

Effect of prenatal counselling on compliance and outcomes of teenage pregnancy

F.A. Mersal,¹ O.M. Esmat¹ and G.M. Khalil²

أثر التوعية قبل الولادة على الامتثال والحصائل لحمل المراهقات

فتحية أحمد مرسال، أميمة محمد عصمت، غادة محمود خليل

الخلاصة: أجرت الباحثات دراسة تجريبية مُعشَّاة مضبوطة بالشواهد من أجل تقييم آثار التوعية قبل الولادة على الامتثال لمبادئ تعزيز الصحة، وعلى حصائل الحمل. وشملت الدراسة 86 مراهقة حاملاً ممن يراجعن مركزاً لصحة الطفل والأم في قرية الخصوص في مصر، وقد جمع الباحثون المعطيات قبل التوعية وبعدها وبعد الولادة. وفي الاختبار التالي للتوعية، أظهرت الحوامل من مجموعة الدراسة اللاتي تلقين التوعية قبل الولادة معارف أكبر بقدر يُعتدُّ به إحصائياً مع امتثال لمبادئ تعزيز الصحة أقل مما لدى مجموعة الشواهد ($P < 0.001$). أما في مجموعة الدراسة؛ فإن 90.7% منهن ولدن في تمام الحمل بالمقارنة مع 41.9% من مجموعة الشواهد كما أن 88.4% من مجموعة الدراسة كان لديهن ولادة مهبلية طبيعية بالمقارنة مع 76.7% من مجموعة الشواهد. وقد صنفت الباحثون الحالة الصحية لدى 90.7% من الولدان في مجموعة الدراسة على أنها جيدة في مقابل 46.5% فقط لدى مجموعة الشواهد. ثم إن 9.3% من الأطفال في مجموعة الدراسة كان وزنهم عند الولادة منخفضاً في مقابل 32.6% من مجموعة الشواهد ($P = 0.008$).

ABSTRACT To evaluate the effect of prenatal counselling on compliance for health promotion and pregnancy outcomes we conducted an experimental randomized control study on a sample of 86 teenage pregnant women attending the maternal and child health centre in Elkhosos village, Egypt. Data were collected pre-counselling, post-counselling and after delivery. At the post test, women in the study (counselling) group showed statistically significantly greater knowledge and compliance of health promotion ($P < 0.001$) than women in the control group. In the study group, 90.7% were full term at labour compared with 41.9% in the control group; 88.4% of the women in the study group had normal vaginal delivery compared with 76.7% of those in the control group. The health condition in 90.7% of the study group neonates was classified as good compared with only 46.5% in the control group. Only 9.3% of the study group babies had low birth weight compared with 32.6% of the control group babies ($P = 0.008$).

Effet des conseils prénatals sur l'observance de recommandations et sur l'issue des grossesses d'adolescentes

RÉSUMÉ Afin d'évaluer l'effet des conseils prénatals sur l'observance des recommandations favorisant une bonne santé et sur l'issue des grossesses, nous avons mené une étude contrôlée, randomisée et expérimentale sur un échantillon de 86 adolescentes enceintes consultant au centre de santé maternelle et infantile du village d'Elkhosos (Égypte). Des données ont été recueillies avant et après l'offre de conseils, puis après la naissance. Lors de l'évaluation suivant l'offre de conseils prénatals, les femmes du groupe à l'étude (conseils) montraient des connaissances favorisant une meilleure santé statistiquement plus importantes et étaient plus nombreuses à les appliquer ($P < 0,001$) que les femmes du groupe témoin. Dans le groupe à l'étude, 90,7 % ont mené leur grossesse à terme contre 41,9 % dans le groupe témoin ; 88,4 % des femmes du groupe à l'étude ont accouché par voie basse contre 76,7 % dans le groupe témoin. L'état de santé des nouveau-nés du groupe à l'étude a été jugé satisfaisant pour 90,7 % d'entre eux contre seulement 46,5 % dans le groupe témoin. Seuls 9,3 % des enfants du groupe à l'étude présentaient un faible poids de naissance contre 32,6 % des enfants du groupe témoin ($P = 0,008$).

