

Increasing Adolescent Sexual Activity Screening Through a Provider-Based Intervention

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Abstract

Screening for adolescent sexual activity is a vital aspect of comprehensive pediatric care. Adolescents engage in risky sexual behaviors. Thus, a complete and accurate sexual health history can assist in the prevention and treatment of disease, prevention of unwanted pregnancy, treatment of existing diseases, and optimal planning of future healthcare for adolescents. Current evidence shows that provider-focused strategies improve the delivery of preventive services, including sexual health screenings. In this initiative, we assessed and examined pre- and post-screening rates for sexual activity among adolescents by advanced practice providers. This multi-site initiative was implemented in four school-based health centers and a school-linked center that included 2,102 unique patients ages 9 to 24 years. Our biphasic intervention included education for advanced practice providers and electronic health record modifications. Pre- and post-data collection was conducted to determine changes in the rate of screening for sexual activity during a primary care adolescent health visit over a 3-year period. Data were collected via retrospective medical chart review and analyzed in three time periods for comparison from 2018 to 2021. Screening rates for sexual activity increased significantly after the intervention (all $p < .001$) with the likelihood more than double that of the year before it was implemented. The intervention was deemed to be a feasible and cost-effective strategy to

improve the provider's willingness and ability to provide more adolescent sexual health screenings.

Keywords

adolescent, clinical research areas, gynecological, community-based care, healthcare settings, pediatrics, quantitative, methods

Introduction to the Brief Report

Beginning the conversation about sexual health with adolescents is an important component of health supervision. In this multi-site intervention project, we aimed to increase screening rates for sexual activity among adolescents by advanced practice providers (APPs). A biphasic intervention was implemented in four school-based health centers and one school-linked center. Pre- and post-data collection was conducted to determine changes in the rate of screening for sexual activity during a primary care adolescent health visit. After the intervention was implemented, there was a significant increase in the rate of screening for sexual activity by providers, with the likelihood more than double that of the year before it was implemented. Formal APP training coupled with the integration of an electronic medical record tool may enhance provider screening of sexual activity among adolescents in primary care.

Background

Problem

Over half of teens in the United States have sexual intercourse by age 18 ([CDC, 2018](#)). Sexually active adolescents are at increased risk for sexually transmitted infections (STIs), making screening and behavioral counseling interventions imperative ([U.S. Preventative Task Force, 2020](#)). Screening for sexual activity in adolescents is an integral component of comprehensive care. However, important governing bodies argue there is substantial room for improvement ([Marcell et al., 2017](#); [SAHM, 2021](#)). One-third of adolescents have no conversation about sex during their annual health maintenance visits and when sex is discussed, the conversations are brief, lasting an average of 36 seconds ([Alexander, 2014](#)). Screening for adolescent sexual activity (SASA) by APPs is insufficient.

However, clear standards for universally improving SASA are not yet known.

Theoretical Framework

This intervention project was guided by the *Theory of Planned Behavior* (TPB: [Rashidian & Russell, 2011](#)). TPB is a social cognition theory extended from the theory of reasoned action to provide a theoretical basis for explaining volitional (willful) behavior. Rashidian and Russell suggest a person's intention to perform behaviors is determined by their attitudes, perceived social or peer pressures (subjective norms), and perceived behavioral control ([Rashidian & Russell, 2011](#)). TPB supports the assumption that individuals may perform or refrain from performing behaviors despite their intention. APPs are frequently exposed to scenarios affecting intentional and willful behaviors related to patient care. Provider SASA is an evidence-based behavior affected by attitudes and perceived social or peer pressures in a clinical setting.

Review of the Literature

The state of the science in this area includes research centered on examining provider practices of screening for sexual activity and sexual history. There is also data-based evidence supporting initiatives centered on enhancing sexual, reproductive, and risky behavior assessment and screening for adolescents. Screening for sexual activity and assessment of sexual and reproductive history varies depending on the patient population, chief complaint, and healthcare setting.

Screening for Sexual Activity

Sexual activity screening for adolescents often begins in primary care. In 2014, Goyal et al. investigated clinician screening practices for adolescent sexual activity and sexually transmitted diseases across 29 different pediatric primary care sites. In a sample of 1,000 randomly selected medical records (routine well visit aged 13–19), only 21.2% had a documented sexual health history. Factors associated with a positive screening included care by a female clinician, older patient age, non-private insurance, and non-Hispanic Black race/ethnicity (Goyal et al., 2014). **[AQ2]**

Moore et al. (2022) investigated sexual activity screening and referral practices among providers caring for adolescent females with chronic disease [AQ3]. A self-report survey and a retrospective review of 222 medical records (documented by 39 pediatricians) revealed 46% of providers reported routinely screening for sexual activity. A coupled review of documentation demonstrated only 11 instances of sexual activity screening (4.9%) among medically complex females (Moore et al., 2022). In a similar study, Pfaff et al. (2021) investigated screening for high-risk behaviors (substance abuse, sex, mood, abuse/violence, suicidal ideation) in hospitalized adolescents [AQ4]. In a sample of 240 males and females (aged 14–17 years), a low rate of high-risk behavior screening was found (38%). This included only a 23% screening rate for sexual activity (Pfaff et al., 2021). To demonstrate an even wider view of sexual activity screening rates among adolescents, Pfaff et al. (2021) also conducted a scoping review of 46 studies centered on high-risk behavior screening in adolescents. Appraisal of studies included in the review demonstrated a low rate of screening for high-risk behaviors (including sexual activity) in the hospital, emergency department, and urgent care setting (Pfaff et al., 2021).

