ARTICLE

Adolescent Violence Prevention Practices Among California Pediatricians

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Objectives: To examine pediatricians' provision of violence prevention services to their adolescent patients and to identify factors associated with pediatricians' implementation of these services.

Design: A cross-sectional sample of California pediatricians completed a self-report questionnaire. The "Precede/Proceed" theoretical model guided the questionnaire in identification of factors associated with pediatricians' screening and intervening practices in preventing adolescent violence.

Results: Two hundred twenty pediatricians (54% female, 66% white, 24% Asian, 5% Latino, and 5% other) participated in the study. On average, participants screened their patients for violence-related risk factors 31% of the time for fighting, 39% of the time for violence in the home, and 29% of the time for weapon carrying. Participants provided their at-risk patients with violence-related interventions less than 50% of the time (on average) implementing the following interventions: written materials, follow-up appointments, discipline counseling, or referral to a community organization, Child Protective Services, or a specialized adolescent clinic. Factors associated with violence prevention screening practices included the following: positive attitudes and beliefs regarding screening for violence, familiarity with violence prevention guidelines, use of prompts in medical records, perceptions of greater skills, and positive reinforcement from patients and colleagues for providing violence prevention services (R^2=0.44; $P<.001$). Factors associated with violence prevention intervention practices included: positive attitudes and beliefs in screening for violence, availability of resources, and positive reinforcement from patients and colleagues for providing violence prevention services (R^2=0.37; $P<.001$).

Conclusions: California pediatricians are not widely screening their adolescent patients for risk factors associated with adolescent violence, nor are they providing interventions to their adolescent patients who may be at risk for violence. The factors associated with pediatricians' implementation of violence prevention services may assist in the development of effective interventions designed to enhance their delivery of these services to their adolescent patients.

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ADOLESCENT violence is an epidemic of major concern in the United States today. Much of the adolescent mortality rate and morbidity results from the medical consequences of this problem. Epidemiological data demonstrate that adolescents have the highest rates of lethal and nonlethal victimization from violence.[1] In the United States in 1995, the homicide rates for children aged 15 years and younger were 5 times higher than for those of children in 25 other industrialized countries combined.[2] Furthermore, in 1994 homicide was the second leading cause of death of adolescents aged 15 to 24 years.[3] As a result, adolescent violence, defined as behaviors that are intended to cause physical harm to another person, is now recognized as a public health problem with multiple social, psychological, and financial consequences.

Because of the high incidence of adolescent violence, pediatricians must provide health care to many adolescents who are at risk or who have been either victims or perpetrators of violence.[4] Because pediatricians have experience with providing preventive health care, they are in an ideal position to provide violence prevention services to their adolescent patients. This is evident by the recommendations and policy statements from national medical organizations, including the American Academy of Pediatrics (AAP) and the American Medical Association, encouraging pediatricians to follow their guidelines and play an active role in the prevention of adolescent vio-

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METHODS

STUDY PARTICIPANTS AND SAMPLING PLAN

Study participants (N=600) were selected from a computer-generated, random sample of more than 3000 pediatricians who are California members of the AAP. This database was selected because it represents more than 74% of practicing, board-certified pediatricians in the United States (AAP Department of Membership, personal communication, June 1998). Criteria for inclusion in the study were (1) being a fellow or candidate fellow of the AAP; (2) seeing at least 3 adolescent patients (aged 11-21 years) per week; and (3) having practiced for at least 1 year. Resident fellows and emeritus fellows were excluded, as they were not likely to have an established practice or to be currently providing primary care to adolescents.

Of the 600 questionnaires mailed to California pediatricians in September 1998, 445 (74%) were returned. Of these individuals, 35 (8%) declined to participate, and 190 (43%) were ineligible to participate in the study based on the inclusion and exclusion criteria. Of those responding, 220 (49%) were eligible to participate in the study. These individuals composed the study population.

STUDY PROCEDURE

Pediatricians selected for enrollment in the study were mailed a packet that included a cover letter describing the study, a letter from the AAP endorsing the study, a questionnaire, and a stamped, addressed return envelope. For individuals who did not respond to the initial mailing, a second identical questionnaire was mailed 3 weeks later. Three weeks following the second mailing, a third identical questionnaire was mailed to those who did not respond to the first 2 mailings. Questionnaires were coded using identification numbers to ensure the participant's confidentiality.

