

July 2014

Strategies for recruitment and retention of teen mothers in a program to prevent repeat pregnancy

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Recommended Citation

South-Paul, Jeannette E.; Ncube, Collette N.; Lin, Chyongchiou J.; Nowalk, Mary Patricia; Kagwima, Ruth N.; Wheeler, Emily A.; Matambanadzo, Annamore; and Adeyeye, Ayotunde (2014) "Strategies for recruitment and retention of teen mothers in a program to prevent repeat pregnancy," *Journal of Adolescent and Family Health*: Vol. 6 : Iss. 2 , Article 1.
Available at: <https://scholar.utc.edu/jafh/vol6/iss2/1>

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Cover Page Footnote

Acknowledgements: This research study was funded by the Heinz Endowments, Pittsburgh PA, grant number B7982. The opinions expressed herein are those of the authors and do not reflect those of the funding agency.

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INTRODUCTION

Between 1990 and 2008, the United States (U.S.) adolescent pregnancy rate has declined 40% to 69.8/1,000 teens age 15-19 years (Ventura, Curtin, Abma, & Henshaw, 2012). Similarly, birth rates for this population have declined nearly 50% between 1991 and 2011 to 31.3/1,000 (Martin, Hamilton, Ventura, Osterman, & Mathews, 2013; Martin et al., 2012). These rates are both substantially higher than those in comparable societies (Kliff, 2010; United Nations Statistics Division, 2011). Moreover, racial and socioeconomic disparities in U.S. teen pregnancies exist. In 2010, the teenage birth rate for non-Hispanic whites was 23.5/1,000, compared with 55.7/1,000 for Hispanics, 51.5/1,000 for non-Hispanic blacks, 38.7/1,000 for American Indian/Alaska Natives, and 10.9/1,000 for Asian/Pacific Islanders (Martin et al., 2012). The economically disadvantaged in all racial/ethnic groups are at highest risk for teen pregnancy (*Teen Pregnancy - At a Glance 2011*, 2011).

The risks to adolescents of early, unplanned pregnancy include inadequate prenatal care, premature birth, low birth weight, higher infant mortality (Barnet, Liu, & Devoe, 2008), increased depression (Barnet et al., 2008), poor school performance and higher drop-out rates, limited job opportunities, decreased potential and actual future earnings, persistent poverty and greater dependence on public assistance (Deardorff, Gonzales, Christopher, Roosa, & Millsap, 2005; Foster, Greene, & Smith, 1990; Klein, 2005). Teen mothers are less likely to complete their education and in turn, their children are at increased risk of behavioral problems and low school preparedness (Klerman, 2004).

Teen mothers who have one child are also at higher risk of having another; for example, 18.3% of births to teen mothers in 2007-2010 were repeat births (Szilagyi et al., 2013). Thus, teen mothers are more likely to become single parents of large families with inadequate financial resources and the emotional support needed to raise healthy and stable families (Johnson, Lay, & Wilbrandt, 1988).

Because the consequences of repeated and closely spaced births among adolescents are thought to be more adverse than those of a single unintended pregnancy, effective programs to address repeat teen pregnancy in the U.S. are needed. Two studies that examined the effect of advanced supply of emergency contraception (Belzer et al., 2003; Schreiber, Ratcliffe, & Barnhart, 2010) and five studies of interventions that involved intensive counseling, education and mentoring programs (Barnet, Liu, DeVoe, Alperovitz-Bichell, & Duggan, 2007; Black et al., 2006; Katz et al., 2011; Key, Barbosa, & Owens, 2001; Salihu et al., 2011) were identified. Only two (Black et al., 2006; Key et al., 2001) successfully reduced teen repeat pregnancy rates.

Studies that required long-term commitment of the teen mother and repeated interactions between teen mothers and the research team have reported

difficulty in both recruiting and retaining teen mothers. Factors related to adolescents in general, and to teen mothers specifically, that affect their recruitment to and retention in research studies, include availability of transportation, child care and time; age; chaotic lifestyle; and levels of stress (Katz et al., 2011; Letourneau, 2001; Schreiber et al., 2010).

