ORIGINAL ARTICLE

Factors Associated with Obstetric and Perinatal Outcomes among Pregnant Teen/Adolescent Filipino 13–19 years old in a Tertiary Hospital

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ABSTRACT

Background. The 2013 National Demographic and Health Survey (NDHS) showed that 1 in 10 young Filipino women aged 15–19 years are childbearing. Yet, teenage pregnancy is known to be associated with complications in the mother and the child.

Objective. This study aimed to describe the sociodemographic characteristics and obstetric and perinatal outcomes of teenage pregnancy among Filipino women aged 13–19 years at the Philippine General Hospital.

Methods. This is a retrospective study consisting of reviewing the hospital records of teenage mothers from years 2014–2016. Descriptive statistics were used to analyze the gathered data.

Results. Almost 50% of the cases of adolescent pregnancy yielded obstetric and perinatal complications. The odds of having abnormal obstetric outcome among mothers with obstetric score of g1 is 7.8 times (95% CI: 2.0 to 30.7) higher as compared to other gravida scores and the odds of having at least one perinatal disorder decreases by 19% (95% CI: 6% to 30%) as the mothers regularly visit an obstetric clinic. This study also showed that among the pregnant adolescents, most of their partners were of legal age. Thirty-nine (23.9%) of them were seen by the Adolescent Service while 31(19%) were seen by the Child Protection Unit (CPU).

Conclusion. With the noted obstetric and perinatal outcomes, teenage pregnancy is an important issue that needs to be dealt with. To ensure good outcomes, provision of health care services designed particularly to cater to the needs of adolescent mothers should be properly and timely implemented. A referral to the Adolescent Service and CPU will greatly improve policies pertaining to provision of holistic care and protection services to teenage mothers.

Keywords: teenage pregnancy, adolescent pregnancy, obstetric and perinatal outcomes

INTRODUCTION

Teenage pregnancy, as defined by the UNICEF, is a state of bearing a child among adolescent women aged 13–19 years old.[1] According to the World Health Organization (WHO), many adolescent women aged between 15 and 19 years get pregnant and accounts for 11% of all births worldwide. Most of these births, around ninety-five percent usually occur in low and middle-income countries.[2] In the Philippines, results of the 2013 National Demographic and Health Survey (NDHS) show that 1 in 10 young Filipino women aged 15–19 years have begun their child bearing years. The survey also showed that early childbearing is common among women who belong to the lower strata of the society and with lower educational attainment.[3,4]

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In a local study done in 1998 by De Guzman, unemployment of mother, poor educational background, and single status were common characteristics of adolescents included in the study. It was reported that the mean age of their partners are older (23 years old) while the mean age of adolescents who got pregnant was 17.9 years.[5] In a study by Scales, mentioned in the same study, males tend to have more power in their sexual relationship due to noted differences in age and sex roles at that time.[6] In a more recent study done by Garcia (2005), significant risk factors affecting teenage pregnancy include also having an older sexual partner, parental unemployment, having a live-in partner while in there adolescent years, being an out of school youth, monthly family income is less than 10,000 pesos, parental separation, and being older than 12 years old.[7]

In the 2013 Young Adult Fertility and Sexuality study or YAFS4, the trend in early childbearing showed that it is highest among women who just graduated from elementary. The YAFS4 study further showed that premarital sex has been found out to be most prevalent among women who are high school graduates.[8] In the NDHS 2013, one in five young adult Filipino women aged 18–24 years already had their first sexual activity before the age of 18 years.[3]

In a sourcebook entitled "Behavior Change Communication Strategies for Preventing Adolescent Pregnancy," published by the Department of Health (DOH), Philippines (2012), it was stated that adolescents (10–19 years old) are crucial in the development of the Philippines as they comprise about 10.5% of the country's total household population in 2007.[9] It also reported that early and unintended pregnancy can be a major constraint to the health and wellbeing of the adolescents.[9] It affects different components of their growth, health, psychosocial and mental aspects.

Literature Review

Complications related to teenage pregnancy accounts for 23% of the overall burden of disease. It was found out that 14% of all unsafe abortions in low and middle income countries are among women aged 15–19 years who are also the most seriously affected by the complications that go with it.[2] Kumar et. al, (2007), found out that teenage pregnancy was associated with pregnancy- induced hypertension, pre-eclamptic toxemia, eclampsia and premature onset of labor.[10] Malamitsi-Pchner and Boutsikou (2006) reported that teenage pregnancy may also lead to sexually transmitted diseases and anemia.[11] Other noted obstetric complications include hypertensive disorders during pregnancy, premature rupture of membranes, preterm onset of labor, anemia and abortion.[12] A more recent study also showed that teenage mothers had higher incidence of having preeclampsia and premature deliveries.[13] A local study done by Panlilio et al. (1980), done at Fabella Memorial Hospital, found teenage pregnancies to be associated with an increase in septic or infected abortions, toxemia, hemorrhages and maternal mortality.[14] In 1996, a study done by Dela Cruz noted that pregnancy-induced hypertension is common in teenage pregnancy and is similar to the age group of mothers 31 years old and older. The same study also noted that teenage pregnancy has an increased risk for premature delivery.[15] After two years, another local study among adolescents done by De Guzman (1998) reported that iron deficiency anemia, respiratory and urinary tract infections and malnutrition were among the complications encountered among pregnant adolescents and there were no maternal mortalities noted. Most of the teenage pregnancies at this time were delivered via normal spontaneous delivery and were cephalic in presentation.[5]

