



Research Article

Project TEMPO (Teens Exploring and Managing Prevention Options): Preliminary Impact on Unprotected Sex among Teens at Risk for Unintended Pregnancy

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Abstract

Teen pregnancy can contribute to negative health and psychosocial outcomes for parents and children and differentially affect marginalized groups. While healthcare professionals serving teens are encouraged to educate and counsel them regarding unintended pregnancy, there has been little empirical work to guide the content, structure, or style of such interventions. In the current study, we report results from a randomized controlled trial designed to test the impact of TEMPO (Teens Exploring and Managing Prevention Options), a screening and brief intervention protocol targeting high risk youth attending primary care, on rates of self-reported unprotected vaginal sex. Participant data was analyzed with a repeated measures logistic regression model using generalized estimating equations (GEE). Retention was high for both 3- (87.4%) and 9-month (76.1%) follow-ups. Among all 435 teens randomized to TEMPO or treatment as usual (TAU), rates of unprotected sex dropped significantly from baseline to three month follow-up, however, at nine month follow up, TEMPO participants were more likely to sustain these

changes. At 9 months, the TEMPO participants were 52% less likely than TAU participants to report recent unprotected sex (AOR=0.48, 95% CI: (0.27, 0.84)). The TEMPO intervention may provide healthcare providers with an evidence-based tool to guide education and counseling around unintended pregnancy.

Introduction

In a given year, as many as 5% of American teens become pregnant and the majority of these pregnancies are unplanned. Teen pregnancy and birth create health, educational, financial, and psychological barriers to success for teen mothers and children [1-4]. There are significant health disparities in unintended and teen pregnancy, with poorer women and women of color experiencing significantly higher rates [5]. Although there have been recent reductions in teen pregnancy, rates of reduction are lower among marginalized groups, such as black and Hispanic teens [6].

Public health efforts to reduce rates of unintended pregnancy include community-level interventions and school-based programming [7,8]. However, other interventions that target at-risk youth in opportunistic settings such as primary care may hold promise. Although the Academy of Pediatrics and the Society for Adolescent Health and Medicine recommend that teen health providers screen for sexual risk behaviors and provide education and counseling to those at risk, there are currently no specific guidelines or protocols available to guide such practices, nor have there been any rigorous evaluations of efficacy [9,10]. Pregnancy prevention education and counseling are terms that are used very commonly in medical, public health, and policy literature, but their meaning is variable and unclear. For example, while Healthy People 2020 recommends family planning services for teens that include patient education and counseling to prevent pregnancy, there was no evidence-based guidance regarding the content, format, or communication style that such interventions should use [11,12].

Screening and Brief Intervention (SBI) is a public health approach for identifying patients at risk for negative health outcomes and intervening early [13]. Brief interventions are a body of practices that are time-limited, structured, and goal oriented [14]. In medical settings, these are short conversations in which healthcare professionals provide feedback on risk, information, and skills or resources, with a focus on increasing motivation [15]. Many brief interventions rely on the principles of motivational interviewing (MI) [16].

Preventing teen pregnancy through SBI in primary care holds the promise to have a significant public health impact and reduce health disparities by engaging, educating, and motivating the majority of teens who visit a primary care setting each year. Such an approach could conserve valuable resources required by more intensive interventions for non-responsive teens with greater need. Furthermore, social determinants of health, such as poverty or race, that may reduce access to more extensive psychosocial interventions, are less likely to prevent access to primary care, increasing health equity. In the study,

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we rigorously evaluated the impact of an SBI approach, titled TEMPO (Teens Exploring and Managing Prevention Options) on unprotected sexual intercourse among teens at risk for unintended pregnancy at nine primary care clinics serving underserved, minority populations in New Mexico. In the current paper, we report preliminary results on our primary outcome variable, which was self-reported unprotected vaginal intercourse at three- and nine-month follow-up.