¹Department of Community Health Nursing, Faculty of Nursing, Ain-Shams University, Cairo, Egypt (Correspondence to F.A. Mersal: khomarkh@yahoo.com).

²Department of Public Health, Faculty of Medicine, Zagazig University, Zagazig, Egypt.

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Introduction

Teenage pregnancy is a worldwide phenomenon affecting both developed and developing countries [1]. About 15 million women/girls aged under 20 years give birth each year, roughly 11% of all births worldwide. The vast majority of these births, almost 95%, occur in developing countries [2]. In Egypt, by the age of 19 years, one-fifth of married women have already begun childbearing [3].

Adolescent pregnancy is one of the main issues in every health care system since early pregnancy can have harmful implications on girls' physical, psychological, economic and social status [4]. A girl who becomes pregnant while still a teenager faces a multitude of problems: she faces motherhood prematurely, usually before her own maturation has been completed [5]. Potentially severe medical complications place both the mother and infant at risk for illness and death.

Teenage mothers often have poor antenatal care as they do not always attend their antenatal appointments; they tend to deliver more low birth-weight babies, premature babies and babies who die during the first year of their life [4]; infant mortality and morbidity rates are higher for infants born to teenage mothers than infants born to older women [6].

Education is a key aspect of nursing care provided during the prenatal period. Appropriate education may result in positive outcomes for the mother and her infant. [7,8]. To achieve healthy outcomes, pregnant women must be offered relevant health education and health promotion information throughout their pregnancy [9]. Pregnant adolescents who receive little or no prenatal care have higher rates of complications than those who receive adequate care [10].

Prenatal health education is an important strategy for reducing prenatal

health disparities for women who are members of a vulnerable population [11]. Nurses and health care providers are in a position of being able to provide counsel and communication to the clients with a multitude of problems. They are in a unique position to develop interventions that will impact and enhance patients' ability to adhere to their prescribed regimens [12]. Receiving adequate counselling during pregnancy has an impact on delivering healthy infants and decreases the risk of low birth weight [13]. Patterson et al. reported that women who engage in self-care behaviours, change their diets, rest, exercise, and consume no alcohol or medications seek safe passage for their infants and themselves [14].

The aim of this study was to evaluate the effect of prenatal counselling on teenage pregnancy knowledge, compliance with health promotion in teenage pregnancy and pregnancy outcomes.

Methods

We conducted this randomized controlled study at Elkhosos, a village in El-Kalubia Governorate, Egypt, with a population of 167 055. This village has 1 maternal and child health centre, affiliated to the Ministry of Health and Population, and this is where our study was carried out.

For the postnatal assessment, however, we visited the homes of the mothers and neonates to collect information on the birth and the outcomes of pregnancy (43 mothers and their babies in the experimental group and 43 in the control group).

Sampling

All the pregnant teenage women who participated in this study were attending the antenatal clinic in the maternal and child health centre.

Inclusion criteria were: under 20 years of age; primigravida, in second trimester; had not participated in any

previous educational programme regarding health promotion; and free from noncommunicable disease (heart disease, diabetes, hypertension).

We invited a total of 103 women to participate in the study; 10 of these women were unwilling to participate for various reasons, including illness and lack of time. We divided the participants into two groups, 47 in the study group and 46 in the control group. However, 4 were excluded from the study group and 3 from the controls owing to incomplete data. The total number of participants was, therefore, 86 teenage pregnant women, 43 in each. The women in the study group were given the education intervention and the women in the control group had no intervention.

Ethical considerations

Oral verbal consent to take part in the study was obtained from the teenage pregnant women in our sample. The purpose of the study was explained to the women prior to their consent. They were assured about anonymity, confidentiality of the data and their right to withdraw from the study at any time with no penalty.