Based on the previous successful teen repeat pregnancy programs and mindful of recommendations by others (Katz et al., 2011; Klerman, 2004; Pinto-Foltz, Logsdon, & Derrick, 2011; Schreiber et al., 2010; Seed, Juarez, & Alnatour, 2009) regarding best recruitment and retention practices, an ongoing mentoring program called the Maikuru Project, was established in 2009 in Allegheny County, Pennsylvania. The term Maikuru ('my-koo-roo') is derived from the African Shona word for a significant female leader in the family, and is the term used for this program's adult mentors. The program included pairing teen mothers with a Maikuru in a multi-visit educational program designed to build self-efficacy and prevent repeat teen pregnancy.

Clearly, teens cannot benefit from a program if they do not participate. Therefore, maximizing recruitment and retention is an integral aspect of a successful program. Low response to initial recruitment efforts and low retention rates required modifications to both recruitment and retention strategies. The purpose of this paper is to describe the strategies used to recruit and retain teen mothers, the challenges presented and how those challenges were addressed, in an effort to assist other researchers working with teens to efficiently and effectively use their resources and implement successful programs.

METHODS

This study was approved by the University of Pittsburgh Institutional Review Board (IRB). The major components of the Maikuru Project were: 1) pairing of teen mothers with Maikurus for individual mentoring; 2) baseline and periodic follow-up assessments of teen mothers and adult mentors; and 3) attendance at eight weekly group educational sessions highlighting self-confidence, communication skills, healthy lifestyles, and social support.

The target sample size was 90 teen mother-Maikuru pairs. Groups of 10 pairs were to be recruited to attend meetings within their home neighborhoods to facilitate transportation and with the intention that each group would develop into a sustainable support network. Teen mother inclusion criteria were age 18 years or less at enrollment, have delivered no more than one birth child that she is raising, not currently pregnant, and agrees to be paired with an adult mentor. Exclusion criteria were age older than 18 years, pregnant, not getting signed consent forms from parent or legal guardian.

Eligibility criteria for adult mentors were age at least 15 years older than teen mothers, criminal and child abuse clearances, consent to participate and be

paired with a teen mother for mentoring. Exclusion criteria included being unable to receive legal clearances, or possess inappropriate mentoring attitudes or motivations.

Recruitment strategies

Recruitment and retention strategies are reported for the period Spring 2008 through February 18, 2013. The research team worked with a community advisory board which: 1) suggested target neighborhoods, social service agencies, community centers and other venues to recruit potential participants; and 2) helped develop recruitment strategies.

In-person recruitment. Research assistants visited agencies serving teens, health centers serving pregnant teens, and schools to make presentations.

Fliers. Fliers were developed that featured photos of white and non-white young mothers with their babies, simple language to attract teen mothers, and contact information. Fliers were distributed widely in stores, markets, community organizations, social service agencies, hospitals, doctor's offices, bus shelters, day care centers, other places of business, and houses of worship (Table 1). Fliers were re-posted frequently to replace those that had been lost, destroyed or removed.

Recruitment through an intermediary. Recommendations to teen mothers by family members, peers and adults who have frequent contact with teens were seen as an important avenue of outreach. Contacts with school administrators, guidance counselors, nurses and in-school day care providers throughout Allegheny County were made through letters, telephone calls and emails. Agencies providing services to pregnant teens and/or teen mothers were similarly contacted. Any respondent who was willing to inform and refer teen mothers was contacted to provide an overview of the program and received fliers to post and distribute. Teen participants were asked to promote the program among other pregnant teenagers.

Bus advertisements. Large versions of the fliers were created to post on buses. Posters were displayed inside designated buses on specific routes that served target communities for specified periods of time. The bus ads ran for 2-3 month intervals and were repeated as needed.

Consent and Enrollment

Potential participants who called to inquire about the study were screened for eligibility by a research assistant who explained the study and answered questions. The screening form included a question about how teens heard about the study. If eligible, a consent form was then mailed to the teen mother to be signed by her and her parent. A stamped self-addressed envelope was included in the mailing, and once the paperwork was returned, the teen was eligible to

participate in the group sessions with her research team-selected Maikuru. Follow-up phone calls were made to teens who had not returned consent forms within four weeks. When necessary, assistance was provided to teens who were having difficulty getting a parent's signature, in the form of phone calls to parents to explain the study, meeting teens and parents to obtain consent, etc. When a sufficient number of teens from a given neighborhood were enrolled, the 8-week intervention was initiated. Teen mothers and Maikurus were asked to complete surveys at the orientation visit and then attended eight weekly 2-hour meetings together. Surveys were repeated at week 8, month 6 and month 12.