Sexual activity screening has also been investigated among adolescent females with mental health concerns in the emergency room. Vayngortin et al. (2022) retrospectively examined sexual history and risk in adolescent females presenting to the emergency department with suicidal ideation [AQ5]. Out of 312 females, aged 13 to 17, only 144 had a documented sexual history. This low screening rate was found despite the even higher risk for unintended pregnancy, STIs, risky behaviors, and non-consensual sex in females diagnosed with mental health illness (Vayngortin et al., 2022). Among the adolescents who were screened for sexual history in this study, important elements such as pregnancy screening, STI screening, and contraception use were missing. Authors found provider screening rates were not associated with gender, age, race, ethnicity, or type of insurance; and this differs from the associated factor findings of Goyal et al. (2014). Vayngortin et al. (2022) further validate the importance of focusing on ways to enhance provider adherence with screening for sexual activity in healthcare facilities.

Interventions to Enhance Screening and Sexual Health History

Health education interventions and electronic health record (EHR) quality improvements have demonstrated success in increasing and enhancing

sexual health assessment ([Harris et al., 2017](#); [Myers et al., 2017](#); [Uzdavines et al., 2022](#)). Adding sexual health assessments directly to EHRs and focusing on clinician education and comfort with sexual history are essential and may improve provider screening rates ([Uzdavines et al., 2022](#)). In one scoping review focused on system and visit-level strategies to increase preventive services for adolescents, authors found the use of innovative technology, parent engagement, and clinician-targeted strategies (such as brief screening tools and education) to be effective evidence-based strategies ([Harris et al., 2017](#)).

A year later, a group of authors tested one of the recommendations found by Harris et al. through the implementation of an educational intervention for nurses and students in six urban high schools. The intervention included working with school nurses to improve access to sexual and reproductive healthcare ([Dittus et al., 2018](#)). The education component was specifically focused on male students and included the provision of condoms and information about pregnancy and STI prevention and services. The effects of the intervention were assessed over a 5-year period. Results demonstrated nurses in the intervention schools changed their interactions with students while students reported significant increases in receipt of sexual health services. In a more recent quality improvement intervention, authors explored screening rates of sexual history and STIs in hospitalized patients aged 14 to 18 years (Hood et al., 2022) **[AQ6]**. The focus of the intervention included education for residents on STI screening, history, and physical form prompts for sexual history documentation, sexual history templates, faculty development, and an electronic medical record template. The rate of sexual health history collected by providers rose from 48.7% to 67.1% following this targeted intervention (Hood et al., 2022).

Purpose and Design

This was a multi-site intervention initiative with retrospective comparison by year. Following a review of current evidence, an intervention targeted at enhancing SASA was implemented and assessed for pre- and post-differences. The two specific aims of this project were as follows: (1) to enhance APP sexual activity screening rates in a primary adolescent care setting through a provider-based intervention and (2) to examine the outcomes of the provider-based intervention for sexual activity screening. Ethical considerations for this initiative were addressed through secure

data management procedures, human subjects training, and review with approval by an institutional board of ethics.

Methods

Procedures

A pre- and post-intervention analysis was conducted to assess differences in SASA rates and associations with demographics. A two-part (biphasic) intervention was developed and implemented at five primary care adolescent health sites in Southeastern North Carolina. *Phase I* of the intervention included the delivery of an educational in-service for APPs and medical staff. Educational training centered on (a) SASA and correspondence with risk for STIs; (b) EHR protocol changes to enhance health center screening rates; and (c) the national, state, and local prevalence rates of STIs. *Phase II* of the intervention included “quick text” modifications to the EHR. The set of quick texts added for SASA included “sexyes” (reports being sexually active) and “sexno” (denies being sexually active). Both of these quick text responses in the EHR indicate a positive screening for sexual activity by the APP. The quick text modifications were made so that APPs could have a quick and feasible way to document sexual activity within the health history, including a comprehensive reproductive and/or sexual health history, when indicated. The EHR modifications also created a more efficient way to capture and track screening rates.

Sample and Data Collection

After phase I education and training were complete, data collection began. Encounter data from adolescents and young adults aged 9 to 24 years were investigated in this intervention with a majority of the sample including early middle and late adolescents. Data were collected via retrospective medical chart review and analyzed in three time periods for comparison: August 1, 2018 to July 31, 2019 (pre-intervention screening rates), August 1, 2019 to July 31, 2020 (year 1 post-intervention screening rates) and August 1, 2020 to July 31, 2021 (year 2 post-intervention screening rates). Over the 3-year period, a total of $N = 8,022$ patient encounters were investigated, representing $N = 2,102$ unique patients.