Pilot study

A pilot study was carried out on 5 pregnant teenage women who were not included in the later study. The aim of the pilot study was to test clarity, simplicity and applicability of the study tools.

Data collection was carried out via interviews conducted by the researchers. We used a structured questionnaire covering personal characteristics, knowledge regarding health promotion needs and health promotion activities; a compliance tool (designed by the researchers); and a physical assessment, which covered present health condition, postnatal health condition and physical assessment of the neonate (through home visit 3–6 days after delivery).

Implementation phase

Data collection was carried out over 3 days per week during the period September 2008–March 2009. The pre-intervention test was done for 86 pregnant teenagers over a period of 2 months. The implementation phase lasted for 5 months to assess the outcome of the pregnancy. The prenatal counselling programme was designed by the researchers and based on the information obtained from the pre-test study tools and findings from similar research; it was revised and modified according to the related literature. The post test was conducted in the MCH on all participants 3 months after the pre-test. Pregnancy outcome was assessed in the home 3–6 days after delivery.

According to the assessment phase and agreement that was obtained in the first session, counselling was implemented in the maternal and child health room; 3–4 sessions were conducted for each teenage pregnant woman.

Data were revised, coded, and tabulated and analysed using SPSS, version 16. $P < 0.05$ was considered statistically significant.

Results

The age of the women in the 2 groups was similar, ranging from 15 to 18 years. Mean age was 16.33 [standard deviation (SD) 1.26] years for the study group and 16.92 (SD 1.23) years for the control group ($P = 0.71$) (Table 1). Age at marriage ranged from 14 to 18 years. Mean age at marriage was 15.33 (SD 1.19) years in the study group and 15.55 (SD 1.31) years in the control group ($P = 0.42$). There was a statistically significant difference between the 2 groups in regard to education level: 69.8% of the study group and 37.2% of the control group had less than secondary education ($P = 0.002$). The recruitment visit was the first antenatal clinic visit for 76.6%

of the study group and 79.1% of the control group ($P = 0.79$).

Table 2 illustrates the general health condition of our pregnant teenage participants. The mean body mass index was 28.62 (SD = 5.04) kg/m² in the study group and 30.64 (SD = 5.17) kg/m² in the control group ($P = 0.07$). Also, 18.6% of the study group and 14.0% of the control group had had a previous abortion ($P = 0.05$).

The most common complaint in the study group was muscle cramps and in the control group anaemia (Table 2). Only muscle cramps, nausea and constipation differed significantly between the 2 groups.

Table 3 illustrates the knowledge about health promotion aspects among teenage pregnant women in the study and control groups before and after the counselling programme. Before the intervention, around half of the participants in each group had satisfactory knowledge with regard to nutrition but less than 50% had

Table 1 Distribution of teenage pregnant women according to personal characteristics

Characteristic	Study group	Control group	P-value
	(n = 43)	(n = 43)	
	%	%	
Education level			
Less than secondary	69.8	37.2	0.002
Secondary	30.2	62.8	0.80
Occupation			
Housewife	76.7	74.4	0.80
Student	23.3	25.6	0.04
Type of family			
Nuclear	79.1	74.4	0.79
Extended	20.9	25.6	
Monthly income/basic needs			
Sufficient	51.2	30.2	0.048
Insufficient	48.8	69.8	
No. of antenatal visits			
1	76.6	79.1	0.79
2	23.3	20.9	
	Mean (SD)	Mean (SD)	
Age (years)	16.33 (1.26)	16.92 (1.23)	0.71
Age at marriage (years)	15.33 (1.19)	15.55 (1.31)	0.42

SD = standard deviation.

