

Project Report

Implementation of One Key Question® at an Urban Teaching Hospital: Challenges and Lessons Learned

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Abstract: Introduction: One Key Question® is a patient-centered tool that seeks to understand patient pregnancy intention and counseling. This pilot study aimed to assess implementation of OKQ at an urban healthcare facility and improve understanding of short interpregnancy intervals (IPI). **Methods:** We describe the implementation of OKQ in our setting using the Diffusion of Innovation Theory as a framework. We broke this up into two phases – the first to assess provider acceptance of the OKQ integration into the clinic workflow and the second to assess how well documentation of OKQ answers occurred in our EMR. **Results:** Most providers in the first phase reported awareness of the inclusion of OKQ in the EHR, yet most physician providers reported only using OKQ at “some visits” (n=5) compared to the MAs, who reported using OKQ at “every visit” (n=8). Most providers felt that OKQ was an effective method of providing preconception and contraception care for women of reproductive age (n=10). Sixty-four patients completed a survey on OKQ after their visit who identified as young (mean age 28.7), either Black (46.9%) or Hispanic (51.6%) and pregnant (61%). Of those, 83% reported that they were not asked OKQ and 42% reported receiving counseling on optimal IPI. In those patients, 78% had documentation of usage of OKQ in the medical record. **Discussion:** The implementation of OKQ provided an opportunity to provide standardized preconception and contraception care to our patient population and improve information regarding short IPI. However, challenges existed in implementation which much be overcome to benefit from OKQ. **Significance:** OKQ has been used successfully in primary care and other settings to assess pregnancy intentions. This article adds to the literature by investigating the implementation of OKQ in a low-resource setting during prenatal and gynecology care. It shares struggles of implementing OKQ in an electronic medical record and how to roll out this program in a setting where pregnancy intention already is including in various forms by our providers.

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1. Introduction

Interpregnancy interval (IPI) is defined as the time between the last live birth and conception of the next pregnancy (Appareddy et al. 2016)[1]. In the US, nearly one-third (33.1%) of pregnancies occur within 18 months of a previous birth (de Bocanegra et al. 2013)[2], deemed a short IPI. A short IPI is a potential risk factor for many pregnancy related complications such as preterm birth, low birth weight (Gemmill et al. 2013, Hussaini et al. 2013)[3,4], small for gestational age infants, labor dystocia, preeclampsia, stillbirth, maternal anemia, third trimester bleeding, uterine rupture, placental abruption, placenta previa, and folate depletion (Cheslak Postava et al. 2015)[5]. A short IPI has also

been linked to unintended pregnancy (Harney et al. 2017)[6] which represents a significant public health burden and themselves are associated with lower incidence of prenatal care initiation in the first trimester and higher rates of preterm birth (Cheng et al. 2009; Shah et al. 2011; Besculides and Laraque 2004)[7,8]. This burden falls particularly on people of color, with African American and Hispanic women more commonly having short inter-pregnancy intervals (IPI) of less than 6 to 11 months than white mothers, 11.7%, 11.2%, and 9.3% respectively (Thoma et al. 2016)[9].

Current programs attempt to assess pregnancy intention and improve reproductive outcomes either through the provision of contraception and counseling or with planning for a healthy pregnancy. One Key Question® is a patient-centered tool, created in 2013 by the Oregon Foundation for Reproductive Health, and seeks to achieve these goals. OKQ is now licensed and operated by Power To Decide. OKQ asks patients of reproductive age “*Would you like to become pregnant in the next year?*” and assesses pregnancy intention through four response choices including “yes,” “no,” “unsure,” and “okay either way.” It was originally designed to be used in primary care settings with the intention of facilitating the provision of high-quality and patient-centered contraceptive counseling, contraceptive services, and pre-pregnancy care (Bellanca and Stranger Hunter 2013)[10]. It requires patients and providers to focus on what a patient *desires* rather than how they *plan*, and also allows for ambivalence in the decision-making process by offering non-binary answer choices (Allen et al. 2017)[11].