Retention strategies

The research team anticipated that there would be numerous barriers to retaining teens in the study including transportation, child care, school commitments, etc. Intervention meetings were held in the evenings so as not to interfere with school or work schedules for teens and mentors and so that teens would be home early enough to put their babies to bed and finish homework or other tasks. Initially, meetings were held within the teens' neighborhood at a neutral location such as a community center or social service agency. A healthful but substantial meal was provided at each meeting, as were bus passes and child care, so that the participants would not incur expenses as a result of participation.

As an incentive to participate and to compensate the participants for their time, teen mothers and Maikurus were offered grocery store gift cards initially then later, reloadable debit cards. A progressive compensation structure was employed in order to increase the likelihood of study completion. The payments were made at week 3 (\$30) for attendance at all visits 1-3, at week 6 (\$30) for attendance at all visits 4-6, at week 7 (\$25) and at week 8 (\$25). This was later modified to \$15 per session given at the end of the meeting.

RESULTS

The Figure shows the migration of teen mothers through the recruitment, enrollment and retention process. Of the teen mothers who telephoned for additional information about the study, 245 passed the initial screening. Twenty-five of these teens (10%) were eliminated because they were too old, pregnant, or not interested, leaving 220 who were mailed consent forms. Only 134 teen mothers, representing 61% of those receiving them, returned fully executed consent forms. An indication of the difficulty of working with and retaining this population is the fact that only 69 (51%) of the 134 participants who consented to participate, remained with program to be paired with an adult mentor and attend the first educational session. Reasons for dropout included loss of interest in participation for a variety of reasons, turning age 20 before the intervention began, and one second pregnancy. Of the 69 who began the program, 52 attended

at least half of the educational sessions (75%) and 11 of them (16%) attended all sessions. Reasons for missing sessions included child's sickness, other family issues, busy schedule, transportation issues and incarceration.

Table 1 indicates the various strategies used to recruit teen mothers and the responses received. By far, the most effective means of attracting teen mothers' attention to the study was through bus advertisements. This strategy, while requiring direct outlay of cash, required very little staff time or effort after deciding when and on which bus routes to post the advertisements. The second most effective strategy was word-of-mouth referrals from family and friends. Clearly this is a low cost strategy, but it does require significant general awareness of the program by those in contact with pregnant teens or teen mothers, which was likely accomplished through any combination of the other strategies. Efforts to recruit teen mothers through schools, hospitals and health centers, and community organizations were moderately effective; day care centers, places of worship and other neighborhood venues were not successful recruitment sites and all were time- and resource intensive. Print media placements were not appropriate for directly reaching teens.

Recruitment Challenges and Solutions

It was anticipated that recruitment would take place over most of the study period because the educational groups would be offered sequentially. This offered the benefits of time to develop relationships with community and social service groups and school administrators; the ability to apply successful strategies to previously less fruitful venues; multiple opportunities to consult with the community advisory board for additional avenues of introducing the program to teens; and time for word of the program to spread among teens. Yet, significant challenges were encountered. Table 2 lists many of the barriers to recruiting and retaining this at-risk population and some of the strategies we used to overcome those barriers. Recruitment barriers were grouped into teen factors and stakeholder factors.

Teen Barriers

Sociodemographic, age and initial study design factors were all barriers to recruiting teen mothers. Because unintended pregnancy is more common among low income teens and because low income teens frequently have fewer supports, the focus of the recruitment efforts were primarily in disadvantaged neighborhoods and schools serving higher proportions of low income students. This focus resulted in challenges which would have been less frequent among populations with higher socioeconomic status and more stable living situations. For example, teen mothers were highly mobile, changing addresses, home phone numbers (if they had them at all), and email addresses frequently. If they relied

on cell phones as their primary means of contact, the phones were frequently pre-paid or pay-as-you-go phones on which the numbers changed each time a new one was purchased. This instability made communication with teen mothers difficult, especially when there was some lag time between initial contact and initiation of a group. Calls to confirm interest were not answered or returned, mailed consent documents and meeting reminders were not received with the result that teen mothers were not enrolled or were lost to follow-up. In response, strategies to overcome these mobility issues were to: reduce the wait time between initial contact and enrollment, make frequent follow-up phone contacts if a delay was anticipated, use social media web sites to communicate with teen mothers, and capitalize on teens' preference for texting by texting reminders instead of calling.

