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Implementation of Community-Wide Initiatives Designed to Reduce Teen Pregnancy: Measuring Progress in a 5-Year Project in 10 Communities

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Abstract

Introduction—Community-wide initiatives (CWI) to prevent teen pregnancy were implemented in 10 communities in the USA. The CWI supported the implementation of evidence-based teen pregnancy interventions (EBIs) and implementation of best practices for adolescent reproductive health care. Implementation was supported through mobilizing communities, educating stakeholders, and strategies to promote health equity.

Methods—We assessed indicators of progress of the CWI for the following five project components (data collected from 2010 to 2015): community mobilization, stakeholder education, working with diverse communities, evidence-based interventions, and increasing access to clinical services and the potential contributions of training and technical assistance.

Results—Communities engaged multiple stakeholder groups to contribute to planning, community outreach and education, and partnership development and used multiple dissemination methods to share information on adolescent reproductive health needs and teen pregnancy prevention strategies. The amount of training and technical assistance from state- and community-based organizations was associated with increased numbers of youth receiving EBIs and increased provision of contraceptives. The number of health centers implementing best practices for adolescent reproductive health services increased; conducting sexual health assessments, offering hormonal contraception or IUD, and offering quick start of IUDs were associated with increases in long-acting reversible contraception utilization.

Conclusions—These findings demonstrate that scaled prevention efforts can occur with adequate support including training and technical assistance and community awareness and engagement in the process.

Policy Implications—The findings raise important questions for understanding what factors contribute to successful community-wide implementation of EBIs and health center best practices

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Conflict of Interest The authors declare no competing interests.

Declarations

Disclaimer The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

for contraceptive access and whether these lead to reductions in teen pregnancies in highly impacted communities.

Keywords

Adolescent reproductive health; Teen pregnancy; Community mobilization; Contraceptive access; Evidence-based interventions

Preventing Teen Pregnancy Through Community-Wide Initiatives: Implementation Outcomes from a 5-Year Project in 10 Communities with High Teen Birth Rates

The teen birth rate declined 51% between 2007 and 2016, from 41.5 to 20.3 per 1000 female adolescents aged 15–19 years, yet racial/ethnic and geographic disparities persist (Martin et al., 2018; Romero et al., 2016). Teen pregnancy and childbearing may lead to increased health, economic, and social costs through short- and long-term impacts on teen parents and their children (Hoffman, 2008; Perper et al., 2010). Multiple evidence-based interventions (EBI) have been shown to be effective at promoting positive reproductive health outcomes for youth (Goesling et al., 2014). Coalition-based efforts (Kegler et al., 1998; Kramer et al., 2005) and capacity-building approaches (Lesesne et al., 2008; Lewis et al., 2012) supported successful implementation of EBIs. Lessons learned from these efforts, combined with evidence supporting the role of contraceptive use in reducing teen birth rates (Santelli et al., 2007), informed the development of the community-wide initiatives described in this paper.

In 2010, the Centers for Disease Control and Prevention, in collaboration with the HHS Offices of Adolescent Health and Population Affairs, funded *Teenage Pregnancy Prevention: Integrating Services, Programs, and Strategies through Community-Wide Initiatives (CWI)*, a 5-year cooperative agreement with nine state- and community-based organizations and five national partners,¹² (<https://www.cdc.gov/teenpregnancy/practitioner-tools-resources/index.html>). The purpose of the CWI was to implement and evaluate multilevel, multicomponent interventions to reduce teen pregnancy and teen births in ten communities with high teen birth rates, defined as above the 2006 national average of > 45.5 births per 1000 females aged 15–19 (2006 was the most recent data available). Eight state- and community-based organizations (henceforward, organizations) worked in a single community and one organization worked in two communities. For a more extensive description of the CWI and its implementation, see Mueller et al (2017). The CWI involved multiple components to support implementation of evidence-based teen pregnancy interventions (EBIs; Goesling et al., 2014) and increase implementation of best practices for adolescent reproductive health care (Romero et al., 2017). The nine organizations, in partnership with health centers and youth serving organizations (YSOs), implemented activities from five project components: (1) mobilize the community through leadership

¹To view the funding opportunity announcement for a description, visit the following web link. <https://www.grants.gov/web/grants/view-opportunity.html?oppId=54258>.

²Tools that were used during the project to support capacity building are available on the CDC website. <https://www.cdc.gov/teenpregnancy/projects-initiatives/communitywide.html>.

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teams and partnerships, (2) educate stakeholders to build support for teen pregnancy prevention, (3) promote health equity through strategies to work with diverse communities, (4) implement EBIs to promote adolescent sexual health, and (5) provide clinical services to youth to support reproductive health.

Five national partners with expertise in one or more of the above project components provided capacity-building assistance to the nine organizations. The national partners were Advocates for Youth, CAI (formerly Cicatelli Associates, Inc.), Healthy Teen Network, JSI Research and Training Institute, Inc., and Power to Decide (formerly the National Campaign to Prevent Teen and Unplanned Pregnancy). The nine organizations in turn provided capacity-building assistance to local YSOs and health centers to support implementation of the five project components (Mueller et al., 2017). We based the capacity-building structure and support model for implementation on the Interactive Systems Framework for Dissemination and Implementation (ISF; Lesesne et al., 2008; Wandersman et al., 2008). The ISF addresses the gap between research and practice with a model of three interacting systems.

The purpose of this paper is to describe (1) indicators of progress in implementing teen pregnancy prevention strategies across communities, (2) differences in progress between communities, and (3) characteristics associated with changes in progress indicators. The analyses of the primary outcome of interest for the CWI, reduction in teen pregnancy and birth, will be reported separately.

