Prevention of Fetal Alcohol Spectrum Disorders in Primary Care: Use of Office Champions Model to Address Alcohol Use

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ABSTRACT

PURPOSE Alcohol use during pregnancy can cause miscarriage, stillbirth, and fetal alcohol spectrum disorders. Despite no safe level of alcohol consumption during pregnancy, 13.5% of pregnant adults reported drinking, and 5.2% reported binge drinking during 2018-2020. This study aimed to improve alcohol screening and brief intervention (ASBI) practices in primary care settings using the Office Champions Quality Improvement Model.

METHODS Seventeen family medicine practices participated. Champions led system-level changes, including workflow redesign, staff training, and electronic health record modifications. Chart reviews were conducted at 3 stages (ie, baseline, post-intervention, and sustainability) to assess change in ASBI efforts. A sustainability survey assessed likelihood of continued ASBI efforts after study completion.

RESULTS A total of 2,725 chart reviews were completed. For the first 2 stages 17 practices submitted data, and 14 practices completed the third stage. Alcohol use screening rate increased from 61% to 81% ($P < .001$) and intervention rates increased from 22% to 67% ($P < .001$). Identification of pregnancy intention increased from 3% to 66% ($P < .001$) and use of the Alcohol Use Disorders Identification Test-Consumption tool increased from 3% to 48% ($P < .001$). Most interventions involved brief counseling and goal setting. Nineteen individual respondents completed the sustainability survey, and most reported confidence in continuing ASBI efforts.

CONCLUSION The Office Champions Quality Improvement Model enhanced ASBI implementation in primary care settings. System-level integration, validated screening tools, education, and a team-based approach supported improvements in ASBI.

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INTRODUCTION

Alcohol use during pregnancy can cause miscarriage, stillbirth, and a range of physical, behavioral, and intellectual disabilities in children that are referred to as fetal alcohol spectrum disorders (FASDs).[1] There is no known safe alcohol consumption limit or time during pregnancy.[1] Yet, 13.5% of pregnant adults reported current drinking, and 5.2% reported binge drinking (ie, at least 1 occasion of having 4 or more drinks for women [5 for men])[2] in the past 30 days during 2018-2020.[3] The United States Preventive Services Task Force has a grade B recommendation for "screening for unhealthy alcohol use in primary care settings in adults 18 years or older, including pregnant women, and providing persons engaged in risky or hazardous drinking with brief behavioral counseling interventions to reduce unhealthy alcohol use."[4]

Family physicians and other primary care professionals are in an ideal position to facilitate the prevention of alcohol use during pregnancy.[5] Considering the role of family physicians in the health of pregnant patients and their children, the American Academy of Family Physicians (AAFP), with funding from the Centers for Disease Control and Prevention (CDC), implemented a 4-year project from September 2018 to September 2022 titled "Family Physicians Addressing Risky Alcohol Use for Prevention of Fetal Alcohol Disorders."[6] The main objectives of this CDC-funded project were to increase family physicians' use of alcohol screening and brief intervention (ASBI) as a routine part of care; decrease unhealthy alcohol use among

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women of reproductive age, including any alcohol use by pregnant women; and improve health outcomes. The major activities included the creation and promotion of resources on ASBI and FASDs to family physicians, residents, and medical students; formation of collaborative partnerships with various organizations for consistent messaging; peer-to-peer training among family physicians; and utilization of an Office Champions Quality Improvement Model[7] to increase ASBI in participating practices. The Office Champions Model employed a Plan-Do-Study-Act cycle to improve the quality of patient care, which involved assessing the practice and collecting baseline data, determining goals, implementing and testing interventions, measuring the success, and sustaining the improvement over time.[7]

Our primary aim was to reduce unhealthy alcohol use among pregnant individuals or those likely to become pregnant in order to prevent FASDs. To achieve this we examined whether implementation of the Office Champions Quality Improvement Model in primary care practices can improve the screening for unhealthy alcohol use and behavioral intervention. We hope that the experiences and lessons learned from this study may offer a framework that can be adapted and replicated in similar clinical settings.