This pilot study aimed to assess healthcare provider’s adherence, adoption, and implementation of OKQ at an urban healthcare facility, firstly through educating providers at our inner-city hospital-based clinic and secondly to see how this program resulted in patient awareness of OKQ and pregnancy spacing.

2. Methods

2.1. Setting

Our hospital-based clinic serves as the primary healthcare option for low-income minority patients including African American and Hispanic populations. The health care team consists of a collaborative team of interdisciplinary healthcare professionals who provide integrated gynecologic and prenatal services. The population screened using OKQ included women between the ages of 18-45 years who were receiving prenatal care and or had women-well visits from August 2018 through October 2019, who have not been surgically sterilized and did not present with suspected menopause or infertility.

2.2. Implementation of OKQ

2.2.1. Evaluation framework

Diffusion of Innovation Theory (DOI) provides a framework for program planning and evaluating the adoption and diffusion of a new program within a social system (Zhang, Yu, Yan, and Spil 2015)[12]. Process evaluation planning was used throughout program implementation as described by Saunders, Evans and Joshi (2005)[13]. Process evaluation provides a comprehensive approach to assess systematically whether program activities were implemented as intended (Centers for Disease Control and Prevention n.d.; Saunders et al. 2005; Winthereik, Neergaard, Jensen, and Vedsted 2018)[13,14,15]. Additionally, a logic model – including inputs, activities, outputs, outcomes and impacts – was created as part of the evaluation plans (Centers for Disease Control and Prevention 2018; McLaughlin and Jordan 1999)[16,17].

2.2.2. Phase 1:

Physicians, medical assistants, registered nurses, advanced nurse practitioner, and administrative staff received training on OKQ program implementation, delivery and data collection tracking. An Interdisciplinary Working Group (IWG) consisting eight

healthcare professionals was formed. The IWG met regularly in this first phase to strategize and develop a workflow process for program implementation. The IWG also identified barriers and facilitators to program implementation. Although the original version of the question was integrated in the EHR, the medical assistants verbally modified the original question to “How soon after this baby are you planning to become pregnant? Within the next year?” when screening obstetric patients for pregnancy intention. Before the full roll out, we tested the intervention with four OBGYN providers to identify the best way to integrate OKQ into the Electronic Health Record (EHR) system.

EHR reviews were conducted among $n=134$ patients of four providers to assess the quality of documentation of OKQ. During the pilot intervention phase, a smart text “.OKQ” was created as a quick documentation for OKQ in the patient EHR. One physician worked directly with the Epic (EHR) team to integrate the OKQ algorithm in the patient EHR. The IWG decided to collapse the options “OK EITHER WAY” and “UNSURE” because feedback from our team reflected their belief that the two categories were redundant in the EHR. Both responses categorize patients as ambivalence. The IWG integrated OKQ algorithms in the intake section of the visit navigator to facilitate documentation for OKQ. We administered a 5-item survey to 12 OB/GYN providers (including two APN) and 11 medical assistants to assess medical assistants and provider’s awareness about the existence of OKQ, use, frequency, and their belief about its effectiveness as a tool for screening for pregnancy intention. It was determined through feedback that medical assistants would screen and document the OKQ screener during their intake evaluation and providers would double check that this information was accurate with the patient.

2.2.3. Phase 2:

After field testing, our version of OKQ was implemented with the entire practice. We administered an 8-items survey to a random sample of ($n=65$) patients aged 18-45 years during their doctor’s visit to assess whether they were asked OKQ during their visit and if they received information about birth spacing recommendations. Chart reviews were conducted to correlate self-reported information among randomly-selected patients who completed the survey with provider’s documentation on OKQ in the EHR.

A report was generated every month yielding data about the number of patients who were asked OKQ during their doctor visit as well as information about patient visit type, date and provider’s documentation of OKQ. The report had 25267 records which included record of patients who had multiple visits (unique records were 8947) from 8/1/2018-10/31/2019. We looked at those that replied “no” to the OKQ to identify contraceptive choice. Some patients had multiple methods identified in the OKQ EHR, which is likely reflective of a change in methods over time. A decision tree was made to describe contraceptive choice using categorizations under one method despite some patients listing multiple methods. For the purpose of this paper, patients that were using condoms in addition to another method were listed under their alternative method but logged separately as also using condoms. For those listing multiple non-barrier methods, we categorized patients into groups of most effective method selected.

