Article

Provider and Practice Characteristics and Perceived Barriers Associated With Different Levels of Adolescent SBIRT Implementation Among a National Sample of US Pediatricians

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Abstract

Pediatrician Screening, Brief Intervention, and Referral to Treatment (SBIRT) practices vary widely, though little is known about the correlates of SBIRT implementation. Using data from a national sample of US pediatricians who treat adolescents (n = 250), we characterized self-reported utilization rates of SBIRT among US pediatricians and identified provider- and practice-level characteristics and barriers associated with SBIRT utilization. All participants completed an electronic survey querying the demographics, practice patterns, and perceived barriers related to SBIRT practices. Our results showed that 88% of respondents reported screening for substance use annually, but only 26% used structured/validated screening instruments. Furthermore, 40% of respondents provided evidence-based brief interventions, and only 11% implemented all core SBIRT practices. Common barriers (eg, confidentiality and insufficient time) and unique provider- and setting-specific barriers to implementation were identified. These findings indicate that although most pediatricians deliver some SBIRT components in their practice, few implement the full SBIRT model, and barriers persist.

Keywords

adolescents, substance use, prevention, implementation, Screening, Brief Intervention, and Referral to Treatment (SBIRT)

Introduction

Substance use and related problems and disorders are common among American youth and have complex multidimensional etiological factors that emerge during childhood.[1] More than 80% of American adults report using alcohol or other drugs before age 18 years, and approximately 5% of US adolescents aged 12 to 17 years meet criteria for a substance use disorder (SUD).[2,3] Alcohol and other drug use during adolescence, especially high-frequency use and problematic use, are associated with increased risk for adverse health and developmental outcomes, including unintentional injury, suicide, aggression, motor vehicle crashes, academic and vocational failure, sexually transmitted infections, and unintended pregnancy, along with addictive and psychiatric disorders.[4-7] Few youth who could benefit from treatment receive it. In 2018, whereas 1.1 million US adolescents met criteria for a SUD, fewer than 1 in 10 received substance abuse treatment.[8,9] Recent data

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suggest that this treatment gap has widened over the past decade.[10] In light of this growing public health problem, novel approaches are needed to better identify, engage, and treat adolescent-onset substance use and SUDs.

One public health approach that has gained traction in the United States in recent years due to its focus on systems of care is the Screening, Brief Intervention, and Referral to Treatment (SBIRT) model.[11] The SBIRT model is an approach to screening, identification, and provision of prevention and intervention services for adolescent substance use in pediatric primary care settings, promoted by the United States Substance Abuse and Mental Health Services Administration (SAMHSA).[12] SBIRT is predicated on the premise that because substance use behaviors exist across a continuum of risk levels in adolescents, they should, in kind, be addressed through a continuum of care encompassing prevention, brief intervention, and referral to specialty SUD treatment services provided to youth based on their risk level.[11] The majority of care provision in the SBIRT model occurs in the pediatric primary care setting by pediatricians and their staff because most adolescents, including those who use alcohol and other drugs regularly, have at least annual contact with a pediatrician or other medical provider.[13] The SBIRT clinical framework includes 4 key practices: (1) screening with a validated screening tool, (2) promoting prevention messages that delay initiation of substance use in nonusers, (3) providing brief advice and/or brief interventions utilizing motivational interviewing aimed at cessation or reduction in use for youth who are using substances but do not meet SUD criteria and for youth with mild to moderate SUD, and (4) referring youth who engage in high-risk substance use or who meet criteria for moderate to severe SUDs to specialized SUD treatment.[14]

