Assessing Confidence in Adolescent Mental Health Pharmacotherapy in Pediatric Medical Residents

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OBJECTIVE The objective of this study was to assess first through third year pediatric medical residents' confidence levels surrounding first-line pharmacotherapy for common mental health conditions in the pediatric patient population and identify areas of need in resident education initiatives.

METHODS From April 2024 through June 2024, 68 pediatric medical residents participating in a pediatric residency program at an academic tertiary medical center were invited to complete a self-assessment questionnaire. Residents rated their confidence in developing a treatment plan, prescribing, and counseling on medications for pediatric mental health conditions, general physical health conditions, and pharmacotherapy using a 5-point Likert scale.

RESULTS A total of 28 pediatric medical residents (41% response rate), ranging from postgraduate year 1 to year 3, completed the survey. Compared with physical health conditions, pediatric mental health conditions were associated with lower confidence scores in medical residents in the areas of developing a treatment plan (mean 3.31 vs 4.28, $p < 0.001$), prescribing medication (mean 2.77 vs 4.02, $p<0.001$), and counseling on medication side effects (mean 2.94 vs 4.01, $p < 0.001$).

CONCLUSIONS This study highlights significant gaps in medical residents' confidence in managing pediatric mental health pharmacotherapy compared with physical health conditions within a single institution's residency program.

ABBREVIATIONS PGY, postgraduate year

KEYWORDS adolescent; medical education; mental health; pediatric; surveys and questionnaires

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Introduction

Mental health conditions are common among pediatric and adolescent populations. The Centers for Disease Control and Prevention's Annual Youth Risk Behavior Survey demonstrated that 40% of high school students reported persistent feelings of sadness or hopelessness for weeks in a row, leading to a cessation of usual activities.[1] Furthermore, mental health conditions are one of the most common causes of hospitalization among adolescents.[2] The recent increase in the prevalence and severity of mental health conditions and psychotropic prescribing led to the declaration of a national emergency in child and adolescent psychiatry in the United States in 2021.[3] Not only are mental health conditions common, but many patients do not receive care. In 2021 and 2022, approximately half of children with a treatable mental health condition did not receive mental health care when needed in the United States.[4] In addition, prescribers recognize there are barriers to patients receiving adequate care, as a survey conducted in 2017–2018 revealed that more than 85% of health practices surveyed reported it was difficult to obtain pediatric behavioral health advice and services for patients.[5] Overall, there is an imminent need to provide adequate education regarding pediatric mental health care to future pediatricians, as pediatricians have a growing role in pediatric mental health care.

Pediatric medical residency programs in the United States are structured to provide broad and intensive training across various pediatric care areas. In addition to being certified by the American Board of Pediatrics or the American Osteopathic Board of Pediatrics, pediatrician candidates must complete a program requiring at least 36 months of residency practice.[6,7] According to the Accreditation Council for Graduate Medical Education, pediatric medical residency training must include at least 40 weeks dedicated to pediatric ambulatory care and 40 weeks focused on pediatric and neonatal inpatient care.[6,7] The mental health training component of the program comprises a small proportion of the overall requirements, with

only 4 weeks specifically allocated to the mental health specialty.[6] This limited exposure contrasts with the more intensive training provided in other disciplines, such as within psychiatry residency programs. It may impact residents' confidence and preparedness in pediatric mental health care.

Currently, the focus on pediatric mental health within the educational program for medical residents is limited because of the overall educational requirements imposed by the American Board of Pediatrics. Residents complete the required 4 weeks of mental health-focused rotations in both outpatient and inpatient settings and see patients with mental health conditions within general inpatient and outpatient rotations. However, the pharmacotherapy education may be overshadowed by the other physical health conditions treated during these rotations. This study aims to assess pediatric medical residents' confidence levels surrounding pharmacotherapy for common mental health conditions in the pediatric patient population. These factors that influence confidence levels and to help identify areas of need in medical resident education initiatives.

