Impact of the 'Providing Access to Continued Education' Programme on Repeat Teenage Pregnancy in The Bahamas

VP Sakharkar[1], MA Frankson[1], PR Sakharkar[2]

ABSTRACT

Objective: *To determine the relationship of determinants such as age, ethnicity, education and sexual behaviour with repeat teenage pregnancy and to determine the impact of 'Providing Access to Continued Education' (PACE) programme in reducing repeat teenage pregnancy amongst its participants in The Bahamas.*

Subjects and Methods: *This retrospective cohort study included 397 attendees of the Adolescent Health Centre (AHC). Eighty-eight out of 139 registered participants completed the PACE programme. Data on age, ethnicity, education, sexual behaviour and repeat pregnancy in two years were analysed for descriptive statistics, and association of demographic characteristics and participation in the PACE programme with repeat pregnancy using the Chi-squared test.*

Results: *Mean age of participants was 16.4 ± 1.1 years; median school grade and mean grade point average (GPA) was 11 and 1.97 ± 0.7, respectively. The mean age at the first sexual activity was 14.9 ± 1.2 years. The mean age and number of sexual partners were 21 ± 4.3 years and 2 ± 1, respectively. Overall, repeat pregnancy rate was 39%: 37.4% amongst PACE registered and 31.8% amongst PACE completed mothers. No significant difference was observed in repeat pregnancy between registered and non-registered as well as those who completed the programme and those who did not. The odds ratio of 0.525 suggested that completion of the PACE programme had a moderate protective effect on reducing repeat pregnancy.*

Conclusion: *Age, ethnicity, education and sexual behaviour showed no association with repeat pregnancy. The PACE programme did not reduce repeat pregnancy rate significantly. However, completion of the programme offered a moderate protection.*

Keywords: Educational performance, PACE programme, repeat teenage pregnancy, sexual behaviour

Impacto del programa 'Brindando acceso a la educación continua' sobre la repetición del embarazo en adolescentes en las Bahamas

VP Sakharkar[1], MA Frankson[1], PR Sakharkar[2]

RESUMEN

Objetivos: *Determinar la relación de determinantes tales como edad, etnia, educación y conducta sexual con la repetición del embarazo adolescente, y determinar el impacto del programa 'Brindando acceso a la educación continua' (BAEC) en la reducción de la repetición del embarazo adolescente entre sus participantes en las Bahamas.*

Sujetos y métodos: *Este estudio de cohorte retrospectivo incluyó 397 asistentes al Centro de Salud Adolescente (CSA). Ochenta y ocho de los 139 participantes inscritos completó el programa BAEC. Los datos de edad, etnicidad, educación, comportamiento sexual y repetición del embarazo en dos años, se analizaron para realizar una estadística descriptiva y determinar la asociación de las características demográficas y la participación en el programa de BAEC con la repetición del embarazo utilizando la prueba de chi-cuadrado.*

Resultados: *La edad promedio de los participantes fue 16.4 ± 1.1 años. El grado escolar promedio*

From: [1]School of Clinical Medicine and Research, The University of the West Indies, Nassau, Bahamas and [2]Roosevelt University College of Pharmacy, Schaumburg, IL, USA.

Correspondence: Dr V Sakharkar, PO Box GT-2590, Shirley Street, Nassau, Bahamas. Fax: (242) 356-5289; e-mail: mruganayani@gmail.com

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y el promedio general de calificaciones (PGC) fueron 11 y 1.97 ± 0.7, respectivamente. La edad promedio de la primera actividad sexual fue 14.9 ± 1.2 años. La edad promedioa y el número de parejas sexuales fueron 21 ± 4.3 años y 2 ± 1, respectivamente. En general, la tasa de repetición del embarazo fue 39%: 37.4% entre las registradas en BAEC y 31.8% entre las madres en el BAEC. No se observó ninguna diferencia significativa en la repetición del embarazo entre las registradas y las no registrados, así como tampoco entre aquellas que completaron el programa y las que no lo completaron. El cociente de probabilidades 0.525 sugirió que la culminación del programa BAEC ttuvo un efecto de protección moderado en cuanto a hacer posible la reducción de la repetición del embarazo.