METHODS

Study Design

This study used a hybrid implementation research design,[8] in which a clinical intervention (ie, the Office Champions Quality Improvement Model) was implemented and evaluated by examining changes in ASBI rates through patient chart reviews.

Participant Recruitment

Participant recruitment occurred from May through August 2019 through AAFP communication channels (eg, member e-mails, newsletters, social media platforms). We aimed to recruit 25 family medicine practices, each capable of appointing 2 champions (ie, 1 physician and 1 nonphysician)

A total of 17 practices were onboarded (Supplemental Appendix 1). Participating practices represented diverse settings, including academic health centers, hospital health systems, Federally Qualified Health Centers, primary care only, and independently-owned practices.

Each practice received up to $3,000 in support, distributed in $1,000 increments upon completion of each of the 3 data collections (baseline, post-intervention, and sustainability). Travel reimbursements were provided for participation in in-person trainings and conferences. Participating physicians were awarded 20 continuing medical education (CME) credits through the American Board of Family Medicine (ABFM).

Intervention Description

The intervention started with an onboarding meeting in November 2019. It utilized the Office Champions Quality Improvement Model to promote ASBI integration into the routine workflows of participating primary care practices. Champions participated in a series of webinars and trainings covering topics such as: the Office Champions Quality Improvement Model, the Collaborative Institutional Training Initiative course on the Protection of Human Research Subjects[9], ASBI implementation in primary care settings, FASDs, and the chart review methodology. Participants were provided access to an online educational platform and a range of supportive educational resources. In addition, 2 subject matter experts provided ongoing technical support throughout the study.

Each practice developed a tailored intervention plan as part of its quality improvement efforts. Practice-level interventions generally focused on system-level changes to facilitate the integration of ASBI into routine care. Common strategies included workflow and process redesign, ASBI educational sessions for clinic staff, use of visual educational tools for patients, and modification to electronic health records (EHRs) to document and track ASBI activities.

Participants convened for a mid-study meeting in August 2020 and a final meeting in July 2022. Quarterly check-ins were held either 1-on-1 or in small groups to provide individualized implementation support. At the end of the study, AAFP staff administered a sustainability survey to assess long-term feasibility and ASBI integration within participating practices.

Outcomes

The primary outcomes were changes in the percentage of patients screened for alcohol use and those who received intervention. Secondary outcomes included types of screening tools used, types of clinicians conducting the screening, and types of interventions provided. We also explored the components of brief interventions, referral destinations, and reasons for not screening or not intervening when needed.

Data Collection

Practices conducted patient chart reviews in 3 stages:

Stage A: Baseline data were collected from November 2019 through February 2020. Each practice identified an index date before starting any intervention activities. They then retrospectively reviewed charts of adult patients (aged ≥18 years), proceeding backward from the index date until at least 50 eligible charts were identified.

Stage B: Post-intervention data were collected from August through November 2021. After the baseline data were collected, each practice selected a new index date marking the start of the intervention. Only patient charts from that date onward were eligible for inclusion. A minimum of 50 charts were randomly selected, often with support from an information technology team using a randomization tool to select the charts.

Stage C: Sustainability data were collected in April and May 2022. Following the collection of post-intervention data,

practices conducted a third round of chart reviews using the same process as in Stage B.

Data were collected using a Excel (Microsoft Corp) template, provided by AAFP, that included demographic variables and outcome measures. Additional fields captured pregnancy status and intent to become pregnant, to ensure ASBI services provided were appropriate for this population. De-identified data were submitted by each practice and compiled by the AAFP team.

Sustainability Survey

At the end of study, a sustainability survey was administered via Qualtrics (Silver Lake Technology Management, LLC) to participating champions to explore how likely the program was to continue after the study ends. The survey explored the champions' understanding of the ASBI program's goals, leadership support, resource availability, clarity of clinical workflows, and responsibility distribution. The survey was developed by the study evaluation team with support from the CDC evaluation group.

Data Analysis

Descriptive statistics, including percentages, were calculated for patient demographics as well as primary and secondary outcome variables. Differences between pre- and post-intervention measurements were assessed using the χ^2 test, with statistical significance defined as a *P* value less than .05. Data analysis was performed using Microsoft Excel and Stata version 14.0 (StataCorp LLC). On the sustainability survey, respondents rated specific sustainability questions on a 5-point scale (ie, very good, good, fair, poor, and very poor) and percentages were calculated for each rating.