Methods

Centers for Disease Control and Prevention (CDC), in collaboration with the five national partners, developed four data collection tools: one annual assessment of needs for the 9 funded organizations, one annual assessment for health centers, one annual assessment for EBI partners, and one annual performance measure report for each community ($N = 10$). For the overall description of the evaluation methodology, see (Tevendale et al., 2017). The nine organizations completed annual assessments that included indicators of progress for community mobilization and stakeholder education from 2011 through 2014. One organization, working in two communities, provided annual assessment data in aggregate rather than community-specific. Participating health centers and youth-serving organizations (YSOs) completed annual assessments from 2012 through 2015. Performance measure reports included indicators of progress for four of the five components: community mobilization, working with diverse communities, EBIs, and clinical services; indicators of progress for stakeholder education were obtained through annual assessments only. CDC determined that these projects were public health practice and not research; therefore, IRB was not required. Data were collected under OMB PRA approval number 0920–0952.

Training and Technical Assistance

During 2012 through 2015, the national partners and nine organizations reported hours of training and technical assistance (T&TA) including information about the topic of T&TA (e.g., continuous quality improvement, program planning) and time spent. T&TA were provided to support implementation based on information provided in annual needs

assessments and monthly calls with TA providers. T&TA were also provided when requested by organizations. We report the number of T&TA hours provided by national partners to the nine organizations and the number of T&TA hours provided by the nine organizations to YSOs and health centers.

Following is a brief description of the components and indicators of progress.

Component 1: Mobilizing the Community Through Leadership Teams and Partnerships

The goal of community mobilization was to develop and sustain active partnerships with YSOs (e.g., schools, parks and recreation, health departments, youth development organizations, non-profits) and health centers and to develop and maintain community leadership groups. Mobilization activities were informed by best practices drawn from research on coalitions, collaboratives, and other community organizations, and included sustainability planning (Huberman et al., 2014; Saunders, 2018). Information about YSO and health center partnerships developed and sustained for EBI and clinical service implementation was collected in annual assessments for EBI partners and health centers and in performance measure reports. Sustained partnerships included YSOs and health centers that participated in every round of data collection: 4 years for YSOs and 5 years for health centers. In addition to these partnerships, organizations established and maintained community engagement through three partnership teams for each community: core partner leadership team, community action team, and youth leadership team. The core partner leadership team assisted and advised the organization in the planning, implementation, and evaluation of the CWI. The community action team provided direct links to the community for engaging, educating, and garnering support. The youth leadership team provided direct links to youth in the community for engaging, educating, and building youth support for the project. The community action and youth leadership teams also provided feedback and input on prevention activities in the community.

Measures included the number of meetings held, number of members, and team participation (number of members attending 75% or more of meetings). Organizations reported on the number of representatives by type serving on the core partner leadership teams for years 2012–2014, the number of representatives by type on the community action teams for years 2011–2014, and the characteristics (age, education) of members on the youth leadership teams for 2012–2014; these numbers are reported in aggregate in this paper.

Component 2: Educating Stakeholders to Build Support for Teen Pregnancy Prevention

Stakeholder education aimed to garner support and commitment to teen pregnancy prevention and to increase awareness of evidence-based strategies for teen pregnancy prevention by educating community leaders, YSOs, and health centers about the CWI, and informing civic leaders, parents, and other community members about teen pregnancy (Finley et al., 2018). Funded organizations reported measures in annual assessments including the stakeholder groups to which they had disseminated information (e.g., adolescents, parents, local youth-serving coalitions, and local school boards) and the methods used for dissemination (e.g., distributed fact sheets, contact with local media, annual conference, and electronic newsletters).

Component 3: Promoting Health Equity Through Strategies to Work with Diverse Communities

The working with diverse communities component aimed to promote health equity by raising community awareness about the link between social determinants of health and teen pregnancy, ensuring culturally and linguistically appropriate programs and reproductive health services were provided to youth, and working to ensure diverse youth and community partners' engagement in program planning and delivery (Fuller et al., 2018; JSI Research & Training Institute, 2016). Organizations reported on the number of best practices ($n = 37$) implemented in six categories annually in performance measure reports: (1) engaging diverse youth, (2) utilizing participatory approaches for community mobilization to include diverse youth, (3) engaging a diverse group of community partners to participate in teen pregnancy prevention efforts, (4) supporting implementation partners' programmatic practices, (5) supporting clinical partners to develop culturally competent clinical services, and (6) supporting community outreach practices.

Component 4: Implementing Evidence-Based Interventions to Promote Adolescent Sexual Health

The goal of the evidence-based teen pregnancy prevention intervention (EBI) component was to increase the number of youth exposed to programs with evidence of effectiveness in reducing teen pregnancy, sexually transmitted diseases, and associated sexual risk behaviors. Partnering YSOs selected EBIs to implement from an evidence review sponsored by the US Department of Health and Human Services (<http://tpevidencereview.aspe.hhs.gov>). Support for implementation of EBIs included use of the planning tool, Promoting Science-based Approaches to Teen Pregnancy Prevention Using Getting To Outcomes ([PSBA-GTO]; Lesesne et al., 2016), that aided YSOs in selecting EBIs to meet their specific community and agency contexts. Performance report measures included the types of EBIs implemented (e.g., sexual health education, youth development, abstinence-based education), the implementation settings (e.g., schools, community-based organizations), the fidelity of implementation, the number and demographic characteristics of youth participants (e.g., age, race, ethnicity, language spoken at home, whether they were part of a special population [e.g., foster care, homeless, pregnant or parenting, or involved with the juvenile justice system]), and in settings that received approval to obtain this information (70%), whether or not they ever had sex. Youth were counted in the total number of youth served if they participated in at least one program session. The number of youth served may include youth who participated in more than one program within a year since organizations were not required to track individual youth across EBIs and sites; the number of youth served in separate years may also include youth who participated in more than one program in other years.

