

Pattern and Consequences of First Visits to Obstetricians/gynecologists by Adolescents: A Nationwide Study in Taiwan

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Background: Some adolescents have special health care needs. Privacy concerns, unawareness or ethnical/cultural factors are barriers to women visiting obstetricians/gynecologists (OB/GYNs). The utilization of OB/GYN services by adolescent girls is seldom reported. The aim of this study was to investigate the pattern and consequences of first visits to OB/GYNs by adolescent girls within the National Health Insurance in Taiwan.

Methods: From the 1-million cohort dataset of the National Health Insurance Research Database spanning from 1996 to 2007, adolescent girls visiting OB/GYNs for the first time were identified. The characteristics of first visits were analyzed. Their follow-up visits and admissions within 1 year after their first visits to OB/GYNs were traced.

Results: In 2006, only 5.8% ($n = 2,682$) of 46,582 adolescent girls in our study cohort had their first visits to OB/GYNs: 46.7% with diagnoses of menstrual disorders and 14.8% with diagnoses related to inflammatory or infectious diseases of the genital organs. The examination most frequently ordered was pregnancy test (for 19.9% of these first visits). Very few (0.4%) first visits were for preventive services. Among the infrequent admissions (85 admissions of 75 girls) to obstetric/gynecology wards within 1 year after first visits, the majority (74 of 85 admissions) were pregnancy-related.

Conclusion: The leading motivating factor for first visits to OB/GYNs by adolescent girls was menstrual disorders. The majority of subsequent admissions were pregnancy-related, indicating that adolescent pregnancy deserves further attention. [*J Chin Med Assoc* 2010;73(3):144–149]

Key Words: adolescent, national health programs, obstetrics/gynecology, Taiwan

Introduction

Adolescent girls enter a transitional period, between being a child and being an adult, that has distinct physiological features. An illness may have different pathophysiology and require different management in adolescent girls. Since pediatric and adolescent gynecology developed in the 1970s, medical knowledge in this field has grown explosively, allowing pediatricians, gynecologists, and family practitioners to better meet adolescents' special health care needs. Studies in

Western countries, however, have found that health services utilization does not match the reported needs of adolescents,¹ and unmet needs for specific health concerns remain substantial.² These indicate that certain problems are not sufficiently detected or managed by professionals.

The American College of Obstetricians and Gynecologists recommends that first visits to obstetricians/gynecologists for preventive health services take place at 13–15 years of age.³ In actual life, embarrassment, privacy concerns or various cultural factors are



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usually barriers to women visiting obstetrician/gynecologists, and this may be exacerbated among adolescent girls. Understanding the factors that motivate adolescent girls to visit obstetricians/gynecologists for the first time can help health care providers gain insight into the specific medical needs of this population group and undertake preventative measures for pregnancy and sexually transmitted diseases. Almost all of the studies on utilization of obstetric/gynecologic services include visits of all women^{4,5} or are focused on specific problems of adolescent girls.⁶⁻⁹ A large-scale utilization study about first visits to obstetricians/gynecologists is hardly feasible without longitudinal data of a cohort. For the current study, we obtained the datasets of 1 million people over a span of 11 years. Our objective was to characterize the utilization of obstetric and gynecologic services by adolescent girls in Taiwan. Specifically, we sought to identify not only the content of the first obstetric/gynecologic visits but also the consequences after these visits.

Methods

We performed a cohort study of adolescent girls identified through the Taiwan National Health Insurance Research Database (NHIRD).¹⁰ The National Health Insurance (NHI) in Taiwan started in 1995 and provides comprehensive health coverage for 98% of Taiwan's 22 million inhabitants. In 2007, the NHIRD released a research dataset comprised of 1 million individuals randomly sampled from all NHI beneficiaries in 2005. This dataset includes all health claims data of these individuals from 1996 to 2007, with the original identification numbers of beneficiaries and medical care facilities encrypted to protect privacy. With the approval of NHIRD for the research use of anonymized datasets, researchers must also sign a user agreement to indicate that they will abide by the regulations of the NHIRD and acknowledge the NHIRD in their publications.