Methods

Settings

The study was conducted at nine primary care sites serving teen patients in New Mexico. Clinics included: four school-based health centers affiliated with local high schools which provide confidential and general health services to teens attending the high school and patients in the nearby community, the University of New Mexico student health clinic, a clinic associated with the Job Corps residential vocational training program, and three private pediatric primary care clinics. Clinics were general practice settings with a range of health-care professionals, including physicians, nurse practitioners, physician assistants, nurses, and medical assistants.

Participants

The target population for the study was male and female teens presenting to one of the primary care sites for any medical reason. Inclusion criteria were being ages 13 through 19, self-reporting past year unprotected vaginal intercourse, not currently pregnant, and not currently using a long-acting reversible contraceptive. Participants were excluded if they were unable to complete all study procedures, if they were pregnant or using long-acting reversible contraceptives prior to study participation. The UNM Health Sciences Center Institutional Review Board reviewed and approved the study. All participants provided written informed consent to participate. A waiver of parental consent was approved by the HSC IRB as these clinics already provided confidential services to teens and parental involvement could potentially discourage teens from participating.

Procedures

The study used a randomized controlled trial design. Participants were approached during regularly scheduled health visits in an exam room, or in the waiting area if privacy allowed, and screened for interest and eligibility using an iPad. Eligible participants who consented to participate completed a baseline survey via REDCap, a secure, de-identified, web application for the management of surveys and databases [17]. The baseline survey was brief, to minimize assessment reactivity effects and gather demographic information as well as self-reported unprotected vaginal sex in the past three months. Consenting participants were then randomized via REDCap allocation software to treatment as usual (TAU) or the TEMPO intervention. If the individual was not eligible they were thanked for their time and dismissed. Participants were followed up via telephone at three and nine months to assess sexual risk behaviors including self-reported past three month vaginal intercourse.

TEMPO Content and Delivery

The SBI TEMPO intervention was a brief, fifteen minute conversation conducted in a style consistent with MI. Extensive formative work with the target population, including targeted input from sexual

minorities, Native American, and Hispanic youth, was conducted to tailor and refine the intervention.

Youth participating in TEMPO discussed reproductive life planning questions regarding their goals and intentions of becoming pregnant or a parent. They were then provided with feedback that they were at risk for unintended pregnancy. They received information on the likelihood of pregnancy given their self-reported frequency of unprotected sex. They completed an exercise in which they imagined their lives down two paths of a river, one in which they had an unintended pregnancy and one in which they followed their reproductive life plan. Interventionists evoked from the teen the impacts of each path of the river on common values such as education, employment, and relationships. Participants were provided with information on the chances of pregnancy with abstinence, condom use, oral contraceptives, and Long-acting Reversible Contraceptives (LARC). All information was supplemented by an informational brochure that uses a pictograph format. Following information exchange, participants who are high in readiness to change engaged in action planning, whereby a specific plan for reducing risk for unintended pregnancy was collaboratively developed with the interventionist. Participants in both conditions received standard medical care that was available at their clinic, including access to contraception.

Principles and skills of motivational interviewing were incorporated into this process, including asking permission, assessing patient understanding prior to sharing information, sharing information in a manner that was tailored to the knowledge the patient already had, and assessing reactions to information or explicitly evoking ways in which the information impacted the patient's thinking about future sexual activity or contraception. Open-ended questions and reflections were used in a strategic fashion to evoke motivational speech.

Interventionists were trained study staff with a behavioral health background (e.g. master's level counselors, psychologists, social workers, and psychology students). All intervention sessions were audio-recorded and coded by two independent coders for adherence to the TEMPO specific study steps and consistency with motivational interviewing, as measured by the Motivational Interviewing Treatment Integrity (MITI) Manual [18]. Weekly supervision integrating coding feedback was held.

Instruments

The primary outcome variable in the study was past three months unprotected sex as measured by the series of branching logic questions:

In the past three months, have you had vaginal sex, even once. By vaginal sex, we mean a penis being inserted into a vagina.