An updated review by the US Preventive Services Task Force published in 2020 has determined that there continue to be insufficient data regarding the benefits and harms of SBIRT for adolescents.[15] In spite of this report, there is promising preliminary evidence for SBIRT from studies indicating that screening for alcohol and other drug use in pediatric primary care settings is feasible and may detect at-risk youth[16,17] and from studies showing that brief motivational interventions are effective at reducing youth substance use behaviors.[18,19] These findings in combination with its low cost and low risk for harm has led to a growing list of pediatric societies and US government agencies, including the American Academy of Pediatrics (AAP), SAMHSA, and the National Institutes of Health, recommending that SBIRT for tobacco, alcohol, and other substance use be incorporated in routine health care for adolescents.[12,14] The AAP has included SBIRT as part of their adolescent substance use prevention and early intervention national practice guidelines since 2011 and currently recommends that pediatricians incorporate the SBIRT practices into their annual health maintenance examinations.[14] Based on these national guidelines, the US government and private foundations have invested millions of dollars on large-scale implementation and dissemination efforts to train physicians, behavioral health counselors, nurses, social workers, and clinical trainees on the SBIRT framework over the past decade.[11,20] Despite these efforts, little is known about rates of SBIRT implementation by US pediatricians, which provider- and practice-level factors predict high versus low utilization of SBIRT practices, and which barriers impede implementation. In the present study, we used data from a national sample of US pediatricians that characterized self-reported SBIRT practices and perceived barriers to implementation of the SBIRT framework. Given the large-scale implementation efforts underway and limited data to guide a national dissemination strategy, the aims of this study were 3-fold: (1) to characterize self-reported implementation rates of SBIRT practices in a national sample of US pediatricians; (2) to identify provider- and practice-level characteristics associated with high versus low SBIRT utilization rates; and (3) to identify perceived barriers to SBIRT implementation among US pediatricians and determine if unique barriers to implementation exist among low SBIRT utilizers.

Methods

Data Collection

This analysis used data from an AAP Pediatrician Substance Abuse Practices and Attitudes Survey developed and administered by the AAP with assistance and funding from the Centers for Disease Control and Prevention in 2014. The survey was designed to obtain information from providers on sociodemographics, practice setting, and training, and queried adolescent substance use and SUD screening practices and attitudes. It was approved by the AAP Institutional Review Board as exempt from human subjects review. Following AAP Institutional Review Board approval, a cover letter describing the survey with an attached link to the survey was embedded in an AAP electronic newsletter and distributed via an email invitation to all AAP members, and access was made available from January 1, 2014, to December 31, 2014. In the cover letter, participants were informed that the survey was anonymous and that their participation was optional. No compensation was offered for survey completion.

Survey Instrument

The survey was administered electronically and branching logic was used. The first survey question served as a screening question asking, "In an average week do you see at least 10 patients ages 9-20 years-old?" Participants who answered yes to the screening question were then administered the full survey. The full survey included 50 questions covering substance use screening (11 items; eg, frequency, type of screening instrument used, etc), brief interventions (10 items; eg, response to negative screens, use of brief advice, motivational interviewing, and making referrals), perceived barriers for implementation of SBIRT practices (12 items), and respondent demographics (eg, sex, years since completion of training), and practice characteristics (eg, practice type, geographic region).

SBIRT practices/components included the following: (1) using structured screeners at appropriate time intervals, (2) providing prevention messages and positive reinforcement for negative screens, (3) providing brief advice and brief interventions based on motivational interviewing for adolescents who reported past year substance use, and (4) referring high-risk adolescents to specialized substance use treatment as needed. For comparative analyses, SBIRT-related variables were dichotomized based on respondents' "yes" or "no" response to survey questions. Full SBIRT utilizers were defined as pediatricians whose survey responses indicated that they had implemented all the AAP-recommended SBIRT practices/components described above, versus pediatricians who used none or only some components of SBIRT.

Sample Characteristics

A total of 363 currently practicing US-based pediatricians completed screening and demographic questions; 306 indicated that they see at least 10 patients aged 9 to 20 years in an average week; 250 (81.7% of eligible respondents) proceeded to answer questions about the frequency with which they screen adolescents for substance use (the remainder did not answer questions about SBIRT practices). Respondents from the analytic sample reported practicing for an average of 18.0 ± 12.0 years since residency and were mostly female (67.2%). All geographic regions in the continental United States were represented, with 32.0% of respondents practicing in the Mid-Atlantic/Southern United States, 25.5% practicing in the North/South Central United States, 26.3% practicing in the Pacific/Mountain regions of the United States, and 16.2 % practicing in New England. Of the 250 respondents, 168 (68.6%) worked in private practices, 45 (18.4%) in hospitals, and 18 (7.3%) in public health centers or other locations. At the time of the survey, US AAP membership was approximately 65 000 pediatricians.[21] Although the survey represents a convenience sample of currently practicing US pediatricians who provide regular medical care to adolescents, based on a comparison to national data on US pediatrician demographic and practice characteristics,[22] survey respondents were representative of the US pediatrician workforce in terms of sex, geographic region of practice, and practice focus (Supplemental Table 1, available online).

