Considerations for Strengthening Contraceptive Compliance Education among Underserved Adolescent Populations

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COMMENTARY

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ABSTRACT

Family planning efforts to be successful must address a variety of factors that potentially impede contraceptive access and successful method uptake. This commentary describes the efforts to enhance birth control acceptance among a population of underserved inner-city perinatal adolescent patients receiving care in a public health facility. While 97% of adolescent patients had contraception discussed at some point in their antenatal, hospital stay or postpartum period; however, there was no correlation between the timing and content of these discussions and ultimate choice or initiation of contraception, Moreover, documented contraceptive uptake again was minimal. This assessment identified influential vectors such as provider variance, protocol adherence and message timing that may have reduced contraceptive uptake. Strategies are recommended that can enhance a public health system's ability to effectively address the unique contraceptive needs and barriers of underserved populations.

INTRODUCTION

While historical public health achievements spanned improvements in vaccines, water, and urban health [1], recent efforts have been focused on a public health issue that should be specific to developing nations but has plagued the United States' maternal mortality [2]. Although contemporary controversy exists on the metrics used to document recent maternal death incidence notwithstanding, several causes of maternal death, when coding was accurate (unaffected by surveillance artifacts) show significant temporal declines, even though there remains substantial scope for preventing avoidable maternal death and reducing disparities [3]. Thus, while the lowering of statistics especially in the United States is still a priority, additional strategies are upstream and have focused on prevention especially as it relates to contraception. The belief that the birth control pill played a large role in averting maternal deaths was substantiated early on [4] along with the practical difficulties of providing effective contraception to populations with high maternal mortality. The authors reiterate the need for maternal

health care services as an adjunct to family planning programs. Contraception combined with strategies of general fertility reduction, could possibly reduce about 1/2 of all maternal mortality in the developing world. Moreover, reproductive risks can be reduced by preventing unwanted pregnancies and protecting maternal health during wanted ones. Not surprisingly, the dissemination of birth control pills along with the more contemporary methods such as long-acting reversible contraception (LARCs) and depot medroxyprogesterone acetate) had significant impact on the reduction of rapid repeat pregnancies and associated complications.

Primary and preventive reproductive health care family planning clinics have been the platform for this approach, especially among young women. The evolution of effective forms of contraception is significant especially among vulnerable populations. Lindberg, Santelli and Desai [5] comment that in 2007-2014, increases occurred in use of one or more contraceptive methods at last sex (78%-88%), dual method use (24%-33%), long-acting reversible contraception including intrauterine device and implant (LARCS) (1%-7%), withdrawal (15%-26%), and withdrawal in combination with other methods (7%-17%). Pill use rose and then fell over time. Level of sexual activity did not change over time. The decline in pregnancy risk among women was entirely attributable to improvements in contraceptive use. However, when compared to other industrialized nations, insights the increased selection of the more effective methods such as LARCS would have a variety of positive outcomes.

Thus, the cost effectiveness of upstream prevention or early intervention is a key to improved health and wellness among women. However, some cohorts, especially underserved populations continue to lag. An example of this group is adolescent and young adults, who continue to experience unintended pregnancies both regionally and nationally. The Texas Campaign to Prevent Teen Pregnancy reports [6] that, in Texas in 2020, although there was a reduction of teen births, 22.898 babies were born to youth 15 to 19 years of age. Nationally, the Centers for Disease Control and Prevention (CDC) also report that the teen birth rates continued to decline from 17.4 per 1,000 females in 2018 to 16.7 per 1,000 females. in 2019. However, rates continue to be higher than in other industrialized countries. As these births often also reflect components of social determinants of health including socioeconomic factors [7] access to health care, and education [8] one may ask why, when the preventive impact of contraceptive health education is empirically evident, one has not been able to effectively communicate or inculcate this information to vulnerable populations in order to improve their uptake of birth control.

The purpose of this commentary, therefore, is fourfold: First, it describes the demographic characteristics of a population of underserved inner-city perinatal adolescent patients who delivered in a large public hospital system. Second, it compares and contrasts their contraceptive uptake and their preferences before, during hospital stay and after discharge. Third, it identifies potential influential vectors such as provider variance and message timing that may have reduced contraceptive uptake. And finally, this commentary will offer for consideration policies that can enhance a public health system's ability to effectively address the unique contraceptive needs and barriers of underserved populations. In addition, such information will be useful not only to understand unique aspects of contraception use but also to partially explain the low prevalence of contraceptive compliance after the receipt of reproductive health education among underserved adolescent populations.