MEASURES

The Precede/Proceed model guided the development of the self-report questionnaire. Questions assessed sociodemographic information, as well as predisposing, enabling, and reinforcing factors associated with pediatricians' provisions of violence prevention services. Violence prevention services included both screening for risk factors and providing clinical interventions such as a follow-up appointment or a referral to a mental health provider.

Sociodemographic Factors (Control Variables)

The questionnaire measured sociodemographic factors related to the study participants' age, sex, race or ethnicity, and the practice setting and demographics. Other information included the percentage of adolescents treated in the previous year who were victims of violence, participants' firearm ownership, and their personal experience with acts of violence against themselves or their children. These factors were included in the study because they were found to be associated with firearm prevention screening.[9,10]

Precede/Proceed Factors (Independent Variables)

Measures associated with participants' screening and intervening practices related to adolescent violence were derived from the Precede/Proceed model. **Table 1** presents examples of items, mean scores for scales, SDs, and Cronbach α where appropriate. A copy of the survey is available on request. The predisposing factors assessed study participants' (1) knowledge about the risks of being a perpetrator of violence (yes/no responses); (2) knowledge about the risk of being a victim of violence (yes/no responses);

Continued on next page

lence.[5,6] Little is known about the extent to which pediatricians provide these services to their adolescent patients, or the factors that are associated with implementation of these services. Thus, the aims of this study were to describe and identify these factors associated with pediatricians' provision and implementation of preventive services related to adolescent violence.

A physician's decision to implement preventive services in the clinical setting involves many conditions. To help organize and provide a conceptual framework for the factors involved in pediatricians' implementation of services to prevent adolescent violence, this study used a component of a theoretical preventive service model, the "Precede/Proceed" model.[7] The factors hypothesized to influence the preventive practices of physicians are organized into 3 categories: predisposing factors, enabling factors, and reinforcing factors.[8] Specifically, *predisposing factors* include physicians' attitudes toward the provision of preventive services (eg, whether the physician feels prevention services will make a difference in changing a health problem); beliefs about the effectiveness of their provision of a preventive service (eg, their self-confidence in implementing a specific preventive service); and knowledge about problems related to the medical condition they wish to prevent. The *enabling factors* include physicians' skills in the provision of the preventive service, availability of resources to provide these services, availability of time, use of prompts in the medical records, and reimbursement for the provision of preventive services. Finally, *reinforcing factors* include outcomes related to the provision of preventive services such as positive reinforcement from patients and colleagues (**Figure 1**).

Use of the Precede/Proceed model is important because it organizes and includes the many factors associated with pediatricians' provision of violence prevention services. The determination of these factors in the context of this model can provide information leading to the development of interventions that enhance pediatricians' violence prevention services.

RESULTS

DESCRIPTION OF THE PARTICIPANTS

Of the 220 pediatricians participating in the study, 54% were female, 66% were white, 24% were Asian, 5% were Latino, and 5% were African American or of "other" race

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(3) personal attitudes toward violence prevention (5-point Likert scale); and (4) beliefs about the effectiveness of violence prevention (5-point Likert scale). The enabling factors assessed study participants' (1) perception of violence prevention skills (5-point Likert scale); (2) prior violence prevention training (number of lectures received 0, 1-2, 3, or > 3); (3) availability of time for providing violence prevention services (5-point Likert scale); (4) reimbursement for time spent on violence prevention (5-point Likert scale); (5) resource availability for violence prevention services (5-point Likert scale); (6) reminders in medical records for providing violence prevention (5-point Likert scale); and (7) familiarity with national guidelines on adolescent violence prevention (yes/no responses). The reinforcing factors measured the study participants' perceived reinforcement (support) for providing violence prevention services, such as feedback from patients and colleagues. These items were measured on a scale from 0% to 100% of the time.

Screening and Intervening Practices (Dependent Variables)

The study participants' screening practices determined the extent to which they screen their adolescent patients on 5 risk factors associated with adolescent violent behavior (eg, "What percent of your new adolescent patients do you ask about violence in the home?"). Each of these 5 factors was scored on a scale from 0% to 100% of the time (**Figure 2** depicts the risk areas). These risk factors were selected for inclusion in this study because they represent prevalent areas of risk associated with adolescent violence that may be amenable to change via interventions by clinicians in the office setting.[12] A scale including all 5 risk factors was computed (mean score, 54.3; SD, 22.1; Cronbach α, 0.77).