Statistical Analysis

Analyses were conducted using IBM SPSS Statistics Analytic software V25.0–27.0 (IBM). Missing data on variables of interest were minimal (ranging from 0% to 3.2%) and were multiply imputed. Descriptive statistics and frequency distributions examined pediatrician characteristics and rates of substance use screening, brief intervention, and referral behaviors along with perceived barriers to SBIRT implementation in the total sample. Logistic regression analyses examined whether provider demographic and practice characteristics (sex, years since completing residency, practice setting, and practice region) were associated with being a full SBIRT utilizer (compared with using only some components of SBIRT) or being a low SBIRT utilizer (using only 1 SBIRT component vs using 2 or more). Binary logistic regressions applying Firth's bias reduction[23] were used to assess whether provider's ratings of barriers to using SBIRT components were associated with being a full SBIRT utilizer. Finally, a multivariable logistic regression model was run incorporating each demographic and practice characteristic that was significantly correlated with full SBIRT utilization status (in the current analyses) to determine whether those characteristics were associated with SBIRT use status after controlling for other relevant variables. We were also interested in whether the implementation of AAP screening recommendations, the first component of SBIRT, influenced uptake of other SBIRT practices. As such, exploratory analyses were conducted to examine relationships between screening frequency (yearly or more vs less frequently) and SBIRT utilization rates. This study was approved by the Johns Hopkins Medicine Institutional Review Board.

Results

Substance Use Screening, Brief Intervention Practices, and SBIRT Utilization

Data on SBIRT practices from the total sample are reported in Table 1. The majority of respondents (88%)

Table 1. Self-reported Use of SBIRT Components Among Total Sample of US Pediatricians Who Treat Adolescents.

SBIRT component	Total sample (n = 250)
Screened regularly using structured/validated screening instruments	65 (26.0%)
Screened for alcohol and drug use at least annually	221 (88.4%)
Used structured/validated screening instruments	65 (26.0%)
Provided prevention messages and responded to negative screens	230 (92.0%)
Provided brief advice and brief interventions	101 (40.4%)
Provided brief advice	229 (91.6%)
Provided brief intervention based on motivational interviewing	101 (40.4%)
Made referrals to substance use treatment	169 (67.6%)
Utilized all SBIRT components	27 (10.8%)

Abbreviation: SBIRT, Screening Brief Intervention Referral to Treatment.

reported screening for substance use at every health maintenance examination or more often, but only 26% reported using validated screening instruments. When asked about what types of clinical practices they performed following a positive screen for substance use in adolescents, 91% of respondents reported providing brief advice, but only 40% reported that they provide brief interventions using motivational interviewing. In all, 68% of respondents reported that making referrals to SUD specialty care was one of the types of clinical practices they performed in response to a positive screen. Only 11% of respondents reported utilizing all SBIRT components.

Provider and Practice Factors Associated With SBIRT Utilization

In a multivariable logistic regression analysis, providers' sex, years since residency, and practice type were not associated with being a full SBIRT utilizer. Geographic region of pediatric practice was associated with full SBIRT utilization such that providers practicing in the New England region were more likely to be full SBIRT utilizers than those practicing in the Mid- and South Atlantic (odds ratio [OR] = 1.34; 95% CI = 1.11-2.34; $P = .02$), North and South Central (OR = 1.26; 95% CI = 1.07-2.12; $P = .02$), or Pacific and Mountain regions (OR = 1.20; 95% CI = 1.05-1.88; $P < .01$) of the United States. None of the examined demographic or practice factors was associated with being a low SBIRT utilizer (all $P > .05$).