To report fidelity (how well the implementation adhered to the program's model), organizations used measures created by program developers or Office of Adolescent Health (OAH). These measures included the number of program activities delivered as "planned and intended" in program materials, as reported through self-report tools completed by program facilitators. Organizations were encouraged to conduct observations of at least 10% of all sessions to assess fidelity. Fidelity scores are the percentage of activities implemented

as planned by the developer including adaptations for the setting in a single implementation of an EBI. Organizations reported the average fidelity across implementations by EBI partner and program in annual performance measure reports.

Component 5: Providing Clinical Services to Youth to Support Reproductive Health

The goal of the clinical services component was to increase the number of youth who have access to reproductive health services, including receipt of contraceptive services. The component required partnerships with health centers to provide youth-friendly and culturally competent clinical services and to develop linkages between EBI implementation partners and health centers (Romero et al., 2015; Hallum-Montes et al., 2016). Implementation outcomes assessed for this component included the number of adolescent clients served, best practices implemented by health centers, contraceptive coverage, and LARC utilization.

Health centers reported on implementation of up to 31 best practices for adolescent reproductive health services. Best practices were identified through a review of recommendations from professional organizations (e.g., American Academy of Pediatrics, Society for Adolescent Health and Medicine, American College of Obstetricians and Gynecologists, American Medical Association, and American Academy of Family Physicians) and governmental agencies (e.g., CDC, Office of Population Affairs), as well as scientific articles on teen-friendly health care and access to services (Romero et al., 2017). The 31 best practices were grouped into eight domains: (1) contraceptive access ($n = 7$ practices), (2) quick start provision of hormonal contraception/IUD ($n = 4$), (3) emergency contraception ($n = 3$), (4) cervical cancer screening ($n = 1$), (5) STI/HIV screening, testing and treatment ($n = 6$), (6) cost, confidentiality and consent ($n = 2$), (7) health center infrastructure ($n = 3$), and (8) health center environment ($n = 5$).

Health centers reported the number of adolescent clients (aged 12 to 19 years) served, and adolescent clients provided a contraceptive method, by method type (pill, patch, ring, injectable, implant, or IUD) and by age and race/ethnicity. Using these data, we calculated contraceptive coverage for each health center as the number of adolescent clients who received any of the above contraceptive methods divided by the total number of adolescent clients. We also calculated the percentage of those provided contraception who received long-acting reversible contraception (LARC; includes intrauterine devices [IUDs] and implants) as LARC utilization by dividing the number of adolescent clients who received a LARC method by the total number of adolescent clients who received any of the above contraceptive methods.

Data Analysis

CDC collected data from organizations using MS Word templates, MS Excel files, Adobe form fill documents, Survey Monkey, and a web-based T&TA reporting tool. We performed analyses for all components using MS Excel, SAS, and SPSS statistical software packages; SPSS was used for all regressions. Descriptive data are reported for all components including frequencies and measures of distribution. For organization comparisons, we report the median and range across organizations except for T&TA where we report means and range. We used hierarchical multiple regression to examine whether the number of T&TA

hours provided to each organization were associated with observed increases in three implementation outcomes while controlling for baseline levels of the relevant outcome: (1) the number of youth who participated in EBIs, (2) contraceptive coverage, and (3) LARC utilization. The relevant outcome variable was the final assessment for each YSO or health center. Similarly, we conducted separate analyses examining the association between increases in implementation of four best practices most proximally related to contraceptive provision (i.e., conducting a sexual health assessment at every visit, hormonal contraception, or IUD available at every visit, offering a wide range of contraceptive options and offering IUD with quick start) and increases in contraceptive coverage and LARC utilization. Each regression analysis included the baseline level of the outcome variable and the independent variable being assessed as predictors of the final assessment level as the outcome variable. Implementation of best practices over time were coded into three categories: (a) implemented the best practice at baseline and all follow-up assessments, (b) did not implement at baseline but implemented at follow up, and (c) did not implement the best practice or stopped implementing the best practice. Dummy codes were used with not implementing or stopping implementing as the referent group (category C in the previous statement).

Results

Training and Technical Assistance

National partners reported providing 12,853 h to the nine organizations. The average number of T&TA hours provided to communities was 1286 h (range by organization 1161 to 1387). T&TA findings are shown by component in the remainder of the “Results” section.

Component 1: Mobilizing the Community Through Leadership Teams and Partnerships

National partners provided a total of 2018 h of T&TA to communities to support community mobilization efforts (see Table 1). The average number of hours provided to communities was 202 (range 143–271).

During 2011–2015, the average number of core partner leadership team meetings per year in the ten communities ranged from one to 13 ($Mdn = 5$). The average number of members per year ranged from 4 to 22 ($Mdn = 11$). The average participation (i.e., proportion of members who attended 75% or more meetings per year) ranged from 18 to 86% ($Mdn = 54\%$). In 2014, based on annual assessments, all nine organizations had representatives from local departments of health and memoranda of understanding (MOUs) or memoranda of agreement (MOAs) with TPP program implementers (i.e., YSOs); eight organizations had MOUs or MOAs with health service providers; four organizations had representatives from local school boards, funders (other than CDC), TPP program implementers and/or health service providers without an MOU or MOA; and three organizations had representation from foundations or elected officials. Additional groups represented in smaller numbers on core partner leadership teams included community colleges, faith-based leaders, and school staff and district administrators. Five organizations increased representation from 2012 to 2014 (C, D, F, H/I, and J), three remained unchanged

with five groups on their core partner leadership team (A, E, and G), and representation for one declined (B).

