Web-Based Perinatal Education for the New Obstetrical Patient: A Quality Improvement Project

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ABSTRACT

Mixed-methods quality improvement project improved the new obstetrical perinatal education curriculum by cultivating reliable delivery of evidenced-based initiatives linked to successful pregnancy. The web-based format enhanced family-centered care in a teaching format in the comfort of the home. The identification of at-risk populations resulted in improved referral for cell-free fetal DNA screening. A qualitative approach assessed overall provider satisfaction with web-based teaching. The patient survey identified barriers for noncompletion of web-based content. Quantitative data identified completion rate, high-risk populations for referral for advanced screening, and provider satisfaction with web-based curriculum content in a teaching platform linked to the provider's website.

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High-quality perinatal education is important for ensuring positive maternal and neonatal outcomes related to pregnancy and childbirth. Offering evidence-based teaching opportunities in a web-based methodology encourages healthy behaviors, lifestyles, and modifications associated with successful pregnancy and birth. Web-based perinatal education linked to the provider's website has many benefits. Quality education is connected to positive effects on pregnancy, childbirth, breastfeeding, and transition to the role of mother (Zolotor & Carlough, 2014). Web-based education platform fosters a collaborative education

setting, improving outcomes. A successful strategy for implementation embraces evidence-based practice applicable to perinatal education development in a teaching platform meeting demands of today's consumer. A quality improvement project was implemented using web-based comprehensive perinatal education videos for the new obstetrical patient population. Web-based format enlightens today's savvy health-care consumer by consistently translating best evidentiary guidelines linked to successful pregnancy and birth.

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LITERATURE REVIEW

The women's health professionals play an important role in the distribution of antenatal education. Perinatal education should be consistent, evidenced based, and started early in pregnancy (Miles & Mynard, 2013). Educational curriculum requires early interventions in pregnancy to meet the needs of today's expectant women. Up-to-date, web-based technologies allow for a modern approach to education and promote healthy birth outcomes (Martin, Bulmer, & Pettker, 2013).

Researchers found that over 51.8% of advanced maternal-age women requested web-based curriculum for perinatal education. Further, a concerning 32.5% reported not receiving any perinatal education during their pregnancy (Wang, Park, & Kim, 2013). Perinatal education can increase awareness and improve knowledge about risks factors and potential complications for pregnant women. Perinatal education is a significant factor associated with improved maternal and neonatal health outcomes (Ustunsoz, Senel, & Pollock, 2011).

Perinatal education related to nutritional recommendation during pregnancy, even for a limited time period, improves multiple maternal and neonatal health factors (Girard & Olude, 2012). Perinatal education provides a foundation of knowledge about pregnancy, childbirth, and a healthy transition to the postpartum period. Quality education is linked to positive effects on pregnancy, childbirth, breastfeeding, and transition to the role of mother.

Web-based education programs provide for an interactive learning environment, improving learning outcomes (George et al., 2012). Researchers found that 97.7% of parents utilize the Internet for information on pregnancy. Further, respondents reported the Internet as the most popular source of information on pregnancy topics (Lima-Pereira, Bermúdez-Tamayo, & Jasienska, 2012).

A formal need assessment of a freestanding outpatient, private OB/GYN clinical practice in North Carolina provided an opportunity to improve dissemination of expert women's health knowledge in

a consistent manner to the new obstetrical patient. The OB/GYN providers consisted of physicians, certified nurse midwives, and nurse practitioners. The new obstetrical patient was seen by a variety of providers, which contributed to a lack of consistency in perinatal education. A focus to integrate noninvasive fetal DNA screening referral for high-risk populations afforded an opportunity to translate evidence to practice in the web-based video curriculum.

High-risk populations benefit with the use of cell-free fetal DNA screening (American College of Obstetricians and Gynecologists [ACOG], 2012). High-risk populations include advanced maternal age 35 years or older, ultrasound data with suspicion for increased risk of aneuploidy, history of a prior pregnancy with a chromosomal abnormality, positive test result for aneuploidy, and parents with chromosomal translocation. ACOG recommends that all women, regardless of maternal age, have an opportunity for prenatal assessment for aneuploidy. Noninvasive prenatal screening utilizes cell-free fetal DNA from the serum of pregnant women offering remarkable ability to identify chromosomal abnormalities. Cell-free fetal DNA screening is recommended as an option for testing for high-risk populations such as advanced maternal-age women, but is not endorsed for low-risk women (ACOG, 2012).