The WHO reports stillbirths and deaths in the first week of life to be 50% higher among babies of mothers aged 20 years and below.[2] Some studies showed the following perinatal outcomes of teenage pregnancy: low birthweight,[16] perinatal asphyxia, jaundice, respiratory distress syndrome,[10] small for gestational age, malformations,[17] infection and sudden infant death syndrome.[11] Such complications were also shown in a local study done by Panlilio, et al. (1980), where a higher incidence of low birth weights among teenage pregnancies, and higher rate (twice) of neonatal deaths was found.[14] Another local study done by De Guzman (1998), also showed such complications, low birthweight or small for gestational age and prematurity among teenage pregnancy. However, the same study reported that 61% of their studied population yielded good neonatal outcomes and relatively high APGAR scores both at first and fifth minutes of life.[5]

This study attempts to identify the obstetric and perinatal outcomes of teenage pregnancy and the factors associated with it in the Philippine setting. As stated in a study done by Natividad (2013) on teenage pregnancy, in order to better understand the specific health risks in our setting, hospital-based prospective and retrospective studies in determining the adverse outcomes of early pregnancy as well as giving birth of the teenage mother and the baby compared to other age groups are recommended to be carried out.[18] Even in the year 1980, Panlilio et al. already explored the complications and outcomes of teenage pregnancies in the Philippines and results at that time already pointed that all teenage pregnancies should be considered high risk and a national priority.[14] Thus, this study could further provide local and recent data on the complications of teenage pregnancy which could eventually help in determining what other measures can be done to avoid the negative outcomes associated with teen pregnancy in the Philippines. This could also contribute in making health policies, intervention programs and improving health services geared toward prevention of early pregnancy among teens, promotion of safe pregnancy among already pregnant teens as well as education for health providers. Moreover, information gathered from the study may generate further questions and help build a standardized data information form for prospective studies.

This study aims to determine the outcome of teenage pregnancy among Filipino women aged 13-19 years old encountered at the Philippine General Hospital (PGH) from year 2014-2016.

METHODS

Study Design

This is a retrospective study involving reviewing the charts of pregnant adolescents from 2014-2016 until the required sample size is achieved.

Sample Size

A minimum of 83 individuals was required for this study. The sample size is based on the reported prevalence of 31.7% associated to complicated neonatal outcome in teenage pregnancy, as noted from the study of de Guzman*[5]. The sample size is also based from 95% confidence level and margin of error of 10%.

Legend:

n = minimum sample size

P = estimated prevalence of complicated neonatal outcome in teenage pregnancy (31.7%)

e = margin of error (10%)

$Z_{(\alpha/2)}$ = standard normal distribution corresponding to the specified size of the critical region (1.96)

Sample size calculation:

$$n \leq \frac{Z^2_{\alpha/2} \times P \times (1 - P)}{e^2}$$

$$n \leq \frac{1.96^2 \times 0.317 \times (1 - 0.317)}{0.10^2}$$

$$n \leq 83$$

Inclusion Criteria

All pregnant women, aged between 13 and 19, who were encountered and delivered in PGH between 2014-2016.

Exclusion Criteria

Pregnant Filipino teens with known co-morbidities such as cerebrovascular stroke, heart failure, tuberculosis, nephrotic/nephritic syndrome, cancer, and diabetes and did not deliver, were not included in the study.

Data Collection

All pregnant women, aged between 13 and 19, who were encountered and delivered in PGH, between 2014-2016, were determined. Their hospital records were then taken from the Records Section of the PGH and were reviewed until the sample size was attained. In the said period, the PGH Teen Mom Clinic was already established and all teenage pregnancies are being referred to the institution's Adolescent Medicine Service.

The following information was collected:

A. Socio-demographic characteristics: age, weight, height, body mass index, nationality, place of origin, age of partner/ father of child, educational attainment, occupation, family income, frequency of smoking, alcohol drinking, drug use, use of contraception, presence of sexually transmitted infections, date of delivery, gestational age on delivery, obstetric score, menarche, age of sexual debut, prenatal care including age at first visit to the health care and frequency and type of labor.
B. Obstetric outcomes of teenage pregnancy: manner of delivery, amount of amniotic fluid, quality of amniotic fluid; cephalopelvic proportion, episiotomy done, rupture of membranes, placental location, diseases developed and other conditions.
C. Perinatal outcomes of teenage pregnancy: plurality, outcome, pediatric aging based on Ballard's score, birth weight, APGAR score in the 1st and 5th minute of life, presence of congenital defect/s and other conditions.

