Maternal and Child Health Journal (2019) 23:996–1002
https://doi.org/10.1007/s10995-019-02754-z

BRIEF REPORTS

Increase in Contraceptive Counseling by Primary Care Clinicians After Implementation of One Key Question® at an Urban Community Health Center

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Published online: 15 June 2019

Abstract
Introduction To provide quality family planning services and reduce racial and socioeconomic disparities in unintended pregnancy and pregnancy outcomes, primary care clinicians should routinely assess women's reproductive health needs and provide patient-centered contraceptive and preconception counseling. One Key Question® asks women if they would like to become pregnant in the next year and prompts clinicians to provide counseling appropriate to each patient. We conducted a pilot study to assess if implementing One Key Question® in the Electronic Medical Record (EMR) of an urban community health center, coupled with brief clinician training, would increase rates of contraceptive and preconception counseling. *Methods* We incorporated One Key Question® into a new EMR form and provided a brief training to primary care clinicians on reproductive life plan assessment, preconception counseling, and contraception. We surveyed women patients, ages 18–49, after their visit and compared pre- vsersus post-intervention rates of patient-reported contraceptive and preconception counseling. *Results* After One Key Question® was introduced in the clinic EMR and clinicians underwent brief training on its use, patients reported significantly higher rates of their clinician counseling them about contraception (52% vs. 76%, $p=0.040$) and recommending a long-acting reversible contraceptive (LARC) method (10% vs. 32%, $p=0.035$). There were no significant changes in preconception counseling. *Discussion* After EMR integration of One Key Question® coupled with brief clinician training, rates of contraceptive counseling and LARC recommendations increased in this community health center pilot study. Future research should compare One Key Question® to standard care in a prospective randomized trial.

Keywords Preconception care · Primary care · Contraception · Long-acting reversible contraception

Significance Statement

What is already known on this subject? Clinicians and patients face barriers to incorporating reproductive life plans, family planning, and preconception counseling in primary care. One Key Question® was developed to help clinicians overcome obstacles, and help them appropriately counsel their patients about their reproductive health.

What this study adds? To date, there are no published studies assessing One Key Question and its impact on clinical care. This pilot study is the first to examine the changes in preconception and contraceptive counseling after One Key Question implementation.

Introduction

The Centers for Disease Control and Prevention (CDC), Department of Health and Human Services' Office of Population Affairs, and medical academies recommend that clinicians incorporate reproductive life plan assessment and patient-centered contraceptive and preconception counseling into routine care for all reproductive age women (American Academy of Family Physicians (AAFP) 2016; American

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College of Obstetricians and Gynecologists (ACOG) 2016; Gavin et al. 2014). Patient-centered counseling is communication that prioritizes each patient's unique preferences and respects the patient as expert in their own values and experiences (Bensing et al. 2000). Preconception care is preventive healthcare a patient receives before pregnancy to address pregnancy-related risk factors, and many endorse this as an important aspect of primary care (American Academy of Family Physicians (AAFP) 2016; Gavin et al. 2014). However, multiple challenges make it difficult for primary care clinicians to offer comprehensive reproductive healthcare. Research in U.S. primary care settings has found that clinician challenges include: lack of knowledge, training, and comfort; beliefs that sub-specialists bear primary responsibility for reproductive care; lack of trained support staff; misperceptions about patient risk factors and contraceptive methods; concerns about available time and reimbursement for counseling; and difficulty finding relevant information and resources (Akers et al. 2010; Schwarz et al. 2009). Patients and clinicians have also reported barriers to preconception care, such as differing assumptions and attitudes about pregnancy planning, or clinicians assuming patients will bring the topic up while patients want their healthcare provider to initiate the discussion (Bello et al. 2013a). In 2009–2010, only 14% of US ambulatory visits with non-pregnant reproductive age women included contraceptive or preconception counseling (Bello et al. 2015). Thus there is a great need for tools that effectively facilitate provision of comprehensive family planning services in primary care.

Further highlighting this need are the persistent racial and socioeconomic disparities in reproductive health. The United States experienced a decline in unintended pregnancy between 2008 and 2011, partially attributed to increased use of long-acting reversible contraception (LARC); yet unintended pregnancy rates remain highest among women living in poverty and Black women (Finer and Zolna 2016). Among women who identify as Black non-Hispanic, 64% of pregnancies were unintended, compared to 38% among White non-Hispanic women (Finer and Zolna 2016). Black non-Hispanic women also face a pregnancy-related mortality ratio more than three times higher than that of White non-Hispanic women (Creanga et al. 2015), and the risk of infant mortality among births to Black non-Hispanic women is more than double that of White non-Hispanic births (MacDorman and Mathews 2011). Preconception care is one promising strategy to reduce pregnancy outcome disparities (Howell et al. 2018).