The quality improvement project had many ambitious objectives and was marketed with flyers at the front desk. Staff development included a lunch-and-learn, which was successful in establishing stakeholder buy-in. New obstetrical patient handout included detailed instruction on the web-based video curriculum and how to access the videos prior to the first new obstetrical visit. The videos could be viewed in the comfort of the home. An educational area was set up in the office, which allowed additional viewing opportunities.

Project objectives were improved consistency of perinatal education dissemination to new obstetrical patients. A high-priority goal was identification of high-risk pregnancies and offering referrals for cell-free fetal DNA screening. Overall improved provider satisfaction with the new obstetrical patient was a very important motivator for project design.

The successful implementation of web-based perinatal education video segments incorporated best available evidence for prenatal care from a

variety of respected clinical resources including the ACOG (2014) and the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, 2014). The video platform is supported by the demands of a technologically advanced population and provider request.

METHODS

A mixed-methods project design was utilized to evaluate overall success of the quality improvement project. One group of subjects, $n = 41$, were selected based on patient willingness to participate in data collection from the available adult female new obstetrical patients during a 10-week data collection window. New obstetrical patients were scheduled 3–5 days per week. The average number of new obstetrical patients scheduled each day was four.

Inclusion criteria included patients during the first trimester of pregnancy presenting for new obstetrical care who were 18 years or older. Exclusion criteria included patients who had an existing treatment care plan in the second trimester or greater of pregnancy. Demographic of patients' age included patients ranging in age from 20 to 44 years. Barriers to completion of the web-based educational video segments were addressed by patient survey.

Provider satisfaction survey assessed satisfaction with the dissemination of evidenced-based pregnancy education focused on the improvement of consistent, expert women's health knowledge. Provider satisfaction was critical to the quality improvement project success. Retrospective chart reviews were completed to identify high-risk populations offered referral for noninvasive fetal DNA screening.

Data tracking tools were utilized at the front desk sign-in area providing essential data for the assessment of project goals. The percentage of new obstetrical patients completing web-based education video segments prior to the first obstetrical visit was captured by a tracking tool. Patient survey for possible barriers encountered was easily accessible at the office front desk.

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(U.S. Department of Health and Human Services, Agency for Health Care Research and Quality, 2014). PEMAT provides two scores for content areas with the highest possible score for each criteria being 100%.

The PEMAT was designed to be completed by health professionals who provide educational curriculum to patients. The PEMAT provides a measurable outcome for selecting education materials for increased retention of curriculum content. Educational materials with high scoring on the PEMAT can confidently be distributed to patients.

Perinatal education curriculum was evaluated by providers utilizing the PEMAT. Data captured by the PEMAT measured outcomes of understandability of curriculum content and ability to meet goals of the perinatal education video content. Web-based video segments were linked to the provider's website and accessed via the patient portal.

RESULTS

Evaluation methods were by a variety of qualitative and quantitative methods. Descriptive statistics were utilized with project results with no two-tiered analysis performed. The high-risk pregnancy population was identified as 51.2 % of the group. Of the high-risk pregnancies identified, 100% received referral for cell-free fetal DNA screening.

Qualitative provider satisfaction survey identified that 75% of providers were satisfied and 25% very satisfied with project results. Variables assessed by providers were for satisfaction. Overall provider satisfaction was 100% satisfied with project impact on utilization of time, cost-effectiveness, and improved consistency of perinatal education.

The patient survey identified one theme or barrier to noncompletion. Patients previously scheduled for a new obstetrical visit prior to project

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implementation failed to be notified of the new web-based video format. Marketing initiatives and new obstetrical patient letters introducing the new format were not mailed to patients already scheduled prior to project implementation. Only new obstetrical patients scheduled after project implementation received the marketing flyer and new obstetrical patient letter, which detailed how to access the perinatal education videos on the provider's website.