Family dynamics played a significant role in impeding the consent and enrollment process. Teen mothers can give consent for their medical care, but legally may not consent themselves for participation in research. Obtaining signed consent forms from parents to allow teen participation was an obstacle to enrollment due to: 1) strained relationships with families, exacerbated by the social, economic and interpersonal consequences of the unintended pregnancy; 2) teen mothers not living at home but living with the child's father, friends, other family members or another boyfriend; and 3) absence of one or more parent due to separation of the parents, incarceration, illness, etc. We anticipated that these chaotic social circumstances would also hinder attendance at meetings because of child care and transportation barriers.

To overcome the challenges of acquiring parental consent, we enlisted the support of intermediaries such as school counselors, case workers at social service agencies or medical practices and other adult family members to access parents; meeting teens and/or their parents at a convenient and neutral site to obtain signatures; and ultimately getting IRB permission to use verbal (telephone) parental consent combined with the teen's written assent. To encourage participation, teen mothers were informed that child care and transportation vouchers would be available when they attended meetings so that they were not dependent on family to facilitate their attendance.

Emotional immaturity of teens is an issue that is not limited to research with teen mothers. At the most basic level, teens were careless about completing forms and receiving fully completed and executed forms sometimes required several attempts, resulting in delayed enrollment. Additionally, we found that teen mothers often did not perceive the serious long-term implications of their unintended pregnancy. They tended to be more focused on the day-to-day issues of caring for a baby, going to school, and maintaining social relationships, so that stressing the importance of the research study was not a successful means of securing their interest or commitment to the program. Secondly, a substantial

amount of time was spent contacting participants who had initially expressed interest or signed consent forms, but did not keep appointments or attend meetings.

To address these challenges we emphasized the immediate rather than long-term, and tangible rather than intangible benefits of participation for the teen and her child, believing that if teens perceive a program as fun and a break from other commitments, they may be more likely to enroll and commit to attending regularly. Utilizing young adult research assistants, who could be perceived as more understanding of teen mothers' issues, was also beneficial. Finally, the research team understood and anticipated barriers to teens' participation and addressed them during the initial contacts. We made multiple, but not unlimited attempts to enroll and eventually learned to offer easy ways for a teen to say no.

Given transportation barriers, the recognized neighborhood insularity of this geographic region, and the potential for dissonance among a group of teens coming from different neighborhoods, the research team initially planned to hold group educational sessions within the recruited teen mothers' neighborhoods. Long delays required to interest a sufficient number of teen mothers from a given neighborhood to begin a group resulted in significant attrition. In response, group size was varied from the planned 10, to accommodate a "critical mass" of teen mothers, and wait time was limited to four weeks or fewer from consent to the beginning of the educational sessions. Group meetings were moved to a single, centrally located site on a busy bus route that was accessible from most of the targeted neighborhoods.

Posters and fliers were used to directly access teen mothers. However, gaining permission to post fliers in schools, and agencies that provide services to teens was time consuming and advertisements placed in health centers had to be replaced often. We found that advertisements placed inside buses and bus shelters were quite effective as teen mothers frequently ride public transportation to school, doctor's appointments and shopping, and are a "captive audience." Although not an option for this study, public service announcements could be placed on radio stations most likely to be listened to by the teen demographic group.

Stakeholder Barriers

The research team sought out and contacted community leaders and directors of agencies that served teens where direct recommendations to the program could be made, including school districts, social service agencies, and health centers treating adolescents. However, working with these groups presented a number of challenges. Staff at some agencies were reluctant to recommend teen mothers because they believed that the research program requirements would interfere with the requirements of their own programs.

Strategies for meeting this challenge included taking sufficient time to understand requirements of programs sponsored by other agencies, determining how the programs can be mutually beneficial, emphasizing these benefits when requesting recruitment assistance, and reciprocating as appropriate. Some agencies that were supportive and willing to make referrals were unable to do so due to overwhelming case loads. In these instances, it was necessary to limit their time commitment by providing brochures, fliers, etc. on a regular basis to serve as reminders.