Primary care clinicians in community health centers (CHCs), especially federally qualified health centers (FQHCs), are an important source of care for women of color and those living in poverty. Nationally, 92% of FQHC patients have incomes ≤ 200% FPL, and 62% are from racial or ethnic minority groups. A national survey of reproductive age women who receive care in CHCs found that most turn to their CHC clinicians as their primary source of family planning care (Wood et al. 2015). And while women generally report high satisfaction with this care, many still face significant barriers to receiving comprehensive contraception options (Wood et al. 2015).

One Key Question® (OKQ) is a clinical tool designed to facilitate routine assessment of a patient's wishes regarding future pregnancy, open a dialogue between patient and clinician about the patient's reproductive goals, and prompt clinicians to provide contraceptive and preconception counseling appropriate to each patient (Allen et al. 2017; Bellanca and Hunter 2013). Created by Oregon Foundation for Reproductive Health (OFRH), OKQ is now licensed and operated by the national organization Power To Decide. OKQ starts by asking patients, "Would you like to become pregnant in the next year?" After assessment of patients' potential for pregnancy (to identify post-menopausal women and those who have undergone hysterectomy or sterilization) and current contraceptive and folic acid use, clinicians are prompted to offer counseling on contraception, preconception care, or both. The OKQ clinical tool is more than the question itself. While intentionally allowing flexibility in how each clinic or provider implements it, Power To Decide requires certification training and fidelity to the model's core components: the question wording must ask "would you like to become pregnant in the next year?" Response options must include at least four choices—"yes," "no," "unsure," and "I'm okay either way." And clinicians must provide patient-centered, comprehensive counseling responsive to the woman's OKQ answer. Patient-centered is defined as: tailored to a woman's individual needs and preferences. Comprehensive is defined as: including (either on-site or by referral) full-scope contraceptive counseling and options, and preconception counseling and services.

OKQ was developed in collaboration with clinicians, researchers, and patients. Internal data indicated patients have a strong preference for the question wording that asks what they "want" or "would like" (rather than plan or intend), and to move away from the usual binary response categories to allow for ambivalence or neutrality. They also liked being asked in primary care. One unpublished pilot study in Oregon found that OKQ prompted increase in uptake of effective contraceptive use in community-based family medicine. ACOG recommends OKQ as an approach to reproductive life planning (American College of Obstetricians and Gynecologists (ACOG) 2016) and several large health networks have adopted it. Other authors have proposed alternative approaches to clinical screening and counseling about pregnancy preferences, (Bello et al. 2013b; Callegari et al. 2017) but empiric research on their acceptability or effects on patient care are lacking (Burgess et al. 2018). Furthermore, OKQ has not been formally tested in FQHC

settings, where arguably it may make the greatest difference by helping clinicians identify and address unmet contraceptive and preconception needs among women at higher risk for adverse outcomes. The purpose of this pilot study was to lay the groundwork for future effectiveness research by assessing for change in contraceptive and preconception counseling after implementation of OKQ in the electronic medical record (EMR) of a Chicago-area urban community health center, coupled with a brief clinician training. We hypothesized that patient-reported contraceptive and preconception counseling would increase after the clinic implemented these changes.

Methods

The study took place at an FQHC on Chicago's west side. Clinicians include family medicine attending and resident physicians, nurse practitioners, and nurse midwives. The study was approved by the authors' Institutional Review Board and the clinic's research committee.

We developed an EMR form based on One Key Question®, with input from local clinicians and informatics experts. This form contained structured clinical documentation (e.g. check boxes and drop-down menus) and free text fields that clinicians could use to prompt and document counseling sessions with patients. The form's content covered four main topics: (1) *Reproductive Life Plan Screening,* including OKQ (whether the patient wishes to become pregnant in the next year), whether she is currently, previously, or ever sexually active with male partners, and whether she has gone through menopause, hysterectomy, or sterilization; (2) *Contraception,* including method effectiveness, possible risks and side effects; (3) *Preconception health,* including folic acid, control of chronic diseases, nutrition, alcohol, tobacco, and medications; and (4) *Reproductive Life Counseling,* including readiness for parenting, options if an unintended pregnancy occurred, and patient and partner communication. The form was loaded into every visit template for adolescent girls and adult women patients and available for clinicians to use in documenting the counseling they provided. Use of the form was optional, and it did not include any alerts or required components. Passive decision support was provided by presenting the patient's current blood pressure, body mass index, and hemoglobin A1c on the form with contraceptive counseling.