In the past three months, have you had vaginal sex without you, or the other person using a condom.

In the past three months, have you had vaginal sex without you, or the other person using any of these methods of birth control:
Birth control pills

- The shot (for example, Depo Provera)
- The path (for example, Ortho Evra)
- The ring (for example, NuvaRing)
- IUD (for example, Mirena, Skyla, Paragard - The Copper IUD, or Liletta)

- Implants (for example, Nexplanon, Milano)

Participants who endorsed all three questions, were categorized as having past three month unprotected sex.

Analyses

To investigate the preliminary efficacy of the TEMPO intervention, a repeated measures logistic regression model using generalized estimating equations (GEE) was fit to the dichotomous outcomes for each subject reporting >1 episodes of engaging in unprotected sex within the last three months at baseline, three months, and nine months. This analysis allowed for the control of within-person variability to gauge whether individuals changed their behavior over time. The independent variables in the model were intervention arm, time point, and the interaction between intervention arm and time point. Analyses include participants recruited and eligible for both three and nine month follow-up to date. This is a preliminary analysis to investigate preliminary evidence of efficacy to support dissemination and implementation efforts.

Results

A total of 558 youth were eligible for the study and, of these, 444 consented, and 438 completed the baseline survey. Randomization occurred following baseline survey completion with 223 randomized to treatment as usual and 212 randomized to TEMPO. Retention for 3- (87.4%) and 9-month (76.1%) follow-ups were high.

The demographic characteristics of randomized participants are described in (Table 1). The majority (n=319, 73.3%) of participants were female. Three-quarters (75%) of participants were Hispanic. Mean age was 17. There were not significant differences in demographics across conditions. Although all participants endorsed past year unprotected sex, rates of past three month unprotected sex at baseline were 52.9% (n=223) for treatment as usual participants and 56.1% (n=212) for TEMPO participants.

	TEMPO		Treatment as Usual	
	Median	Q1-Q3	Median	Q1-Q3
Age, years	17	16-18	17	16-18
	n	%	n	%
Race				
American Indian or Alaska Native	17	8	26	11.7
Asian	3	1.4	2	0.9
Black	17	8	10	4.5
Native Hawaiian or Pacific Island	5	2.4	2	0.9
White	86	40.6	86	38.8
More than one race	11	5.2	16	7.2
Unknown or Not Reported	73	34.4	81	36.3
Ethnicity				
Hispanic/Latino	159	75	169	75.8
Sickle cell anemia	0	0	N/A	
Dermatological Conditions				

Table 1: participant Demographic Characteristics.

At 9 months, the participants in the TEMPO arm were 52% less likely than TAU participants to report unprotected sex in the last three months (Table 2).

	Odds of reporting at least 1 episode of unprotected sex in the last three months in TEMPO vs. TAU groups
	Odds ratio (95% CI)
Baseline: TEMPO vs. TAU	1.14 (0.78, 1.66)
3 months: TEMPO vs. TAU	0.76 (0.44, 1.31)
9 months: TEMPO vs. TAU	0.48 (0.27, 0.84)

Table 2: Odds ratios between groups.

Both the TAU and TEMPO group reported decreases in unprotected sex at three months, at the nine month follow-up point, the TAU group had regressed back towards baseline, with rates of unprotected sex increasing, while the TEMPO group maintained the effect of reduced unprotected pregnancy rates (Table 3). The GEE analysis found that there was a significant differential effect in the outcome over time between the two arms (interaction between group and time: $p = 0.023$) (Table 4).

	Proportion reporting at least 1 episode of unprotected sex in the last 3 months	
	TAU	TEMPO
Baseline	n=223 118 (52.9%)	n=212 119 (56.1%)
3 months	n=192 35 (18.2%)	n=188 27 (14.4%)
9 months	n=163 40 (24.5%)	n=168 24 (14.3%)

Table 3: Proportions at risk between groups.