During 2011–2015, the average number of community action team meetings per year in the ten communities ranged from 3 to 9 ($Mdn = 6$). The average number of members per year ranged from 6 to 21 ($Mdn = 14$). The average proportion of members who attended 75% or more meetings per year ranged from 11 to 82% ($Mdn = 35\%$). In 2014, organizations had representation from the public sector ($n = 8$), nonprofit sector ($n = 9$), health services ($n = 7$), parents ($n = 7$), religious leaders ($n = 6$), civic leaders ($n = 6$), education ($n = 5$), neighbors ($n = 5$), business sector ($n = 4$), and youth leadership team ($n = 4$).

During 2011–2015, the average number of youth leadership team meetings per year in the communities ranged from 9 to 25 ($Mdn = 17$). The average number of members per year ranged from 8 to 18 ($Mdn = 13$). The average proportion of members who attended 75% or more meetings per year ranged from 29 to 72% ($Mdn = 59\%$). In 2014, organizations had representation from youth who were younger than 15 years of age ($n = 4$), ages 15 to 17 ($n = 9$), ages 18 to 19 ($n = 9$), older than 19 years of age ($n = 4$), out of school youth ($n = 3$), and youth receiving post-secondary education ($n = 5$).

Component 2: Educating Stakeholders to Build Support for Teen Pregnancy Prevention

National partners provided a total of 1476 h of T&TA to communities ($M = 148$ h; range = 101–208) to support stakeholder education efforts (see Table 1). Organizations disseminated information to a variety of stakeholder groups in 2014 (see Fig. 1), with most organizations (> 6) disseminating to adolescents, parents, local youth-serving organizations, local organizations that serve high risk youth, health care providers and clinics, local health departments, funders, the media, and faith-based leaders. Multiple dissemination methods were used with meetings, roundtables, symposia; social media, and distribution of fact sheets being the most common methods (used by > 6 organizations). Across organizations and years 2012–2014, information was disseminated to an average of 17 (range 10–25; $Mdn = 16$) stakeholder groups and organizations used an average of 10 dissemination methods (range 7–14; $Mdn = 10$).

Component 3: Promoting Health Equity Through Strategies to Work with Diverse Communities

National partners provided a total of 1244 h of T&TA to communities with an average of 125 h (range 47–273) to support working with diverse communities. The median total number of best practices implemented across communities increased from 19 (range 5–32) in 2012 to 29 (range 12–37) in 2015. Implementation of more than 90% of best practices were reported by communities B, D, E, F, G, and J in 2015.

Component 4: Implementing Evidence-Based Interventions to Promote Adolescent Sexual Health

National partners provided 5715 h of T&TA to communities with an average of 572 h (range 495–794; Table 2) to support the implementation of EBIs. The nine organizations provided 3152 h ($Mdn = 298$; range = 64–599) of training and 3757 h ($Mdn = 348$; range =

124–616) of technical assistance to YSOs in the communities (Table 2). The total number of unique YSOs during 2012–2015 was 157 and 113 YSO reported two or more years of data. Forty-one YSO partners were sustained for all 4 years (2012–2015; median per community = 3; range 1–13; see Table 3). During 2011 to 2015, the overall median number of YSO partnerships developed per community was 13.5 (range 9–29).

YSOs served 54,149 youth with EBIs during 2012 to 2015 (Table 4). The number of youth served increased each year from 2012 to 2014: 4304 in 2012, 12,085 in 2013, and 19,344 in 2014. YSOs reported serving 17,756 youth in 2015; however, 2015 data were for a truncated reporting period (e.g., January–September). Among youth served during 2012 to 2015 for whom demographic characteristics were reported ($n = 53,489$), 57% were female, 53% were aged 14 years or younger; 27% were aged 15–16, 14% were aged 17–18, and 6% were 19 years or older; 34% were African American, 34% Hispanic, and 32% were white. Among the 113 YSOs for which there are two or more years of data, the number of youth served in the last assessment ($M = 164$, $SD = 346$) was greater than the number of youth served in the first assessment ($M = 111$, $SD = 255$), $t(112) = -1.99$, $p = 0.049$. Among youth who answered questions regarding sexual behavior, the median proportion of youth who reported having sex was 45% (range by community = 26 to 68%).

EBIs delivered in school settings served the largest proportion of youth (66%, 35,085 of 54,149; Table 4); The majority of youth served in school settings were by four funded organizations that partnered with school districts for EBI implementation during in-school time (25,533 youth; data not shown). Community-based organizations (CBOs) served 18% of youth and other settings served much smaller proportions of youth, ranging from 2 to 4%. Overall, the majority of youth participated in sexual health education (63%) followed by abstinence-based education (19%), youth development (14%), and health center-based interventions (e.g., the Seventeen days brief video intervention (Downs et al., 2004); 4%; data not shown). The proportion of youth who at baseline reported ever having sex was highest at health centers (73%), colleges (66%), military settings (60%), and among special populations (i.e., youth who are in foster care, homeless, pregnant or parenting, or involved with the juvenile justice system; 62%) and was lowest in schools (27%).

Communities served a median of 4659 youth during 2012 to 2015 (range = 1925–12,718; see Table 5). Community J served the largest number of youth (12,718) followed by communities E (7547) and F (6690). Five of the seven communities (A, E, F, H, and J) that had representation from schools on either or both the core partner leadership team and community action team served more than 5000 youth.

Overall, mean fidelity scores by community ranged from 78 to 98% ($Mdn = 94\%$) from 2012 to 2015. Fidelity observation scores by community ranged from 75 to 100% ($Mdn = 91\%$). Average fidelity scores varied by program delivery setting such that the highest fidelity scores were observed in settings that served smaller numbers of youth (less than 2000 youth; see Table 5) and slightly lower fidelity scores were observed in settings that served larger numbers of youth (e.g., schools). Average fidelity scores also varied by type of program such that the highest fidelity scores were observed for programs that were implemented less frequently (e.g., health center-based programs and youth development

programs) and slightly lower scores were observed for programs that were implemented more frequently (e.g., sexual health education).