Before implementing the new EMR form, members of the research team (DBS and JBK) provided an in-person training to clinicians at the health center. This lasted 15 min during a required all-clinician meeting and consisted of presenting CDC recommendations for contraception and preconception care and orienting clinicians to the new EMR content. A different research team member (JD) provided a second training for residents to accommodate their schedule. Both training sessions described the OKQ intervention and its purpose to increase contraceptive and preconception counseling.

We conducted cognitive interviews of the survey instrument by recruiting women patients in the clinic waiting room, and used feedback to refine the survey instrument. Data collection took place from September 2014 through September 2015. The pre-intervention period lasted approximately 3 weeks (Sept–Oct, 2014), the clinician training and EMR form implementation occurred in mid-October, and post-intervention data collection occurred in two separate blocks of approximately 1 month each (Dec 2014–Jan 2015; and Sept 2015). The second block was added due to lower-than-expected recruitment during December and January. There were no significant differences in respondent demographics between the two post-intervention blocks, but to assess the effect of this time lapse we conducted post hoc analysis comparing outcomes between the two blocks of respondents. In both the pre- and post-intervention phase, data were collected using a self-administered paper survey that patients completed after their clinic visit. Qualifying women patients were 18–49 years old, not currently pregnant, and saw a clinician on one of the days of data collection. Patients were given a $5 retail gift card after participation.

During each phase, a researcher screened patients for study eligibility directly after the clinic visit, and interested patients consented verbally to participate. The survey asked patients about their clinical appointment that day, including whether their provider talked to them about birth control, recommended a specific birth control method, talked to them about being healthy before becoming pregnant, and/or recommended folic acid or a multivitamin. The survey included questions about their overall satisfaction with their medical care, and their satisfaction with the way their provider taught them about improving their health. The survey also included One Key Question®: "Would you like to become pregnant in the next year?" Possible responses were "Yes," "I'm not sure," "I'm ok either way," "No, but sometime in the future," and "No, I never want to become pregnant." Finally, the survey included questions about the patient's history of menopause, hysterectomy, or sterilization, whether she was sexually active with a male partner (currently or ever), demographic information (age and race/ethnicity), and the reason for their clinic visit. Race/ethnicity and reason for visit were free-text answers which we then coded into distinct categories. Clinicians were not informed of the days that patients would be surveyed.

We compared pre- and post-intervention patient survey responses using the Chi squared test when all cell counts were ≥ 5 and Fisher's exact test when any cell count was < 5. We excluded from analysis those patients who had no potential for unintended pregnancy or did not meet inclusion

criteria (pre-intervention: n = 6; post-intervention: n = 5). A patient was considered to have this potential if she reported she had not undergone sterilization, hysterectomy, or menopause and that she was currently or ever sexually active with a male partner. Contraceptive and preconception counseling were assessed among all included respondents, regardless of their stated desire for future pregnancy. We classified contraceptive methods as: LARC (intrauterine devices and implants), highly-effective non-LARC methods (those with typical-use effectiveness ≥ 90%), and less effective methods (< 90% effective) (Steiner et al. 2006). Data analysis was carried out using STATA (StataCorp, College Station, TX). The significance level for all statistical tests was set at $p < 0.05$.

Table 1 Patients surveyed before and after implementation of One Key Question® (OKQ), women ages 18–49 with potential for unintended pregnancy

	Pre-OKQ (n = 29)	Post-OKQ (n = 34)
Age, n (%)		
18–25	6 (21)	9 (27)
26–35	10 (35)	14 (41)
36–49	13 (45)	11 (32)
Race/ethnicity, n (%)		
Black/African American	25 (86)	32 (94)
White/Caucasian	1 (4)	1 (3)
Other	1 (4)	1 (3)
Missing/unknown	2 (7)	0
Response to OKQ, n (%)		
Yes	1 (4)	2 (6)
Unsure	1 (4)	6 (18)
Ok either way	5 (17)	1 (3)
No, but sometime in the future	8 (28)	15 (44)
No, never	14 (48)	10 (29)
Reason for visit, n (%)		
Birth control	6 (21)	5 (15)
Other women's health	3 (10)	5 (15)
General health	20 (69)	24 (71)

