The Effect of Technology-Based Breastfeeding Approach on Adolescent Mothers' Breastfeeding Situation

Rukiye Celik* and Ebru Kılıçarslan Törüner

Faculty of Health Sciences Department of Nursing, Gazi University, Turkey

Abstract: Adolescent pregnancy is an important health problem worldwide. This study aims to thoroughly investigate the literature to examine the effects of the technology-based breastfeeding approach on breastfeeding success in adolescent mothers. To be pregnant and to be an adolescent at the same time increase the risk of mortality and morbidity in mothers and infants. Such breastfeeding challenges as not breastfeeding or starting but not continuing breastfeeding, and negative thinking/practices on breastfeeding are more common in adolescent mothers than in adult mothers. The way education and counselling is delivered is crucial to inform and support the risky adolescent mothers for breastfeeding. Technology-based approaches has been increasing to improve the effectiveness and length of such education in recent years. Technology-based approaches include web-based programs, tablets, mobile phones, messages, and applications. Specific to individual and age-appropriate technology-based breastfeeding approaches with a multidisciplinary team could provide effective and successful breastfeeding. The integration of breastfeeding approaches with technology could increase the initiation and continuation of breastfeeding, the rates of breastfeeding of babies and nutrition information/ behaviors of mothers considering the use of technology by adolescents. Health care providers have significant roles to maintain, protect, and improve the maternal and infant health and also to prevent adolescent pregnancies. It is thought that taking into consideration the developmental characteristics of adolescent mothers, it would be beneficial the constitution of the technology-based breastfeeding programs by health care providers with the roles of caring, counseling, educating, researching, collaborating, and advocating.

Keywords: Adolescent, Mother, Breastfeeding, Technology, Healthcare provider.

INTRODUCTION

Adolescence is the transitional period between childhood and adulthood, which involves explicit growth and development with physical, cognitive, emotional and social changes [1, 2]. It is also known as a period in which secondary sex characteristics develop, physical growth accelerates, risk-taking behaviors (harmful substance usage, violence, eating habit changes, risks in physical activities and risky sexual behaviors) increase and fertility is gained [3-6].

World Health Organization (WHO) identifies adolescence as the period from age 10 to 19 and uses "adolescent pregnancy" concept to define the pregnancy of girls between these ages [7]. Like adolescence period, pregnancy involves physical, psychological, emotional and social changes. Experiencing adolescence and pregnancy at the same time might bring about many adverse effects together. Hence, pregnant adolescents could be evaluated as a high risk group [8,9]. Adolescent pregnancy poses significant problems for both maternal and infant health in underdeveloped and developing countries [10, 11]. Higher rates of adolescent pregnancy in underdeveloped countries make it a serious health problem. It is estimated that 11% of all births worldwide are the results of adolescent pregnancies (15-19 years) [12]. According to the 2015 World Health Statistics, adolescent birth rate is 49‰. In Europe, adolescent birth rate is 20 ‰ [13].

It could be seen that adolescent mothers may not have adequate knowledge about child health and development and may have risky behaviors. They may be less sensitive to nutrition and less skilled in infant feeding. Therefore, breastfeeding challenges like not to breastfeed or not to continue breastfeeding, and negative thinking/practices on breastfeeding are more common in adolescent mothers than in adult mothers [14, 15]. This manusctript is prepared by reviewing literature to thoroughly investigate the effect of technology-based breastfeeding program for adolescent mothers on their breastfeeding success and nursing interventions to prepare breastfeeding approaches. In this manuscript, health problems which may developing adolescent mothers and babies, breast-feeding problems and approaches to solve these problems are discussed in a question and answer format.

1. What effects does adolescent pregnancy have on mother's health?

Adolescent pregnancy causes adverse pregnancy outcomes and increases maternal mortality. Each year approximately three million adolescents are exposed to

*Address correspondence to this author at the Faculty of Health Sciences Department of Nursing, Gazi University, Turkey;
Tel: 0943 979 00 99; Fax: +90 312 216 26 36;
E-mail: rukiyecelik25@gmail.com

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persistent health problems or die because of unsafe abortions [16]. Besides, due to short gaps between pregnancies, high numbers of gravidity, poor antenatal care and lack of preparation for birth and parenting, an adolescent pregnant is more likely to experience obstetric complications such as nutritional deficiency, pause in growth and development, toxemia, obstetric infections, pre-eclampsia, bleeding and anemia than adult pregnants [17-20]. Adolescent pregnancy leads to stress and negative emotions related to parenting [9, 21]. Moreover, personality changes, body image problems, depression, inadequate coping ability and low self-esteemmay be observed [9, 22-24]. Adolescent pregnancies also have unfavourable social and economic effects on society and families. Many adolescents have to drop out of school and have difficulties to find a job with a low level of education [16].