Conclusión: *La edad, etnia, educación y conducta sexual no mostraron ninguna asociación con la repetición del embarazo. El programa BAEC no redujo significativamente la tasa de repetición del embarazo. Sin embargo, completar el programa ofreció una protección moderada.*

Palabras claves: rendimiento escolar, programa BAEC, repetición del embarazo en las adolescentes, conducta sexual

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INTRODUCTION

Teenage pregnancy is a well-known public health problem. Complications like low birthweight, preterm birth, poor maternal nutrition and an increased rate of operative deliveries are related to teenage pregnancy. Teenage motherhood has social and psychological implications apart from direct physical effects on the mother's health. The experience of pregnancy can heighten teenage mothers' health awareness, especially family planning measures that can help them make wise reproductive choices to avoid repeat pregnancy. However, the literature suggests that teenage mothers are at higher risk for repeat pregnancy than those who were never pregnant before (1, 2). Teenagers who have given birth before are likely to have inadequate prenatal care and increased perinatal and neonatal mortality, and those who had an abortion before are found to be at high risk for stillbirth and preterm birth (3).

In 2008, almost 12% of the total births in The Bahamas occurred to mothers who were aged below 20 years (4), but estimates on repeat teenage pregnancy are lacking. Most teenage mothers in The Bahamas receive comprehensive care at the Adolescent Health Centre (AHC) located in Nassau and almost half of them attend the 'Providing Access to Continued Education' (PACE) programme. The PACE programme is a combined effort of non-governmental organizations and the Government of The Bahamas which includes the Ministries of Education, Health and Labour and Social Development. The mission of the PACE programme is to provide education and support to teen mothers and promote awareness and develop policies that reduce both teen pregnancy and unplanned pregnancy among young teens (5). As reflected in the PACE programme's information brochure, the motto of this programme is "To foster, strengthen and motivate, to build integrity and character in teen mothers" and its major goals are "To create hope, to inspire change and to develop growth amongst the teenage mothers".

The PACE programme provides parenting skills, safe sex and family planning education, education on the health needs of babies and mothers, social and psychological support to teenage mothers and assistance in continuation of their education. Neither its health education nor the continuing education component has ever been formally evaluated. The current study is an attempt to determine the relationship of determinants such as age, ethnicity, education and sexual behaviour with repeat teenage pregnancy and to determine the impact of the PACE programme in reducing the rate of repeat pregnancy amongst its participants.

SUBJECTS AND METHODS

This was a retrospective cohort study comparing teenage mothers who participated in the PACE programme *versus* who did not. Teenagers attending AHC were the target population. Teenagers who were 19 years or younger, first time pregnant and attended AHC from 1st January 2007 to 31st December 2008 were included in the study. The exclusion criteria were attendees above 19 years of age, having a second or subsequent pregnancy, attending clinic other than AHC and with incomplete or missing record of index pregnancy. Data on age, ethnicity, education, sexual behaviour and PACE referral were collected from the antenatal records at the AHC. All of the teenagers were followed up for two years from their first pregnancy outcome, which could have been a full-term or preterm delivery or an abortion. The pregnancy outcome data were obtained from the computerized database at Princess Margaret Hospital. Any record of delivery or miscarriage during the two-year follow-up period was considered as a repeat teenage pregnancy. Teenage pregnancy was defined as a pregnancy in women under 20 years at the time of antenatal booking at the AHC. Repeat teenage pregnancy was defined as pregnancy occurring within 24 months of the last pregnancy outcome, regardless of mother's age at subsequent pregnancy. Forty-nine participants in each group was determined as an appropriate sample using a standard equation determining independent cohort studies sample size given alpha at 0.05 and power of 80%.