Statistical analysis

Descriptive statistics, such as frequency and proportion, mean and standard deviation (SD), chi-square test, Fisher's exact test, and two-sample t-test were used to analyze the data. All significant factors were further analyzed using logistic regression. The level of significance was set at 0.05. All data analysis was performed in STATA 12.

Ethical Issues

The study protocol was approved by the Ethical Review Board of the PGH. The study did not need any informed consent. There were no direct risks or benefits to the participants involved in this study since it only involved chart review. Potential risk involves the possibility of having the patient's privacy and/or confidentiality be compromised. However, all efforts were done to ensure information and or data collected was kept confidential and was only used for the purposes of this study. There was no conflict of interest noted.

RESULTS

Demographic and Clinical Profile

A total of 163 patient records were reviewed and included in the study. The mean age and standard deviation age was 17.4 ± 1.5 years and patients were predominantly at 37 to 41 weeks gestational age (56.7%). One hundred twenty-eight of these patients were on their first pregnancy, 28 on their second pregnancy and three on their third pregnancy. Table 1 provides the demographic and clinical profile of the patients.

Seventy charts did not specify the age of the partners of the participants. Table 2 shows the number of adolescent women having partners with the said particular age. The youngest male partner was 15 years old. Most of the participants' partners were of legal age, 18 years old. Moreover, 26 participants were noted to have partners whose ages were older than them by six years or more.

Table 3 shows the number of female adolescents and their age of gestation when they first visited the health care for prenatal check-up. It is noted further that 42 patients did not specify their age of gestation when they first visited the health care. Thirty-eight of the female adolescents visited the health care on their first trimester, 38 on their second trimester

Table 1. Demographic and clinical profile of patients

	Mean ± SD; Frequency (%)
Demographic Profile	
***Age** (years)*	17.4 ± 1.5
***Gestational age** (months)*	
Less than 37	60 (40.0)
37 to 41	85 (56.7)
More than 41	5 (3.3)
***Weight** (kg)*	56.5 ± 9.8
***Height** (m)*	1.5 ± 0.1
BMI	25.0 ± 5.3
***Age of partner** (years)*	21.9 ± 5.3
Place of origin	
Within Metro Manila	103 (63.2)
Outside Metro Manila	60 (36.8)
Educational attainment	
Elementary level/graduate	21 (13.3)
High school level/graduate	113 (71.5)
College level/graduate	24 (15.2)
Occupation	
Employed	51 (32.5)
Self-employed	1 (0.6)
Unemployed	105 (66.9)
Smoker	
Yes	41 (25.9)
No	117 (74.1)
Alcohol drinker	
Yes	39 (24.5)
No	120 (75.5)
Used contraception	
Yes	2 (1.3)
No	147 (98.7)
Used prohibited drugs	
Yes	10 (6.4)
No	146 (93.6)
***Menarche** (years)*	12.5 ± 1.5
***Age of sexual debut** (years)*	16.1 ± 1.5
Clinical Profile	
Presence of STI	
Yes	2 (1.3) condyloma acuminata
None	146 (98.7)
Hemoglobin count	
110 and below	39 (26.2)
Above 110	110 (73.8)
Type of labor	
With analgesia	128 (84.2)
Without analgesia	24 (15.8)
Number of visits	5.0 ± 2.6
Age of gestation at first visit	22.4 ± 12.0
Obstetric score	
G1	128 (80.5)
G2	28 (17.6)
G3	3 (1.9)

Table 2. Age of partners of the pregnant teens

Age of Partner (years)	n
15	1
16	4
17	8
18	10
19	14
20	10
21	8
22	7
23	5
above 24	26
Unknown	70
Total	163

Table 3. Age of gestation at first visit to the health care center

Age of Gestation (weeks)	n
Less than 12 (1st trimester)	38
13 to 28 (2nd trimester)	38
More than 28 (3rd trimester)	45
Unspecified	42
Total	163

Table 4. Prenatal care: number of visit at the health care center

Number of Visit	n
Unspecified	24
Less than and or equal to 4	65
More than 4	71
None at all	3
Total	163

and 45 on their third trimester. The health care center they visited for prenatal check-up includes the local health center, lying-in clinics, and their respective local hospitals.

Table 4 shows the frequency of visits in the health center of the female adolescents. Twenty-four did not specify the number of visits. Sixty-five patients visited less than four times and seventy-one visited more than four times. Noted that only three of the subjects did not have any visit in the health center.

Other conditions noted among the patients, not included in the exclusion criteria included: having chronic hepatitis B, bronchial asthma not in acute exacerbation, history of upper respiratory tract infection, bacterial, and history of seizure disorder, conditions which are not complicating the current pregnancy. Other conditions also noted were chronic hypertension, history of eclampsia, poor obstetric history, and history of eclampsia.

The PGH has Child Protection Unit (CPU) and Adolescent Medicine Clinic providing services for pediatric patients including services for teenage pregnancy. Female pregnant adolescents are referred to the CPU if their partners were older than them by more than five years, if abuse is suspected, and for parenting seminars to be provided. Among the pregnant teenagers, only 39 (23.9%) were seen by the Adolescent Service while 31(19%) were seen by the CPU.