The participants' intervening practices determined the extent to which they provide violence prevention interventions to the patients they identified to be at risk for violence (eg, "How often do you provide written materials to your patients regarding violence prevention?"). Each of the 7 dimensions of clinical intervention was scored on a scale from 0% to 100% of the time (**Figure 3** displays the types of interventions). These interventions were selected for this study on the basis of previous literature focusing on clinical interventions related to violence prevention.[13,14] A scale including all 7 interventions was computed (mean score, 30.6; SD, 22.7; Cronbach α, 0.77).

DATA ANALYSES

Basic descriptive statistics were used to obtain measures of central tendency and variability to describe the sample of participants. Bivariate analysis was used to examine associations between the sociodemographic variables and the factors from the Precede/Proceed model, with each of the 2 dependent variables (screening and intervening practices). Bivariate relationships between the independent and dependent variables were tested using Pearson product correlations, t tests, and χ^2 analyses depending on the level of measurement of the variables involved in each comparison. Independent variables significantly associated ($r \geq 0.20$, $P < .05$) with the dependent variables at the bivariate level were included in the regression analyses. Two separate, linear regression models were used to assess factors multivariately associated with participant screening and the intervening practices to prevent adolescent violence. In each model, the same 3 sociodemographic factors were entered as control variables: the participant's sex, firearm ownership, and percentage of patients who were victims of violence. The control variables were entered in the first block, followed by the predisposing variables in the second block, the enabling variables in the third block, and the reinforcing variables in the fourth block.

or ethnicity. Most pediatricians (53%) reported practicing in a private, group, or solo practice, with 22% practicing in a health maintenance organization setting, and the remaining 25% practicing in other settings that included public health clinics, university-based settings, or military settings. In addition, most pediatricians (50%) reported practicing in urban settings, with only 10% practicing in rural settings (**Table 2**).

Regarding the study participants' reports of treating adolescent patients who were victims of violence, 71% reported that at least one fourth of their adolescent patients had been a victim of a violent act (eg, gunshot wound or assault) in the last year. In addition, 7% of study participants owned a firearm, 18% reported having been a victim of violence, and 4% of those who were parents reported that their children had been victims of violence.

SCREENING AND INTERVENTION PRACTICES

Overall, participants provided violence-related screening and intervention services to less than 50% of their adolescent patients. On average, participants screened their patients for violence-related risk factors 31% of the time for fighting, 39% of the time for violence in the home, and 29% of the time for weapon carrying. In contrast, they screened, on average, more than 50% of their patients for school-related problems and for abuse of alcohol and other drugs (Figure 2). Similarly, of the patients identified to be at risk, participants provided violence-related interventions, on average, less than 50% of the time using the following intervention methods: written materials, follow-up appointments, referral to a community organization, referral to Child Protective Services, provision of discipline counseling, and referral to a specialized adolescent clinic (Figure 3).

BIVARIATE ASSOCIATIONS BETWEEN THE INDEPENDENT AND DEPENDENT VARIABLES

Bivariate associations between the independent and dependent variables reveal several significant associations (**Table 3**). Of the sociodemographic variables, sex (female) was found to be significantly associated with both of the dependent variables. Of the personal background characteristics related to violence, lack of firearm ownership and treating an increased percentage of patients who were victims of violence were significantly associ-

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Table 1. Measures of the Precede/Proceed Model

Measures	Example Items	Mean Score (SD)	Items	Range	Cronbach α*
Knowledge of risk factors for perpetrators	Is carrying a firearm a risk factor for being a perpetrator of violence?	6.9 (1.29)	8	1-8	. . .
Knowledge of risk factors for victims	Is having a history of being in jail a risk factor for being a victim of violence?	6.7 (1.24)	8	2-8	. . .
Attitudes toward violence prevention	Adolescent violence is an important/unimportant medical problem.	13.1 (3.20)	5	4-20	0.70
Beliefs about violence prevention	Counseling adolescents is effective/ineffective in reducing violence.	19.8 (4.01)	6	8-30	0.72
Skills in violence prevention	I am adequately/not adequately trained to screen for violence.	4.9 (1.89)	2	2-10	0.63
Training experience	How many lectures did you receive in medical school regarding the prevention of adolescent violence?	1.5 (1.27)	3	0-6	. . .
Time availability	My appointment schedule provides/does not provide adequate time to screen for adolescent violence.	3.8 (1.18)	1	1-5	. . .
Reimbursement	I am adequately/not adequately paid for my time spent counseling about violence.	1.8 (1.15)	1	1-5	. . .
Resource availability	I have/do not have community resources available to refer my adolescent patients at risk for violence.	7.7 (2.59)	3	3-15	. . .
Reminders (prompts)	I have/do not have prompts in charts for asking about violence.	2.1 (1.51)	1	1-5	. . .
Familiarity of guidelines (recommendations)	I have read the American Academy of Pediatrics "Guidelines for Health Supervisions III" regarding the prevention of adolescent violence.	1.3 (1.22)	4	0-4	. . .
Reinforcement for providing violence prevention services	Amount of colleague support for providing violence prevention services?	18.9 (20.64)	6	0-100	0.89