Staff Turnover

To mitigate impacts of staff turnover, 2 champions per practice were designated so that remaining staff could train replacements. The study team also provided training for new champions as needed.

Ethical Considerations

Ethical approval was obtained from the AAFP Institutional Review Board (protocol number 19-344). Informed consent was obtained from all physician and nonphysician office champions upon enrollment (Supplemental Appendix 2). In each practice, at the time of alcohol use screening, verbal consent was obtained from patients asked to respond to a few additional questions regarding their alcohol consumption. Only de-identified information was collected from the practices.

RESULTS

All 17 participating practices submitted chart review data (at least 50 reviews each) for the baseline and second measurement periods. Only 14 practices provided data for the third measurement period, as 3 chose not to complete the sustainability component of the study. In total, 2,725 medical chart reviews were conducted, including 983 reviews at baseline, 933 at the second stage, and 809 at the third.

Of the medical charts reviewed, 78% were for female patients, 63% were for White patients, and 53% were for individuals of reproductive age (ie, 18 to 44) at baseline. There were no notable differences in demographic distributions between baseline and subsequent measurement periods. The proportion of patients reporting pregnancy intention (yes or no) as opposed to unknown status, increased from 45% at baseline to 94% during the second measurement and 93% during the third.

Figure 1 illustrates the changes in alcohol use screening and intervention rates during the study period. The screening rate significantly increased from 61% at baseline to 71% for the second measurement and 81% for the third ($P < .001$). The percentage of patients who screened positive for alcohol use rose from 8% at both baseline and the second measurement to 13% for the third measurement ($P = .90$). Similarly, the

Table 1. Patient Demographics (N = 2,725)

Characteristic	Baseline, No. (%)	2nd measure, No. (%)	3rd measure, No. (%)	*P* value
Sex	n = 983	n = 931	n = 809	.01
Male	216 (22)	244 (26)	224 (28)	
Female	767 (78)	687 (74)	585 (72)	
Race/Ethnicity	n = 983	n = 933	n = 786	.001
Asian	50 (5)	52 (6)	53 (7)	
Black	163 (17)	142 (15)	146 (18)	
Hispanic	104 (11)	104 (11)	86 (11)	
White	615 (63)	567 (61)	454 (58)	
Other	47 (5)	62 (7)	47 (6)	
Age, y	n = 983	n = 931	n = 809	.03
18-24	96 (10)	91 (10)	68 (8)	
25-34	227 (23)	198 (21)	154 (19)	
35-44	200 (20)	164 (18)	189 (23)	
45-64	263 (27)	299 (32)	249 (31)	
≥65	197 (20)	179 (19)	149 (18)	
Pregnancy[a]	n = 462	n = 381	n = 331	.14
Yes	28 (6)	37 (10)	27 (8)	
Patient trying to get pregnant	n = 434	n = 344	n = 303	< .001
Yes	14 (3)	244 (71)	202 (66)	
No	182 (42)	78 (23)	83 (27)	
Unknown	238 (55)	22 (6)	19 (6)	

Note: Data were collected for baseline from November 2019 through February 2020; the second measurement (post-intervention) from August through November 2021; and the third (sustainability) in April and May 2022.

[a]Among women of reproductive age (ie, 18-44 years).

percentage of patients receiving interventions among those who screened positive increased from 22% at baseline to 49% for the second measurement and 67% for the third (P <.001).

Changes were also observed in the tools used for screening and the personnel conducting them. At baseline, 20% of patients were asked informally about alcohol use, rather than assessed using a standardized tool. Use of the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) screening tool increased significantly from 3% at baseline to 46% for the second measurement period and 48% for the third (P <.001) (Table 2). Despite this, the Single Alcohol Screening Question (SASQ) remained the primary screening tool across all 3 stages. Medical assistants and physicians were the primary clinicians conducting screenings and brief interventions at all 3 stages. Involvement of physicians, physician assistants, and nurse practitioners in screening increased during the second and third stages. The percentage of nurses involved in screening also rose during the third measurement (P <.001).