Obstetric Outcomes

This study noted that nine had miscarriages (one induced), one had intrauterine fetal death, two had hydatidiform mole, and one had ectopic pregnancy as an outcome.

Table 5 shows the obstetric outcomes of patients included in this study. Majority of the patients delivered through spontaneous vaginal delivery (57%) without cephalo-pelvic disproportion (73.33%), with episiotomy (52%) and mostly

Table 5. Obstetric outcomes of patients

	Frequency (%) N=150
Type of delivery	
Spontaneous vaginal delivery	86 (57)
Assisted vaginal delivery	14 (0.09)
Caesarean section	50 (33)
Amount of amniotic fluid	
Anhydramnios/Oligohydramnios	0 (0.0)
Adequate	50 (10.3)
Not specified	130 (89.7)
Quality of amniotic fluid	
Stained	6 (4.0)
Clear	39 (26.0)
Not specified	105 (70.0)
Cephalo-pelvic disproportion	
Yes	17 (11.33)
No	110 (73.33)
Not specified	23 (15.33)
Episiotomy	
Yes	78 (52)
No	28 (18.67)
Not specified	44 (29.33)
Rupture of Membranes	
PPROM	3 (2.0)
Premature Rupture of Membranes	22 (14.67)
Not PROM	125 (83.33)

Table 6. Perinatal outcomes of patients

	Frequency (%)
Outcome	N=163
Alive	150 (92)
Miscarriage	9 (5.52)
Intrauterine Fetal death	1 (0.61)
Died	0 (0.0)
Ectopic pregnancy	1 (0.61)
Hydatidiform mole	2 (1.23)
Plurality	N=150
Single	150 (100.0)
Twins	0 (0.0)
More than two	0 (0.0)
Pediatric aging	N=150
Pre-term	42 (28.0)
Full-term	106 (70.7)
Post-term	2 (1.3)
Birth weight	N=150
Small for gestational age	8 (5.4)
Appropriate for gestational age	137 (91.3)
Large for gestational age	3 (2.0)
Unknown	2 (1.3)
APGAR score in the 1st minute of life	N=150
Less than 7	11 (7.33)
More than 7	133 (88.67)
Not specified	6 (4)
APGAR score in the 5th minute of life	N=150
Less than 7	4 (2.67)
More than 7	140 (93.33)
Not specified	6 (4.00)

no premature rupture of membranes (83.33%). Majority of them had no specific record of the amount and quality of amniotic fluid (89.7% and 70.0% respectively).

It was noted that 79 out of 163 adolescent pregnancies experienced obstetric complications such as having assisted vaginal delivery and Caesarean section delivery, cephalopelvic disproportion, stained amniotic fluid, placenta previa, and other complications arising during pregnancy. Other outcomes noted were as follow: 2 had abruptio placenta, 1 had intraamniotic infection, 7 developed preeclampsia, 2 had gestational hypertension, 2 had gestational diabetes, and 1 had both pre-eclampsia and gestational diabetes.

Perinatal Outcomes

Table 6 shows the perinatal outcomes of patients included in this study. All patients, apart from those who had intrauterine fetal death (1), hydatidiform mole (2), ectopic pregnancy (1) and miscarriage (9), had delivered single live births (100%). Among them, 92.4% had neonates with APGAR score of more than 7 in the 1st minute and 97.2% with APGAR score of more than 7 in the 5th minute of life (97.2%). A greater number of infants were delivered full-term (70.7%) and appropriate for gestational age (92.5%).

Out of 163 adolescent pregnancies, 77 experienced abnormal perinatal outcomes. There were three who gave birth to extremely low birthweight neonates (<1500 grams). Other perinatal outcomes include hydrocephalus (2), anencephaly (1), macrocephaly (2), multiple congenital anomalies (2) (one included anencephaly, absent gastric bubble, and pulmonary hypoplasia), folliculitis (1), respiratory distress (8) (neonatal pneumonia versus meconium aspiration syndrome versus transient tachypnea of the newborn versus hyaline membrane disease), neonatal depression (2), hydrocele (1) and rule out sepsis (9).

Demographic and Clinical Factors and Presence of Obstetric Disorders

We analyzed differences in demographic and clinical factors relative to the presence and absence of obstetric disorders. Obstetric score was the only variable significantly associated with abnormal obstetric outcome (p-value < 0.05) (Table 7). All other variables under the demographic and clinical aspects were relatively similar in patients with and without obstetric disorders (p-value > 0.05).

Demographic and Clinical Factors and Presence of Perinatal Disorders

The number of visits was the only variable significantly associated with abnormal perinatal outcomes (p-value<0.05) (Table 8). Patients with at least one abnormal perinatal outcome visited the obstetric clinic less often than patients with normal perinatal outcomes.