Potential for unintended pregnancy is defined as a woman who has not undergone menopause, sterilization, or hysterectomy and is currently or ever sexually active with a male partner

Results

We surveyed 63 patients at the study clinic who had potential for unintended pregnancy: 29 in the pre-intervention group, 34 post-intervention (Table 1). The participant population was primarily self-described as Black or African American (90%) and mean age was 32.2 years in both groups. In both the pre- and post-intervention group, most patients reported they did not want to become pregnant in the next year (76% pre-OKQ, 74% post-OKQ). Among all patients with potential for unintended pregnancy who did not wish to become pregnant in the next year (n = 47), most were currently sexually active with a male partner (n = 31, 66%). Of these, eight patients (26%) reported using no contraceptive method. Abstinence or withdrawal counted as contraception. Contraceptive non-users included 4 of the 14 (29%) currently sexually active patients who responded that they never wished to become pregnant.

Comparing contraceptive counseling before and after implementation of OKQ (Table 2), we found statistically significant increases in patients reporting that their clinician talked to them about birth control during their visit (52% vs. 76%, p = 0.04) and that they recommended a LARC method (10% vs. 32%, p = 0.04). There were no significant differences in recommending highly effective non-LARC methods. There were also no significant differences in preconception counseling, however in post hoc analysis looking separately at the two time blocks of post-intervention data collection, there was a significant decline in preconception counseling over time: in the first block (2–3 months after the clinician training) 59% of respondents reported receiving preconception counseling, versus 18% in the second block (11 months after, p = 0.026). No equivalent decline was seen

Table 2 Contraceptive and preconception counseling before and after implementation of One Key Question® (OKQ)

	Pre-OKQ (n = 29)	Post-OKQ (n = 34)	*p* value*
Did your provider talk to you about birth control? (responded "yes")*	15 (52)	26 (76)	.040
Did your provider recommend a birth control method? (yes = checked any response other than "no method")	16 (55)	22 (65)	.441
Did your provider talk to you about being healthy before pregnancy? (responded "yes")	15 (52)	13 (38)	.283
Did your provider recommend folic acid, prenatal vitamin or multivitamin? (responded "yes")	10 (34)	7 (21)	.216
LARC method recommended	3 (10)	11 (32)	.035
Highly effective non-LARC method recommended	12 (41)	11 (32)	.458

*While the research team uses the term "clinician" when referring to physicians and advance practice clinicians, in order to be consistent with clinic practice, our survey used the term most commonly used at the study clinic which was "provider"

in contraceptive counseling. Very few patients expressed dissatisfaction with their medical care and health education received (n = 1 in each group) and there was no difference in dissatisfaction between patients before and after the intervention (Fig. 1). However, the percent of patients who reported they were very or extremely satisfied with their overall medical care decreased (97% vs. 56%, p = 0.001).

In assessing whether the patient's reason for the clinic visit mattered, we found that overall those presenting for general health reasons were significantly less likely to receive contraceptive care (65%), versus those presenting for birth control (100%) or other women's health reasons (88%, p = 0.045). Looking only at post-intervention respondents, contraceptive care increased in the general health group (71%) and reason-for-visit was not associated with likelihood of receiving contraceptive care. A general health reason was also associated with lower likelihood of receiving preconception care (39%) versus a birth control reason (73%) or other women's health reason (88%, p = 0.01). This was true both before and after the OKQ intervention, with no post-intervention increase in preconception care for general health visits.

Discussion

After implementing One Key Question® in the EMR of an urban FQHC, coupled with a brief clinician training, we observed increased rates of contraceptive counseling and LARC recommendations. We also observed a decrease in patient satisfaction but no increase in dissatisfaction. We saw no difference in preconception counseling. Increased contraceptive care was noted especially among patients presenting for general health reasons.