2. What Effects does Adolescent Pregnancy have on Infant?

Adolescent pregnancy is among the health problems that prevent raising a healthy generation developing [19]. Having an adolescent mother is a big risk factor for the infant as well. Perinatal mortality is 50% higher in adolescent pregnancies compared to pregnancies between ages of 20-29 years [16]. Preterm delivery, stillbirth, meconium aspiration, respiratory distress syndrome, low birth weight, negative neonatal outcomes and medical complications due to preterm delivery, intrauterine growth retardation, congenital anomalies and sepsis are more common in adolescent pregnancies [10,18, 25, 26]. In addition, baby born to adolescent mothers are at higher risk for abuse and neglect, delays in cognitive-social-emotional development, learning disability, poor academic performance, behavioral problems, anxiety, delinquency and problematic peer relations [9, 27].

3. What are the Most Common Breastfeeding Problems of Adolescent Mothers?

Since adolescent mothers' babies are at a high risk of death and disease, breastfeeding is of vital importance for them. However, one of the problems which adolescent mothers face during postpartum period is to initiate and sustain lactation [26, 28].

Adolescent mothers are less likely to breastfeed their infants due to such factors as low rate of breastfeeding in the first hour and first six months after birth and getting education on breastfeeding during antenatal or postnatal period, involvement of family elders in the nutrition of the infant, negative thoughts associated with breastfeeding and being less skilled in infant feeding [14, 28]. Sipsma, *et al*., who investigated breastfeeding status of 225 adolescent mothers during the first 6 months postpartum, found that social support resources and experiencing difficulty with breastfeeding was closely associated with initiating and sustaining breastfeeding, and only 11% of the mothers sustained breastfeeding for 6 months [29]. In the study by Camarotti, *et al*., conducted with 80 adolescent mothers about their breastfeeding experiences, it was stated that the breastfeeding rates decreased due to such reasons as lack of knowledge about correct breastfeeding technique, nipple problems, and inadequate suction of the baby [30]. Dewan, *et al*., who studied with 40 adolescent and 40 adult mothers, showed that the adolescent mothers had less knowledge about breastfeeding and commonly preferred bottle feeding [31]. Rates of infant formula usage and early introduction of complementary foods increase in adolescent mothers, and mothers frequently start to use baby bottle when they don't breastfeed. This situation adversely affects the establishment of a routine for the baby during the first year of life and baby's weight chart and healthy growth/development [14].

4. What should be done to Promote /Encourage Breastfeeding in Adolescent Mothers?

The breastfeeding of infants during the first year of life is important for their health in the later years [32]. Therefore, adolescent mothers, who are at a high risk of ceasing breastfeeding, should be educated and supported. A qualitative study by Nelson and Sethi, revealed that adolescent mothers, who received breastfeeding support, had positive opinions about breastfeeding as adult mothers did, and their breastfeeding rates increased [33]. In their study, Smith, *et al*., who investigated factors influencing breastfeeding decisions and practices in adolescent mothers, stated that the education provided to encourage and support breastfeeding increased the rates of breastfeeding, and accordingly the infants' growth and development were influenced positively [34]. Wambach, *et al*., showed that after the breastfeeding counselling course designed for adolescent mothers, breastfeeding duration of mothers increased, and breastfeeding rates as well as positive opinions related to breastfeeding increased [35]. In the study conducted to observe breastfeeding behaviors of 22.023 adolescent mothers of term infants, Leclair, *et al*., explain that breastfeeding education given in the

early postpartum period is effective and adolescent mothers should be supported with a multidisciplinary approach [36]. In the study of Yılmaz, *et al*., factors influencing initiation of breastfeeding and breastfeeding rates on 200 adolescent mothers were investigated, and the results showed that adolescent mothers who started breastfeeding early had planned pregnancy and after birth they received education that encouraged breastfeeding from health professionals [37].

5. Why are Technology Based Approaches Preferred for Breastfeeding Education?

Adolescent mothers are found to be at high risk for breastfeeding, and breastfeeding educations have positive effects on breastfeeding [34-37]. However, the way of giving this service is important as well as providing breastfeeding education and counselation for adolescent mothers. In order to improve and maintain the effectiveness of education, the techniques used should be designed for the needs of target group.

