Original Study

The Prescribing of Contraceptives for Adolescents in German Gynecologic Practices in 2007 and 2011: A Retrospective Database Analysis

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A B S T R A C T

Objective: To investigate the prescribing trend of contraceptives in adolescent girls aged 12-18 years and to compare prescribing patterns of the most frequently used contraceptives among this population in Germany in 2007 and 2011.
Methods: A retrospective cohort study was conducted to analyze contraceptive prescriptions written by gynecologists in 2007 and 2011 in Germany by using the IMS Disease Analyzer database (IMS HEALTH). All adolescent girls aged 12-18 years with at least 1 prescription of a contraceptive drug in 2007 or 2011 were identified. The prevalence of contraceptive prescriptions was calculated and the types of contraceptive substances prescribed were examined.
Results: A total of 21,026 teenage girls in 2007 and 18,969 in 2011 received contraceptive prescriptions. The prevalence of contraceptive prescribing rose significantly between 2007 and 2011 ($P < .001$). The percentage of teen girls who received prescriptions of levonorgestrel and chlormadinone pills was significantly higher in 2011 compared to 2007 ($P < .001$). However, the portion of contraceptive pills containing drospirenone or desogestrel significantly decreased in 2011 compared to 2007 ($P < .01$).
Conclusion: There was a significant increase in contraceptive prescription usage among adolescent girls between 2007 and 2011 in Germany. However, the prescription behavior of doctors also changed; they consequently prescribed contraceptives with more evidence. Further research is needed to better understand the various factors associated with contraceptive use among this population.
Key Words: Adolescents, Contraception, Pregnancy prevention

Introduction

Contraceptive medications are the most popular form of reversible contraception, and different forms, such as injectable and oral contraceptive drugs, are available. Though injectable hormonal contraceptives are considered the most effective, oral forms are preferred by most adolescent girls due to their ease of use.[1,2] Contraceptive usage among teenage girls has been increasing in the past few years.[3] A recent study showed that the percentage of teenage girls that received a prescription for oral contraceptives increased from 12% in 2002 to 18% in 2009 in the US.[4] Oral contraceptives are mainly indicated for birth control; however, they can also be prescribed to treat conditions such as painful bleeding, acne, and cycle regulation.[5,6]

Adolescents are the age group at the highest risk for unintended pregnancy and the importance of avoiding unprotected sexual activity among adolescents has been recognized worldwide.[7]

In Germany, in 2006, according to the Federal Statistical Office, 6153 children were born whose mothers were girls under 18 years of age AND 6590 girls less than 18 years old had abortions in the same period. The possible psychosocial consequences of young motherhood are negative social outcomes such as achieving lower level of education.[8] In another study conducted in UK research has found the early onset of sexual activity (before age 16) among adolescents to be related to teen pregnancy.[9]

As the prevalence of teenage pregnancy continues to increase,[8] investigation of contraceptive prescribing in this population is warranted. In addition, there is currently limited evidence on contraceptive prescribing patterns in adolescents in Germany. Therefore, the purpose of this study was to investigate prescribing trends and the prescribing patterns of the most frequently prescribed oral contraceptives to adolescent girls aged 12-18 years in 2007 and in 2011, in Germany.

Patients and Methods

Data Source

IMS Disease Analyzer has access to a selected panel of physicians' practices and patients. The data are generated directly from the computers in the physicians' practices via standardized interfaces and provide daily routine information on patients' diseases and therapies. A practice transmits patient data stored in the physician's computer to IMS on a monthly basis. Before transmission, the data are encrypted for data protection and contain in similar scope and detail the information in the files of patients in the doctor's practice. Each month, the physician receives a doctor feedback

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report reflecting his own prescription pattern and providing a means to compare it to those of collaborating colleagues in the IMS panel within his specialist group. The Disease Analyzer database provides a complete listing of all relevant patient details for each practice. The data obtained directly from the practice computers are checked for plausibility, linked to relevant additional information such as the price of a medicinal product, ATC and ICD coded, saved, and updated on a monthly basis. The data bank includes only anonymized data in compliance with the regulations of the applicable data protection laws. The sampling method for the Disease Analyzer database is based on summary statistics from all doctors in Germany published yearly by the German Medical Association (Bundesärztekammer) [http://www.baek.de]. The statistical unit of IMS uses these statistics to determine the panel design according to the following strata: specialist group, German federal state, community size category, and age of physician. This panel design forms the basis for the acquisition of the practices processed in the Disease Analyzer.[10]