Perceived Barriers to SBIRT Utilization

Perceived barriers to SBIRT implementation from the total sample, stratified by SBIRT utilization group status, are reported in Table 2. Confidentiality issues (52%) and insufficient time during appointments (52%) were the most commonly reported SBIRT barriers among all respondents. Other perceived barriers to SBIRT implementation with moderate frequency in the total sample included lack of expertise for managing substance use in the practice (38%) and in the surrounding community (32%), limited opportunity to talk to patients without a parent being present (34%), reimbursement issues (30%), and limited access to referral services (27%). Concerns about confidentiality between patients and their parents (OR = 2.31; 95% CI = 1.02-5.67; $P = .04$) and insufficient time (OR = 2.36; 95% CI = 1.04-5.78; $P = .04$) were significantly associated with SBIRT utilization status, such that these barriers were more likely to be reported by full SBIRT utilizers compared with non–full SBIRT utilizers, whereas unfamiliarity with screening tools was less likely to be reported as a barrier by full SBIRT users (OR = 0.07; 95% CI = 0.00-0.54; $P < .01$).

Multivariable Model Combining Factors Related to SBIRT Utilization

In a multivariable logistic regression analysis examining the impact of all factors identified in the main analyses as being significantly associated with being a full SBIRT utilizer (practice region, concerns about confidentiality, insufficient appointment time, and lack of familiarity with available screening tools), insufficient appointment time was positively associated (OR = 2.97; 95% CI = 1.26-7.56; $P = .01$) with being a full SBIRT utilizer. Conversely, lack of familiarity with available screening tools was negatively associated (OR = 0.06; 95% CI = 0.00-0.49; $P = .003$) with being a full SBIRT user. Providers in North and South Central (OR = 0.28; 95% CI = 0.08-0.89; $P = .03$) and Pacific and Mountain (OR = 0.27; 95% CI = 0.07-0.88; $P = .03$) regions were less likely to be full SBIRT users than those in New England.

Table 2. Self-reported Barriers to SBIRT Implementation, by SBIRT Utilizer Group.[a]

Reported barrier	Total (n = 250)	SBIRT utilizer groups[a]		Odds ratio (full SBIRT users vs non–full users) (95% CI)	*P*
		Full SBIRT utilizers (n = 27)	Non–full SBIRT utilizers (n = 223)		
Confidentiality issues between patient and parent	130 (52.0%)	19 (70.4%)	111 (49.8%)	**2.31 (1.02-5.67)**	**.044**
Insufficient time during appointment	129 (51.6%)	19 (70.4%)	110 (49.3%)	**2.36 (1.04-5.78)**	**.040**
Lack of appropriate clinical expertise in the practice	95 (38.0%)	6 (22.2%)	89 (39.9%)	0.45 (0.17-1.08)	.076
Limited opportunity to talk to patient without parent present	84 (33.6%)	9 (33.3%)	75 (33.6%)	1.01 (0.42-2.27)	.981
Lack of appropriate clinical expertise/unfamiliar with clinical expertise in the community	81 (32.4%)	7 (25.9%)	74 (33.2%)	0.73 (0.29-1.71)	.484
Reimbursement issues (unclear how to bill visit)	70 (30.0%)	11 (40.7%)	64 (28.7%)	1.72 (0.75-3.83)	.193
Limited access to referral services	68 (27.2%)	9 (33.3%)	59 (26.5%)	1.42 (0.59-3.22)	.419
Insufficient time for follow-up	54 (21.6%)	4 (14.8%)	50 (22.4%)	0.66 (0.20-1.74)	.420
Unfamiliar with available screening tools	44 (17.6%)	0 (0%)	44 (19.7%)	**0.07 (0.00-0.54)**	**.004**
Limited time and resources to adequately train staff	37 (14.8%)	6 (22.2%)	31 (13.9%)	1.85 (0.66-4.60)	.226
Unfamiliar with how to conduct brief intervention or respond to screening results	31 (12.4%)	1 (3.7%)	30 (13.5%)	0.36 (0.04-1.46)	.173
Unfamiliar with how to implement screening in practice setting	13 (5.2%)	0 (0%)	13 (5.8%)	0.28 (0/00-2.25)	.292

Abbreviation: SBIRT, Screening Brief Intervention Referral to Treatment.
Odds ratios and *p*-values in bold indicate statistical significance at or greater than $p < 0.05$ threshold.
[a]Pediatricians who utilized the full recommended SBIRT approach (screening at every health maintenance examination, using structured screening, responding to negative screens with positive reinforcement, providing brief advice for low-risk, motivational interviewing for mild-/moderate-risk, and referrals to substance use treatment for high-risk adolescents).