Most interventions consisted of brief behavioral or motivational interventions (Table 2). The use of brief interventions increased from 63% at baseline to 87% in the second measurement period and 91% in the third. These interventions typically included assessing patients' willingness to reduce or quit alcohol use, providing feedback, and encouraging behavioral changes or goal setting. Approximately 15% to 20% of patients arranged follow-up appointments. At baseline, none of the practices had developed plans with patients, but during the second and third measurements, 21% of patients developed plans to reduce or quit drinking. Referrals and other interventions were more common at baseline, though follow-up appointment scheduling increased slightly by the end of the study. Referral rates were low, but when made, were typically to behavioral health specialists and community treatment programs.

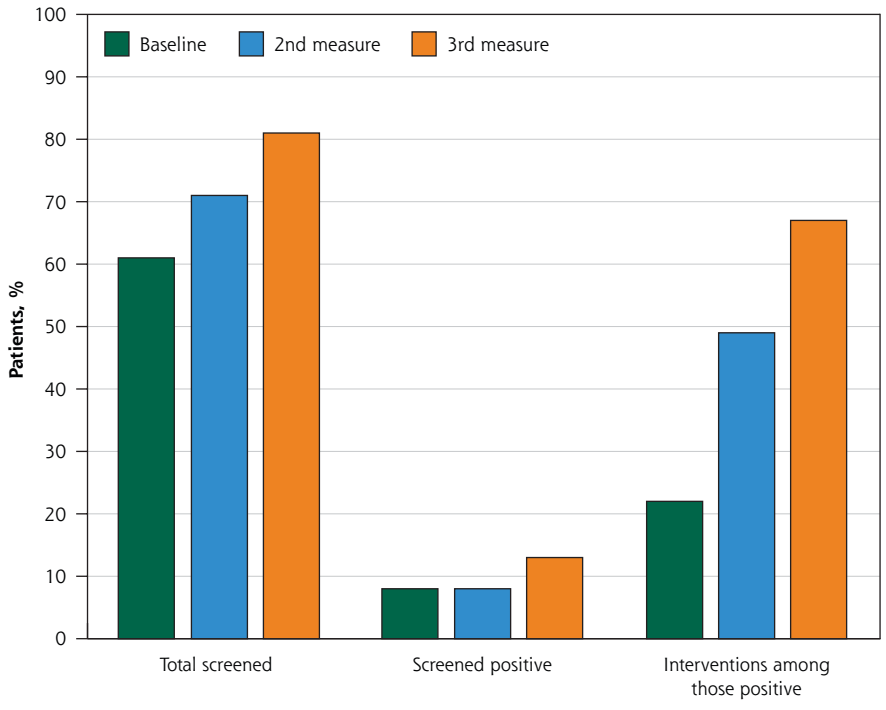
Reasons for not screening or intervening were largely undocumented, especially at baseline. Of the recorded reasons, most cited time constraints and staffing issues, which may have been due to frequent staff turnover, insufficient numbers of nurses or medical assistants, and impacts of the pandemic. Qualitative feedback from monthly and quarterly meetings with office champions also indicated that screening was affected by factors such as medical assistant shortages (eg, due to call-offs, hiring freezes, lack of trained medical assistants), especially when untrained float medical assistants were used. Clinicians also reported time constraints, limiting their ability to conduct screenings and provide counseling.

A total of 19 respondents from 14 practices participated in the sustainability survey, of which 10 were physician champions. Other respondents included nurses, process improvement managers, office managers, residency program directors, associate program directors, medical directors, and assistant directors, all of whom were directly responsible for sustaining ASBI efforts in their practices. Nearly 80% of participants reported they had established clear workflow processes, and expressed they had plans to continue alcohol use screening. However, results pointed to the need to establish transparent workflows and comprehensive monitoring systems (Supplemental Appendix 3).

DISCUSSION

The use of Office Champions Quality Improvement Model increased ASBI rates among the participating practices. We observed an increase in the use of AUDIT-C screening tool alongside the SASQ, providing more in-depth assessment of alcohol use and support for developing individualized intervention plans. Although not a primary aim of this study, we also found an increase in identification of the patients trying to become pregnant.