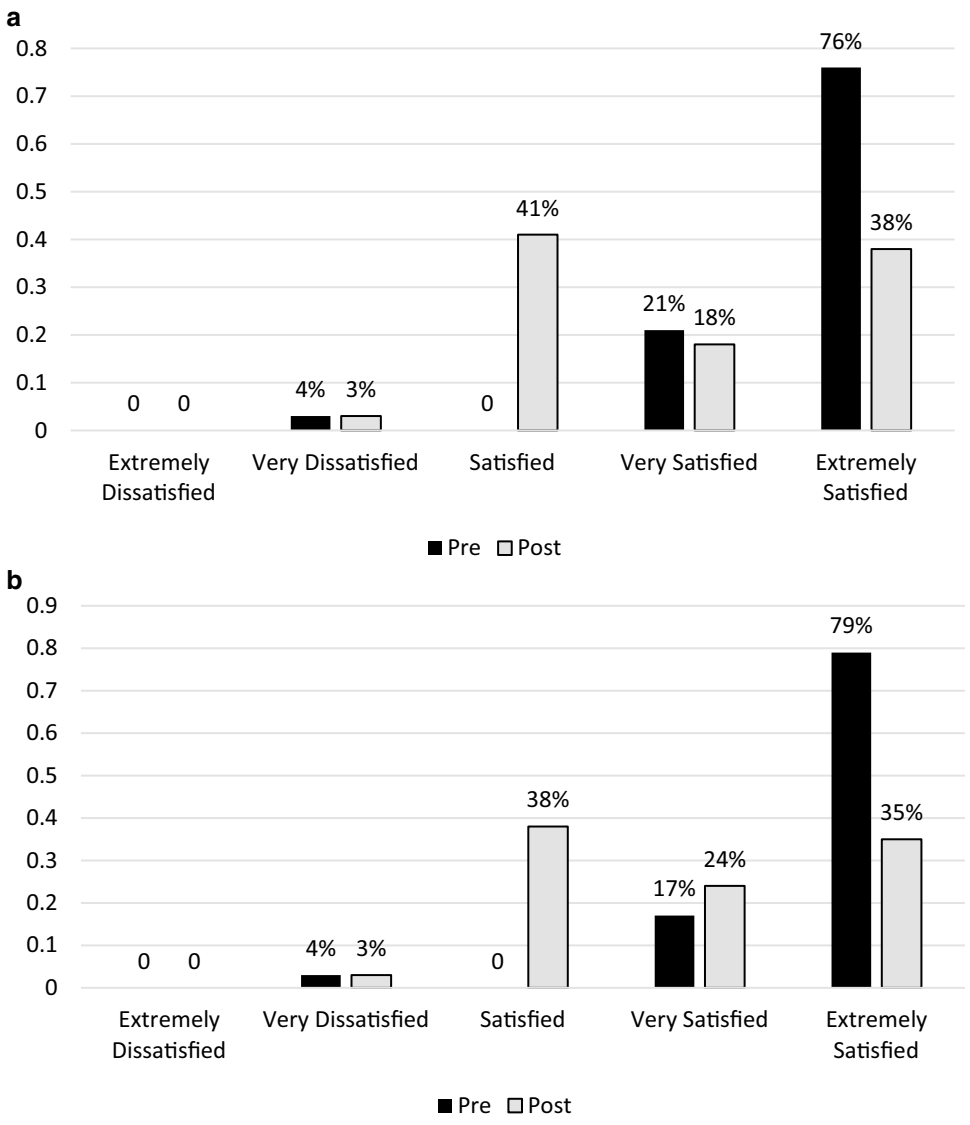

Fig. 1 Patient satisfaction pre- and post-One Key Question®. **a** Satisfaction with overall medical care during your visit? **b** Satisfaction with the way your provider taught you about improving your health?

This is the first published study to demonstrate changes in clinical care after implementation of OKQ and adds to other research showing that use of highly effective contraceptive methods increases after clinics implement pregnancy intention screening (Saada et al. 2015). Future studies should assess differences in feasibility, satisfaction, and patient outcomes when OKQ is implemented in different formats. For example, patients may prefer a paper format rather than being asked about their pregnancy goals directly by their clinician.

After implementing the OKQ-based intervention, we saw no increase in preconception counseling. Very few patients desired to become pregnant in the next year, which may have prompted clinicians to pay less attention to preconception needs. However, 21% of patients expressed ambivalent pregnancy wishes (unsure or okay either way), and prior research has shown that women feeling ambivalent may be as likely to become pregnant as those who report they desire pregnancy (Miller et al. 2013), and so may have benefited from counseling to address health risks and conditions that could affect a future pregnancy.