Methods

This study was conducted in a pediatric hospital system located in Texas, providing a broad range of medical services to children from 46 counties. The center is recognized for its comprehensive specialty care, including general and highly specialized medical services. The hospital serves a diverse group of pediatric patients, including many who require specialized care for mental health conditions treated in dedicated behavioral health units and throughout the hospital. This institution trains approximately 70 pediatric medical residents annually, offering hands-on experience in various medical disciplines in both inpatient and outpatient settings, with a mental health specialty practice provided during two 2-week inpatient rotations. The pediatric medical residents spend time in both the behavioral health unit, where the psychiatric team serves as the primary team, and with the consulting psychiatric team on the general floors. Pharmacists play a crucial role in training these pediatric medical residents, contributing their expertise in medication management and therapeutic strategies for various mental health and physical health disease states through multidisciplinary rounding. Currently, there is 1 pediatric psychiatric clinical pharmacist who serves the hospital in the behavioral health unit and the psychiatric consult team.

The primary objective of this study was to assess the confidence levels of pediatric medical residents in prescribing, counseling, and making treatment plans for mental health conditions. Secondary objectives were to quantify previous psychiatry experiences, identify areas of greatest need or potential gaps in education, and quantify interest in educational initiatives. A comprehensive electronic survey was developed using the Qualtrics platform to assess the confidence levels of residents in their knowledge of pediatric mental health pharmacotherapy and care planning. Survey questions were developed in alignment with previously conducted surveys in the literature. They were reviewed and adjusted based on feedback from local content experts, including a pediatric psychiatric pharmacist and a pediatric hospitalist.[8,9] The final draft of the survey included questions that rated residents' confidence in prescribing medications, developing treatment plans, and counseling patients for common pediatric mental health conditions, as well as other common pediatric medical conditions.

The 17-question survey, shown in Table 1, consisted of multiple-choice questions, open-ended queries, and Likert scale items. The survey addressed participants' current roles, anticipated practice settings, past experiences in pediatrics and psychiatry, resource usage for pediatric mental health treatment, and confidence in pharmacotherapeutic treatment planning, prescribing, and counseling. Confidence was self-assessed on a 5-point Likert scale (none [1], poor [2], fair [3], good [4], and excellent [5]).

The survey was distributed to postgraduate year 1 (PGY1), PGY2, and PGY3 pediatric medical residents via email and in-person printed QR codes, with 68 medical residents targeted for survey participation. The survey was open from April 2, 2024, through June 21, 2024. Descriptive statistics were employed to summarize demographic information, and open-ended responses were subject to qualitative analysis to extract meaningful insights based on trends in the responses. Likert scale responses were analyzed to quantify participant confidence levels of each disease state or medication class. The aggregate mean for all mental health portions of each section was compared with the aggregate mean for all physical health conditions using the Wilcoxon Signed Ranks test with an alpha level $\alpha = 0.05$ for significance.

Results

The survey was completed by 28 residents (response rate 41%) over the course of the survey period. Characteristics of the residents who completed the survey can be seen in Table 2. Of the residents who completed the survey, the majority were in the first year of their program and had a prior psychiatry rotation during medical school, residency, or both periods of time. Most residents (75%) reported spending 1 to 4 weeks in psychiatry rotations during their residency. During medical school rotations, the duration varied, with 57% of residents spending 1 to 4 weeks and 39% spending 5 to 8 weeks. Over half (54%) of the residents also reported personal or family experience with medications for mental health conditions. A slightly greater proportion of residents anticipate participating in an