Technology use is on the increase, and alternatives to traditional breastfeeding education are emerging accordingly. Most mothers today depend on technology-based breastfeeding approaches [40]. When the use of technology by adolescents is considered, it makes sense to use technology to improve the influence of the education planned for them (since technology access, usage and interest are high among adolescents). Web-based programs, tablets, mobile phones, text massages and applications can be counted among technology-based approaches [14, 38, 41]. Wuthrich, *et al*., used 8 therapy modules of 30 minutes via CD-ROM and telephone session in adolescents with anxiety disorder in their study; Sirriyeh, *et al*., used text massage in their study with adolescents; Riizer, *et al*., used web-based program in their study with obese adolescents; Cafazzo, *et al*., used an application in their study involving adolescents with type 1 diabetes. These randomized trials found positive impacts of technology-based approaches on health behaviors [41-44]. Di Meglio, *et al*., found that more low-income adolescent mothers in New York state they breastfeed exclusively when breastfeeding peer counselors from their public health department called them on their phones. An independent interviewer telephoned all new mothers weekly to document feeding patterns. It was found that breastfeeding duration increased by peer support. However, this study did not demonstrate a significant effect of peer support on starting breastfeeding [45]. In another study, Wambach, *et al*., constituted a technology-based program for adolescent mothers including education in hospital with two prenatal classes, telephone calls at 4, 7, 11, and 18 days and 4 weeks in postpartum period. They reported that their intervention group breastfeed for a median of 177 days, which was significantly greater than the control groups [35]. In a study, Pitts, *et al*., provided breastfeeding education to 21 adult pregnant women at the 32, 34 and 36th week prenatal visit via computer tablets. They investigated effect of technology-based education on starting and sustaining breastfeeding, and found positive effect [38]. In a meta analytic study by Lau, *et al*., which researched the effects of technology to improve breastfeeding among women in the perinatal period, technology was found to have significant positive effects. These effects were increases in the rates of starting feeding infants only with breast milk, the rates of feeding them only breast milk at the first and 6th months, and nutrition knowledge/behaviors of the mothers [39].

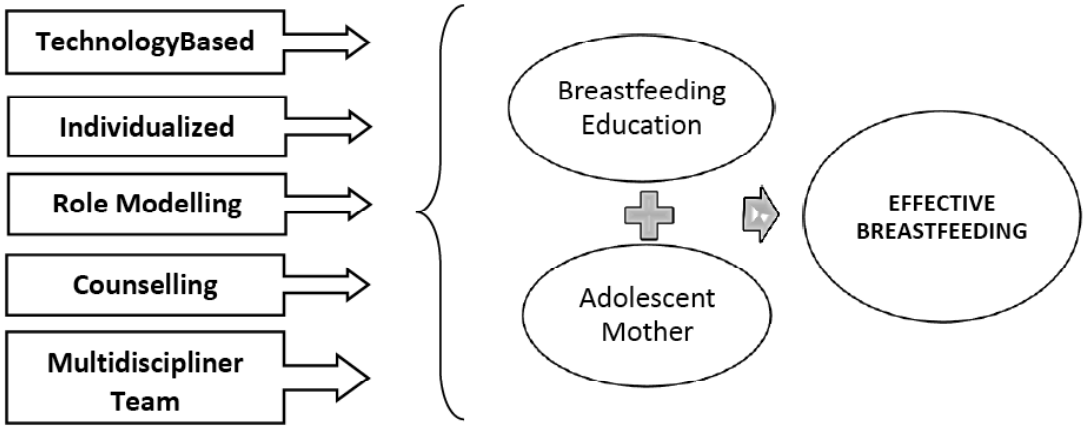

Figure 1: Components of breastfeeding approach planned for adolescent mothers and its impact on breastfeeding success [36, 38, 39].

Overall, adolescents thought that technology-based approaches were easy to use and understand, effective to reach and accept, had positive results to improve healty life behaviours. Most of the adolescents defined that they liked to use technology-based approaches in their life [35, 46-48]. Therefore, it would be beneficial to use technology-based approaches in developing effective health behaviors especially in adolescents. Health care providers should consider using technology -based approaches like program development, research, monitoring, counselling, social support, and education to improve the well-being of adolescents.

6. What could be done by Health Professionals to Prepare Education Programs?

WHO has developed an evidence-based program involving 6 areas to prevent adolescent pregnancy. The program has discussed the following subjects; preventing early marriage; preventing early pregnancy with sexual education, increased educational opportunities and economic-social support programs; increasing use of contraception; reducing sexual coercion; preventing unsafe abortions and increasing antenatal-postnatal care [21]. In adolescent pregnancies which occurred despite these precautions, breastfeeding is important to protect and promote health of infant as well as mother [49, 50].

Health professional has a significant role in preventing adolescent pregnancy, and in protecting, maintaining and promoting the mother's and infant's health, when an adolescent pregnancy occurs. Particularly midwives and nurses are the key health professionals in intiating and sustaining breastfeeding [51, 52]. It is considered that technology-based breastfeeding education programs which were created considering the developmental features of adolescent mothers along with the counsellor, caregiver, educator, researcher, collaborator and advocate roles of health professionals might be helpful.

CONCLUSION

Educating and supporting adolescent mothers who are at risk for breastfeeding is crucial. Technology-based breastfeeding programs can increase breastfeeding rates, duration and success; and improve breastfeeding/care skills of adolescent mothers; and also promote development of infants by decreasing nutritional problems. Consequently, life quality of adolescent mother and their infants improves, so raising a healthy generation can be ensured.

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