STUDY DESIGN AND METHODS

Between 2011 and 2013, a retrospective chart review of perinatal contraceptive education and subsequent contraceptive initiation was conducted for patients between the ages of 15 and 19 receiving care at a large public hospital in the southwestern region of the US. The electronic medical records (EMR) demographic profiles of 1,022 teen pregnancies were systematically reviewed. Birth control uptake by setting was assessed and patient contraceptive education by provider, stated preferred patient method, and the ultimate receipt of a desired

method, a different method, or no method at all were also reported.

RESULTS

Participant characteristics: Of the 1,022 charts reviewed, 1,011 charts or 99% were included in this study. Eleven charts were excluded due to incomplete data, such as a patient delivering outside medical system. Most of the patients were Hispanic patients (70.72%), followed by Caucasian (18.5%), African American (9.99%), and other (0.73%) (Table 1). Medicaid was the dominant payer source (94.86%) (Table 1). No significant difference for contraceptive uptake was found among racial/ethnic groups.

Provider type and timing of health education: Three different types of health care providers were identified as delivering contraceptive information during three different time windows while the patient was under care. The first scheduled window was the prenatal clinic where contraceptive education was taught by the Nurse Practitioner (NP, 45.3%). The second window was at bedside in- hospital education conducted by Certified Nurse Midwife (CNM, 30.96%). The final educational window and the most prevalent occurred during the follow-up post-partum visit via NP (52.13%) (Table 2). Out of 1,011 patients reviewed, 990 patients (97.92%) had contraception discussed with them at some point in the pregnancy, hospital stay, or postpartum visit. In only 21 (2.08%) charts reviewed, was there no documented discussion of contraception.

Contraceptive uptake by timing of education: When contraception education was provided during the prenatal care period, the majority of patients chose "no contraception" (51.24%), followed distantly by oral contraceptive pills (OCPs, 9.69%). When patients received education during their in-hospital stay, patients most frequently chose "no contraception" (25.62%), followed by almost equal proportions of OCPs (18.3%) and depo medroxyprogesterone injection (18.2%). Contraceptive uptake during the postpartum setting was also low; although most patients chose depo medroxyprogesterone

injection (22.95%), followed by "no contraception" (19.59%), OCPs (16.62%), and IUD (10.58%) (Table 2).

Cumulatively, and for a variety of reasons, by the time the patient was discharged from postpartum care, 657 (64.99%) had no contraception prescribed. The most frequently cited reason was that the patients received no contraception despite contraceptive education (34.53%), followed by those who received no contraception because it was not discussed at the postpartum visit (19.09%). The final cohort received no contraception because they did not keep the postpartum visit (11.37%)(Table 2). It also appears that, there were far more who received no contraception during the postpartum visit (349; 34.53%). Poor uptake was also observed in the more effective methods. In fact, of the patients who chose LARCs, 108 (10.58%) chose IUD and less than 1/3 received one (31; 3.07%), while 72 (7.12%) chose subdermal implant and less than ¼ received one (14; 1.38%). With respect to depo medroxyprogesterone injection, 232 (22.95%) chose injection, and 156 (15.43%) received it (Table 2).

When comparing the presentation timing of antepartum/prenatal contraceptive education to contraception given, there was no statistically significant impact of discussion of contraception on implementation of contraception, with combined contraceptive odds ratio (OR) of 1.1, progesterone oral contraceptive OR of 1.7, depo medroxyprogesterone injection OR of 1.2, subdermal implant OR of 1.1, or IUD OR of 2.1 (Table 3).

DISCUSSION

Contraceptive acceptance is critical to the reduction of maternal mortality and repeat unintended pregnancies in underserved populations. While some variance in the research exists in terms of impact of contraceptive utilization among at risk groups in the US exists, most agree that its uptake is often dependent on patient access, protocol adherence, timing of method teaching, chosen evidence-based curricula and instructor consistency. While this commentary is based on a formative design, its findings

suggest several practical approaches to address low contraceptive uptake among marginalized populations.