The total number of combined T&TA hours provided by an organization to a specific YSO was associated with higher number of youth served by EBIs after controlling for baseline levels of youth served ($\beta = 0.34, p < 0.001$). The total number of TA hours and Training hours (separately) was also associated with higher numbers of youths served by EBIs (TA, $\beta = 0.38, p < 0.001$; Training, $\beta = 0.18, p < 0.02$, respectively).

Component 5: Providing Clinical Services to Youth to Support Reproductive Health

National partners provided 2400 h of T&TA to communities, averaging 240 h of T&TA (range 194–342; Table 1). Organizations provided 713 h of training (community-level, $Mdn = 77$ and range 16–157) and 1422 h of technical assistance (community-level, $Mdn = 137$ and range 39–447) to health centers for provision of clinical services to youth to support reproductive health (Table 2). From 2011 to 2015, organizations developed partnerships with a total of 78 health centers (community-level, $Mdn = 8.5$; range 5–12; Table 3); Fifty-five health centers participated in all years of the project (median per organization = 5; range 2–10).

Adolescent Clients Served—The total number of adolescents served by health centers as indicated in the initial assessment was 55,073. The number served as indicated in the final assessment for each health center, which may have occurred in year 2013, 2014, or 2015, was 59,234 (Table 6). Among health centers that participated in all years of the project ($n = 41$), we did not see a significant increase in number of clients served (Year 1 total = 37,896; Year 4 total [final full year reporting] total = 40,102).

Best Practices for Adolescent Reproductive Health Services—For the health centers that completed at least two organizational assessments ($n = 67$), we compared best practices at first assessment and at final assessment. The number of health centers with a policy to conduct a sexual health assessment at every visit increased from 53 to 63, the number offering hormonal contraception or IUD at every visit increased from 48 to 57, and the number offering quick start for IUD insertions increased from 32 to 40. There was also an increase in the number of health centers implementing best practices related to creating a youth-friendly environment such as a private counseling area (49 to 54) and teen focused magazines or posters (45 to 51).

Overall, there were no substantial changes in the number of health centers implementing any of the 13 best practices in the categories of STD and HIV testing; cervical cancer screening; cost, confidentiality, and consent; and infrastructure. Most of these best practices were already being implemented by 80% or more of the health centers at baseline, which may have limited the opportunity for improvement.

Contraceptive Coverage and LARC Utilization—We compared mean contraceptive coverage and LARC utilization at the initial assessment to the final assessment point for each health center. We found a significant increase in contraceptive coverage from 32 to

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39% ($t(67) = -3.09, p = 0.003$), as well as an increase in LARC utilization from 10 to 16% ($t(66) = -2.33, p = 0.02$; Table 6). From the initial assessment to the final assessment, seven of the ten communities had increases in average contraceptive coverage among their health center partners with increases ranging from 5 to 36 percentage points; three had decreases of 1 to 8 percentage points (Table 6). Seven of the ten communities had increases in LARC utilization from 2 to 24 percentage points whereas three had decreases of 3 to 11 percentage points (Table 6).

The total number of T&TA hours provided by an organization to a specific health center partner was associated with higher levels of contraceptive coverage in the health center's final report after controlling for baseline levels of contraceptive coverage ($\beta = 0.24, p < 0.005$). The total number of TA hours also predicted higher levels of contraceptive coverage at the last report ($\beta = 0.24, p < 0.006$). Of the contraceptive provision best practices, only offering IUD with quick start was associated with a change in contraceptive coverage; health centers that reported quick start at baseline and at every follow-up assessment were more likely to have increases in contraceptive coverage than those who discontinued or never engaged in this best practice ($c = 0.269, p < 0.005$).

While T&TA was not associated with LARC utilization, implementation of the following best practices at baseline and each follow-up assessment (always) versus discontinuing or never engaging in the best practice was associated with increased LARC utilization at follow-up: (1) offering a wide range of contraceptive options ($\beta = 0.37, p < 0.007$), (2) hormonal contraception or IUD available at every visit ($\beta = 0.38, p < 0.039$), and (3) offering IUD with quick start ($\beta = 0.31, p < 0.023$). Implementation of the following best practices after baseline was also associated with LARC utilization at follow-up: (1) conducting a sexual health assessment at every visit ($\beta = 0.52, p < 0.015$), (2) hormonal contraception or IUD available at every visit ($\beta = 0.48, p < 0.010$), and (3) offering IUD with quick start ($\beta = 0.41, p < 0.002$).

Discussion

This study examined indicators for progress from a 5-year community-wide initiative project designed to prevent teen pregnancy in 10 US communities. Overall, organizations increased the number of youth served by EBIs in YSOs and increased contraceptive coverage among health center partners. Training and technical assistance (T&TA) hours provided by organizations to YSOs and health centers were associated with positive changes in key outcomes, specifically serving more youth with EBIs and contraceptive coverage. Organizations were able to engage community members through leadership teams and educate diverse stakeholder groups through multiple dissemination methods. Engaging community members through leadership groups (via mobilizing efforts) and disseminating information to multiple audiences through multiple dissemination methods can support organizations in reaching more youth and providing reproductive health services.