Screening Practices and Their Association With SBIRT Utilization

In exploratory analyses comparing frequent and infrequent screeners (Supplemental Data Section 2, available online), respondents who endorsed screening on at least an annual basis (termed *frequent screeners*) were significantly more likely to use structured screening instruments compared with infrequent screeners (28.1% vs 10.3%; $P = .04$).

Discussion

In this national survey of practicing US pediatricians who provide regular medical care for adolescents, implementation of some SBIRT practices, in particular routine screening for substance use in adolescent patients, was common, but only a minority of pediatricians used validated screening tools or regularly implemented all components of the SBIRT framework (screening, prevention messaging, brief intervention, and referral to treatment). Common and unique barriers to SBIRT implementation and distinct provider and practice characteristics were associated with high versus low SBIRT utilization rates. These findings carry implications for national SBIRT dissemination efforts and US pediatrician workforce training.

We found that whereas some SBIRT practices are consistently implemented among US pediatricians, others such as provision of evidence-based brief interventions and referral to specialty substance use treatment have been under implemented despite multiple policy statements, evidence reviews, and guidelines from the AAP and SAMHSA.[12,14] Rates of substance use

screening (88%), provision of prevention messaging (92%), brief interventions (40%), referral to substance use treatment (68%), and implementation of all 4 SBIRT practices (11%) are consistent with those observed in a recently published survey of pediatricians from Massachusetts.[24] Compared with prior national survey data from the mid-1990s,[25] our results show higher rates of routine substance use screening (88% vs 45%) and higher, albeit still low, rates of using validated screening instruments (26% vs 5%) among US pediatricians. The high rates of responding to negative drug screens and prevention messaging (92%) reported by respondents was notable, but consistent with prior studies,[24] and stand out when contrasted with the low rates of utilization of validated screening instruments (26%). Further inquiry into the effectiveness of prevention messaging when decoupled from a structured screening approach is warranted. Collectively, these findings indicate that uptake of specific SBIRT practices among US pediatricians who treat adolescents is not uniform and that although substance use screening has increased over the past 2 decades, treatment and referral practices lag behind. Underutilization of structured screening with validated tools, use of evidence-based brief interventions, and referral practices represent areas for improvement in SBIRT dissemination efforts. Structured screening of adolescents for alcohol and drug use with validated tools is one of the most critical components of SBIRT given that that the use of routine "unstructured" clinical questioning often fails to detect substance-related problems and is less sensitive.[14,17,26] Structured screening tools for substance use in primary care are very brief, can be self-administered, and have excellent detection rates.[18,27,28] For example, the S2BI screening tool is a highly specific/sensitive (~90%) 7-item questionnaire for identifying moderate and severe alcohol and cannabis use disorders in adolescents.[29] Once adolescents who use alcohol or drugs or who meet criteria for SUD are identified, multiple studies have shown that brief interventions using motivational interviewing approaches are effective at reducing youth substance use behaviors[30] and can be successfully implemented in pediatric primary care settings.[18,27,28,31] Finally, approaches to enhance the rate and effectiveness of referral practices by US pediatricians warrant further study given the lower rates of implementation of this SBIRT practice.

Another strategy to enhance uptake of SBIRT practices among US pediatricians is to identify pediatricians and practice environments that are low SBIRT utilizers and experience greater barriers to implementation and provide targeted resources and training. Our results identified differences in SBIRT utilization rate based on geographic region and provider and practice characteristics that were associated with distinct barriers to SBIRT implementation. Our findings are consistent with previous studies that have reported significant regional variability in health screening and surveillance among US pediatricians across a range of childhood conditions (developmental delay, maternal depression, social determinants of health, etc).[32,33] Region-specific systems-level dissemination strategies may be necessary to achieve recommended SBIRT implementation goals. Although requiring replication, these provider and practice factors could inform targeted dissemination efforts to improve SBIRT utilization among the pediatricians, practices, and regions most likely to underutilize SBIRT practices. Prior studies have shown that pediatricians who completed SBIRT training were more likely to screen and provide brief interventions for substance use.[34,35] Thus, future implementation efforts should address these barriers and knowledge gaps and attempt to implement targeted SBIRT training for underutilizers.