Table 2 Distribution of teenage pregnant women according to their health condition

Health parameter	Study group (n = 43)		Control group (n = 43)		P-value
	No	%	No	%	
Albumin in urine	4	9.3	6	14	0.5
Previous abortion	8	18.6	6	14	0.5
Most common complaint					
Muscle cramps	30	69.8	18	41.9	0.009
Anaemia (Hb < 11 g/dL)	26	60.5	29	67.5	0.5
Nausea	22	51.2	11	25.6	0.01
Haemorrhoids	21	48.8	16	37.2	0.27
Heartburn	20	46.5	14	32.6	0.18
Headache	15	34.9	22	51.2	0.12
Shortness of breath	7	16.3	12	27.9	0.19
Constipation	4	9.3	14	32.6	0.008
	Mean (SD)		Mean (SD)		
BMI (kg/m ²)	28.62 (5.04)		30.64 (5.17)		0.07
Haemoglobin	10.86 (1.06)		10.28 (1.11)		0.7

BMI = body mass index; SD = standard deviation.

satisfactory knowledge regarding the other items, with exercise being the lowest (Table 3). Before the programme, there was no statistically significant difference for knowledge between the 2 groups. After the programme there was a great improvement in health promotion knowledge in the study group but not in the control group, with a statistically

significant difference between the 2 groups for all items ($P < 0.001$).

Table 4 describes the adequacy of compliance with certain aspects of health promotion in the study and control groups. At the pre-test, no statistically significant differences were present between the study and control groups as regards compliance to certain aspects of health promotion. At the post-test,

after the counselling programme, the study group had statistically significantly better compliance compared to the women in the control group ($P < 0.001$) except for compliance to medication use.

Only 4 of the babies born to mothers in the study group were pre-term (< 38 weeks) while 18 of the mothers in the control group had pre-term babies

Table 3 Distribution of teenage pregnant women according to satisfactory knowledge regarding aspects of health promotion pre- and post-counselling

Item	Satisfactory knowledge (%)					
	Pre-counselling			Post-counselling		
	Study group (n = 43)	Control group (n = 43)	P-value	Study group (n = 43)	Control group (n = 43)	P-value
Nutrition	51.2	46.5	0.66	93.0	44.2	< 0.001
Smoking	46.5	37.2	0.38	95.3	55.8	< 0.001
Clothing	46.5	32.6	0.18	93.0	37.2	< 0.001
Ante-natal follow-up	44.2	23.3	0.04	93.0	23.3	< 0.001
Rest & activity	44.2	39.5	0.66	95.3	39.5	< 0.001
Travelling	44.2	37.2	0.51	97.7	37.2	< 0.001
Medication use	41.9	20.9	0.03	93.0	32.6	< 0.001
Danger signs	37.2	39.5	0.8	100.0	37.2	< 0.001
Minor discomfort	37.2	39.5	0.8	83.7	39.5	< 0.001
Immunization	37.2	41.9	0.6	100.0	48.8	< 0.001
Hygiene	32.6	37.2	0.65	83.7	53.5	0.003
Exercise	23.3	18.6	0.26	95.3	30.2	< 0.001

Table 4 Distribution of teenage pregnant women according to pre- and post-counseling compliance regarding aspects of health promotion

Parameter	Pre (adequate compliance)			Post (adequate compliance)		
	Study	Control	<i>P</i> -value	Study	Control	<i>P</i> -value
	%	%		%	%	
Antenatal follow-up	14.0	20.9	0.3	95.3	16.3	< 0.001
Nutrition	20.9	16.3	0.57	90.7	16.3	< 0.001
Exercise	0.0	0.0	-	60.5	9.3	< 0.001
Hygiene	39.5	46.5	0.51	100.0	41.9	< 0.001
Rest & activity	48.8	32.6	0.12	74.4	44.2	0.004
Immunization	53.5	44.2	0.38	100.0	60.5	< 0.001
Smoking	23.3	16.3	0.41	100.0	16.3	< 0.001
Medication use	55.8	51.2	0.66	76.7	72.1	0.24
Travelling	32.6	37.2	0.65	100.0	44.2	< 0.001
Clothing	44.2	55.8	0.28	100.0	51.2	< 0.001

($P = 0.001$) (Table 5). There was a statistically significant difference between the study and control groups regarding occurrence of complications during labour ($P = 0.003$).