3. Results

The pilot implementation of OKQ, as adapted for use by the healthcare practice, was performed by 9 OB/GYN providers and 11 medical assistants (MAs) in our hospital-based women’s health clinic. The majority of providers reported awareness of the inclusion of OKQ in the EHR, yet most physician providers reported only using OKQ at “some visits” ($n=5$) compared to the MAs, who reported using OKQ at “every visit” ($n=8$). This may be due to the screening process where MA’s were responsible for screening at each visit. The majority of providers felt that OKQ was an effective method of providing preconception and contraception care for women of reproductive age ($n=10$), but physician providers overwhelmingly felt that it was too simplistic and did not actually represent a benefit to

patients. MAs felt that OKQ was a good tool to get the conversation started on the topic of contraception (n=10), but also reported that it was effective to both educate and help patients make informed decisions regarding their reproductive health. Notably, the designated birth control counselor reported a decreased number of referrals during this time which suggest that providers were performing their own birth control counseling at the time.

A subsample of sixty-four patients completed the OKQ survey after their visit was complete. The majority of patients identified as between 25-34 years old (mean age of 28.7 years old) and either African American (46.9%) or Hispanic (51.6%) race/ethnicity [Table 1]. The majority of patients were pregnant at the time of survey (61%). Of those, many respondents reported that they were not asked if they would like to become pregnant in the next year (83%). About half of respondents reported receiving counseling on IPI greater than or equal to 18 months (42%).

Table 1. Demographics of the 64 patients who completed the OKQ survey.

Demographics Characteristics		
N=64	N	%
<i>Age</i>		
M = 28.7; SD = 6.46		
18-24	20	31.3
25-34	29	45.3
35-44	13	20.3
<i>Ethnicity</i>		
African American	30	46.9
Hispanic	33	51.6
White		
Asian		
Other	1	1.7

Out of the 25 GYN patients, 44% reported using a form of birth control. Of these women, 63.6% reported satisfaction with the method they were using. In subsequent chart reviews, 78% of the 64 patients had documentation of usage of OKQ in their chart. Of the 16% that did not (n=10), 80% had documented preconception and/or contraception counseling based on their desire for pregnancy as noted by the provider.

Upon retrospective review of OKQ documentation in the EHR during the study period, answers were evaluated to assess types of contraceptives desired. Of the respondents who answered "no" to OKQ [Table 2], the most common forms of contraceptive choice desired were tubal ligation (n=607), followed by injection (n=598), IUD (n=565), condoms (n=563), the implant (n=548), and birth control pills (n=542). Of all respondents, 676 did not have a contraceptive choice documented.

Table 2. Documented Birth Control Options of Patients Who Said “No” to OKQ

Birth Control Methods among Patients who Responded No by Visit Type			
	Prenatal Visit N=2,306	Postpartum Visit N=332	GYN Visits N=2696
	N	N	N
Condoms	314	44	205
Depo-Provera	192	33	373
Patch	13	5	16
Pills	225	42	275
Implant	292	40	216
IUD	238	36	291
Rhythm method	3	1	1
Spermicide	0	0	1
Tubal ligation	273	47	287
Vaginal ring	1	1	13
Vasectomy	7	1	2
Withdrawal	3	2	19
Those that used condoms in addition to method	25	3	20
Blank	207	50	419

4. Discussion

Various barriers to contraceptive counseling exist at both the provider and patient level. Commonly cited provider barriers include comfort level or knowledge base surrounding contraception, assumptions about a patient’s pregnancy risk, and a provider’s own beliefs regarding certain types of contraception (Akers et al. 2010; Dehlendorf, Krajewski, and Borrero 2014; Rosenberg, Waugh, and Burnhill 1998)[18,19,20]. For example, Akers et al. 2010 posited that providers may be less likely to offer quality contraceptive counseling to patients who reported abstinence, or to older reproductive age patients who already had children and were perceived as being “more responsible.” Lack of time, or irrelevance to the chief complaint were other commonly reported factors influencing provision of contraceptive counseling. While our 20 providers generally felt comfortable providing contraceptive and pre-conception counseling, many of them reported relevance to the chief complaint, type of visit, and applicability to patients as major barriers to using OKQ as a screening tool to initiate this counseling.