Factor Analysis (abnormal obstetric outcome)

Obstetric score was further examined as a risk factor for abnormal obstetric outcome. Using logistic regression, the

odds of having abnormal obstetric outcome among mothers with obstetric score of g1 is 7.8 (95% CI: 2.0 to 30.7) times higher as compared to those with g2 and g3 obstetric score. The odds ratio is statistically significant (p-value = 0.003).

Factor Analysis (abnormal perinatal outcome)

Considered as risk factors for perinatal disorder, number of visits was further examined through logistic regression. The odds of having at least one perinatal disorder decreases by 19% (95% CI: 6% to 30%) as the mothers regularly visit an obstetric clinic, and was statistically significant (p-value = 0.004).

DISCUSSION

Out of the 163 patient records that were reviewed, the mean age and standard deviation age was 17.4 ± 1.5 years. One hundred twenty-eight of these patients were on their first, 28 on their second, and three on their third pregnancy. Among the 93 patient records with reported age of the partner, 80 had partners aged 18 and above. Of the 163 teenage adolescents, 39 (23.9%) were seen by the Adolescent Medicine Service while 31 (19%) were seen by the CPU. This study showed that almost 50% of the cases of adolescent pregnancy yielded obstetric and perinatal complications. Further analysis of data, showed that gestational age was the only variable significantly associated with abnormal obstetric outcomes. The odds of having abnormal obstetric outcome among mothers with obstetric score of G1 is 7.8 times higher as compared to those with G2 and G3 obstetric score which means as soon as an adolescent gets pregnant, there is a great chance of having abnormal obstetric outcome. Moreover, the odds of having at least one perinatal disorder decreases by 19% (95% CI: 6% to 30%) as the mothers regularly visit an obstetric clinic.

The WHO reported that complications related to teenage pregnancy accounts for 23% of the overall burden of disease.[2] Gestational hypertension may have occurred among

Table 7. Association of demographic and clinical factors and presence of obstetric disorders

	Mean ± SD; Frequency (%)		
	With at least 1 abnormal obstetric outcomes	Normal obstetric outcomes	p-value
***Age** (years)*	17.4 ± 1.5	17.6 ± 1.0	0.573[1]
***Gestational age** (months)*			
Less than 37	34 (39.5)	2 (18.2)	
37 to 41	50 (58.1)	9 (81.8)	0.370[3]
More than 41	2 (2.3)	0 (0..0)	
***Weight** (kg)*	56.9 ± 9.8	59.7 ± 13.3	0.424[1]
***Height** (m)*	1.5 ± 0.07	1.5 ± 0.06	0.239[1]
BMI	24.4 ± 3.6	25.8 ± 4.7	0.325[1]
Hemoglobin count			
110 and below	17 (19.3)	4 (50.0)	0.066[3]
Above 110	71 (80.7)	4 (50.0)	
***Age of partner** (years)*	21.5 ± 5.5	23.2 ± 4.7	0.478[1]
Place of origin			
Within Metro Manila	56 (58.9)	5 (45.5)	0.391[2]
Outside Metro Manila	39 (41.1)	6 (54.5)	
Educational attainment			
Elementary level/graduate	12 (13.0)	0 (0.0)	0.589[3]
High school level/graduate	66 (71.7)	9 (81.8)	
College level/graduate	14 (15.2)	2 (18.2)	
Occupation			
Employed	20 (22.2)	2 (18.2)	1.000[3]
Unemployed	70 (77.8)	9 (81.8)	
Smoker			
Yes	25 (27.5)	2 (20.0)	1.000[3]
No	66 (72.5)	8 (80.0)	
Alcohol drinker			
Yes	24 (26.4)	2 (18.2)	0.725[3]
No	67 (73.6)	9 (81.8)	
Used contraception			
Yes	0 (0.0)	2 (18.2)	0.1333[3]
No	86 (100.0)	9 (81.8)	
Used prohibited drugs			
Yes	4 (4.4)	0 (0.0)	1.000[3]
No	86 (95.6)	9 (100.0)	
***Menarche** (years)*	12.5 ± 1.5	12.9 ± 1.6	0.437[1]
Presence of STI			
Yes	1 (1.2)	0 (0.0)	1.000[3]
No	82 (98.8)	9 (100.0)	
***Age of sexual debut** (years)*	16.2 ± 1.5	15.3 ± 1.9	0.092[1]
Type of labor			
With analgesia	77 (89.5)	9 (90.0)	1.000[3]
Without analgesia	9 (10.5)	1 (10.0)	
Seen by Adolescent Medicine			
Yes	22 (23.2)	2 (18.2)	1.000[3]
No	73 (76.8)	9 (81.8)	
Seen by Child Protection Unit			
Yes	22 (23.2)	1 (9.1)	0.450[3]
No	73 (76.8)	10 (90.9)	
Number of visits	5.1 ± 2.7	5.2 ± 2.9	0.933[1]
***Age of gestation at first visit** (weeks)*	19.9 ± 11.5	20.1 ± 8.1	0.959[1]
Obstetric score			
G1	84 (90.3)	6 (54.5)	
G2	9 (9.7)	2 (18.2)	0.0001[3]
G3	0 (0.0)	3 (27.3)	

Statistical tests used: 1 = Two-sample t-test; 2 = Chi-square test; 3 = Fisher's exact test

these adolescents since it is likely to develop among those who are exposed to the chorionic villi for the first time. Preeclampsia is also usually affecting young and nulliparous women since older women would have more of a chronic hypertension with superimposed preeclampsia.[19] Reasons behind the findings of this study may include that female adolescents are still undergoing major changes in their body, and psychological changes which affect their food preferences, lifestyle, habits, and prenatal care.