Unfortunately, it was not possible to request referrals from school district personnel without school district approval. Many schools were reluctant to allow students to participate in research projects. We found that the best approaches were to anticipate long wait times for the approval process, utilize our institution's IRB application and approval as support documents, be prepared to demonstrate the benefit to the students regardless of research outcomes, and work with any contacts within the school that have already been established.

Relatively speaking, teen mothers were not common enough in general family medical practices to warrant placing staff in waiting rooms to speak with potential participants or to enlist the support of the health centers' staff to make referrals. The research team focused on one clinic housed in the city's only maternity hospital and frequently placed posters and fliers there, in addition to establishing a relationship with the clinic's staff to foster referrals.

Overall in this study, stakeholders as referral agents were more resource-intensive and less productive than direct advertising was found to be. However, anticipation of potential barriers and willingness to continue to adapt the recruitment strategies helped the research team to increase the productivity of the effort over time.

Retention Challenges and Solutions

Many challenges to retention have been successfully overcome in general research populations and were used for this study of teen mothers. Others were unique to this study or were similar in nature to those pertaining to recruitment.

A major challenge to receiving benefits of the program was inability of many teen mothers to adhere to the intervention schedule. In part, this stemmed from their unpredictable and unstable lifestyles, a lack of commitment to the program, and also from other demands on their time that included school, child care, other responsibilities at home, medical appointments, after school jobs and time for socializing. The research team worked to overcome lack of commitment by carefully selecting and matching the adult mentors to the teen mothers, providing mentoring training for Maikurus, and putting the teen and adult in touch with each other before the beginning of the educational meetings if possible. This early matching enabled the pair to establish rapport, and allow the teen to feel that

her attendance at the meetings was important because there would be someone there who was anticipating her attendance.

The challenges resulting from frenetic schedules and unstable lifestyles required the research team to hold educational sessions after school or in the early evening, adhere strictly to meeting start and end times, provide child care for meetings, offer make-up sessions, and be willing to reduce the number of sessions. It was important to consolidate data collection efforts within meetings and not include “homework.” To eliminate transportation as a barrier, bus or subway passes and free parking passes were provided. In some cases, the adult mentor provided transportation for a teen mother, demonstrating another benefit of the early matching.

Incentive payments should be designed to compensate the teen for her time that might otherwise be spent working for pay. Initially, the compensation was designed to be “backloaded,” that is, increasing in value as the program progressed. This system was meant to encourage teens to attend all sessions, especially those toward the end of the program when participation typically wanes, and to ensure follow-up data collection. The original clustered incentive payment could not overcome impediments to attendance, e.g., sick children, eviction, serious illness of the mother, last minute change of plans, and was not producing the desired results. Thus, the payment program was adjusted to provide an incentive for attendance at each meeting. Furthermore, teens were offered a substantial meal at each meeting saving them the cost of a meal, and other small gifts (framed photograph of the mother and her child, medicine syringes, child cereal bowls, etc.) were periodically given to attendees.

The program was designed to allow for participant input into the program topics. Because groups can have unique personalities, the teens could select a topic from a list for one meeting that would address their collective needs. This input served to offer the teen mothers some ownership of the program and is believed to have contributed to retention. Additionally, based on feedback from participants, it was decided to reduce the number of sessions constituting the program from eight to five. This resulted in a need to reduce the number of topics covered in the program. Input from the teen mothers and adult mentors was helpful in selecting the most useful topics for the shorter program.

DISCUSSION

Teen pregnancy presents multiple short- and long-term consequences for the teen and her baby, as well as their nuclear and extended families. Programs designed during the past two decades have used a variety of approaches to limit teen births, with community outreach, home-based and cell phone counseling efforts successfully reducing teen pregnancy rates (Barnet et al., 2007; Salihu et al., 2011) and improving parenting skills (McDonald et al., 2009). But reducing rates

of repeat pregnancy seems to be more intractable (Barnet et al., 2007; Belzer et al., 2003; Katz et al., 2011; Schreiber et al., 2010), with few studies reporting successful interventions. Notable exceptions were programs that included mentoring and peer support groups (Black et al., 2006; Key et al., 2001).