First, as reported in our patient demographics, we found that a setting such as ours, a large public hospital serving indigent perinatal youth, is strategic as it provides cost effective access to a group of patients who could benefit from a robust contraceptive initiative. Both cohort age and their dependency on public funding co-vary with a variety of medical and non-medical risks related to a rapid repeat pregnancy that could possibly be mitigated via effective contraception. To support this belief, based on our experience, we recommend that the use of a quality assurance protocol across teaching opportunities be initiated to manage contraceptive acceptance. As our data describes, all but 11 patients were lost to follow-up and only 21 (2.08%) of charts reviewed indicated that there was there no documented discussion of contraception. It seems that most patients received contraceptive education. However contraceptive acceptance among patients was low. One would recommend a more coordinated process to enhance this contraceptive uptake and identify if lack of receipt of birth control was due to refusal or other factors such as unavailability of preferred method. Perhaps, the three windows of education, prenatal, in hospital and postpartum could be integrated in an evidence-based educational platform with content reinforced and consistently presented at each encounter? Could a contraceptive 'bundle' strategy like those used currently used in maternity settings be adapted to adapt to birth control? Such an initiative, however, requires dedicated funding and perhaps social work involvement to track, monitor and evaluate selected methods of teaching.

Second, we also compared and contrasted contraceptive uptake and preferences of adolescents before and after discharge. Disappointingly, documented contraceptive uptake again was minimal. Our results show that 97% of patients had contraception discussed at some point in their antenatal, hospital stay or postpartum period; however, there was no correlation between the timing and result of these discussions and ultimate choice or initiation of contraception. One explanation may be related to cultural competency of the approach. As the majority patient cohort identified as Hispanic (72.7%) several questions emerge. One can speculate that language and culture historically play a role in contraceptive acceptance although information on patient preferred language was not obtained from the EMR, bilingual staff with cultural sensitivity can be effective in educating adolescent patients who have English as a second language. The involvement of nuclear and extended family in perinatal decisions may also be relevant to whether the adolescent considers contraception and accepts the most effective method. This group, especially, if they are undocumented, may have their contraceptive counseling bifurcated, follow-up care may be limited due to clouded citizenship, or that emergency Medicaid funding terminated at postpartum dismissal. If the patient legally qualifies for maternity Medicaid, this coverage ends at 61 days postpartum which also imposes a deadline for contraception initiation, contraceptive monitoring, and follow-up. Recent changes in legislative statute in states such as Texas have extended medical coverage for 6 months, but longer coverage may not enhance contraceptive compliance especially when method specific problems occur.

Third, it appears that the timing of contraceptive messaging is important along with provider consistency. Early research on contraceptive learning [9] suggests that the adoption of medical information may be influenced by when the information is presented during perinatal care. Researchers found that pregnant youth who were participating in maternity educational groups were more interested in learning about labor and delivery while pregnant than the variety of methods available to prevent subsequent pregnancies. Moreover, these patients expressed little interest in information on child development and child rearing until after the postpartum period. This may suggest that patients are less receptive prenatally to future pregnancy prevention methods than during their postpartum exam. One also may speculate that patient denial of future sexual encounters or anxiety over the upcoming delivery may tap down or defer their interest on birth control. Such an explanation may partially explain

that while the chart review documented information potentially being provided at three different times results were less than desired. The receptivity to the information was marginalized by when it was presented so that there was a lower than expected reported contraceptive acceptance rate.

A parallel factor may be that the information is provided by a different midlevel provider multiple times. Given the wide variety of patient encounter types (antenatal visits, lab visits, triage visits, inpatient stay, postpartum visits) and provider types (MDs, CNMs, NPs, PAs, RNs), this could be confusing and protocol adherence may lack fidelity. A practical solution would develop a multidisciplinary team that would coordinate consistent prenatal, in-hospital and postpartum contraception provider and educational content. Such a team with a designated point person could utilize a standard evidence-based contraceptive curriculum at each setting with patient knowledge and satisfaction assessed. Several reasons support this strategy. The lack of a consistent educational approach could be confusing to patients who may not have an established a relationship with one educator. One could speculate that when educational information is inconsistent or vague it affects learning. There may be reluctance to question a new health provider if an adolescent patient has language limitations or clouded legal status. A consistent educator presenting the same information overtime in a team approach is preferred. This would reinforce the material, develop trust, and establish a relationship with the provider. Training and incorporation of evidenced-based platforms such as Transtheoretical Model or Motivational interviewing could also reinforce the link from teaching to information adoption. Previous assessments of STI management among youth have successfully demonstrated that such techniques will improve adolescent patients' acceptance of care [10].