Quantitative data included that the overall completion rate of the web-based video education curriculum was 63.4%. During the data collection phase, the completion rate of the web-based perinatal education was negatively impacted by failure of notification to previously scheduled patients prior to project implementation. The ongoing evaluation by patient survey of system processes encountering barriers to success was continually addressed and interventions designed as appropriate.

Additional quantitative data included PEMAT scored by providers. The PEMAT was scored at 100% for understandability and suitability. The PEMAT analyzed the provider's overall confidence in the understandability of web-based perinatal education content as to the suitability for utilization of the web-based educational curriculum for patients. Project data has been analyzed utilizing the SPSS statistical software (Cronk, 2014).

DISCUSSION

The Institute of Medicine's (IOM) report *Crossing the Quality Chasm: A New Health System for the 21st Century* echoes a distressing crisis in health-care quality. The report endorses application of an organizational design alteration for the U.S. health-care structure (IOM, 2001). The design endorses the advancement in health care for the 21st century beginning with providers, legislative authorities, and leadership including community and private sectors. The IOM goals include six specific objectives for health-care improvement.

The goals are based upon the framework of safety, effective, patient-centered, timely, efficient, and equitable health-care delivery in patient care. Six aims were identified by the IOM in an effort to improve quality (Swanzy, Roussell, & Pratt, 2014). The web-based curriculum addresses effective, efficient, and patient-family centered care by implementing perinatal curriculum utilizing an

up-to-date platform including all family members in the teaching design.

According to *Healthy People 2020* initiatives, 2 of the 20 aims are addressed with the quality improvement project. First, the maternal, infant, and child initiative focuses on improving the well-being of mothers, infants, and children (U.S. Department of Health and Human Services, Healthy People, 2014b), important maternal-child public health goals for all. Second, the initiative of educational and community-based programs are addressed with the design and implementation of perinatal education in the outpatient setting. The focus on education improved quality, accessibility, and usefulness of educational and community-based programs intended to prevent illness and injury, improving overall health and enhancing quality of life (U.S. Department of Health and Human Services, Healthy People, 2014a). Health-care teams with focus on achieving improvement in quality goals are better prepared to meet demands of an ever-changing complex adaptive health-care system.

The National Quality Forum (NQF) has endorsed 14 quality measures on perinatal care. The measures address a wide range of care concerns, including childbirth, pregnancy and postpartum care, and newborn care (NQF, 2014). Approximately four million babies in the United States are born each year. Conditions related to pregnancy, childbirth, and neonatal care account for nearly 25% of inpatient admissions. Deaths during pregnancy and childbirth have doubled for all U.S. women in the past 20 years. Infant mortality due to maternal complications is responsible for close to 6% of all infant deaths. The quality improvement project disseminated expert women's health knowledge to the new obstetrical population focused on improving national benchmarks.

Potential threats include the possibility of patients not completing the web-based education prior to their new obstetrical visit. Lack of referral to the web-based video education from office staff or technological malfunction presented threats to success. The study data was from a limited sample size of $n = 41$. Future study is recommended to evaluate the overall generalizability of the use of web-based video curriculum in other clinical settings or childbirth classes.

IMPLICATIONS FOR PRACTICE

The quality improvement project demonstrated the important role advanced practice nurses and childbirth educators play in bridging the gap between evidence-based research and application to clinical practice. The consistent delivery of evidence-based initiatives, evaluation of at-risk populations, and incorporation of up-to-date knowledge to plans of care exemplified the important role of women's health professionals.

The quality improvement project provided an opportunity to demonstrate synthesis of expert women's health knowledge into educational plans of care focused on enhanced childbirth experiences. The quality improvement project was devoted to curriculum enhancement, improved dissemination of evidence, and consistency of delivery of perinatal education. The identification of high-risk populations early in pregnancy and incorporating the use of noninvasive fetal DNA screening utilized cutting-edge research-improving outcomes. The improvement in treatment plan incorporating timely referral to genetic screening occurred early in pregnancy.

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