Figure 1. Bar Graph of Alcohol Use Screening and Intervention Rates From 2020 to 2022



Note: Data were collected for baseline from November 2019 through February 2020; the second measurement (post-intervention) from August through November 2021; and the third (sustainability) in April and May 2022.

Detection of Pregnancy Intentions

At baseline, patients' pregnancy intentions were largely unknown. Identifying these intentions allowed for discussions about prenatal alcohol use, aligning with studies that emphasize the importance of preconception care, including alcohol consumption management, to improve pregnancy outcomes.[10] Also, identification of this group helped to target screening and intervention for alcohol use. Although not included in the results tables, our internal review confirmed that women who were pregnant or intended to get pregnant were consistently included in routine alcohol screening procedures.

Screening Protocols and Physician Knowledge

The increase in positive screening rates observed in this study may be attributed to several factors. Studies have shown that physician education and training are crucial to improve screening for unhealthy alcohol use.[11] The education provided in this study enhanced the knowledge of physicians and their teams about unhealthy alcohol use, and prompted necessary changes in practice. Participating practices implemented screening protocols, adjusted workflows, standardized documentation processes, and updated their EHR systems to remind staff about screening and results reporting. These interventions led to a nearly 20% increase in screening rates by the end of the study. Similar improvements have been documented in other studies after implementation of structured screening protocols.[12]

Utilization of AUDIT-C

The use of the AUDIT-C screening tool was encouraged due to its brevity, validity, and reliability in primary care settings, which make it an effective tool for early intervention.[13,14] The use of the AUDIT-C tool was minimal at baseline, but increased significantly, allowing practices to gather more detailed information than with the SASQ, which helped in formulating individualized intervention plans.

Screening Timing and Personnel

The timing and type of personnel involved in screening are crucial for workflow purposes as they affect the number of people screened, the tool used, and the interventions implemented. A previous study has shown that screening at any visit (compared with annual examinations only) was associated with higher screening rates for alcohol and drug use,[15] a practice adopted by office champions in this study. Additionally, understanding Screening, Brief Intervention, and Referral to Treatment (SBIRT) workflow adaptations across various settings is essential for selecting the best models for medical care environments.[16] Key elements include service

Table 2. Screening and Intervention (N = 2,725)

Characteristic	Baseline, No. (%)	2nd measure, No. (%)	3rd measure, No. (%)	*P* value
Type of screening tool used	n = 594	n = 666	n = 661	< .001
SASQ	446 (75)	345 (52)	334 (51)	
AUDIT-C	17 (3)	300 (46)	317 (48)	
AUDIT	10 (2)	9 (1)	7 (1)	
Other	121 (20)	12 (2)	3 (1)	
Type of screening clinician	n = 597	n = 656	n = 649	< .001
Medical assistant	235 (39)	250 (38)	190 (29)	
Medical student	1 (0.2)	1 (0.2)	0 (0)	
Nurse	133 (22)	70 (11)	124 (19)	
Nurse practitioner	12 (2)	23 (4)	39 (6)	
Physician	144 (24)	196 (30)	197 (30)	
Physician assistant	4 (1)	56 (9)	56 (9)	
Resident	3 (1)	9 (1)	2 (0.3)	
Other	65 (11)	51 (8)	41 (6)	
Type of intervention	n = 16	n = 38	n = 57	.45
Brief intervention	10 (63)	33 (87)	52 (91)	
Scheduled separate appointment	0 (0)	2 (5)	1 (2)	
Referred patient	3 (19)	2 (5)	6 (11)	
Provided resources	1 (6)	2 (5)	1 (2)	
Other	4 (25)	3 (8)	3 (5)	
Brief intervention components	n = 9	n = 33	n = 52	.44
Advised to reduce alcohol use or quit	8 (89)	31 (94)	46 (88)	
Assessed if patient is willing to reduce alcohol use or quit at this time	6 (67)	24 (73)	26 (50)	
Assisted patient to develop plan	0 (0)	7 (21)	11 (21)	
Arranged plan follow up appointment	2 (22)	5 (15)	8 (15)	
Other	1 (11)	0 (0)	5 (10)	
Type of referral	n = 3	n = 2	n = 6	.65
Behavioral health specialist	1 (33)	2 (100)	3 (50)	
Community treatment program	1 (33)	0 (0)	2 (33)	
Other	1 (33)	0 (0)	1 (17)	

AUDIT = Alcohol Use Disorders Identification Test; C = consumption; SASQ = Single-Item Alcohol Screening Questionnaire.