There were also statistically significant differences in regard to the general health of the babies in the 2 groups: 30 of the 43 mothers in the study group had babies with good general health compared with only 20 of the 43 mothers in the control group ($P < 0.001$) (Table 5); 4 of the babies in this group were stillborn.

Birth weight (low/normal), breast feeding (exclusive/not exclusive/artificial) and the condition of the umbilicus (clean/septic/bloody) also showed statistically significant differences between the 2 groups (Table 5).

Discussion

Although the legal age for marriage in Egypt at the time of our study was 16 years for females and 18 years for males, the mean age at marriage of the pregnant women in our study was 15.33 years for the study group and 15.55 years for the control group, indicating that under-age marriage is still a concern. A recent study on teenage mothers in India showed similar results. Although

the legal age for marriage is 18 years for females and 21 years for males in India, early marriage is common [15]; by age 15 years, 26% of females are married.

As is usual in Egyptian culture, all the teenage pregnant women in our study were married and received support from their families. Also, fertility is highly valued: reproduction is encouraged by religious and social beliefs and the wife has higher self-esteem after having children.

More than 70% of our participants had made only 1 visit to the antenatal care clinic. Similarly, antenatal care services in Indonesia are still underutilized. Approximately 95% of pregnant women in Indonesia attended at least 1 antenatal care visit, but only 66% had made the recommended 4 visits [16].

The prevalence of anaemia in the study and control groups was quite high, over 60%. In developing countries over 50% of pregnant women suffer from iron deficiency anaemia [17]. It is also prevalent among adolescent girls because the growth spurt and onset of menstruation increase iron requirements. Iron supplementation during adolescence is one of the strategies advocated to improve iron balance in pregnancy [18].

Our findings indicated a deficit in knowledge and compliance with health

promotion actions in the 2 groups. After the programme, an improvement was noted in the study group but not the control group. Education about the importance of good nutrition before and during pregnancy should be given to adolescents, including information about the obstetric complications resulting from poor nutritional status in pregnancy. Nutritional deficiencies in pregnancy have been found to contribute to poor maternal outcomes [19,20]. This is supported by Reron et al., who suggest that pregnant women do not make significant changes in their nutrition habits because they are insufficiently informed about the importance of a healthy diet during pregnancy [21].

In a study of lifestyle practices of Jordanian pregnant women, it was found that the physical activity behaviour, which measures the women's ability to follow a regular exercise pattern, was ranked last among the health-promoting lifestyle behaviours [13]. Our participants also showed little knowledge of the benefits of exercise pre-counselling. In the study group however, after counselling, over 95% of the women demonstrated satisfactory knowledge.

Our findings were in accordance with those of Maimbola, Ahmed and Ransjo-Arvidson, who stated that health promotion is an essential component

Table 5 Distribution of teenage pregnant women regarding pregnancy outcomes according to their attendance to counselling programme

Parameter	Study group (n = 43)		Control group (n = 43)		P-value
	No.	%	No	%	
Gestational age at labour					
At term (38–42 weeks)	39	90.7	25	58.1	0.001
Pre-term (< 38 weeks)	4	9.3	18	41.9	
Type of delivery					
Normal vaginal	38	88.4	33	76.7	0.15
Caesarean section	5	11.6	10	23.3	
Complications during labour	5	11.6	17	39.5	0.003
Obstructed labour	2	4.7	8	18.6	0.04
Vaginal bleeding	2	4.7	5	11.6	0.43 ^a
Tears of perineum	1	2.3	4	9.3	0.35
Pregnancy outcome					
Full-term baby	39	88.4	25	58.1	0.006
Pre-term baby	4	9.3	12	27.9	
General condition of baby					
Good	39	90.7	20	46.5	< 0.001
Bad	4	9.3	19	44.2	< 0.001
Dead	0	0	4	9.3	0.12 ^a
Birth weight					
Low (< 2.5 kg)	4	9.3	14	32.6	0.008
Normal (2.5–3.5 kg)	39	90.7	29	67.4	
Breastfeeding					
Exclusive	35	81.4	16	37.2	< 0.001
Not exclusive	6	14	23	53.5	< 0.001
Artificial	2	4.7	4	9.3	0.67 ^a
Umbilicus					
Septic	4	9.3	18	41.9	< 0.001
Clean	36	83.7	16	37.2	< 0.001
Blood	3	7	9	20.9	0.06