We are testing a program focused specifically on preventing repeat teen pregnancy that includes group educational sessions, adult mentoring and long term follow-up. We found that 245 eligible teens responded to recruitment efforts between Spring 2008 and February 2013 and among those, 28% completed the enrollment process, were matched with an adult mentor and began the intervention. Previous research among adolescents reports enrollment rates ranging from approximately 30% to over 92% (Black et al., 2006; Katz et al., 2011; McDonald et al., 2009; Nguyen et al., 2012). While recruitment efforts for other studies targeting teens have found local newspaper articles, school newsletters (Nguyen et al., 2012), direct recruitment at postpartum school parenting programs (Pinto-Foltz et al., 2011), and direct recruitment during pregnancy and postpartum at the hospital or clinic (Stevens-Simon, Dolgan, Kelly, & Singer, 1997) to be effective strategies, we found that bus advertisements led to enrollment of half of our participants.

Initial expectations that collaborations with local high schools, physician's offices and social service agencies would provide ample recruitment opportunities were not met. This challenge was met with perseverance, creative problem solving and reliance on the community advisory board and other informants to explore and utilize other options. Other authors have recommended a community advisory board as an essential element of developing successful research with teens (Pinto-Foltz et al., 2011).

As others have reported a considerable time commitment needed to approach schools for recruitment of students into research studies (Nguyen et al., 2012), we recommend approaching groups of school nurses, counselors or child care providers when they hold district- or city-wide meetings. This eliminates having to approach each school's representative individually and can encourage a group of individuals to serve as champions for the project with school administration in their respective schools. This strategy also has the potential to facilitate acceptance of the program's educational sessions in fulfillment of school-required parenting classes, which may induce teen mothers to participate, as it reduces some of the demands on their time.

Strained relationships between teen mothers and their parents or legal guardians or parental absence presented barriers to obtaining written informed parental consent which initially slowed the pace of enrollment in this study. Furthermore, consent for adolescents for research varies by state. For example, in Pennsylvania while she is pregnant, an adolescent may give consent for herself, but once she gives birth, she may give consent for her own child, but not for

herself. While this issue has not been raised by other researchers and will likely be institutionally idiosyncratic, it is important for researchers in this area to know that consent methods may be different from those for adults, but may also be negotiable, given the constraints presented by this population.

Of the 69 teen mothers who enrolled, completed baseline assessments and attended the first session of this program, 52 (75%) completed at least 50% of the educational program sessions while 11 (16%) attended all educational sessions. This compares with 38% (52/97) (Seed et al., 2009) and 50% (12/24) (Letourneau, 2001) retention rates and 52% completion rate for cell phone counseling sessions (Katz et al., 2011) in repeat teen pregnancy prevention programs. Given the: 1) difficulties of retaining adolescents in long term research studies (Pinto-Foltz et al., 2011; Seed et al., 2009); 2) finding that increased exposure to the intervention resulted in lower repeat pregnancy rates (Katz et al., 2011); and 3) longitudinal nature of our program, it was important to identify methods to support teens' participation to maximize their benefit from the intervention.

We found that the social issues that influence adolescent decision-making and for which they noted limited avenues for resolution, complicated their ability and willingness to participate. Care-giving demands for their infants, family responsibilities, requirements for school or job attendance, moving from one home to another and in some cases, restrictions imposed by the judicial system all negatively affected participation in this study and have been reported in other studies (Letourneau, 2001; Seed et al., 2009). Although we were unable to overcome all such impediments, we believe that our efforts to eliminate identified barriers and provide financial incentives for attendance, a strategy whose effectiveness at promoting attendance by teen mothers has been demonstrated by previous research (Stevens-Simon et al., 1997), contributed to recruitment effectiveness and retention.

Maintenance of reliable and consistent methods of communication demanded multiple contacts with teen mothers prior to and throughout the intervention. Use of the Internet as a viable alternative for increasing participation of adolescents, particularly African Americans has been reported (Scott-Johnson, Gross, & Browne, 2010), while obtaining contact information for individuals in the teen's social network and using social networking sites to maintain contact have been recommended (Seed et al., 2009). We successfully used both text messaging and social networking through Facebook© to send meeting reminders and keep in touch with participants. Other strategies are to request contact information updates at each visit and to request contact information from multiple contacts (Seed et al., 2009).

The importance of a strong relationship between the teen mother and those working with her in the intervention has been highlighted in other studies (Black

et al., 2006). Our interpretation of this idea was to pair the teen mother and her Maikuru before the initial intervention meeting and hire research assistants who are culturally sensitive and close in age to participants, to create a mini-community.