Finally, this commentary recommends for consideration policies that can enhance a public health system's ability to effectively address the unique contraceptive needs and barriers of underserved populations. We suggest that further standardization of contraceptive curricula and

teaching protocols could be achieved with clear The American Congress of Obstetricians and Gynecologists [11] guidelines on teen contraception methods and access. For example, national recommendations could be standardized so contraception discussion be initiated at a certain gestational age, as has been done with various other prenatal initiatives. With regards to the postpartum interventions, Postpartum IUD placements should be encouraged, particularly in women who are likely to be lost to postpartum follow up. This would require in-patient protocols be in place and accommodations made by the in-hospital pharmacy made for institutional reimbursements depending on the funding source. Finally, access to contraception in out-of-clinic settings (school clinics, etc) may be appropriate for this patient population.

This assessment, however, has identified several limitations. As a formative inquiry, participants were not randomly assigned to either component nor was there a control population for comparison. Additionally, the unique characteristics of population make it difficult to generalize results to other age groups or settings. There was no documentation in the EMR that participants were screened or excluded for significant behavioral issues or language comprehension. Moreover, as this was based on data available in EPIC charts, information on sensitivity analysis was not readily available and was an additional limitation. While protocols were used for contraceptive education, fidelity was not evaluated in every case. Nevertheless, this review suggests several areas for further investigation. If education is not the barrier to contraceptive initiation, what are the barriers and how can they be overcome? Why are patients not given the contraceptive they requested? Why is LARC implementation so low? Local quality improvement projects would help to identify some of these location-specific barriers and potential solutions. Another limitation to this analysis is that due to the retrospective nature of this study, there was no way to adjust for amount of contraceptive knowledge prior to prenatal care initiation. This may have influenced contraceptive decision-making and receipt independent of counseling. Despite these limitations and additional questions, this commentary

provides acceptable and practical suggestions to improve contraceptive uptake for a vulnerable cohort. It also provides an understanding of how a variety of barriers including social determinants experienced by inner city adolescent patients impact their health in this case effective contraceptive utilization.

Acknowledgements

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PEER REVIEW

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TABLES

Table 1: Demographics.

Race	
Hispanic	715 (70.72%)
Caucasian	187 (18.5%)
African American	101 (9.99%)
Other	8 (0.79%)
Insurance	
Medicaid	959 (94.86%)
Private	39 (3.86%)
Other	13 (1.29%)

Table 2: Contraceptive Counseling, Decision Making, and Implementation.

	Antepartum	Hospital	Postpartum
Patients Counseled	775 (76.66%)	837 (82.87%)	816 (80.71%)
Contraceptive Chosen			
Combined contraceptive (OCP, Patch, Ring)	98 (9.69%)	185 (18.3%)	168 (16.62%)
Progesterone oral contraceptive	0 (0%)	52 (5.14%)	40 (3.96%)
Depo medroxyprogesterone injection	70 (6.92%)	184 (18.2%)	232 (22.95%)
Subdermal implant	25 (2.47%)	50 (4.95%)	72 (7.12%)
IUD	62 (6.13%)	105 (10.39%)	108 (10.58%)
Other	3 (0.3%)	0 (0%)	0 (0%)
Chose None	518 (51.24%)	259 (25.62%)	198 (19.59%)
Not Discussed	235 (23.24%)	174 (17.21%)	193 (19.09%)
Contraceptive Given			
Combined contraceptive (OCP, Patch, Ring)		10 (0.99%)	118 (11.67%)
Progesterone oral contraceptive		49 (4.85%)	35 (3.46%)
Depo medroxyprogesterone injection		127 (12.56%)	156 (15.43%)
Subdermal implant		N/A	14 (1.38%)
IUD		1 (0.1%)	31 (3.07%)
Other		0 (0%)	0 (0%)
None		650 (64.29%)	349 (34.53%)

Table 3: Impact of Antepartum Discussion on Postpartum Implementation of Contraception.

Type of contraception	Odds Ratio	95% CI	
Combined contraceptive (OCP, Ring, Patch)	1.108	0.588	2.085
Progesterone oral contraceptive	1.674	0.523	5.361
Depo medroxyprogesterone injection	1.223	0.678	2.215
Subdermal implant	1.113	0.233	5.512
IUD	2.096	0.408	10.762