	Odds of reporting at least 1 episode of unprotected sex in the last three months comparing time points	
	TAU	TEMPO
	Odds ratio (95% CI) ¹	Odds ratio (95% CI) ¹
3 months vs. Baseline	0.20 (0.13, 0.29)	0.13 (0.082, 0.21)
9 months vs. Baseline	0.29 (0.20, 0.44)	0.12 (0.076, 0.20)
9 months vs. 3 months	1.51 (0.997, 2.28)	0.95 (0.56, 1.61)

Table 4: Odds ratios within groups.

Discussion

Adapting SBI to teen pregnancy prevention appears to hold promise in reducing unintended pregnancy, as demonstrated by its impact on unprotected sex in this study. The TEMPO intervention significantly outperformed TAU in sustaining reductions in unprotected sex across time. While TAU does have a short-term effect on reducing

teen unprotected sex, that effect quickly regresses to baseline. However, with the addition of the TEMPO intervention. The reduction in unprotected sex is maintained.

Disseminating and implementing TEMPO could significantly impact rates of teen pregnancy, by providing healthcare professionals with a standardized education and counseling protocol to use with high risk youth during the greater than eight preventive and acute primary care visits that the average US adolescent attends during their teen years [19]. The current standard of treatment is lacking standardized guidelines and tools to help providers communicate with teens and provide pregnancy prevention methods. The TEMPO intervention was designed to provide education and counseling protocols for providers as well as provide a new set of tools to augment the current standard of care and help reduce teen pregnancy.

Teen patients report wanting to talk to providers about sex related health topics [20]. Although teen healthcare providers report engaging in education and counseling for pregnancy prevention in almost half of medical visits with teens, prior to TEMPO there were no protocols available to guide healthcare professionals in effective and efficient strategies for having such conversations and this intervention fills a very important gap.

To our knowledge this is the first study addressing provider gaps in knowledge and to provide standardized education and counseling tools for teen pregnancy. As a novel intervention it is imperative that great care be taken to evaluate the intervention at all stages of development, dissemination, and implementation. Further work, across a variety of settings and demographics is an important step in establishing TEMPO as a potential intervention [21].

Strengths & Limitations

One of the strengths of this project was the depth of teen participation in the development of the intervention. Teens were at the forefront of the development of project. Their feedback helped inform the language, exercises, and styles of communication used in the intervention. Another strength is the projects focus physicians. The intervention was not designed to radically change how primary care providers conduct pregnancy prevention and reproductive health education but to provider clearer and standardized guidelines and to provide tools to enable physicians to better communicate with and work with teens.

While this study was the first to test a motivational interviewing based screening and brief intervention approach to unintended pregnancy prevention among teens, the positive results are consistent with screening and brief interventions for other health behaviors in primary care, including risky alcohol use, as well as evidence suggesting that motivational interviewing is effective with adolescents.

A potential limitation of the project is that we were not able to evaluate TEMPO on its own without TAU. By operating within primary clinics and not independently recruiting teens, there was no way to provide the TEMPO intervention without TAU. Future studies into TEMPO should look at TEMPO independently in order to better evaluate how TEMPO mediates the effects of TAU. Another potential limitation is that due to funding timelines we were unable to follow participants for more than nine-months.

Conclusion

Overall TEMPO is an intervention that seeks to fill gaps in physician recommendations and knowledge in regards to reproductive education and counseling. TEMPO provides guidelines for education as well as tools to help improve physician outcomes. The preliminary findings of this intervention suggest that TEMPO negates the regression of standard care over time and maintains a low rate of unprotected sex past three months. Future work with TEMPO should continue to provide the intervention across a variety of settings and patient demographics as well as evaluate the intervention and follow participants over a long time frame.

