5	4	3	2	1
5. I understand the justifications in using psychotropic medications in children and adolescents	5	4	3	2	1
6. I understand the effects and side effects of psychotropic medications	5	4	3	2	1
7. I am able to discuss psychotropic medications with clients	5	4	3	2	1
8. I am able to answer questions about psychotropic medications	5	4	3	2	1
9. I am able to identify psychotropic medication side effects in clients	5	4	3	2	1

Appendix B

Study Record Sheet

Age (range 3-17 years): _____

Race (circle one):

American Indian or Alaskan Native

Asian

Black or African American

Hispanic Latino

Native Hawaiian or Pacific Islander

White

Other

Gender (circle one):

Female

Male

Transgender

Non-binary

Other

Number of psychotropic medications prescribed: _____

Number of side effects identified: _____

Number of contacts with caregivers or prescribers: _____

Comments:

Appendix C

Brief Psychopharmacologic Education

Table 1.

Paired Samples Test

	Pre		Post					
Question	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*	*Cohen's d*
1	2.2	1.03	3.7	0.67	-4.025	9	0.003	1.17
2	1.6	0.69	3.4	0.69	-5.014	9	<.001	1.14
3	1.6	0.84	3.6	0.69	-6.708	9	<.001	0.94
4	3	1.15	4	0.47	-2.372	9	0.042	1.33
5	3.6	0.97	4.5	0.52	-2.077	9	0.068	1.37
6	2.9	0.99	3.9	0.32	-3.354	9	0.008	0.94
7	2.7	1.25	3.9	0.32	-3.087	9	0.013	1.23
8	2	0.82	3.7	0.67	-5.075	9	<.001	1.06
9	2.4	1.07	4	0.47	-3.748	9	0.005	1.35

Appendix D

PMMC Screening

Table 2.

Frequency Distribution for Sex, Race, & Age

Demographic	*n*	*%*
Sex		
Male	7	100
Female	0	0
Transgender	0	0
Non-Binary	0	0
Other	0	0
Race		
American Indian or Alaskan Native	0	
Asian	0	0
Black or African American	1	14.3
Hispanic Latino	0	0
Native Hawaiian or Pacific Islander	0	0
White	6	85.7
Other	0	0
Age		
3	0	0
4	0	0
5	1	14.3
6	1	14.3
7	1	14.3
8	2	28.6
10	1	14.3
11	1	14.3
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0

Note. $N = 7$ ($n = 7$ for each condition).

Table 3.

Frequency Distribution for Medications Prescribed, Side Effects, & Collaborations

Measure	*n*	*%*
Medications		
1	6	85.7
2	1	14.3
Side Effects		
0	3	42.9
1	1	14.3
2	2	28.6
4	1	14.3
Collaborations		
0	5	71.4
1	2	28.6

Note. $N = 7$ ($n = 7$ for each measure).