Table 1. Survey Questions

Question #	Question	Answer Choices
1	Which of the following best describes your current role?	• PGY1 • PGY2 • PGY3
2	Where do you anticipate practicing in the future?	• Inpatient • Outpatient • Other
3	What prior experience do you have in psychiatry? (Select all that apply)	• None • Psychiatry rotation (medical school) • Psychiatry rotation (residency) • Personal/family experience with medications for mental health conditions • Work experience
3a	How many weeks of prior psychiatric rotation experience in medical school do you have?	• 1–4 wk • 5–8 wk • >8 wk
3b	How many weeks of prior psychiatric rotation experience in residency do you have?	• 1–4 wk • 5–8 wk • >8 wk
3c	How many weeks of prior work experience in psychiatry do you have?	• 1–4 wk • 5–8 wk • >8 wk
4	Please rate your confidence in DEVELOPING A TREATMENT PLAN for the following mental health conditions in pediatric populations: anxiety, attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), behavioral/conduct disorders, depression	• None • Poor • Fair • Good • Excellent
5	Please rate your confidence in DEVELOPING A TREATMENT PLAN for the following medical conditions in pediatric populations: asthma, diabetes, community-acquired pneumonia, skin/soft tissue infection, constipation	• None • Poor • Fair • Good • Excellent
6	Please rate your confidence in PRESCRIBING the following medication classes for mental health indications in pediatric populations: antipsychotics (eg, risperidone), SNRIs (eg, duloxetine), SSRIs (eg, escitalopram, fluoxetine), stimulants (eg, amphetamines, methylphenidate), mood stabilizers (eg, lamotrigine, lithium)	• None • Poor • Fair • Good • Excellent
7	Please rate your confidence in PRESCRIBING the following medication classes for medical indications in pediatric populations: anti-asthmatics (eg, albuterol, fluticasone), insulin, antimicrobials (eg, penicillin, vancomycin), stimulant laxatives/stool softeners (eg, bisacodyl, senna, docusate, polyethylene glycol)	• None • Poor • Fair • Good • Excellent
8	Please rate your confidence in COUNSELING ON SIDE EFFECTS of following medication classes for mental health indications to pediatric populations and their caregivers: antipsychotics (eg, risperidone), SNRIs (eg, duloxetine), SSRIs (eg, escitalopram, fluoxetine), stimulants (eg, amphetamines, methylphenidate), mood stabilizers (eg, lamotrigine, lithium)	• None • Poor • Fair • Good • Excellent

(Table cont. on page 663)

Table 1. Survey Questions *(cont.)*

Question #	Question	Answer Choices
9	Please rate your confidence in COUNSELING ON SIDE EFFECTS of following medication classes for medical indications to pediatric populations and their caregivers: anti-asthmatics (eg, albuterol, fluticasone), insulin, antimicrobials (eg, penicillin, vancomycin), stimulant laxatives/stool softeners (eg, bisacodyl, senna, docusate, polyethylene glycol)	• None • Poor • Fair • Good • Excellent
10	What resources do you use currently in regard to pediatric mental health treatment? (Select all that apply)	• Internal guidelines • American Academy of Child and Adolescent Psychiatry (AACAP) • American Academy of Pediatrics (AAP) • Tertiary Database (Lexicomp, UpToDate) • Texas Health and Human Services Psychotropic Medication Use Parameter Guidelines • Other
11	What other pediatric mental health conditions/medication classes do you want to know more about?	Free-text response
12	Which of the following do you believe could enhance your education about pediatric mental health treatment in the residency program? (Select all that apply)	• Lectures • Online modules • Additional rotations • None • Other
13	What suggestions do you have for improving education about pediatric mental health treatment in your program?	Free-text response
14	How likely are you to participate in additional training or educational sessions related to pediatric mental health, if offered?	• Not at all • Slightly • Moderately • Very, Extremely

PGY, postgraduate year

outpatient practice site (46%) compared with an inpatient site (39%) in the future, with some reporting the intention to practice in both settings (14%).

The survey results reveal varying levels of confidence among medical residents in developing treatment plans, prescribing medications, and counseling patients across different disease states and drug classes, as shown in Table 3 and the Figure. When comparing aggregate data from all physical health conditions surveyed to all mental health conditions, mental health conditions overall were associated with lower confidence scores in the areas of developing a treatment plan (mean 3.31 vs 4.28, $p < 0.001$), prescribing medication (mean 2.77 vs 4.02, $p < 0.001$), and counseling on medication side effects (mean 2.94 vs 4.01, $p < 0.001$).

Confidence levels for managing physical health conditions, such as asthma, community-acquired pneumonia, and skin/soft tissue infections, were consistently higher than those for developing a treatment plan for mental health conditions, such as depression, anxiety, and autism spectrum disorder, as shown in Table 3. Confidence in prescribing medications for mental health conditions, such as antipsychotics, mood stabilizers, antidepressants, and stimulants, was lower, with 29% of residents rating their confidence as" good" or excellent" compared with 78% for physical health condition medications, such as antimicrobials, inhalers, and stimulant laxatives/stool softeners. Additionally, confidence levels for counseling on medication side effects were lower for mental health medications compared with physical health condition medications. Specifically, medication counseling confidence ratings of "good" or "excellent" were given by 87% of respondents for physical health condition treatments (excluding diabetes). In comparison, only 31% of respondents rated their confidence as "good" or "excellent" for mental health medications.