At the patient level, barriers include potential low health literacy which may limit comprehension of OKQ, misunderstanding of survey questions, and even patient ambivalence regarding reproductive desires. Contemporary planning paradigms hold implicitly that all women possess clear, unchanging reproductive goals, placing them into one of two distinct categories on the binary decision-making tree (Bachrach and Newcomer 1999)[21]. Leaving little room for ambivalence does not improve reproductive outcomes, as women end up neither prepared adequately for pregnancy, nor counseled appropriately on methods they can use to avoid pregnancy (Miller, Barber, and Gatny 2013)[22]. OKQ is unique in that it permits for ambivalence, acknowledging that the very strength and polarity of a woman’s reproductive desires can, and likely will, change throughout her life. Despite perceived patient and provider barriers, the majority of our providers felt that OKQ was a useful tool to start the conversation about contraception and could further emphasize the importance of shared decision-making when it comes to reproductive

health. “Client centered” or patient-centered approaches have long been associated with increased continuation of contraceptive methods and higher perceived quality of counseling, and could even be targeted to adequately address reproductive ambivalence (Dehlendorf, Krajewski, and Borrero 2014; Dwamena *et al.* 2012)[19,23].

This pilot is just one example of how OKQ can be adapted and implemented in a clinic setting, particularly in an urban low-income area. OKQ has now been implemented in various settings such as Federally Qualified Health Centers (FQHCs) in Chicago, as well as during home visits in Hawaii with varying measures of success (Stulberg, Dahlquist *et al.* 2019; Hipp *et al.* 2017)[24,25]. Stulberg, Dahlquist *et al.* 2019 found that the implementation of OKQ in an urban community health center led to increased rates of contraceptive counseling and LARC recommendations, with no change in preconception counseling. Another study found that rates of contraceptive counseling in a primary care and OB/GYN practice increased when OKQ was integrated into practice and even improved patient satisfaction rates (Song *et al.* 2021)[26].

The strength of this intervention was its integration in a low-resource, inner city hospital setting. The implementation of OKQ provided an opportunity to provide standardized patient-centered preconception and contraception care to women of childbearing age. Also, we were able to engage healthcare providers, nurses, medical assistants and administrator staff in the implementation of this program. In addition, we used various methods of data collection to optimize program evaluation (e.g., electronic health record reviews, self-reported data, provider’s feedback and informal conversations with staff). For instance, an OKQ Epic - electronic health record Clarity Report is being generated every month which allow for continuation of conducting quality performance measures. Likewise, we have a diverse patient population which there is little data regarding using OKQ in that setting. We are in the process of incorporating OKQ algorithm into the EHR in the inpatient Maternity Care Unit.

There are limitations related to our program implementation and evaluation. For example, using self-reported data is subject to recall bias and social desirability bias. Also, screening for pregnancy intention among obstetric patients was difficult as patients were having multiple clinical encounters. Moreover, OKQ was designed to be used prior to a pregnancy event which may have made these results less representative of the typical OKQ screening population. The OKQ screening tool in the EHR was problematic in that it maintained the last entry recorded in prenatal encounters without making it a required field to complete in subsequent visits. Thus it is hard to assess whether MAs were asking OKQ at each visit versus only asking OKQ during one encounter. Also, the EHR generated multiple answers for some patients which needs to be corrected for future iterations.