A total of 463 teenagers were registered at the AHC during the two-year study period (Figure). A total of 397 records

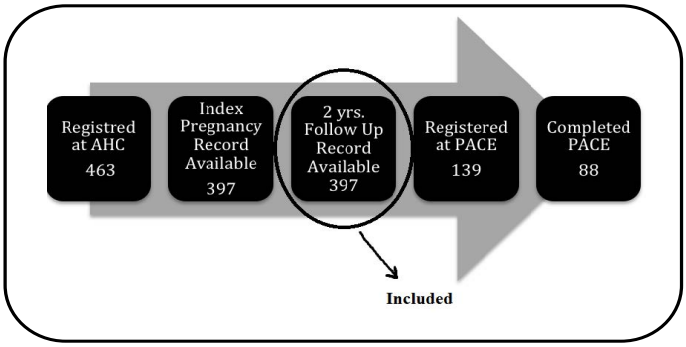

Figure: Diagram showing sample selection.

were included after excluding six records with second pregnancy and 60 with incomplete records. One hundred and thirty-nine out of 397 participants were registered in the PACE programme. The PACE programme coordinator had a preset criteria for determining participants' programme completion. Participants attending at least 50% of the health and continuing education classes, motivational activities, and completing assigned craft projects are awarded a certificate of completion. Passing of The Bahamas Junior Certificate (BJC) or The Bahamas General Certificate of Secondary Education (BGCSE) examination is another criterion used for programme completion. Eighty-eight teenage mothers completed the PACE programme successfully during the study period. The study was approved by joint University of the West Indies (UWI)–Public Hospital Authority of the Bahamas Ethics Committee.

Data were analysed for descriptive and inferential statistics including association between age, ethnicity, education and sexual behaviour with repeat teenage pregnancy using the Chi-squared test. All analyses were performed using the Statistical Package for Social Sciences (IBM SPSS) version 17.0 for Windows. All analyses were conducted at 0.05 significance level.

RESULTS

Participants' demographic and educational data are summarized in Table 1. The majority of the study participants were Bahamian (87.2%) and attended public schools (93.2%). Three hundred and forty-nine (87.4%) participants attended school on New Providence Island, while 39 (9.9%) attended schools on other Family Islands, mostly attending public schools (96.2%). Seven (1.3%) had attended school in Haiti. The grade point average (GPA) of participants ranged from 0 to 3.81, with a mean of 1.97 (± 0.7). The mean GPA of the participants who had repeat pregnancy was 1.88 (± 0.62) and of those with no repeat pregnancy was 2.18 (± 0.68). Their sexual partner's age ranged from 14 to 49 years, with a mean of 21 (± 4.37) years. Just over four in five (83.2%) of the partners were between the ages of 17 and 25 years, while 5.4% were below the age of 17 years. Mean age at first sexual activity among participants was 14.9 ± 1.2 years and the mean number of sexual partners was two. Of the 397 participants, only one was married.

The overall repeat pregnancy rate was 39%. Associations of repeat pregnancy with factors of interest are summarized in Table 2. These results shows that age at the first pregnancy, school grade and GPA, attendance at private or public schools, ethnicity and age of the partner had no association with repeat pregnancy. No statistically significant difference was observed for the incidence of repeat pregnancy in participants registered with PACE and those who were not.

Table 1: Demographic characteristics (n = 397)

Characteristics	Value
Age (years), mean ± SD (range)	16.3 ± 1.1 (13−19)
Education, median grade (range)	11 (5−12)
Ethnicity, n (%)	
Bahamian	346 (87.2)
Haitian	26 (6.5)
Haitian-Bahamian	19 (4.8)
Jamaican	5 (1.3)
American	1 (0.25)
Education and sexual behaviour	
Mean grade point average (GPA) ± SD (range)	1.97 ± 0.7 (0−3.81)
Mean age at first sexual activity (years) ± SD (range)	14.9 ± 1.2 (12−17)
Mean number of sexual partners ± SD (range)	2.1 ± 1.5 (1−10)
Mean age of sexual partner (years) ± SD (range)	20.9 ± 4.37 (14−49)

Table 2: Association of repeat pregnancy with factors of interest

		Repeat pregnancy		X^2	CI	*p*
		Yes	No			
Age (years)	≤ 15	31	51	0.07	0.65-1.76	0.79
	>15	124	191			
Education (grade)	< 10	26	29	1.8	0.38, 1.2	0.18
	≥ 10	128	211			
Ethnicity	Bah	136	210	0.03	0.57, 1.94	0.87
	NBah	19	32			
Partner's age (years)	≤ 25	130	213	0.94	0.73, 2.57	0.33
	> 25	20	24			
GPA	≤ 2.00	82	115	0.93	0.53, 1.23	0.33
	> 2.00	62	107			
School	Private	6	14	0.75	0.59, 4.09	0.38
	Public	147	223			
PACE registered	Yes	52	87	0.24	0.59, 1.37	0.62
	No	103	155			
PACE completed	Yes	28	60	3.2	0.26, 1.07	0.07
	No	24	27			