When asked how likely they were to participate in additional training or educational sessions, 47% of residents selected "very" or "extremely likely," with 39% selecting "moderately" likely. Residents were also asked questions about their preferred methods for enhancing their pediatric mental health education.

Table 2. Study Sample Characteristics

Characteristic	*N* = 28 n (%)
Role	
PGY1	13 (46)
PGY2	8 (29)
PGY3	7 (25)
Anticipated practice site	
Inpatient	11 (39)
Outpatient	13 (46)
Other*	4 (14)
Prior psychiatry experience	
None	0 (0)
Psychiatry rotation (medical school)	27 (96)
Psychiatry rotation (residency)	21 (75)
Personal/family experience with medications for mental health conditions	15 (54)
Work experience	2 (7)

PGY, postgraduate year

* Those that indicated "other" planned to practice in both inpatient and outpatient sites.

Table 3. Confidence Ratings for Specific Pediatric Mental Health and Physical Conditions

	N = 28 Mean ± SD		*N* = 28 Mean ± SD
Developing a treatment plan			
Mental Health		Physical Conditions	
Anxiety	3.64 ± 0.621	Asthma	4.5 ± 0.577
ADHD	3.82 ± 0.67	Diabetes	3.61 ± 0.832
Autism spectrum disorder	2.96 ± 0.838	Community Acquired pneumonia	4.46 ± 0.576
Behavioral conduct disorders	2.29 ± 0.46	Skin/soft tissue infections	4.39 ± 0.629
Depression	3.79 ± 0.568	Constipation	4.43 ± 0.573
Prescribing medication			
Mental Health Medications		Physical Conditions Medications	
Antipsychotics	1.89 ± 0.497	Anti-asthmatics	4.43 ± 0.573
SNRI	2.64 ± 0.731	Insulin	2.93 ± 1.016
SSRI	3.75 ± 0.701	Antimicrobials	4.39 ± 0.629
Stimulants	3.68 ± 0.819	Stimulant laxatives/stool softener	4.32 ± 0.612
Mood stabilizers	1.89 ± 0.685		
Counseling on side effects of medication			
Mental Health Medications		Physical Conditions Medications	
Antipsychotics	2.5 ± 0.962	Anti-asthmatics	4.18 ± 0.723
SNRI	2.71 ± 0.976	Insulin	3.64 ± 0.911
SSRI	3.64 ± 0.951	Antimicrobials	4.11 ± 0.737
Stimulants	3.75 ± 0.928	Stimulant laxatives/stool softener	4.11 ± 0.832
Mood stabilizers	2.07 ± 0.979		

ADHD, attention-deficit/hyperactivity disorder; SNRIs, serotonin and norepinephrine reuptake inhibitors; SSRI, selective serotonin reuptake inhibitors

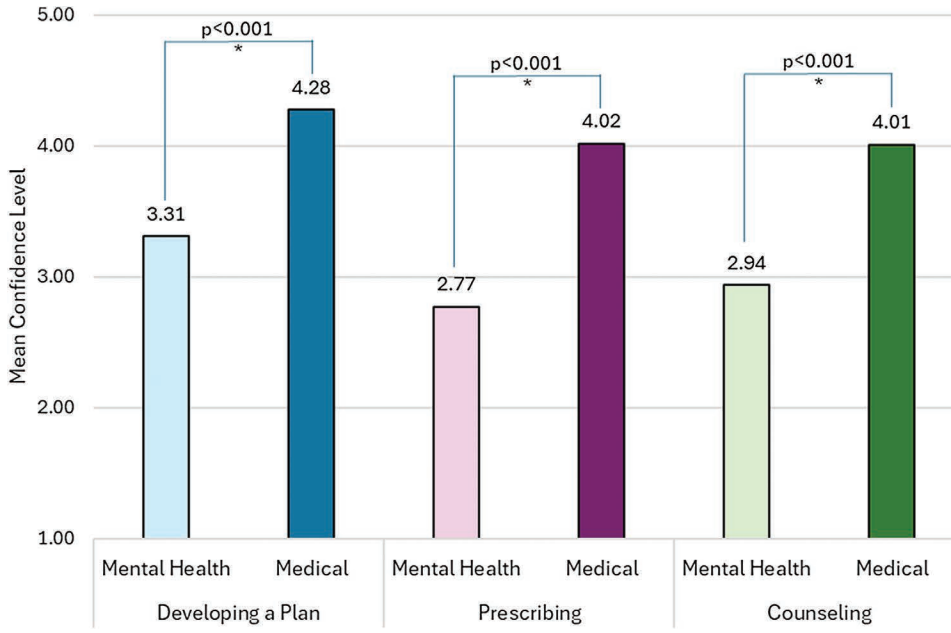
Likert scale confidence: 1 = none; 2 = poor; 3 = fair; 4 = good; 5 = excellent.