The quality of the information of IMS Disease Analyzer data has been validated and the completeness of its medical recording is highly respected.[11] The database contains data from approximately 3100 primary care practices and 20 million patients in Germany in the time between 1992 and 2012. The database has been extensively used for drug utilization studies.[12,13]

Study Population

A total of 164 gynecologic practices contributed data to IMS Disease Analyzer in Germany between 2007 and 2011 (study period). This study cohort consisted of female adolescents aged 12-18 years who had had at least 1 visit to a gynecologic practice in 2007 or 2011. All patients with at least 1 prescription of a contraceptive drug (ATC: G03A) were identified from the study cohort. The study cohort was stratified into 2 age bands: 12-15 years and 16-18 years.

Study Outcomes

The main outcome of this study was to investigate the prevalence of contraceptive prescribing (ATC: G03A) in 2007 and in 2011. The prevalence of contraceptive prescribing in 2007 and 2011 was calculated as the number of adolescents girls, aged 12-18 years, with at least 1 prescription of a contraceptive drug divided by the number of teenage girls, aged 12-18 years in the database, in each of these years respectively. In addition, the pattern of the contraceptives prescribed to the teenage girls aged 12-15 years and 16-18 years in 2007 and 2011 and the reasons for the prescription(s) were examined.

Statistical Analysis

Data were analysed using SAS software version 9.2 (SAS Institute, Cary, NC). Descriptive analyses were used to determine frequencies for contraceptive use overall and in each age group and each year; 95% binomial lower and upper confidence limits for prevalence were used.

Results

Prevalence of Contraceptive Use in Gynecologic Practices

In total, 33,430 teenage girls aged 12-18 years in 2007 (mean 16.7 years, SD 1.2) and 28,237 in 2011 (mean 16.7 years, SD 1.2) were included in this study.

In 2007 62.9% (21,026) and in 2011, 67.2% (18,969) of the teenage girls in the overall study cohort received contraceptive prescriptions. There was a statistically significant difference in the prevalence of teenage girls with contraceptive prescriptions between 2007 and 2011 ($P < .001$), which was also reflected in the age groups ($P < .001$).

Figure 1 shows the prevalence of teenage girls in the age groups of 12-15 and 16-18 years with contraceptive prescriptions in 2007 and 2011.

Indications for Prescribing

Overall, the main indication for the prescription of an oral contraceptive pill was known for 43.2% (14,442) of the patients in 2007 and for 67.2% (18,969) of them in 2011, with contraceptive management being the main reason for receiving a prescription in both age groups and study periods. Pain and other conditions associated with female reproductive organs and the menstrual cycle were the second most common reason for receiving contraceptive prescriptions as documented by gynecologists. Other reasons for the prescriptions included acne and excessive, frequent, or irregular menstruation (Table 1).

Prescribed Contraceptives

Table 2 shows the most commonly prescribed contraceptive substances in each period stratified by age group. In the 2 study periods, oral contraceptives dominated. There was no significant increase in the number of girls prescribed injectable or vaginal contraceptives from 2007 to 2011. The combination of 'ethinylestradiol & levonorgestrel' was the most frequently prescribed substance. The percentage of teenage girls aged 12-15 years receiving prescriptions for 'ethinylestradiol & levonorgestrel' pills was significantly higher in 2011 than 2007. The percentages of prescriptions

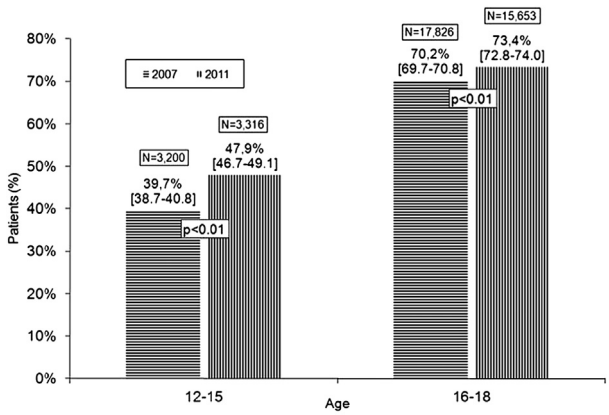

Fig. 1. Prevalence of contraceptive prescribing in adolescent girls aged 12-15 years and 16-18 years in gynecologic practices in Germany.