*Ellipses indicate that measures of α reliability are not reported for these scales as the responses for these items were not expected to be correlated with one another.[11]

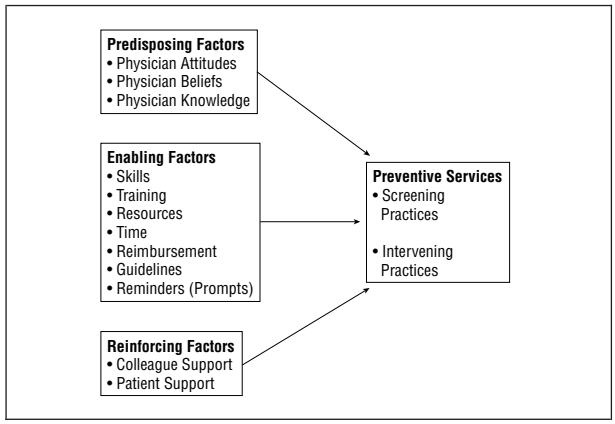

Figure 1. *Constructs of the "Precede/Proceed" model.*

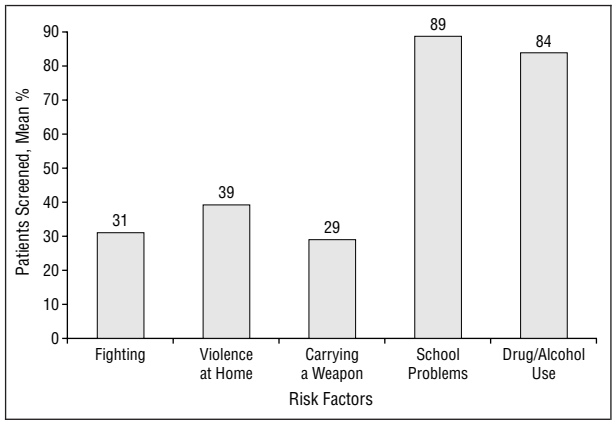

Figure 2. *Percentage of patients screened by participants for risk factors related to violence.*

ated with screening practices. Of the 12 variables in the Precede/Proceed model assessed in this study, 10 were significantly associated with participants' screening practices, and 9 were significantly associated with their intervening practices.

MULTIVARIATE ASSOCIATIONS BETWEEN INDEPENDENT AND DEPENDENT VARIABLES

Results of the regression analysis assessing participants' screening practices indicate several significant findings. Specifically, after controlling for the effects of the participants' sex, firearm ownership, and number of patients who were victims of violence, participants' screening practices were significantly associated with positive attitudes toward screening and positive beliefs about the effectiveness of screening (predisposing factors); perceptions of greater skills, use of screening reminders, greater familiarity with screening guidelines (enabling factors); and positive reinforcement for providing violence prevention services (reinforcing factors). These variables together account for 44% of the variance ($P<.001$) in participants' violence prevention screening practices (**Table 4**).

Results of the regression model assessing participants' intervening practices show several significant findings. After controlling for the effects of the participants' sex, firearm ownership, and the number of patients who were victims of violence, participants' intervening practices were significantly associated with more positive attitudes toward screening and positive beliefs on the effectiveness in screening (predisposing factors), greater

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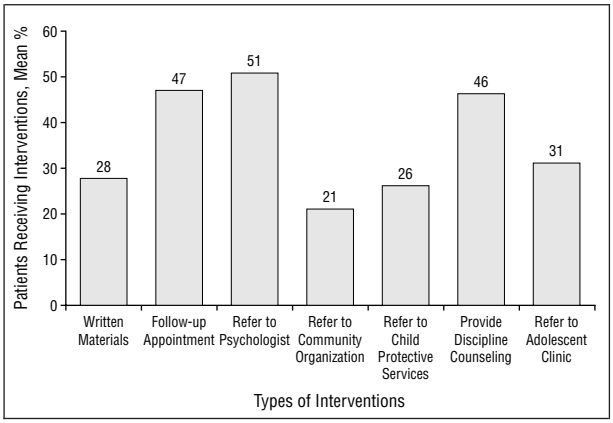