*df = 1, CI: 95%, *p* = two-tailed, missing data not included
Bah: Bahamian; NBah: Non-Bahamian; GPA: grade point average; PACE: Providing Access to Continuing Education

A closer look at 139 participants registered at the PACE programme revealed that there was a 47% repeat pregnancy among 51 of its participants who did not complete the programme. On the other hand, of 88 who completed the PACE programme, 31% had repeat pregnancy ($x^2 = 3.2$, df = 1; $p = 0.07$). Although, there was no significant association observed

between completion of the PACE programme and repeat pregnancy, the OR of 0.53 (95% CI: 0.26, 1.1), suggests a moderate protection against repeat pregnancy. This study did not find any association of age at the first pregnancy with repeat pregnancy. However, both older (age 18 years) and younger (age 13 years) teenagers were noted to have more repeat pregnancies than others.

DISCUSSION

The overall repeat pregnancy rate of 39% at 24 months in this study was comparable with findings reported by Coard *et al* (36%) and Damle *et al* (35%) but higher than those from Barnet *et al* (19%) and Nelson [23–26%] (6−9). This rate was comparable with one regional study from Jamaica (10), which looked at the impact of the Women's Centre of Jamaica Foundation programme on repeat pregnancy. In this Jamaican study, repeat pregnancy rate among programme participants was 37% compared to 60% among non-participants after four years. Registration with or completion of the PACE programme did not show statistically significant reduction in the rate of repeat teenage pregnancy. Programmes similar to the PACE also showed less or no reduction in repeat pregnancies (8, 11, 12). This study did not find any association for age at the first pregnancy with repeat pregnancy. However, both older (age 18 years) and younger (age 13 years) teenagers had higher rates of repeat pregnancy than others, which is consistent with findings reported by many authors (9, 13–15), who have found immaturity of the mother as a more likely determinant of repeat pregnancy, whereas older teenagers are likely to get pregnant intentionally, being independent. Additionally, Omar *et al* (16) found older age at first pregnancy to be a determinant of repeat pregnancy.

In this study, participants' poor level of education is reflected in their GPA score. A lower GPA is a sign of lack of interest in school and low desire for achievement, which was found to be associated with repeat teenage pregnancy (11). Mean age at first sexual activity of PACE participants was 14.9 years, which is lower than for the average American teenagers, who had their first sexual activity at about 17 years of age (17).

Raneri and Weimann have noted that if the partner was older by five or more years, the risk of repeat pregnancy was higher (18). No such association was found in this study.

Even though completion of the PACE programme seems to offer some protection, it did not significantly reduce the rate of repeat teenage pregnancy. These results are consistent with the observation of Webster and Weeks (12), where teen empowerment programmes such as job training, GED preparation, school completion *etc* have shown little or no effect in reducing subsequent pregnancies. Most successful repeat teenage pregnancy prevention programmes indicated a strong contraception support arm (2).

There is an obvious disconnect between the PACE programme's mission and goals. The desire to reduce teenage pregnancy rate is expressed in its mission, but goals listed are vague and difficult to measure. This disconnect may have influenced the planning of various activities at PACE without focus on measurable outcomes. This could be a major issue in the design of the PACE programme that might explain its non-significant impact on reducing the rate of repeat teenage pregnancy.

This was the first evaluation exercise on the impact of the PACE programme on repeat teenage pregnancy. This study has provided a snapshot on the rate of repeat teenage pregnancy in The Bahamas and also evaluated the impact of the PACE programme in reducing it. However, being a retrospective record review, we could not conduct in-depth analysis of the determinants of repeat teenage pregnancy. Use of a computerized data system in a public hospital has excluded clients seeking medical care privately or abroad, which might have also influenced our results.

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