Our results identified common and unique self-reported barriers to SBIRT implementation among US pediatricians according to their level of SBIRT utilization, which may inform policy decisions and future SBIRT dissemination efforts. Consistent with previous studies,[36-39] the main barriers reported by pediatricians from our sample were insufficient time to learn and incorporate SBIRT practices, lack of familiarity with structured/validated screening tools, confidentiality issues, and low comfort level with performing brief interventions and making referrals. Strategic approaches to address these barriers have been developed and focus primarily on incentivizing providers, practices, and health care systems (eg, via Continuing Medical Education/Maintenance of Certification credit for SBIRT trainings, expanded Current Procedural Technology codes for reimbursement of SBIRT practices, and state and federal SBIRT implementation grants) or utilizing technology support (eg, self-administered screening tools on patient's smartphone or tablet, integration of screening results into electronic medical records, and computer-administered brief interventions) as pathways to increase uptake of SBIRT practices.[20,40,41] These strategies, although promising, remain largely untested. One exception is with computer-administered screening and brief interventions because these have shown preliminary efficacy for reducing adolescent substance use in pediatric primary care settings and have potential to be adapted across different clinical care settings.[42]

In the present study, some of the barriers were more frequently reported among full compared with non–full

SBIRT utilizers and vice versa. For example, unfamiliarity with screening tools was more frequently reported by providers who did not routinely use all the recommended SBIRT components. On the other hand, insufficient time and concerns about confidentiality were more frequently reported by providers who report using all the SBIRT components. These results converge with findings from prior studies and suggest that provider- and setting-specific factors may influence SBIRT uptake.[40,43] Provider- and setting-specific barriers to SBIRT implementation represent an important area of future study. Future research should seek to replicate these findings and develop and test targeted implementation/dissemination approaches tailored to specific provider types and practice settings.

There are several relevant limitations to this study. Our findings are based on self-report data rather than observed testing or treatment delivered in practice. Respondents may have given answers that they perceived to be more acceptable to themselves, their peers, employers, or the AAP, reflecting a social desirability bias. There are also some limitations regarding the sample's generalizability; although the study sample had broad representation from all US geographic regions and showed similar composition to the US general pediatrician workforce in terms of sex, practice setting types, and for most geographic regions, the findings may not be generalizable to family practitioners, nurse practitioners, pediatricians with subspecialty training, or pediatricians who are not AAP members. Despite the survey drawing from the currently practicing AAP membership, it is important to emphasize that the sample is a convenience sample. Respondents were not incentivized for their participation, and the total sample of respondents represented only a small fraction of the total AAP membership. Given this, it is possible that AAP members and survey respondents specifically may be more familiar with SBIRT guidelines and, therefore, more inclined to screen and treat adolescent substance use. If this were the case, rates of SBIRT utilization among US pediatricians overall may be even lower than we report. The study also has relevant strengths. The survey's comprehensive questions querying substance use screening and intervention, SBIRT practices, barriers, and importantly provider and practice characteristics allowed the investigation of SBIRT utilization rates and associated predictors and barriers to implementation in the sample. Although the sample is a convenience sample, its representativeness of the US pediatrician workforce may also be viewed as a strength.

In conclusion, the majority of US pediatricians in this sample reported screening for substance use annually, but few implement the full spectrum of the SBIRT framework as recommended in the AAP practice guidelines, and many report implementation barriers. Addressing these barriers and combining general and subgroup-targeted dissemination efforts may improve uptake of SBIRT by US pediatricians.

Author Contributions

CJH: Contributed to conception and design; contributed to acquisition, analysis, and interpretation; drafted manuscript; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.
IP: Contributed to conception and design; contributed to acquisition, analysis, and interpretation; drafted manuscript; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.
ASY: Contributed to conception and design; contributed to acquisition, analysis, and interpretation; drafted manuscript; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.
PM: Contributed to interpretation; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.
RA: Contributed to interpretation; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.
HA: Contributed to interpretation; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.
SL: Contributed to conception and design; contributed to acquisition, analysis, and interpretation; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.
MH: Contributed to conception and design; contributed to acquisition, analysis, and interpretation; drafted manuscript; critically revised manuscript; gave final approval; agrees to be accountable for all aspects of work ensuring integrity and accuracy.

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Supplemental Material

Supplemental material for this article is available online.

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