Supportive Components: Community Mobilization, Stakeholder Education, and Working with Diverse Communities

Communities that had representation from schools on partnership teams served the largest number of youth with EBIs. However, organizations faced challenges in expanding to schools. Saunders (2018) found that schools were reluctant to consider EBIs, particularly sexual health education, and that there were multiple stakeholders required (i.e., superintendents, principals, teachers, parents) to form a partnership. While Plastino and others (2017) found it took considerable time and effort to build school partnerships, these efforts led to more youth reached with EBIs and increased the likelihood of sustainability. Organizations may have disseminated to a larger number of stakeholder groups with multiple dissemination methods in 2012 to establish partners. By 2014, efforts appeared focused on a smaller number of stakeholders. This finding may suggest that organizations felt disseminating information in a more targeted approach was more effective than continued broad dissemination throughout the community.

Evidence-Based Interventions

The relatively larger number of T&TA hours provided for EBIs and the association between T&TA hours and the number of youth served by EBIs suggests ongoing support is needed to implement EBIs and expand reach in communities. T&TA supporting the use of PSBA-GTO to implement EBIs has been found to support higher fidelity and improved performance in using the steps of PSBA-GTO (Chinman et al., 2016). Higher fidelity scores were observed for programs that were implemented less frequently suggested the need for ongoing support to maintain fidelity in initiatives with more frequent implementation. Communities that implemented EBIs in schools during school time (as opposed to after school programming) served nearly half of the youth served in the project. Although larger numbers of youth can be reached through prevention programming in schools a higher frequency of sexual experience was noted in other program implementation settings. Related, over half of youth served by EBIs were 14 years or younger (i.e., younger middle school aged youth) and were less likely to report having sex. Youth served in health centers, military settings, and special populations were older and more likely to report having had sex. Partnerships with YSOs serving youth who are more likely to be sexually active including older youth are important so that youth most at risk of teen pregnancy are reached with EBIs and connected to clinical services.

Clinical Services

Health center partners had success in increasing implementation of many best practices for adolescent reproductive healthcare, such as having a policy to conduct sexual health assessments at every visit, offering hormonal contraception or IUDs at every visit, and offering quick start for IUDs. Some best practices were already being implemented by a majority of health centers making room for improvement limited such as STD and HIV testing. Other best practices may have proved difficult or unfeasible to adopt such as those associated with cost, confidentiality, consent, and infrastructure. Improvements were seen in implementing a sexual health assessment at every visit, making hormonal contraception or IUD available at every visit, and providing quick start of IUDs. Changes in these best

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practices suggest that these are feasible targets for quality improvement efforts in clinics. Efforts in planning, educating and developing support from leadership in multi-level health care systems, and mapping out new processes may have contributed to these changes (O'Uhuru et al., 2017; Sotolongo et al., 2017; Travers et al., 2019). Implementation of best practices related to ensuring a youth-friendly health center environment also increased; however, these best practices may be easier to implement (e.g., displaying SRH materials or showing a brief video) compared to the best practices requiring changing clinical policies or provider training. Additionally, some best practices are not feasible at some health centers such as adding weekend hours.

Over the course of the five-year CWI, health center partners significantly increased the percentage of adolescent clients receiving contraception and the percentage who selected a highly effective LARC method. Increases in the percentage of clients receiving contraception were associated with providing a larger number of hours of T&TA to health center partners. This relationship is likely due to TA, given that TA hours predicted increases in contraceptive coverage, whereas number of training hours did not. Organizations offered TA around specifically tailored topics (e.g., logistics of assuring that teens had one-on-one time with their medical provider). Understanding the types of technical assistance and provider trainings associated with improvements as opposed to more broad measures of T&TA is important.

An increase in LARC utilization was associated with a number of best practices including offering a wide range of contraception, making hormonal contraception or IUDs available at every visit, and offering IUD with quick start. For the latter two best practices, increases in LARC utilization were seen for health centers that implemented the practices throughout the CWI, as well as those who started implementing during the CWI. These findings suggest that having methods readily available, at baseline and over time contributed to increasing LARC utilization. Changes in LARC utilization were not associated with T&TA which may be due to a broader focus of T&TA efforts. More specific measures of T&TA would be helpful in determining how T&TA focused on LARC utilization may improve utilization rates.

There was not a significant project-wide increase in the number of adolescent clients receiving services among health center partners that participated in all years of the project. Youth may be accessing clinics, but not clinics that were included in the CWI. Additionally, although only 46% of CWI health centers received Title X funding, the findings are similar to declines among adolescent clients served at Title X clinics. In 2011, 912,045 females aged 15 to 19 years accessed services at Title X clinics, while only 603,790 were seen in 2015 (Fowler et al., 2016, 2012); this decrease may have been due to increased use of LARC which requires fewer visits, other changes to health care provision, and reduction in total revenue for Title X clinics (Fowler et al., 2017).

Limitations

Our findings are subject to some limitations. The project was a demonstration project with measures designed to support management of implementation including identifying needs and monitoring performance on progress; therefore, some measures provide limited

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information that can be difficult to interpret (e.g., mobilization). An application of the CWI with more rigorous methodology may be better able to identify connections between implementation outcomes and overall outcomes of the project (e.g., birth rates, individual behaviors). Missing from this evaluation are measures of the quality of the partnership teams (e.g., influence, contribution, cohesion, and support for teen pregnancy efforts) and reach and impact of dissemination strategies. Self-reported best practices for working with diverse communities and data did not include information on how best practices affected implementation and contribution to EBI and clinical service implementation.

We did not conduct multivariate analysis that included multiple predictors (e.g., clinical best practices and T&TA in the same model) due to the limited sample size. Some partners entered the project later in the study and/or participated for a shorter period and were likely to receive less T&TA and have less time to implement new strategies. Additionally, there were no comparison communities for implementation indicators and no external comparison groups available for EBI partners or health centers to determine whether increases in youth reach, contraceptive coverage, and LARC utilization were the result of CWI activities. T&TA hours, which require consistent monitoring, may not have been accurate because of a lack of consistent recording by technical assistance providers.