Note: Data were collected for baseline from November 2019 through February 2020; the second measurement (post-intervention) from August through November 2021; and the third (sustainability) in April and May 2022.

delivery, information storage, and sharing workflows. Successful integration strategies include co-locating SBIRT clinicians and incorporating SBIRT data into EHRs.[15] In our case, the interventions implemented by office champions included updates to EHR systems and workflow processes, that aligned with key SBIRT workflow adaptation elements. Leadership buy-in proved essential for any workflow or process changes, consistent with studies emphasizing the importance of leadership, dynamic management, and flexibility during implementation.[16]

Challenges in Providing Interventions

Although practices successfully improved screening rates, providing interventions was limited due to time and resource constraints. The provision of interventions increased by almost 45% between baseline and end point data collection. However, only 67% of eligible patients received an intervention. A team-based approach could address this issue, reduce the physician's administrative burden and elevate the clinical staff's role by delegating tasks to other care team members such as nurses, medical assistants, and physician assistants.[18,19] Similar resource and time constraints were also evident in the participating practices. While behavioral therapists or social workers can connect patients with support groups or community resources, not all practices have access to these resources. Informal dialogs with office champions indicated that larger practices, such as university health systems, often have access to these resources, whereas smaller practices may find it easier to gain leadership buy-in, which is critical for driving change. Although the sustainability survey showed participants were confident about continuing ASBI in their practices, more effort is needed to apply a team-based approach and establish a robust monitoring system.

Strengths and Limitations

Despite the challenges posed by the COVID-19 pandemic, participating practices successfully implemented and completed the study within the designated time frame. Practices adopted strategies such as use of patient portals and standardized screening protocols for telehealth visits. Notably, over 80% of practices remained engaged through the end of the study, despite substantial staff turnover. The presence of 2 champions per practice was instrumental in maintaining continuity. Additionally, the opportunity to earn 20 ABFM-accredited CME credits served as a strong motivator for physician champions to complete the study.

One limitation of this study was that the question used to assess "intention to get pregnant" asked whether the patient planned to become pregnant but did not distinguish between actively trying or passively not preventing pregnancy. This ambiguity could limit the accuracy of identifying patients at risk for alcohol-exposed pregnancies. To address this, practices were encouraged to integrate alcohol screening into routine care for all patients of reproductive age, thereby reducing the risk of missing high-risk individuals.

Some practices encountered challenges in getting leadership buy-in, involving all team members in screening, and updating the EHR to capture and measure ASBI. While individualized support and peer discussions through the online learning platform helped address several of these issues, not all challenges were fully resolved. Without consistent team-based implementation at the practice level, it was difficult to comprehensively capture ASBI-related data, such as reasons for not conducting screenings or interventions and the specific components included in brief interventions.

CONCLUSION

This study demonstrates that the Office Champions Quality Improvement Model can be an effective strategy for enhancing ASBI in primary care. System-level changes, including workflow redesign, staff training, and EHR modification, can significantly increase alcohol screening and intervention rates, especially among patients who were pregnant or intending to become pregnant. The expanded use of validated tools such as AUDIT-C supported more tailored interventions. Despite the challenges related to staffing and leadership engagement, our findings suggest that the integration of team-based structured ASBI approaches into routine primary care can be a key strategy for preventing fetal alcohol spectrum disorders.

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Key words: alcohol screening; brief intervention; primary health care; quality improvement; fetal alcohol spectrum disorders

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Previous presentation: The study information and results are available in various formats on the AAFP website at https://www.aafp.org/family-physician/patient-care/care-resources/substance-use/excessive-alcohol-use/alcohol-sbi-office-champions-project-findings.html

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Supplemental materials

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