On Nutritional Status

In this study, results showed that the average body mass index of the subjects fell within the normal range, and 73.8% were not anemic or had hemoglobin count above 110 mg/dl. This study only covered reviewing the charts of 163 teenage mothers. It is important to note that during puberty a lot of biological, psychosocial and cognitive changes begin to occur. These directly affect the nutritional needs and status of the adolescents (Stang and Story, 2005).[20] As stated by Alton (2005) healthier infant outcomes is associated with a female adolescent having good nutrition status prior and during her pregnancy.[20]

The previous 7th National Nutrition Survey showed that in 2008, a total of 26.5% of female adolescents from 11-19 years old were considered underweight and mild underweight.[21] In 2015, the survey done by the Department of Science and Technology's Food and Nutrition Research Institute (DOST-FNRI) showed that among pregnant Filipino women, 24.7 % were nutritionally-at-risk and 39.7% of the said population were teenage mothers, aging below 20 years old. Moreover, in a study done by Capanzana, et al. (2015), one of the moderate health problems among pregnant women is anaemia with prevalence of 25.2% based on the 8th National Nutrition Survey (2013).[22,23] Iron deficiency anemia among pregnant adolescents can lead to prematurity, low birth weight, depressed maternal immune system, decreased tolerance on blood loss at delivery and many other complications (Stang, 2005).[20]

Table 8. Association of demographic and clinical factors and perinatal outcomes

	Mean ± SD; Frequency (%)		
	With at least 1 abnormal perinatal outcomes	Normal perinatal outcomes	p-value
***Age** (years)*	17.4 ± 1.4	17.4 ± 1.5	0.840[1]
***Weight** (kg)*	55.4 ± 9.3	57.7 ± 10.1	0.156[1]
***Height** (m)*	1.5 ± 0.11	1.5 ± 0.07	0.053[1]
BMI	25.3 ± 6.6	24.7 ± 3.6	0.521[1]
Hemoglobin count			
110 and below	18 (24.7)	21 (27.6)	0.680[2]
Above 110	55 (75.3)	55 (72.4)	
***Age of partner** (years)*	21.4 ± 6.3	22.2 ± 4.5	0.477[1]
Place of origin			
Within Metro Manila	51 (61.5)	52 (65.0)	0.638[2]
Outside Metro Manila	32 (38.5)	28 (35.0)	
Educational attainment			
Elementary level/graduate	9 (11.2)	12 (15.4)	
High school level/graduate	59 (73.8)	54 (69.2)	0.732[2]
College level/graduate	12 (15.0)	12 (15.4)	
Occupation			
Employed	25 (32.5)	26 (32.5)	
Self-employed	1 (1.3)	0 (0.0)	0.931[3]
Unemployed	51 (66.2)	54 (67.5)	
Smoker			
Yes	19 (23.7)	22 (28.2)	0.523[2]
No	61 (76.3)	56 (71.8)	
Alcohol drinker			
Yes	17 (21.5)	22 (27.5)	0.381[2]
No	62 (78.5)	58 (72.5)	
Used contraception			
Yes	0 (0.0)	2 (2.6)	0.497[3]
No	73 (100.0)	74 (97.4)	
Used prohibited drugs			
Yes	3 (3.8)	7 (9.1)	0.207[3]
No	76 (96.2)	70 (90.9)	
***Menarche** (years)*	12.6 ± 1.4	12.4 ± 1.7	0.427[1]
Presence of STI			
Yes	2 (2.7)	0 (0.0)	0.242[3]
No	71 (97.3)	75 (100.0)	
***Age of sexual debut** (years)*	16.4 ± 1.4	15.8 ± 1.6	0.983[1]
Type of labor			
With analgesia	63 (84.0)	65 (84.4)	0.944[2]
Without analgesia	12 (16.0)	12 (15.6)	
Seen by Adolescent Medicine			
Yes	19 (22.9)	20 (25.0)	0.752[2]
No	64 (77.1)	60 (75.0)	
Seen by Child Protection Unit			
Yes	15 (18.1)	16 (20.0)	0.754[2]
No	68 (81.9)	64 (80.0)	
Number of visits	4.3 ± 2.3	5.6 ± 2.7	0.003[1]
***Age of gestation at first visit** (weeks)*	21.2 ± 10.7	23.7 ± 13.2	0.261[1]
Obstetric score			
G1	66 (83.5)	62 (77.5)	
G2	13 (16.5)	15 (18.8)	0.275[3]
G3	0 (0.0)	3 (3.7)	

Statistical tests used: 1 = Two-sample t-test; 2 = Chi-square test; 3 = Fisher's exact test