Health centers reported contraceptive coverage and LARC utilization using electronic medical records that are dependent upon accurate documentation by providers. Although TA was provided on accurate coding of services received at a health center visit, it is possible that report of contraceptive coverage and LARC utilization is not accurate and may be under- or over-reported. Finally, best practices were assessed based on the report of a single person at each organization and are considered present or absent. Many funded organizations worked to improve the quality of best practices from what was present at baseline, but changes in quality of best practice implementation were not captured.

Conclusions/Implications/Future Directions

Increased T&TA was associated with increased reach and number of youth served with EBIs and increased provision of effective contraceptives in communities participating in the CWI. The CWI funded organizations were able to implement EBIs with fidelity, increase youth reached with EBIs, and the number of youth provided contraceptives, including LARC in participating health centers. Although the contributions of community mobilization, stakeholder education, and working with diverse communities were not assessed statistically due to measurement limitations, these factors may have contributed to implementation and sustainability. The reach achieved through evidence-based interventions and increased provision of effective contraceptives through multiple components suggests efforts to implement EBIs or to increase provision of contraceptives may benefit from broader community-wide approaches and community engagement. Some of the lessons learned from the CWI were incorporated into an OAH funding announcement to promote health equity and eliminate disparities³ through strengthening community engagement, and a CDC funding announcement focused on linkage to care and improvements in clinical

³To view the funding opportunity announcement for a description, visit the following web link. <https://www.grants.gov/web/grants/view-opportunity.html?oppId=271309>.

services.⁴ Overall, the findings raise important questions for understanding what factors contribute to successful community-wide implementation of EBIs and health center best practices for contraceptive access and whether these lead to reductions in teen pregnancies in highly impacted communities.

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⁴To view the funding opportunity announcement for a description, visit the following web link. <https://www.grants.gov/web/grants/view-opportunity.html?oppId=274991>.

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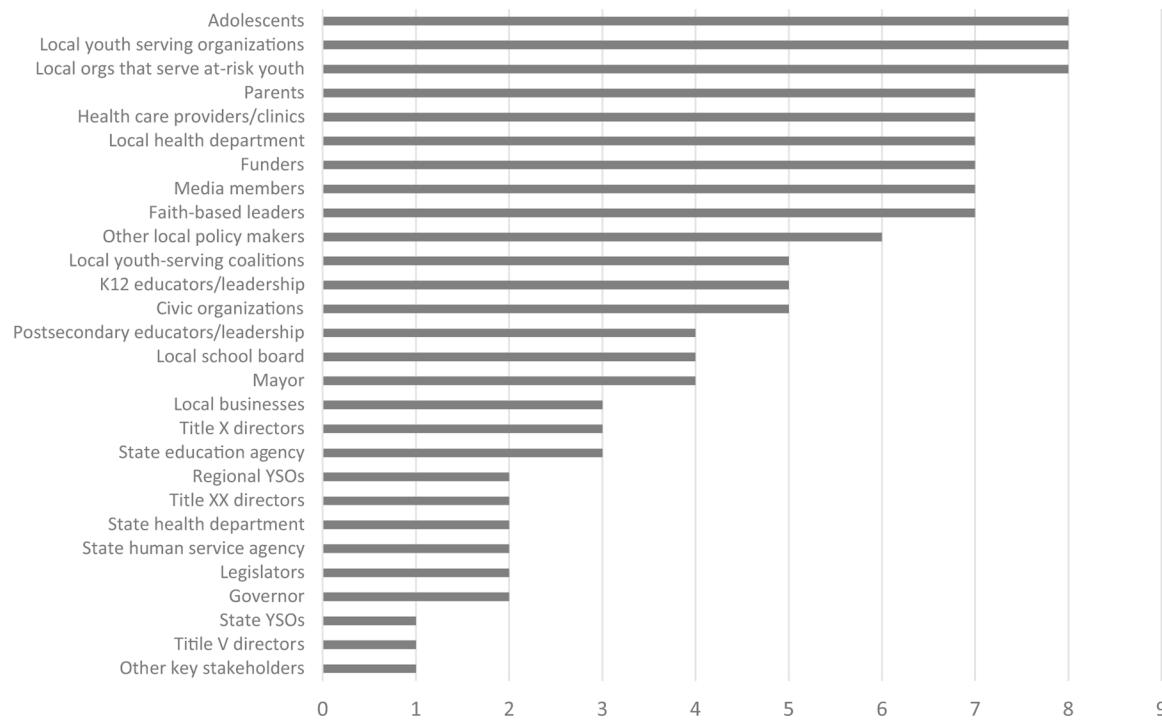


Fig. 1.

Number of organizations that disseminated information to stakeholder groups in 2014

Table 1

Training and technical assistance (T&TA) hours provided by national partners to the ten communities, by project component, 2011 to 2015

Community	Community mobilization	Stakeholder education	Working with diverse communities	EBIs	Clinical services	Total
A	160	128	110	685	214	1,297
B	251	116	127	535	205	1,234
C	197	122	273	527	215	1,334
D	262	143	115	495	306	1,321
E	151	175	131	543	342	1,342
F	206	149	110	552	257	1,274
G	271	208	122	522	213	1,336
H	191	165	97	529	194	1,176
I	188	171	47	533	222	1,161
J	143	101	116	794	233	1,387
Total ^{a,b}	2018	1476	1244	5715	2400	12,853
Average	202	148	125	572	240	1,286

^aTotal hours provided to each community includes training and technical assistance received directly by each community including multiple site trainings (i.e., trainings where more than community participated). If an 8-h training was provided to all 10 communities, each community receives 8 h. Therefore, totals reflect 72 h of TA for an 8-h training