Figure 3. *Percentage of patients identified to be at risk by participants to receive violence prevention interventions.*

availability of resources (enabling factors), and positive reinforcement for providing violence prevention services (reinforcing factors). These variables together explain 37% of the variance ($P<.001$) in participants' violence prevention intervening practices (Table 4).

Table 2. Sociodemographic and Practice Characteristics of Study Participants

Characteristics of Study Participants (N = 220)	No. (%) of Participants
Mean age, y	44 (range, 29-68)
Sex	
Female	119 (54)
Race/ethnicity	
White	145 (66)
Asian	52 (24)
Latino	12 (5)
African American/other	11 (5)
Mean years in practice	13 (range, 1-38)
Practice setting type	
Private practice	117 (53)
Health maintenance organization	49 (22)
Other	54 (25)
Practice setting location	
Urban	110 (50)
Suburban	89 (40)
Rural	23 (10)
Owner of a firearm	15 (7)
Personal history of violence	39 (18)
Participants' children who were victims of violence	9 (4)
Adolescent patients who were victims of violence in the last year, %	
0	47 (22)
1-24	153 (71)
50-74	12 (6)
75-100	1 (1)

COMMENT

Consequences resulting from adolescent violence are complex and far reaching, with no easy solutions to the problems they cause. However, as health care providers face the medical, social, psychological, and financial consequences of adolescent violence, they must increasingly attempt to prevent and manage these consequences. Recognizing that pediatricians have taken a preventive role with many other child and adolescent public health problems, the AAP Task Force on Violence encourages pediatricians to take an active role in the prevention of adolescent violence. However, the AAP also recognizes the lack of research that examines prevention and treatment strategies for pediatricians to use in addressing this problem.[5]

Our study is among the first to examine pediatricians' clinical role in the prevention of adolescent violence. Results of this cross-sectional survey of California pediatricians show that a majority of them do not provide violence-specific screening and intervention services to their adolescent patients. These findings are consistent with other research examining rates of physicians' violence-specific preventive services.[9,10] In contrast, however, we found that participants reported screening their adolescent patients more for non–violence-specific risk factors such as substance abuse and school problems. This suggests that participants did not fail to screen their adolescent patients; rather they screened selectively for non–violence-related risk factors. Reasons participants did or did not screen for violence-specific risk factors are likely to involve many conditions. Although we found low rates for violence prevention services, we did identify several significant factors associated with pediatricians' violence screening and intervention practices. We examined these factors in the context of the Precede/Proceed model to provide a framework for understanding the factors associated with these low rates for the provision of violence prevention services, and as a theoretical basis for the development of interventions to enhance pediatricians' delivery of these services.

Of the predisposing factors associated with violence screening practices, we found that participants' attitudes toward violence prevention and beliefs about the effectiveness of violence prevention are associated with screening practices. These findings are supported by other research examining the effects of attitudes and beliefs as important factors associated with physicians' delivery of violence prevention services.[9,15-17] As suggested by the Precede/Proceed model, physicians' attitudes and beliefs are often influenced by their educational experience. Based on these findings, the development of violence prevention educational programs may need to be directed toward changing and/or enhancing pediatricians' attitudes and beliefs toward violence prevention to ultimately increase their delivery of violence prevention services to at-risk adolescents.

Regarding the enabling factors associated with violence screening practices, we identified some practical measures that may enhance pediatricians' delivery of violence prevention services. For example, our results identified greater familiarity of violence prevention guidelines with better violence screening practices. Perhaps the implementation of violence prevention guidelines such as those from the AAP Task Force on Violence and Task Force on Adolescent Assault Victim Needs, which outline specific violence prevention strategies for pediatricians to use in the clinical setting, may enhance pedia-

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Table 3. Bivariate Relationships Between Sociodemographics, Predisposing Factors, Enabling Factors, and Reinforcing Factors With Screening Practices and Intervening Practices