Both periods of adolescence and pregnancy mean increased nutritional demand and risk. The adolescent's body is not yet fully developed to meet the demands of pregnancy considering the physiological demands of her own growth. Improved maternal and fetal outcomes of pregnancy may occur if corrective measures to solve nutritional problems and to promote healthy food choices among adolescents are implemented.[20]

On Relationships

This study focused on describing the sociodemographic profile of the teenage mothers. The study showed that the youngest among the subjects was at 13 years old and mostly were 18-19 years old. One of the sociodemographic characteristics described is the age of their partners. With this study, it was found out that most of the subjects' partners were of legal age, 18 years old and the youngest was 15 years old. Moreover, 26 subjects were noted to have partners whose ages are six years and more than their age.

As mentioned in the study of De Guzman (1998), according to Scales, males tend to have more power than their female adolescent partner in their sexual relationship due to noted differences in age and sex roles at that time.[5,6] As mentioned in Magill and Wilcox (2007), there is a higher risk of getting pregnant among adolescents when their partners are older and have lower education. Moreover, having adverse childhood experiences such as emotional, physical or sexual abuse, is considered as one of the risk factors for poor outcomes among pregnant teen mothers.[24]

In accordance to the Republic Act 7610, Special Protection of Children Against Abuse, Exploitation and Discrimination Act, some of the cases warrant referral to the CPU especially those with suspected rape and abuse, adolescents below 18 years old, and female adolescents having partners much older than them, in our case five years gap.[25] Among the adolescents included in this study, 31(19%) were seen by the CPU. There is a need to do a retrospective analysis on the evaluation and management of potential abuse among teenage mothers. Referring adolescent mothers to the CPU allows an interdisciplinary team approach in the evaluation and management of the well-being of the mother. The CPU specialists, social workers, mental health providers, among others would be able to discuss the case of the child in depth, determine existing psychosocial risk factors, recognize abuse and evaluate the mental health status of the teens. While focusing also on the psychosocial risk factors, the hope of preventing complications or repeat pregnancies among teens could be within reach.

On Educational Attainment, Socioeconomic Status, Contraceptive Use and Sexually Transmitted Infections

Among the teenage mothers involved in this study, only 15.2% reached the tertiary level. Most of the teenage mothers, 66.9% were unemployed at the time of pregnancy and delivery. It was also reported in the Sourcebook on BCC Strategy for Preventing Adolescent Pregnancy (2012), attaining a higher education tends to increase the use of contraceptive methods.

The use of contraception is essential to prevent pregnancy and most especially of sexually transmitted diseases. Among the charts reviewed, it is noted that 98% did not use any contraceptive method. This finding is similar to the YAFSS 4 data which showed that 78% did not use any contraception.[8] Reasons for not using contraceptive were not further identified in the charts reviewed. Moreover, it was noted that there were two female adolescents who reported to have condyloma acuminata.

On Engagement in Non-Sexual Risk Behaviors

In this study, it is noted that greater percentage of teenage mothers involved were not engaged into smoking (74.1%), drinking alcohol (75.5%) and using prohibited drugs (93.6%).[26] A study done by the University of the Philippines Population Institute (UPPI) in the year 2010 on the Lifestyle, Health Status and Behavior of Young Workers in Call Centers and other Industries in Metro Manila and Metro Cebu showed that drinking alcohol and taking drugs have a high significant association with engaging in sex.

On Menstrual and Sexual history

As noted in this study, the average age of menarche among the teenage mothers is 12.5 ± 1.5 years old and the average age of sexual debut is 16.1 ± 1.5 years old which is approximately 2 years after she had her menstrual period. Puberty as defined in Nelsons Textbook of Pediatrics, is a biologic process involving changes such as appearance of secondary sexual characteristics, and the capability to reproduce. As further stated, during early puberty, there is also a feeling of anxiety and interest in sex and one's sexual anatomy.[27] As stated in the Adolescent's Health Care Book (Neinstein, et. al, 2008), earlier physical maturation, has increased the distance between cognitive and emotional development and reproductive capacity of an adolescent thereby increasing the risk of unintended pregnancy in this age group.[28]

On Prenatal Care

In this study, it can be seen that a greater proportion of the pregnant adolescents already consulted in a health service, on their second and third trimester. Premature delivery among pregnant teenagers of 28% is relatively high probably due to multiplicity of factors mentioned previously. The late prenatal consult of about a fourth of the pregnant teens (27%) could explain the birth of 5.4% small for gestational age, 7% with poor APGAR score in the first minute and 2.67% in the 5th minute. There were still three teenage mothers who never visited the health care facility. This necessitates further investigation to be done so as to know what more can be improved in our current healthcare services. As stated in the study of Capanzana, et. al. (2015), 94.3% of the respondents

of Updating Survey in 2011 received some form of prenatal care during their pregnancy however deliveries assisted by professionals is still generally low in the Philippines.[22]

A research done by Vinttzileos et al. (2002) reported that having early and frequent prenatal care demonstrates a decrease in fetal death and complications among mothers.[29] In the Philippines, with the desire of achieving a decrease in maternal and newborn mortality, the DOH issued Administrative Order 2008-0029 entitled "Implementing Health Reforms for Rapid Reduction of Maternal and Neonatal Mortality" which mandates that each locality should provide a package of health and nutrition services to the mothers, newborns and children.[30] Supporting the said results, this study found out that with having regular visits, the teenage mother avails of the prenatal package as stated earlier, designed by the government to achieve good outcomes both to the health of the mother and of the newborn.