^bTotal hours are calculated from complete values with decimal values. Hours of T&TA by community are rounded; therefore, total hours received do not equal the sum of community values for T&TA hours

Table 2

Total number of hours of training and technical assistance provided^a by the nine organizations to health centers and youth serving organizations by participating community, 2011–2015

Community	Health centers		Youth serving organizations	
	Training	Technical assistance	Training	Technical assistance
A	16	39	64	124
B	77	49	187	172
C	31	447	132	343
D	52	133	304	353
E	138	139	292	595
F	95	191	494	574
G	31	163	390	285
H	107	125	291	616
I	157	137	401	241
J	—*	—	599	456
Total hours ^b	713	1422	3152	3757
Average	78	158	315	376

*Data not reported

^aTotal hours provided by each component includes trainings that were provided to multiple sites. If an 8-h training was provided to all 9 organizations, it would only count as 8 h of training provided instead of 72 h

^bTotal hours received are calculated from complete values with decimal values. Hours of T&TA by community are rounded; therefore, total hours received do not equal the sum of community values for T&TA hours

Table 3

Partnerships^a developed and sustained by organizations with YSOs and health centers, by community, 2011–2015

Community	YSO partnerships		Health center partnerships	
	Developed	Sustained ^b	Developed	Sustained
A	11	1	9	5
B	16	3	5	3
C	16	3	5	4
D	10	4	9	8
E	14	3	8	4
F	29	13	12	10
G	23	3	9	8
H	11	4	7	6
I	9	2	5	2
J	13	5	9	5
Total	152	41	78	55
<i>Mdn</i>	13.5	3	8.5	5

^aPartnerships included in this table are YSOs that implemented EBIs and health centers that implemented best practices

^bSustained partnerships include YSOs and health centers that participated in every round of data collection: 4 years for YSOs and 5 years for health centers

Table 4

Number of youth served by evidence-based intervention type, percent of youth who ever had sex, and fidelity by program implementation setting, from 2012–2015

Setting	Youth served	Ever had sex % ^a	Fidelity % (Obs ^b %)
School	35,085	27	86 (88)
Community-based organization	9645	44	93 (89)
Special populations ^c	2409	62	90 (89)
Military	1312	60	97 (97)
Faith-based organization	1905	40	96 (97)
Health center	1855	73	96 (80)
College	944	66	100 (93)
Other	994	57	95 (76)
Total	54,149	30	90 (89)

^a Some participants were not surveyed or did not participate in surveys; therefore, the percent shown here is not the percent of the total number of youth surveyed across settings and program types is 83% (range 37 to 100%)

^b Obs = scores based on an external observers' ratings of program fidelity. Fidelity scores are based on facilitator self-reported fidelity ratings

^c Special populations included youth who are in foster care, homeless, pregnant or parenting, or involved with the juvenile justice system

Table 5

Number of evidence-based intervention youth served, percent of youth who ever had sex, and fidelity by community, 2012–2015

Community	Youth served	Ever had sex % ^a	Fidelity % (Obs ^b %)
A	5,162	34	95 (93)
B	1,925	41	87 (77)
C	3,803	68	98 (97)
D	2,768	59	95 (-)
E	7,547	32	96 (96)
F	6,690	31	78 (-)
G	4,066	49	86 (75)
H	5,340	59	94 (100)
I	4,156	55	95 (84)
J	12,718	26	93 (90)

* Data not reported

^aSome participants were not surveyed or did not participate in surveys; therefore, the percent shown is not the percent of the total number of youth served. The average proportion of youth surveyed across organizations is 55% (range 30 to 100%)

^bObs = scores based on an external observers' ratings of program fidelity. Fidelity scores are based on facilitator self-reported fidelity ratings

Table 6

Number of adolescent clients, contraceptive coverage, and LARC utilization for health centers initial and final assessments and difference^a between initial and final assessment during 2011–2015

Community	N	Adolescent clients ^b		Contraceptive coverage ^c		LARC utilization ^{d,e}				
		Initial	Final	Diff	Initial	Final	Diff			
A	6	5,751	4,694	-18%	14%	27%	14%	10%	9%	
B	4	4,691	5,843	25%	47%	55%	8%	20%	16%	-4%
C	5	2,700	1,796	-33%	17%	54%	36%	22%	10%	-11%
D	8	4,137	4,272	3%	29%	27%	-2%	26%	24%	-3%
E	7	4,884	4,557	-7%	63%	68%	5%	16%	21%	5%
F	12	7,485	8,855	18%	32%	40%	8%	4%	12%	8%
G	9	15,310	17,100	12%	34%	27%	-8%	3%	5%	2%
H	7	2,949	3,489	18%	29%	42%	13%	3%	27%	24%
I	4	1,684	2,418	44%	52%	50%	-1%	20%	22%	2%
J	9	5,482	6,300	15%	12%	20%	7%	3%	23%	21%
Total	71	55,073	59,324	8%	32%	39%	7%	10%	16%	6%

^aNumerical difference for adolescent clients and percentage point difference for contraceptive coverage and LARC utilization

^bHealth center partners reported adolescent client data for a partial year in the final year of the project. For health centers who reported data from the truncated final year, the previous complete year data are included

^cContraceptive coverage includes all medical methods of contraception including pill, patch, ring, injectable, implants, and intrauterine devices and is calculated by dividing the number of adolescent clients who received a contraceptive method by the total number of adolescent clients by health center

^dLong-acting reversible contraceptives (LARC) include contraceptive implants and intrauterine devices (IUDs)

^eLARC utilization is calculated by dividing the number of adolescent clients who received an implant or IUD by the total number of adolescent clients who received any contraceptive method