Independent Variables	Test	Dependent Variables: Screening Practices	P	Intervening Practices	P
Sex (female)	*t*	4.05	<.01	2.22	<.01
Age	χ^2	1.11	. . .	0.75	. . .
Race/ethnicity	χ^2	0.92	. . .	2.32	. . .
Mean years in practice	χ^2	1.07	. . .	0.87	. . .
Practice setting					
Type	χ^2	1.37	. . .	0.72	. . .
Place	χ^2	1.79	. . .	0.96	. . .
Owner of a firearm	*t*	–2.30	<.05	0.47	. . .
Personal history of violence	*t*	1.21	. . .	0.06	. . .
Participants' children who were victims of violence	*t*	–1.22	. . .	0.12	. . .
Higher percentage of patients who were victims of violence	χ^2	5.09	<.01	1.35	. . .
Greater knowledge of risk factors for perpetrator	Pearson *R*	0.10	. . .	–0.09	. . .
Greater knowledge of risk factors for victim	Pearson *R*	0.11	. . .	–0.03	. . .
Positive attitudes about violence prevention	Pearson *R*	0.48	<.01	0.37	<.01
Positive beliefs toward violence prevention	Pearson *R*	0.46	<.01	0.37	<.01
Perceptions of greater violence prevention skills	Pearson *R*	0.43	<.01	0.35	<.01
Greater training experience	Pearson *R*	0.29	<.01	0.31	<.01
Greater time availability	Pearson *R*	0.28	<.01	0.25	<.01
Reimbursement for time spent	Pearson *R*	0.15	<.01	0.05	. . .
Greater resource availability	Pearson *R*	0.24	<.01	0.38	<.01
Use of reminders (prompts)	Pearson *R*	0.30	<.01	0.17	<.05
Greater familiarity of guidelines (recommendations)	Pearson *R*	0.36	<.01	0.27	<.01
Positive reinforcement for providing violence prevention services	Pearson *R*	0.33	<.01	0.41	<.01

**Higher scores indicate better screening and provision of interventions by participants. Ellipses indicate* P *is not significant.*

tricians' screening practices.[5,13] In addition, we found that the use of prompts in the medical records are associated with increased screening practices. Use of reminders in patients' records has been shown to be effective in other research by increasing physicians' screening practices for domestic violence.[18] This minor change may similarly enhance pediatricians' screening behaviors related to adolescent violence.

Violence prevention training is thought to be important in increasing the rates for the provision of violence prevention services.[14,15] Although we did not find increased reports of training to be associated with screening practices, it may be that more important factors include pediatricians' perceptions of the quality of the skills they received from their training rather than just the amount of training. For example, although we found that more than 74% of participants had received violence prevention training since residency, 75% reported having no confidence in their ability to counsel on violence prevention. Perhaps their training was knowledge based rather than skills based. If this is the case, violence prevention training programs may be more effective if they include a skills-based component, such as use of readily available programs like the AAP skills-based training program, "Steps to Prevent Firearm Injury." Use of skills-based training may thereby increase pediatricians' self-confidence in their skills when providing violence prevention services.

Of the enabling factors associated with office-based interventions to prevent violence, we found greater resource availability to be of single importance. As explained by the Precede/Proceed model, resource availability is essential to enabling the physician to provide appropriate interventions for their identified at-risk patients. Interestingly, research has shown that there is not a lack of available resources, but a lack of effective collaboration among health care agencies and other sectors, such as violence-related community organizations or mental health services, that allow providers to refer identified at-risk adolescents for assistance with violence-related services.[19] This suggests that pediatricians need to consider developing effective linkages with other violence prevention organizations in their communities to enhance delivery of violence-related interventions to their adolescent patients.

Finally, as another essential component to the Precede/Proceed model, we found positive reinforcement for providing violence prevention services, such as that of colleagues and patients, to be associated with increased screening and intervention practices. This has been demonstrated in other research that examined barriers to physicians' reports of family violence because of the lack of peer support.[19] Similarly, the fear of losing patients was found to explain why physicians failed to report suspected child abuse.[20] These findings suggest the need for pediatricians to develop a supportive practice environment to increase the likelihood that they will provide violence prevention services. One mechanism could be the use of practice protocols on violence prevention. Such protocols could provide developed, established, practice-supported, and practice-specific guidelines for managing at-risk adolescents. Furthermore, once implemented the protocols could be evaluated and modified based on the outcomes of violence prevention services

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Table 4. Factors Associated With Greater Screening and Intervening Practices*