^aYates corrected χ^2 .

of antenatal care: it provides the opportunity for the individual pregnant adolescent mother to discuss her health, pregnancy, labour and plans for childbearing and child care [22]. Counselling on health promotion and disease prevention and cure is a fundamental part of any medical consultation. It has a direct impact on patient health and an overall impact on the burden of disease in the community [23].

Our data confirm the findings of other investigators who indicated that antenatal care provides an opportunity to educate the pregnant woman

about pregnancy and childbirth [24]. Antenatal education programmes are a very important component of antenatal care worldwide since they encourage women themselves contribute for a better pregnancy outcome and care of the neonate [25,26].

We found that pregnancy outcomes were better in the study group compared with the control group. This agreed with the findings of other studies which found rates of stillbirths to average about 50% higher for adolescent mothers compared with mothers in their 20s [27]. Too-early childbearing

also has a negative impact on the survival of babies. A large American study found a 55% greater risk of neonatal death in babies of mothers aged 10–15 years, a 19% higher risk in babies of 16–17-year-olds, and a 6% higher risk in babies of 18–19-year-olds [28]. A study in Latin America found a 50% greater risk of neonatal death in babies of mothers aged under 16 years [29]. Large national surveys show neonatal death risk levels are typically 50%–100% higher in babies of adolescents compared with those of older women [30]. Studies have shown an independent

adverse effect of early pregnancy on newborn health conditions such as pre-term birth, low birth weight, small for gestational age, asphyxia and malformations [2]. Flynn, Budd and Modelski concluded that pregnant adolescents are a very vulnerable population, experiencing disproportionately high rates of adverse birth outcomes [31]. In a review of 14 studies, Coren, Barlow and Stewart-Brown concluded that educational interventions can have a positive

impact on outcomes for this vulnerable group [32].

In agreement with our findings, Grady and Bloom found that a positive, supportive prenatal health experience may encourage and empower adolescents to care for themselves and their children [33]. Some research on teenage pregnancy has indicated that with good psychosocial support and appropriate and adequate prenatal care, teenagers could have similar

pregnancy outcome to that of older women [34,35].

In this study we have demonstrated that prenatal health education is an important and successful strategy for reducing health disparities for women who are members of a vulnerable population. This is supported in other research [11]. Prenatal health education should be an integral part of prenatal care as a means of improving the perinatal outcomes for women and their infants.

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Saving the lives of mothers and children in the Region

Addressing the health of mothers and children is at the heart of the Millennium Development Goals (MDGs) and health and development index. It is the subject and focus of several United Nations and WHO resolutions adopted by all Member States.

To reduce mortality among mothers and children, the World Health Organization (WHO), United Nations Children's Fund (UNICEF) and the United Nations Population Fund have jointly organized a high-level meeting "Saving the lives of mothers and children: accelerating progress towards achieving MDGs 4 and 5 in the Region". The meeting will take place in Dubai, United Arab Emirates, from 29 to 30 January 2013, under the patronage of Her Royal Highness Princess Haya Bint Al Hussein, wife of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of the United Arab Emirates and Ruler of Dubai. The high-level meeting will be in the form of a global forum featuring unique partnerships to address the increase in mother and child mortality rates in the Eastern Mediterranean Region.

Further information about the work of WHO in the Region to improve the health of mothers and children can be found at: www.emro.who.int/health-topics/child-health-and-development/ and www.emro.who.int/entity/rhrn/