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References

1. Kost K, Maddow-Zimet I, Kochhar S (2018) Pregnancy Desires and Pregnancies at the State Level: Estimates for 2014.
2. Finer LB, Zolna MR (2011) Unintended pregnancy in the United States: incidence and disparities, 2006. *Contraception* 84: 478-485.
3. Kalmuss DS, Namerow PB (1994) Subsequent Childbearing Among Teenage Mothers: The Determinants of a Closely Spaced Second Birth. *Fam Plan Perspect* 26:149-159.
4. Parks C, Peipert JF (2016) Eliminating health disparities in unintended pregnancy with long-acting reversible contraception (LARC). *Am J Obstet Gynecol* 214: 681-688.
5. Burrus BB (2018) Decline in Adolescent Pregnancy in the United States: A Success Not Shared by All. *Am J Public Health* 108: 1-2.
6. Barfield WD, Warner L, Kappeler E (2017) Why We Need Evidence-Based, Community-Wide Approaches for Prevention of Teen Pregnancy. *J Adolesc Health* 60: 3-6.
7. Marseille E, Mirzazadeh A, Biggs MA, P Miller A, Horvath H et al. (2018) Effectiveness of School-Based Teen Pregnancy Prevention Programs in the USA: a Systematic Review and Meta-Analysis. *Prev Sci* 19: 468-489.
8. Geoffrey R Simon, Cynthia Baker, Graham A Barden III, Brown OW, Hardin A, et al. (2014) 2014 recommendations for pediatric preventive health care. *Pediatrics* 133: 568-570.
9. Michigan Quality Improvement Consortium (2013). Prevention of unintended pregnancy in adults 18 years and older. Southfield (MI): Michigan Quality Improvement Consortium.
10. Jaccard J, Levitz N (2013) Counseling Adolescents About Contraception: Towards the Development of an Evidence-Based Protocol for Contraceptive Counselors Website. *J Adolesc Health* 52: 6-13.
11. US Department of Health and Human Services. (2015). Office of Disease Prevention and Health Promotion. Healthy People 2020. Family Planning.
12. Hargraves D, White C, Frederick R, Margaret Cinibulk, Meriden Peters et al. (2017) Implementing SBIRT (Screening, Brief Intervention and Referral to Treatment) in primary care: lessons learned from a multi-practice evaluation portfolio. *Public Health Rev* 38:31.
13. Hetteema J, Wagner CC, Ingersoll KS, Russo JM (2014) Brief Interventions and Motivational Interviewing. *Oxford Handbooks Online* 2.
14. Fisher G, Roget N (2009) Encyclopedia of Substance Abuse Prevention, Treatment, & Recovery.

15. Miller WR, Rollnick S (2012) *Motivational Interviewing, Third Edition: Helping People Change*.
16. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, et.al. (2009) Research electronic data capture (REDCap)-A metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform* 42: 377-381.
17. Kramer Schmidt L, Andersen K, Nielsen AS, Moyers TB (2019) Lessons learned from measuring fidelity with the Motivational Interviewing Treatment Integrity code (MITI 4). *J Subst Abuse Treat* 97: 59-67.
18. Nordin JD, Solberg LI, Parker ED (2018) Adolescent Primary Care Visit Patterns. *Ann Fam Med* 8: 511-516.
19. Jones R, Finlay F, Simpson N, Kreitman T (1997) How can adolescents' health needs and concerns best be met? *Br J Gen Pract* 47: 631-634.
20. Jensen CD, Cusing CC, Aylward BS, Craig JT, Sorell DM (2011) Steele RG. Effectiveness of motivational interventions for adolescent substance use behavior change: a meta-analytic review. *J Consult Clin Psychol* 79(4): 433-440.
21. Kaner E, Bland M, Cassidy P, Coulton S, Deluca P, et al. (2009) Screening and brief interventions for hazardous and harmful alcohol use in primary care: a cluster randomised controlled trial protocol. *BMC Public Health* 9: 287.



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