The concept of adolescence is evolving, and there is disagreement in the literature on defining the period of adolescence.¹¹ In our study, adolescents were operationally defined as teenagers for data analysis. Thus, we identified adolescent girls as females between the ages of 13 and 19 in 2006. We then identified the girls who consulted obstetricians/gynecologists in 2006 without any prior visits to outpatient or inpatient obstetric/gynecologic units between 1996 and 2005. Their first visits to obstetricians/gynecologists in 2006 were extracted for further analysis. For each first visit, dimensions of analysis included the patient's

age, the setting and type of consultation, the obstetrician/gynecologist's sex, the principal diagnosis (coded according to the International Classification of Diseases, Ninth Revision, Clinical Modification, ICD-9-CM), examinations, and medications.

We also followed the help-seeking pattern for obstetric/gynecologic care of these adolescent girls after their first visits to obstetricians/gynecologists for 1 year. Both inpatient and outpatient claims were analyzed.

Data extraction and descriptive statistical analysis were undertaken with the Perl programming language (version 5.10.0).¹² Categorical variables were compared using χ^2 test of proportions.

Results

A total of 46,582 (4.7%) adolescent girls between the ages of 13 and 19 in 2006 were identified in the study dataset. Their percentage and age distribution in the cohort dataset were similar to that of the general population in Taiwan (Table 1).¹³ Of adolescent girls, 2,682 (5.7%) had visited obstetricians/gynecologists for the first time in 2006. The percentage of girls with first visits increased with age. Compared to 13-year-old girls, 19-year-old girls showed significantly higher utilization of obstetric/gynecologic services ($p < 0.001$).

Table 2 demonstrates the characteristics of first visits. The majority of girls (77.1%) had their first obstetric/gynecologic visits in the setting of private physician clinics. There were few emergency visits or preventive care visits to obstetricians/gynecologists. Pregnancy tests were performed during 534 (19.9%) of the 2,682 first visits. More than 4 fifths (436/534) of the pregnancy tests followed the principal diagnosis of menstruation disorders and other abnormal bleeding from female genital tract (ICD-9-CM: 626).

Nearly half (46.7%) of the adolescents' first visits to obstetricians/gynecologists were for disorders of menstruation and other abnormal bleeding from female genital tract (ICD-9-CM: 626) (Table 3). Diagnoses related to inflammatory or infectious diseases of the genital organs (ICD-9-CM: 616, 112, 614) accounted for 14.8% of first visits. Prescriptions were written in 82.5% of visits. The 5 most frequently prescribed items were progesterone (in 771 visits), nonsteroidal anti-inflammatory drugs (587), antacids (437), estrogen (333), and other analgesics/antipyretics (283).

Within 1 year after the first visit, repeat visits to obstetricians/gynecologists occurred in more than half of the cohort ($n = 1,458$) (Table 3). Among the top 3 diagnoses, the likelihood of repeat visits ($p = 0.06$) or

Table 1. Age distribution of adolescent girls in 2006*†

Age (yr)	General population* (N=22,876,527)	Sampling cohort (N=1,000,000)	Girls with first visit in the sampling cohort
13	156,982 (0.69)	6,665 (0.67)	240 (3.6)
14	152,727 (0.67)	6,621 (0.66)	272 (4.1)
15	151,443 (0.66)	6,474 (0.65)	332 (5.1)
16	159,251 (0.70)	6,881 (0.69)	382 (5.6)
17	148,633 (0.65)	6,478 (0.65)	470 (7.3)
18	163,562 (0.71)	6,940 (0.70)	470 (7.1)
19	148,220 (0.65)	6,523 (0.65)	496 (7.6)
13–19	1,080,810 (4.72)	46,582 (4.65)	2,682 (5.7)

*Data presented as n (%); †data from Reference 13.

Table 2. Characteristics of 2,682 first visits to obstetricians/gynecologists by adolescent girls within the National Health Insurance program in Taiwan in 2006*

	Visits
Place of first visit	
Academic medical center	86 (3.2)
Metropolitan hospital	163 (6.1)
Local community hospital	364 (13.6)
Physician clinic	2,069 (77.1)
Type of visit	
Normal consultation	2,639 (98.4)
Emergency	28 (1.0)
Ambulatory operation	4 (0.1)
Preventive service	11 (0.4)
Examination	
Sonogram	230 (8.6)
Pregnancy test	534 (19.9)
No. of prescribed drug items	
0	469 (17.5)
1	630 (23.5)
2	702 (26.2)
≥3	881 (32.8)
Follow-up after first visit	
Visit within 30 d	887 (33.0)
Visit within 1 yr	1,458 (54.4)
Admission within 1 yr	75 (2.8)
Sex of obstetrician/gynecologist	
Female	620 (23.1)
Male	2,061 (76.8)
Unknown	1 (0.0)