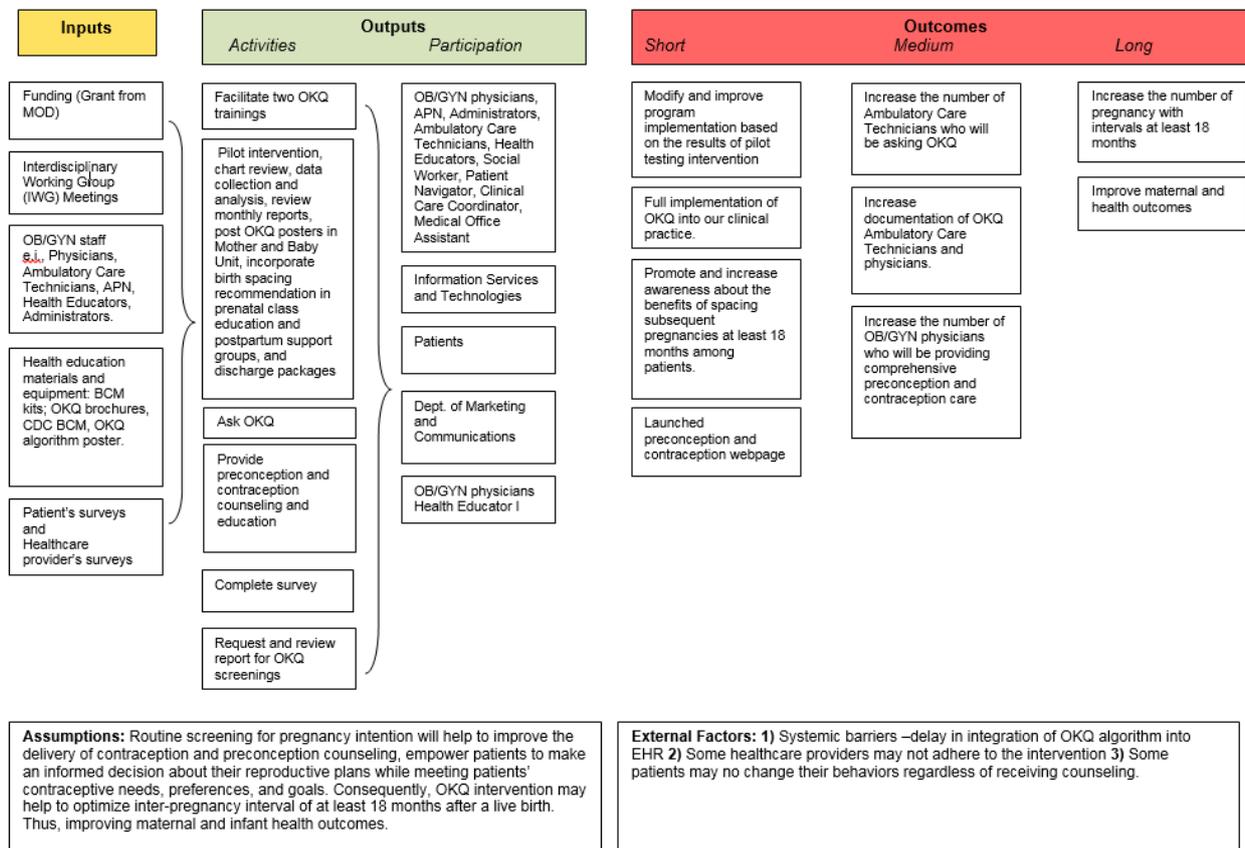
Recommendations

For other programs considering integration of OKQ into clinical practice, we have the following recommendations on how to optimize this experience:

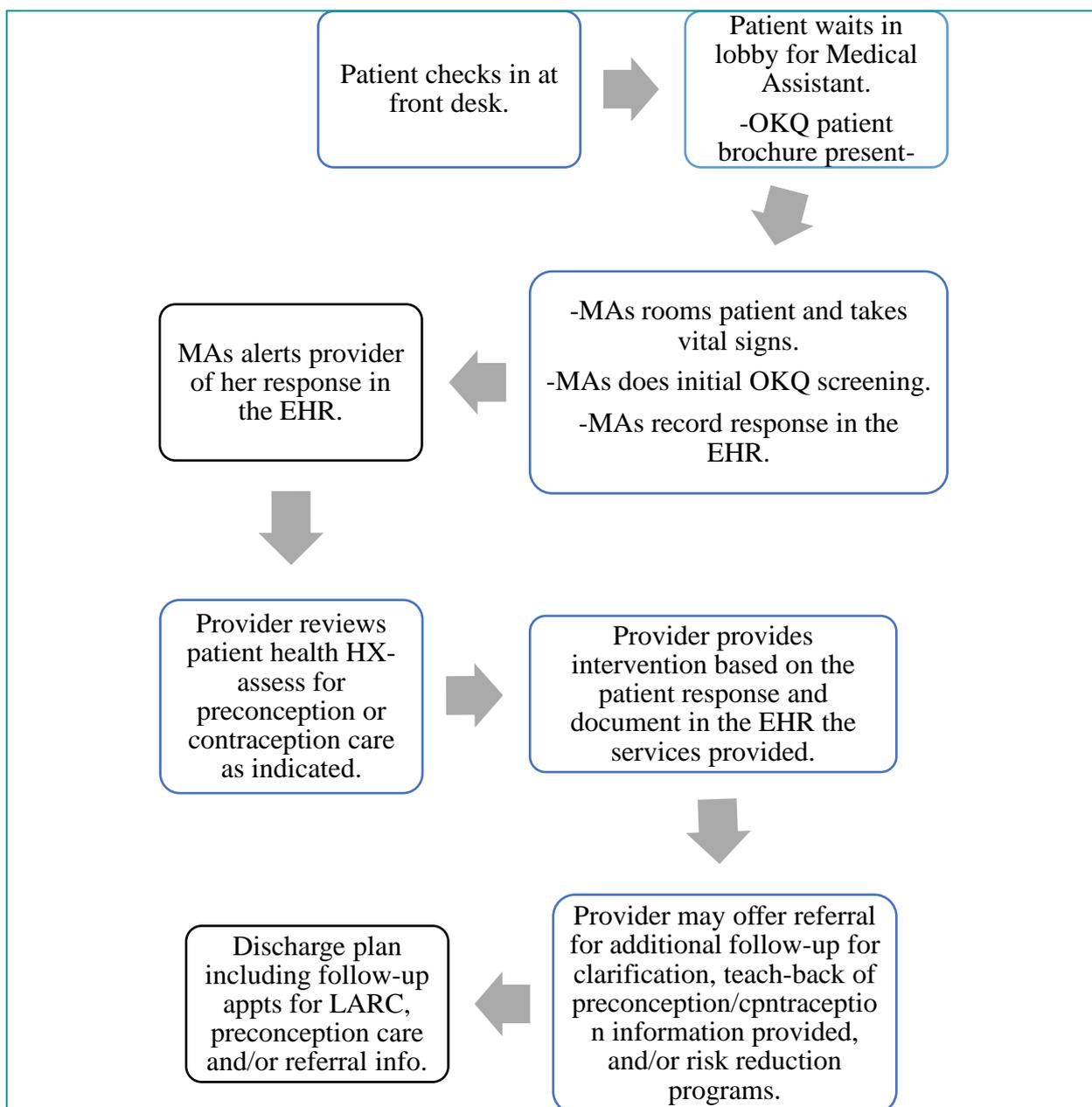
- Frequent reminders and refresher training courses for providers, medical assistants, nurses and residents (if it is a teaching facility)
- Partnership with EHR team to help with incorporating this into documentation
- Multi-disciplinary team to discuss each part of clinical care in the implementation of OKQ and who is the best care team member to provide this counseling
- Add an alert in the electronic health record to remind medical assistants and providers to ask OKQ to patients at every encounter
- Integrate OKQ algorithm in the in-patient maternity unit patient navigator – this will allow screening for pregnancy intention throughout the continuum of maternity care

Appendix A

Program OKQ – Logic Model



Appendix B



OKQ Screening Clinic Flow

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