In reflecting on the finding that LARC recommendations increased after implementing the intervention, we speculate that asking about pregnancy wishes led more clinicians to identify an unmet need for contraception in their patients, and that this may have led clinicians to recommend LARC methods based on their own counseling practices. It is also possible that training factors had an effect, but no specific conclusions can be drawn about this. While the two clinician training sessions both discussed patient-centered preconception and contraceptive counseling, the training received by resident physicians also emphasized LARC methods' superior effectiveness. This was an unintentional consequence of having two different trainers. We did not have the necessary data to assess whether patients who saw a resident physician reported different counseling or satisfaction than those who saw other clinicians. Given the history of reproductive injustice in the United States, we recognize the importance of ensuring that future trainings consistently emphasize patient-centered contraceptive counseling and specify the critical importance that choice of method is based on the patient's informed selection. Since being operated by Power To Decide, trainings on OKQ have come to include this content as a standard and required component. In future research, we will use this standard training for all OKQ-based interventions.

We note with concern that in the post-intervention phase, fewer respondents described being very or extremely satisfied with care. However, we cannot conclude if the intervention, the increase in contraceptive counseling, or LARC recommendations were the cause of decreased patient satisfaction. Other unmeasured clinic factors may have caused this change, such as satisfaction with clinic staff interactions or wait times on the days of data collection. It is also possible that patient satisfaction would have increased if more women received preconception counseling.

Study limitations include a small sample size, a single study site, some difficulty with recruitment that led to a delay in completing surveys after the intervention, and before versus after comparison rather than random allocation to intervention and control groups. Therefore, we cannot conclude whether the intervention was the cause of the observed changes. Although approximately 73% of eligible patients we invited to participate accepted and completed a survey, we did not collect data on non-respondents so we do not know if our sample was representative of the invited population. Although small, differences in the before versus after patient populations (Table 1) may have contributed to clinician differences in counseling. We also cannot separately assess changes after the clinician training and the EMR form since we treated them as a single intervention. We did not assess the intervention's acceptability to patients, clinicians or other members of the health care team. We did not ask patients if their clinician asked them OKQ or if the counseling they received would motivate them to make any changes, such as starting folic acid or a new contraceptive method. Finally, we did not conduct a process evaluation or chart review to determine how often clinicians used the new EMR form, asked patients OKQ, or offered other reproductive health counseling incorporated in the form.

The majority of women did not want to become pregnant in the next year, and more than one in four of the sexually active women in this group reported using no birth control. This demonstrates a potential unmet need for contraceptive counseling to help women achieve their goals. One Key Question® shows promise for increasing the rates of contraceptive counseling in urban community-based primary care where women experience disproportionally high rates of unintended pregnancy and poor birth outcomes compared to other groups. Future research should assess the effects of OKQ using prospective randomized allocation to treatment groups. This study's findings can inform future research by reinforcing the importance of measuring patient satisfaction along with contraceptive and preconception care, and of standardizing clinician training to emphasize OKQ starts a conversation and follow-up counseling should be driven by the principle of patient-centered communication.

Compliance with Ethical Standards

Conflict of interest Michele Stranger Hunter is the One Key Question® consultant with Power To Decide, the non-profit organization that owns the trademark on One Key Question®. All proceeds from the licensing of One Key Question® go into further OKQ program development consistent with the mission of Power To Decide, which

can be found at https://powertodecide.org/about-us. Authors report no other conflicts.

References

Akers, A. Y., Gold, M. A., Borrero, S., Santucci, A., & Schwarz, E. B. (2010). Providers' perspectives on challenges to contraceptive counseling in primary care settings. *Journal of Womens Health, 19*(6), 1163–1170. https://doi.org/10.1089/jwh.2009.1735.

Allen, D., Hunter, M. S., Wood, S., & Beeson, T. (2017). One Key Question(®): first things first in reproductive health. *Maternal and Child Health Journal, 21*(3), 387–392. https://doi.org/10.1007/s10995-017-2283-2.

American Academy of Family Physicians (AAFP). (2016). Preconception Care (Position Paper). Retrieved February 7, 2019, from https://www.aafp.org/about/policies/all/preconception-care.html.

American College of Obstetricians and Gynecologists (ACOG). (2016). Committee Opinion No. 654: reproductive life planning to reduce unintended pregnancy. *Obstetrics and Gynecology, 127,* e66–e99.