*Data presented as n (%).

admissions ($p=0.53$) within 1 year was not different. Among 85 admissions by 75 adolescent girls, the leading diagnoses were pregnancy-related (normal pregnancy in 51 admissions and complications of pregnancy or delivery in 23 admissions) (Table 4). As 2 girls were admitted twice with different diagnoses, there

was a total of 58 girls accounting for 60 admissions related to pregnancy, labor, and delivery: 51 admissions with final delivery (ICD-9-CM: 650–659) and 9 admissions with pregnancy- or delivery-related complications (ICD-9-CM: 660–669). We traced the primary diagnoses of the first obstetric/gynecologic visits by these 58 girls: 23 girls had disorders of menstruation and other abnormal bleeding from the female genital tract (ICD-9-CM: 626), 10 girls underwent antenatal screening (ICD-9-CM: V28), 5 girls experienced hemorrhage in early pregnancy (ICD-9-CM: 640), 3 girls had inflammatory disease of the cervix, vagina and vulva (ICD-9-CM: 616), 3 girls showed other symptoms involving the abdomen and pelvis (ICD-9-CM: 789), and the remaining 14 girls had other diagnoses. None was admitted because of malignancy.

Discussion

Our nationwide assessment of first visits to obstetricians/gynecologists by adolescent girls in Taiwan had some important findings. First, such visits were not common in Taiwan; only 5.8% of adolescent girls consulted obstetricians/gynecologists for the first time in 2006. Second, less than 1% of the first visits were for preventive services. Third, nearly half of the first visits were due to menstrual disorders, and pregnancy tests were the most often ordered examination. Finally, pregnancy accounted for the majority of infrequent admissions to obstetric/gynecologic wards.

The pattern of first visits to obstetricians/gynecologists has seldom been reported. The few available studies usually originate from 1 single clinic.¹⁴ The strength of our current study lies in the nationally representative cohort dataset spanning more than 1 decade. All events within the NHI can be traced so that we can note when the first visits occurred and observe the complete follow-ups.

Table 3. Diagnoses and subsequent follow-ups of 2,682 first visits to obstetricians/gynecologists by adolescent girls within the National Health Insurance program in Taiwan in 2006*

ICD-9-CM code & diagnosis group		Visits	Follow-up within 1 yr	
			Visit (n = 1,458)	Admission (n = 75)
626	Disorders of menstruation & other abnormal bleeding from female genital tract	1,252 (46.7)	715	28
616	Inflammatory disease of cervix, vagina, & vulva	300 (11.2)	163	5
625	Pain & other symptoms associated with female genital organs	204 (7.6)	84	2
789	Other symptoms involving abdomen & pelvis	138 (5.1)	53	3
595	Cystitis	54 (2.0)	33	0
599	Other disorders of urethra & urinary tract	53 (2.0)	35	1
112	Candidiasis	51 (1.9)	39	0
614	Inflammatory disease of ovary, fallopian tube, pelvic cellular tissue, & peritoneum	46 (1.7)	30	0
465	Acute upper respiratory infections of multiple or unspecified sites	41 (1.5)	18	1
611	Other disorders of breast	34 (1.3)	8	0
V72	Special investigations & examinations	33 (1.2)	19	1
620	Non-inflammatory disorders of ovary, fallopian tube, & broad ligament	29 (1.1)	21	1
640	Hemorrhage in early pregnancy	29 (1.1)	25	5
220	Benign neoplasm of ovary	24 (0.9)	19	5
256	Ovarian dysfunction	22 (0.8)	15	0
Others		372 (13.9)	181	23

*Data presented as n (%) or n. ICD-9-CM = International Classification of Diseases, Ninth Revision, Clinical Modification.