Participants were able to select as many choices as they wished. Lectures were the most commonly selected educational method (n = 22), followed by online modules (n = 12) and additional rotations (n = 11). None of the respondents selected "none" in response to this question. When asked in an open-ended format about other pediatric mental health conditions or medication classes, the residents were interested in knowing more about the following topics: obsessive-compulsive disorder, oppositional defiant disorder, conduct or behavioral disorders, agitation, antipsychotics, and serotonin-norepinephrine reuptake inhibitors.

Discussion

This study highlights a disparity in medical residents' confidence levels between managing pediatric mental health conditions and physical health conditions. Pediatric residents report lower confidence in their ability to develop treatment plans, prescribe medications, and counsel patients regarding mental health pharmacotherapy compared with other disease states, including asthma and infectious diseases. Confidence in insulin and diabetes management was lower than in other medical conditions, likely due to the endocrinology team serving as the primary team managing these medications, with less resident involvement in ordering and counseling of insulin. The discrepancy in treatment confidence in mental health conditions could potentially be attributed to the limited guidelines and resources for mental health conditions compared with the wide variety of guidelines and resources available

Figure. Overall average medical resident confidence levels for developing a treatment plan, prescribing, and counseling on side effects of medications for common mental health conditions compared with medical conditions in pediatric populations.



Likert scale confidence: 1 = none; 2 = poor; 3 = fair; 4 = good; 5 = excellent.

* $p < 0.05$ is statistically significant.

for common medical conditions surveyed. In addition, it is important to note that pharmacotherapy is often not first-line therapy for mental health conditions, which could lead to decreased confidence in the pharmacotherapy used in these conditions.[10] Given the substantial role that pediatricians often play in addressing mental health needs due to lack of access and shortages in psychiatric specialists, closing this gap is key to increasing the provision of pediatric mental healthcare.[11,12]

A vast majority of the residents in this study had previous exposure to mental health or psychiatric training, with 96% of respondents reporting the completion of a psychiatric rotation during medical school training, and 75% disclosing having a rotation during residency before taking this survey. Notably, there is a disconnect between exposure to psychiatric training and effectively managing mental health conditions, as resident comfort in managing and prescribing common psychotropic medications remains low. This insight illustrates that the current structure and content of psychiatric training may be insufficient in providing the necessary knowledge to ensure residents feel adequately prepared for optimizing patient outcomes as it relates to mental health. While residents are exposed to mental health training, the duration and intensity of their training may be fragmented and less likely to foster the requisite skills needed for the effective management of pediatric mental health conditions. This is evident at the study institution, where residents' mental health exposure is conducted in 2-week sections, which, according to the results of this study, may not be an adequate amount of time to instill confidence. At the study institution, residents are trained in various areas with access to robust online guidelines, resources, and simulations to practice different skills. At present, there are limited mental health guidelines available on the facility's internal intranet, and physical health conditions may overshadow mental health conditions treated in the inpatient setting during bedside rounds teaching.