Bellanca, H. K., & Hunter, M. S. (2013). ONE KEY QUESTION®: preventive reproductive health is part of high quality primary care. *Contraception, 88*(1), 3–6. https://doi.org/10.1016/j.contraception.2013.05.003.

Bello, J. K., Adkins, K., Stulberg, D. B., & Rao, G. (2013a). Perceptions of a reproductive health self-assessment tool (RH-SAT) in an urban community health center. *Patient Education and Counseling, 93*(3), 655–663.

Bello, K. J., Adkins, K., Stulberg, D., & Rao, G. (2013b). What is the effect of a self-administered reproductive life plan (RLP) on preconception and contraceptive counseling? *Contraception, 88*(3), 461. https://doi.org/10.1016/j.contraception.2013.05.117.

Bello, J. K., Rao, G., & Stulberg, D. B. (2015). Trends in contraceptive and preconception care in United States ambulatory practices. *Family Medicine, 47*(4), 264–271.

Bensing, J., Verhaak, P. F., van Dulmen, A. M., & Visser, A. P. (2000). Communication: the royal pathway to patient-centered medicine. *Patient Education and Counseling, 39,* 1–3.

Burgess, C. K., Henning, P. A., Norman, W. V., Manze, M. G., & Jones, H. E. (2018). A systematic review of the effect of reproductive intention screening in primary care settings on reproductive health outcomes. *Family Practice, 35*(2), 122–131.

Callegari, L. S., Aiken, A. R. A., Dehlendorf, C., Cason, P., & Borrero, S. (2017). Addressing potential pitfalls of reproductive life planning with patient-centered counseling. *American Journal of Obstetrics and Gynecology, 216*(2), 129–134.

Creanga, A. A., Berg, C. J., Syverson, C., Seed, K., Bruce, F. C., & Callaghan, W. M. (2015). Pregnancy-related mortality in the United States, 2006–2010. *Obstetrics and Gynecology, 125*(1), 5–12.

Finer, L. B., & Zolna, M. R. (2016). Declines in unintended pregnancy in the United States, 2008–2011. *New England Journal of Medicine, 374*(9), 843–852.

Gavin, L., Moskosky, S., Carter, M., Curtis, K., Glass, E., Godfrey, E., … Zapata, L. (2014). Providing quality family planning services: recommendations of CDC and the U.S. office of population affairs. *MMWR Recommendations and Reports, 63*(RR-04), 1–54.

Howell, E. A., Brown, H., Brumley, J., Bryant, A. S., Caughey, A. B., Cornell, A. M., … Grobman, W. A. (2018). Reduction of peripartum racial and ethnic disparities: a conceptual framework and maternal safety consensus bundle. *Obstetrics & Gynecology, 131*(5), 770–782. https://doi.org/10.1097/aog.0000000000002475.

MacDorman, M. F., & Mathews, T. J. (2011). Understanding racial and ethnic disparities in U.S. infant mortality rates. *NCHS Data Brief*, no. 74. Hyattsville, MD: National Center for Health Statistics.

Miller, W. B., Barber, J. S., & Gatny, H. H. (2013). The effects of ambivalent fertility desires on pregnancy risk in young women in the USA. *Population studies, 67*(1), 25–38.

Saada, A., Grzeniewski, M., & Tobier, N. (2015). Improving contraceptive services in primary care: a quality improvement collaborative pilot (published abstract). *Contraception, 92*(4), 364.

Schwarz, E. B., Santucci, A., Borrero, S., Akers, A. Y., Nikolajski, C., & Gold, M. A. (2009). Perspectives of primary care clinicians on teratogenic risk counseling. *Birth Defects Research, Part A: Clinical and Molecular Teratology, 85*(10), 858–863.

Steiner, M. J., Trussell, J., Mehta, N., Condon, S., Subramaniam, S., & Bourne, D. (2006). Communicating contraceptive effectiveness: a randomized controlled trial to inform a World Health Organization family planning handbook. *American Journal of Obstetrics and Gynecology, 195*(1), 85–91.

Wood, S. F., Beeson, T., Goldberg, D. G., Mead, K. H., Shin, P., Abdul-Wakil, A., … Rosenbaum, S. (2015). Patient experiences with family planning in community health centers. Geiger Gibson/RCHN Community Health Foundation Research Collaborative. Retrieved February 7, 2019, from https://publichealth.gwu.edu/sites/default/files/Geiger_Gibson_Family_Planning_Report_2015.pdf.