Table 4. Principal diagnoses for admissions within 1 year after first visits to obstetricians/gynecologists by adolescent girls within the National Health Insurance program in Taiwan in 2006

ICD-9-CM code	Diagnosis group	Admissions, n
220	Benign neoplasm of ovary	5
285	Other and unspecified anemias	1
614	Inflammatory disease of ovary, fallopian tube, pelvic cellular tissue, & peritoneum	1
620	Non-inflammatory disorders of ovary, fallopian tube, & broad ligament	3
633	Ectopic pregnancy	1
640–649	Complications mainly related to pregnancy	13
650–659	Normal delivery, and other indications for care in pregnancy, labor, & delivery	51
660–669	Complications occurring mainly in the course of labor & delivery	9
752	Congenital anomalies of genital organs	1

ICD-9-CM = International Classification of Diseases, Ninth Revision, Clinical Modification.

Although the leading specialist society in the US recommends that girls have their first visits to obstetricians/gynecologists for preventive health services at the age of 13–15 years,³ only a small number of adolescent girls in Taiwan consult obstetricians/gynecologists for the first time in a year, and even fewer do so for preventive services. The psychosocial factor might play an important role in Taiwan. For example, embarrassment during pelvic examination is usually felt by women in different countries.^{15,16} On the other hand,

our study revealed that medications were prescribed during most of the first visits to obstetricians/gynecologists and nearly 1 third of patients received ≥ 3 items. This implies that adolescent girls in Taiwan usually visited obstetricians/gynecologists because of physical problems rather than for preventive services. According to information from the Council of Youth Rights Promotion and Protection, Ministry of Interior, Executive Yuan, Republic of China,¹⁷ an investigation in 2000 revealed that 13.9% of male adolescents and

10.4% of female adolescents had sexual experience. The rates might have increased in recent years. Furthermore, human papillomavirus vaccination is emerging as a new kind of health care. Therefore, preventive services deserve attention in Taiwan.

Previous studies have shown that more than half of gynecologic visits by adolescent girls are due to menstrual disorders.^{14,16} Other studies reported that menstruation-related problems can affect up to 75% of adolescent girls and are the leading causes of both school absenteeism and physician visits.^{8,18} Although menstrual disorders accounted for the majority of first visits to obstetricians/gynecologists in our study, the help-seeking girls were only a small minority of all adolescent girls in Taiwan. Perhaps most girls and/or their family adopted a wait-and-see attitude toward menstrual disorders¹⁹ or they just consulted other primary care providers.

In our study, the pregnancy test was the most oft performed examination, and it often followed the principal diagnosis of menstrual disorders. Experts have suggested that as girls gradually reach maturation of reproductive potential after menarche, pregnancy tests should not be ignored in the management of menstrual disorders in adolescents.²⁰ Another reason for frequent pregnancy tests at such visits might be that many girls seek medical help solely out of concern that they may be pregnant.²¹ Before the final diagnosis is made, obstetricians/gynecologists may initially diagnose menstrual disorders in order to help the girls avoid disgrace.

Although admissions during the follow-up period were infrequent in our study, the majority of admissions were related to pregnancy. Adolescent pregnancy, implied by pregnancy tests and the diagnoses for later admissions, corresponded with the finding from a previous study that identified birth control as a health care service that is needed by adolescents but suboptimally received.² In fact, adolescent pregnancy is a major social issue in Taiwan. According to official statistics, 5,086 of all 205,720 newborns in 2006 were born to mothers younger than 20 years.²² Because abortions without medical indications are not reimbursed by Taiwan's NHI and thus not recorded in the NHIRD, a considerable number of non-recorded cases likely exist.

There were some limitations in our study. First, the diagnoses listed on NHI claims mainly serve administrative purposes. They are sometimes tentative and not final diagnoses, especially in ambulatory settings. Also, they are the doctors' impressions rather than the actual reasons for consultation. Second, the claims study is a type of utilization study. Compared to results from questionnaires or interviews, the prevalence of

each disorder in our study is unavoidably underestimated. Third, our study represents the utilization of obstetricians/gynecologists only and is not designed to determine utilization for reproductive needs through other health care providers. Adolescent girls might visit obstetricians/gynecologists for non-gynecologic problems. On the other hand, they might visit pediatricians, family physicians, internists or even school nurses for gynecologic problems and preventive services. In particular, some hospitals might allocate adolescent patients to their pediatrics department. Fourth, visits to obstetricians/gynecologists with out-of-pocket expenses would not be included in NHI claims, leading to underestimation in our results.

In conclusion, menstrual disorders were the most common problems for which adolescent girls in Taiwan made their first visits to obstetricians/gynecologists. The majority of subsequent admissions were pregnancy-related, indicating that adolescent pregnancy deserves further attention.

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