Strengths and Limitations

This study targets a seldom studied high risk-population, i.e., teen mothers, and attempts to prevent repeat teen pregnancies. Our experience provided valuable insight into working with this population. Its strengths also include use of a community advisory board, a young and culturally sensitive research team and a willingness to adapt recruitment and retention strategies to our situation.

Some of our data are limited because initial respondents to the recruitment strategies had not yet provided informed consent before they dropped out. Hence, we were unable to document specifically why they chose not to participate. Moreover, the data collected represent a limited geographic and demographic perspective and other strategies, such as recruiting through faith communities, may be pertinent to teen mothers from other locales or racial/ethnic groups.

Conclusions

Working with teen mothers in research studies or other programs can be significantly hampered by personal and environmental issues outside of the control of both the potential participants and the researchers. To overcome these challenges to recruitment and retention in a longitudinal study we recommend anticipating those challenges and being willing to be flexible and adapt procedures to address issues as they arise. Specific examples of adaptation used for this population were adoption of information technologies frequently used by adolescents, and focusing on forming strong relationships among teen mothers, their mentors and the research team in the early stages of the intervention. Other successful strategies were the use of bus advertisements, an easily accessed, centralized meeting location, short time periods between recruitment and enrollment, immediate incentives for participation, offering a meal and child care to minimize cost of participation, and rescheduling one-on-one meetings as needed when participants are unable to attend. By anticipating barriers and facilitating participation, recruitment and retention efforts for research projects involving teens can be successful.

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Table 1. Promotional Avenues and Outcomes

Location	Facilities contacted or events attended, n	Eligible teen mothers who called to inquire, n (%)	Consented participants, n (%)	Completed baseline survey, n (%)
Bus/bus shelter ads	111	117 (47.8)	64 (47.8)	35 (50.0)
Community businesses including child care centers	63	2 (0.8)	2 (1.5)	0 (0.0)
Community organizations including social service agencies	22	21 (8.6)	11 (8.2)	6 (8.6)
Educational institutions	7	22 (9.0)	11 (8.2)	3 (4.3)
Health center/hospital	8	16 (6.5)	6 (4.5)	4 (5.8)
Neighborhood*	-	5 (2.0)	3 (2.2)	3 (4.4)
Places of worship	31	2 (0.8)	2 (1.5)	1 (1.4)
Social Media		2 (0.8)	1 (0.8)	0 (0.0)
Word of mouth	-	42 (17.1)	26 (19.4)	12 (17.4)
Miscellaneous/Don't know/Can't remember	21	14 (5.7)	8 (6.0)	5 (7.3)
Total N	-	245	134	69

*Participant reported hearing about the program "in the neighborhood."

Table 2. Challenges Faced in Recruiting and Retaining Teen Mothers and Strategies to Overcome Them

Recruitment		
Situation	Challenge	Strategies to Overcome
<i>Teens</i>		
Geographic mobility/low income resulting in frequent: change of address and home phone number, disconnected cell phone numbers, obsolete email addresses	Difficulty communicating to enroll, follow up, and remind teens about meetings	<ul style="list-style-type: none"> ➤ Request contact information updates at each visit ➤ Reduce wait time between consent and enrollment ➤ Frequent follow-up contacts if there is a delay ➤ Use of social media ➤ Use of texts instead of calls
Strained relationships with parents/guardians; Nontraditional, dysfunctional families; Teen not living at home	Obtaining parental consent	<ul style="list-style-type: none"> ➤ Use or services of agency case workers, school counselors ➤ Meet teen and/or parent at neutral and convenient site ➤ Use telephone consent (per IRB)
	Lack of childcare Transportation difficulties	<ul style="list-style-type: none"> ➤ Provide childcare and transportation vouchers at meetings