These findings are consistent with previously conducted studies that have explored the efficacy of different training models in enhancing residents' confidence and competence in mental health care.[13,14] This study distinguishes itself by focusing on the pharmacological aspects of mental health conditions, specifically examining individual medications and drug classes in comparison to physical health conditions and their associated medications. Previous research has generally taken a broader approach, emphasizing the management of conditions, diagnosis, and overall medication titration, without concentrating on specific drugs. Other studies suggest that medical residents have low confidence in treating pediatric mental health conditions and have suggested ways to help improve

these confidence levels. One such study demonstrated that an integrated mental health training model, where mental health specialists either provided independent care in the same building or collaborated with the medical residents, resulted in a notable increase in confidence in prescribing psychotropic medications.[13] Additionally, it has been shown that introducing a curriculum that includes a multidisciplinary, case-based, active learning approach to covering mental health conditions increases resident confidence and retention related to the pharmacologic management of mental health disease states.[14]

In previously conducted studies regarding resident preferences for education, bedside teaching and hands-on learning were preferred over other types of education.[15,16] For this study, the goal was to explore additional teaching methods that could be offered to supplement the bedside learning that is already provided to residents. Although bedside learning was not offered as a preferred learning strategy in our survey, bedside learning should still be considered and optimized alongside didactic education. Additionally, of the 28 responses, no residents selected "none" when asked about their preferred education method, indicating a strong interest in improving their education. The information gained from this study can be leveraged to develop educational programs that align with residents' preferences by incorporating a mix of didactic lectures and additional resources, thereby providing a more comprehensive and effective training experience.

Given previous studies showing the benefit of a multidisciplinary approach in improving resident confidence levels, pharmacists can play a crucial role in addressing the confidence gap among medical residents by leveraging their expertise in pharmacotherapy. Studies have shown that pharmacist-led didactic educational sessions can significantly increase medical residents' pharmacotherapy knowledge.[17] Therefore, pharmacists are vital to educational efforts in both didactic settings and experiential teaching models (eg, multidisciplinary rounding). At the study institution, pharmacists already collaborate closely with residents during rounds and have various educational handouts for physical health conditions, but mental health conditions are currently less emphasized. To address this, pharmacists can develop targeted educational sessions and materials focused on mental health pharmacotherapy, covering medication management, monitoring side effects, and providing patient counseling. By providing practical, case-based learning opportunities and fostering a supportive learning environment, pharmacists can help residents gain the necessary skills to effectively manage pediatric mental health conditions and ensure they are well-prepared to address the mental health needs of pediatric patients.

This study highlights the gap in the confidence levels of pediatric medical residents regarding mental health pharmacotherapy, particularly in developing treatment plans and prescribing pharmacotherapy. This confidence gap may exacerbate the ongoing adolescent mental health crisis, as providers may be less equipped to address these patients or may unintentionally develop suboptimal treatment plans. It could be extrapolated that discomfort in counseling may correlate with discomfort in mental health pharmacotherapy prescribing, which can ultimately lead to reduced patient satisfaction and trust in their provider to plan their care. This also emphasizes the role of the pharmacist to provide appropriate medication counseling, as some physicians may not feel equipped to provide robust education on medications for mental health conditions. The marked improvements observed in prior studies with integrated and scenario-based training models indicate that these approaches could be essential for bridging the current confidence gap.[13–16] This implies that residency programs may consider incorporating more hands-on, longitudinal training experiences to ensure residents gain the repeated exposure and reinforcement necessary to build and sustain their confidence in managing pediatric mental health conditions.

Limitations

The study findings are limited by their focus on pediatric medical residents from a single hospital system, which may not be generalizable to other settings. Because this study was conducted on PGY1 through PGY3 residents with a relatively low response rate, there could be a skew in the data based on the residents' varying experiences before taking this survey. Additionally, the survey's reliance on self-reported confidence levels may not accurately reflect competency. The use of a survey instrument that has not been validated also introduces limitations, as it may compromise the reliability and accuracy of the findings. Future research is needed to explore the impact of enhanced training programs confidence and clinical outcomes in pediatric mental health care. As this study focused on child and adolescent mental health, these results may not be generalized to adult psychiatry education.

Conclusion

This study finds that pediatric residents have lower confidence levels in managing pediatric mental health pharmacotherapy compared with physical health conditions within a single institution's medical residency program. Owing to the requirements set by the Accreditation Council for Graduate Medical Education, this may be a similar challenge among pediatric residents at other programs. The survey results highlight the need for enhanced and targeted educational interventions to improve residents' skills and confidence in pediatric mental health pharmacotherapy. This highlights an area where pharmacists can make a substantial impact

through various initiatives, given the pharmacotherapy expertise they bring to a multidisciplinary approach.

Article Information

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