According to Capanzana et al. (2015), while there may be programs of the government that exist to address the needs of pregnant Filipinos, nothing though is geared toward meeting the needs of pregnant adolescents.[22] In a study by Tilghman and Lovette (2008), they reported that pregnant adolescents are unique and/or different from other groups of pregnant women of older age, in all major aspects of assessment such as in their social environment; their personal, social, and psychological development; and their physical response.[31] Having this in mind, prenatal care and childbirth education geared to be given among typical population of pregnant women may not be the best way to serve pregnant adolescents. Such study recommends that in order to develop best practices in childbirth education among adolescents, one way is to be aware of what they want to know, learn and what their values are.[31]

In 2011, WHO published guidelines on preventing early pregnancy and poor reproductive outcomes among adolescents in developing countries. In this publication, one of the six recommendations included, the increase in the use of skilled antenatal, childbirth and postnatal care among adolescents.[32] It was also recommended in the study of Capanzana et al. (2015) to develop adolescent-friendly health centers which might help in increasing the number of teenage mothers who are visiting the health care at an earlier age of gestation and doing their checkups frequently as advised by the health care professionals leading to a decrease in the occurrence of abnormal perinatal outcomes.[22] In our own hospital, PGH already reestablished the Teen Mom Clinic in 2013. Pregnant adolescents seen at the Outpatient Department are referred and scheduled for check-up at the Teen Mom Clinic. Once they are seen, they are invited to attend different lectures developed by the Division of Adolescent Medicine of the Department of Pediatrics and the Obstetric and Gynecology Department. The adolescents are also encouraged to notify the Division of Adolescent Medicine once they are admitted for delivery. This strategy aims to follow the adolescents and do postnatal check-ups to guide them as they go through major changes that accompany the transition of being a young single adolescent to a young adolescent mother.

Limitations of the Study

The study only determined the obstetric and perinatal outcomes of teenage pregnancy among 13- to 19-year-old Filipino women encountered in PGH from 2014-2016.

CONCLUSION

Teenage pregnancy as WHO and DOH emphasize, is an important issue that need to be dealt with. It is important to note, that 48% of the adolescent mothers still experienced obstetric complications and 47% of their newborns still had perinatal complications. As the analysis showed, frequent visits of the adolescent mother to the health care center reduces the occurrence of perinatal complications. Hence, improvement in the provision of health care services designed particularly to cater to the needs of adolescent mothers need to be properly implemented. It is important to remember, that adolescents are unique, and their needs are not similar to the other age groups. Improvement in the provision of adolescent-friendly health care services designed particularly to cater to the needs of adolescent mothers need to be properly implemented. By doing so, it helps ensure that a teenage mother receives the healthcare services she deserves. In this way, the percentage of adolescents and babies experiencing complications can be further lowered or complications can be totally eradicated in the future. Moreover, referral to Adolescent Medicine and Child Protection Specialists could help give wholistic care and ensure safety among these adolescents.

Recommendations

The PGH's Teen Mom Clinic is a good start to promote provision of health care services specifically designed to cater the needs of pregnant adolescents. It is important to note that adolescent period is a period that entails a lot of changes in a person, hence, the services designed to adult mothers may not be appropriate for them. It is highly recommended, that the local health centers and the employees there, be continuously given proper training and modules on how to provide health care services among teenage mothers. Frequency of visiting the health centers should be ensured to decrease perinatal morbidity and complications.

Furthermore, this study recommends that healthcare facilities should provide services not only to the newborns, but be extended to the adolescent mothers to ensure that these teenage mothers are getting proper nutrition and are still in good health, physically and psychologically. The health care facility catering to adolescent mothers must also provide privacy so that these teens will not hesitate to consult. By doing so, teenage pregnancy recurrence may be prevented and that the overall occurrence of complications would somehow decline.

Psychosocial factors such as presence of adverse childhood experiences among pregnant adolescents should also be included in the evaluation and focus of care. Referral to CPU is recommended especially when there is suspected abuse, wide age gap between the teen mom and the partner and/or the child is still not able to discern what is right and/or wrong.

Moreover, a prospective study with bigger sample size from different locations, is recommended to get a complete data on the demographic and clinical profile of pregnant adolescents. Studies exploring the evaluation and management of potential abuse among teenage mothers and the situation of adolescent mothers after giving birth are also important topics researchers can deal with in the future.

Statement of Authorship

Both authors contributed in the conceptualization of work, acquisition and analysis of data, drafting and revising and approval of the final version submitted.

Author Disclosure

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