Immaturity	<p>Reluctance of uninterested teens to say “no”</p> <p>Do not perceive the significance of their situation or the value of the intervention as do the researchers, mentors and referring individual</p>	<ul style="list-style-type: none"> ➤ Recognize that teens’ interest level is hard to read and seeming lack of interest may be inability to overcome barriers to participation. Evaluate/review potential barriers with teens to differentiate between lack of interest and barriers. Make multiple attempts to enroll, but set a limit to the number then, offer easy ways to say no ➤ Emphasize the benefits (short and long term, tangible and intangible) to the teen and her child and fun aspects of the program rather than importance of study results
	Incomplete paperwork	<ul style="list-style-type: none"> ➤ Limit paperwork that is to be completed before the first face-to-face meeting
Insufficient number of eligible teen mothers in a given neighborhood	Long wait times to recruit enough teen mothers for a group and resultant loss of interest	<ul style="list-style-type: none"> ➤ Enroll teens into a group as soon as possible ➤ Vary size of groups to accommodate shorter wait times ➤ Match adult mentor and teen mother before first meeting to enhance emotional investment in program ➤ Hold meetings in a neutral site on busy public transportation route

Limited direct access to teen mothers	Difficulty getting teen mothers' attention	<ul style="list-style-type: none"> ➤ Place and replace fliers and ads in places frequented by teens, especially inside public transportation ➤ Place public service announcements on local radio stations most frequently listened to by teens ➤ Utilize youthful assistants to answer phones, make contacts, conduct outreach and promotion at agencies serving teens ➤ Contact agencies that have direct access to teens ➤ Encourage word-of-mouth referrals from teen and adult participants
<i>Stakeholders</i>		
Social services agencies serving teen mothers with individual agendas and goals	Mixed responses from social service agencies serving teen mothers	<ul style="list-style-type: none"> ➤ Be aware of and understand requirements of other social service agencies serving this population ➤ Attend meetings, invest time to understand how programs can be mutually beneficial ➤ Emphasize collaborative nature of the project ➤ Request referrals after a teen mother has completed the other program ➤ Do not waste time on over-extended or uninterested groups

Heavy case load of school counselors and case workers	No time to make referrals or do not remember	<ul style="list-style-type: none"> ➤ Approach groups of school personnel who might refer teen mothers such as county- or city-wide school nurse or counselor organizations, instead of one at a time ➤ Limit their time commitment by providing fliers, brochures, business cards, etc. ➤ Approach directors of school based child care centers who have frequent contact with teen mothers
Reluctance of school administrators to have their students become research subjects	Extensive time required to get permission to recruit in public school districts	<ul style="list-style-type: none"> ➤ Anticipate long wait times and plan accordingly ➤ Be prepared to send university IRB application when approaching school districts or other agencies responsible for teens
Limited assistance by physicians' offices treating pregnant teens or teen mothers	Extensive research assistant time required to approach teens in waiting rooms because of low numbers	<ul style="list-style-type: none"> ➤ Focus on obstetrical practices/clinics with large teen populations ➤ Continued and repeated contact with those practices
Retention		
Situation	Challenge	Strategies to overcome
Inability to adhere to the intervention schedule	Inadequate benefit from program	<ul style="list-style-type: none"> ➤ Offer after school or early evening meetings ➤ Send meeting reminders via text, social media,

		<p>adult mentor</p> <ul style="list-style-type: none"> ➤ Adult mentor offers transportation
Limited time available because of commitments to school, work, child care, social time for friends, child's father or other boyfriend, family responsibilities, etc.	Other priorities preclude attendance at meetings	<ul style="list-style-type: none"> ➤ Adhere to stated time schedules ➤ Consolidate all survey or other work to meeting times, no "homework" ➤ Provide childcare and transportation vouchers for meeting ➤ Be flexible about adjusting the number of sessions, combining topics into fewer sessions ➤ Work with schools to have program participation fulfill school parenting curriculum as an additional benefit
Need to work to supplement income	Uninterested in donating time	<ul style="list-style-type: none"> ➤ Offer financial or other tangible incentives, to compensate for their time and effort
Unpredictable and unstable lifestyles	Loss of interest in program or inconsistent attendance at meetings	<ul style="list-style-type: none"> ➤ Select age appropriate, non-relative adult mentors, provide mentoring training and match adult-teen pairs early to establish relationships, provide stable, consistent support for meeting attendance and adoption of behaviors to prevent subsequent pregnancy
One or more topics not as		<ul style="list-style-type: none"> ➤ Modify program based on teen input (e.g,

compelling for teen audience as others		number of sessions, topics offered)
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Figure. Numbers of Teen Mothers Who Called in Response to Recruitment Efforts through Those Who Completed the Program