	Screening Practices		Intervening Practices	
	β	*P*	β	*P*
Block 1: Control Variables				
Sex (female)	0.23	<.01	0.17	<.05
Nonowner of firearm	0.14	<.05	–0.08	. . .
Patients victims of violence, %	0.25	<.001	0.00	. . .
Change in R^2	0.15	<.001	0.03	<.001
Block 2: Predisposing Factors				
Positive attitudes toward screening	0.23	<.05	0.23	<.05
Positive beliefs about screening	0.24	<.01	0.21	<.05
Change in R^2	0.17	<.001	0.15	<.001
Block 3: Enabling Factors				
Perceptions of greater skills	0.18	<.05	0.15	. . .
Use of screening reminders (prompts)	0.14	<.05	NS	. . .
Greater familiarity of screening guidelines	0.15	<.05	0.05	. . .
Greater resource availability	0.04	. . .	0.23	<.01
Reimbursement for time spent	NS	. . .	NS	. . .
Greater training experience	–0.02	. . .	0.12	. . .
Greater time availability	0.08	. . .	0.06	. . .
Change in R^2	0.1	<.001	0.13	<.001
Block 4: Reinforcing Factors				
Positive reinforcement for providing prevention services	0.19	<.05	0.30	<.001
Change in R^2	0.02	<.001	0.06	<.001
Total R^2	0.44	<.001	0.37	<.001
F statistic	11.43	. . .	9.21	. . .

**Higher* β *scores represent a stronger magnitude of association of the factor with screening and provision of violence prevention interventions by participants. NS indicates that these factors were not entered, as their significance level was greater than .05 or the correlation coefficient was less than 0.20.* R^2 *indicates Pearson correlation; ellipses,* P *is not significant.*

provided by the practice, thereby providing a form of feedback and positive reinforcement for both the practice and its practitioners.

As explained in context of the Precede/Proceed model, the factors we found to be associated with implementation of violence prevention services have several implications for intervention development. One important feature of this model, however, relates to the hierarchical principle in the organization of the 3 categories of factors. Specifically, the predisposing factors must be in place first for the enabling factors to be effective. Although we found that having prompts in the medical records was associated with increased screening practices, having prompts in the medical record may not be effective if individuals do not have positive beliefs about their effectiveness in providing violence prevention services. The model further emphasizes that once the preventive service has been provided, the physicians must feel social support and positive reinforcement from their patients and colleagues to maintain the provision of this service. This suggests that if pediatricians do not receive positive reinforcement from their colleagues for providing violence prevention services, they will in all likelihood not continue to screen their patients. Although we identified many factors associated with pediatricians' violence prevention practices, the implications for effective interventions to enhance delivery of such services must take into consideration the hierarchical nature of these factors, as well as be inclusive of all categories of factors.

CONCLUSIONS

Limitations of this research include the self-report, the cross-sectional nature of the study, and the limited generalizability of this statewide sample. Because these data were self-reported, individuals may have overreported their practice behaviors because of social desirability. On the other hand, if participants in our study were overreporting their screening and intervention practices, the actual violence preventive practices may be even lower than those we identified, and may further underscore the need to enhance these services. Furthermore, because this was a cross-sectional study, the predictive nature of the factors identified cannot be elucidated. In addition, there may be factors that are not represented in this research that may further explain providers' provisions of violence prevention services. As discussed by the Precede/Proceed model, the community, work environment, and patient and parental attitudes and beliefs all affect providers' provisions of violence prevention services. Therefore, more in-depth qualitative analyses of the factors associated with physician provisions of violence prevention services may provide information on other salient associations with these behaviors. Despite these limitations, this information does provide a "first look" at the adolescent violence prevention services of pediatricians, and a starting place for the development of theory-driven, practical interventions. Finally, although we cannot make generalizations from this statewide sample, California does provide a diverse and broad spectrum of pediatricians, including those working in a variety of practice types and settings. A national study may provide more nuances of the different aspects of practice types and settings.

In summary, our study is an initial attempt at describing pediatricians' provisions of violence prevention services to their adolescent patients. Although we found low rates for both screening and intervening practices by pediatricians in the prevention of adolescent violence, we did find many factors associated with their delivery of these services. We describe these factors, as guided and supported by the Precede/Proceed preventive service model, to provide a conceptual foundation for the development of effective interventions that enhance physicians' delivery of violence prevention services to their adolescent patients.

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