Data Analysis

Univariate statistics included mean \pm *SD* or proportions. Because of the multiple observations for many patients, the assumption of independence was violated for most regression models. To account for the related nature of the data, we employed Generalized Estimating Equation models. These hierarchical linear models allow for repeated observations in the covariance structure. A logit model with a binomial distribution was specified, with the reported statistic being an odds ratio and 95% confidence interval (95% CI). All analyses were conducted using SAS version 9.4 [AQ7]. Significance was determined at $p < .05$.

Results

Characteristics of the patients on their initial visit, inclusive of the years 2018 to 2021, are shown in [Table 1](#). The ages of patients ranged from 9 years (mid-childhood) to 24 years (young adulthood). The majority of patients were White (46.1%) and Black (43.9%) races. Ten percent of patients identified with other races, including Asian, Native Hawaiian or Pacific Islander, or Unspecified. [Table 2](#) provides adjusted odds ratios (AOR) and 95% CI for receipt of the intervention. Any confidence interval not including 1 is statistically significant. Females were represented at a higher rate than males. However, males were significantly more likely to receive the intervention (AOR = 1.18; 95% CI [1.06, 1.32]). There was no association between race and receipt of the intervention, thus Black and other race patients were similarly likely as White patients to be asked about sexual activity. After the intervention was implemented in August 2019, there was significantly increased use of the intervention by clinicians, with the likelihood of its use more than double (AORs > 2.0) that of the year before it was implemented (2018–2019). Finally, compared to young adults, every younger age group was significantly more likely to receive the intervention (AOR range = 1.61–2.90).

Table 1.

Characteristics of $N = 2,110$ Patients at Their First Available Visit Between 2018 and 2021.

| [AQ8] | Mean \pm <i>SD</i> or % |
|-------------|---------------------------|
| Age (years) | 17.2 \pm 3.1 |
| Female (%) | 71.8 |
| Race (%) | |
| White | 46.1 |
| Black | 43.9 |

| [AQ8] | Mean \pm SD or % |
|-------|--------------------|
| Other | 10.0 |

Table 2.
Results of SASA Intervention.

| [AQ9] | Adjusted odds ratio/95% confidence interval | <i>p</i> values |
|--------------------------|---|-----------------|
| Gender | | |
| Female | Ref. | |
| Male | 1.18 [1.06, 1.32] | .003 |
| Race | | |
| White | Ref. | |
| Black | 1.06 [0.96, 1.18] | .25 |
| Other | 1.11 [0.94, 1.32] | .23 |
| Year | | |
| 2018–2019 | Ref. | |
| 2019–2020 | 2.17 [1.95, 2.41] | <.001 |
| 2020–2021 | 2.03 [1.81, 2.28] | <.001 |
| Age group | | |
| Young adult (21–24) | Ref. | |
| Late adolescent (18–21) | 1.61 [1.21, 2.15] | .001 |
| Mid adolescent (15–17) | 2.44 [1.85, 3.22] | <.001 |
| Early adolescent (11–14) | 2.90 [2.18, 3.87] | <.001 |
| Mid childhood (9–10) | 1.83 [1.05, 3.16] | .03 |

Note. Ref. = referent group in the multivariate model; SASA = screening for adolescent sexual activity.

Discussion

Our results mirror previous research findings from [Harris et al. \(2017\)](#), [Myers et al. \(2017\)](#), and [Uzdavines et al. 2022](#). Education, training, and EHR modifications improve adolescent sexual activity screening rates. In our evaluation, providers screened for sexual activity similarly in all racial groups with an increased likelihood of screening in younger patients. Although it is essential to reach younger adolescents with sexual health histories, providers must continue to screen across childhood, adolescence, and young adulthood without discrimination.

This intervention project should be understood in the context of some limitations. First, this intervention occurred in one county of one Southeastern state, affecting generalizability. However, the sample size and

heterogeneous demographics do help to reduce that limitation. Next, all APPs included in the investigation were nurse practitioners and physician assistants (not by exclusion, but because these are the only providers staffed at these locations). Different screening rates may have been seen before or after the intervention if APP classification was varied. Lastly, this was not a controlled trial and reasons beyond our measure may have contributed to increased sexual activity screening.

Application

The results of this initiative have important implications and demonstrate both statistical and clinical significance. This feasible initiative can be replicated with relatively commensurate costs to running a healthcare facility. Our results and methods could assist APPs in other regions to increase sexual activity screening rates, thereby positively impacting adolescent health outcomes. Our results indicate implementation of an education intervention, coupled with modifications to an EHR, may increase sexual activity screening among early, middle, and late adolescents by APPs. Results also demonstrate improved provider sexual activity screening behaviors occurred during the time of world COVID-19 pandemic, indicating feasibility and improvement with training and EHR modifications, even in times of a serious healthcare provider shortage.

Declaration of Conflicting Interests **[GQ2]**

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Author Biographies

[AQ13]

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