



The current status of sexually transmitted infections in South Korean children in the last 10 years

Yumi Jang ^{ID}, Eunjung Oh ^{ID}

Division of HIV/AIDS Control, Korea Disease Control and Prevention Agency, Cheongju, Korea

ABSTRACT

Objectives: This study aimed to review the status of sexually transmitted infections (STIs) in children in South Korea between 2010 and 2019, as well as to establish guidelines for the prevention and management to reduce the incidence of STIs in children.

Methods: Data reports from 590 STI surveillance institutions in local health center, hospital-level medical institutions with urology or obstetrics/gynecology departments and public hospitals between 2010 and 2019 in the integrative disease management system of the Korea Disease Control and Prevention Agency as of December 2020 were analyzed.

Results: A total of 172,645 cases of STIs were reported over the 10-year period (2010–2019), of which 2,179 cases (1.26%) represented STIs in children below the age of 18 years. A higher incidence of infections was observed in girls (1,499 cases, 68.79%) than in boys (680 cases, 31.21%). The STIs that had the highest incidence were, in descending order, chlamydial infections (997 cases, 45.75%), gonorrhea (592 cases, 27.17%), condyloma acuminata (338 cases, 15.51%), genital herpes (250 cases, 11.47%), and chancroid (2 cases, 0.09%). In adolescents aged 14 to 17 years, chlamydial infections, genital herpes, and gonorrhea were most frequently reported. Condyloma acuminata, in particular, have been consistently reported in children below the age of 14 years.

Conclusion: Children must be protected legally and institutionally from sexual abuse. Specific management protocols for STIs in children must be established by local governments and associated organizations. National human papillomavirus vaccination programs should be expanded to include boys, and anti-STI educational efforts using modern media should be more activated.

Keywords: Adolescent; Child; Child welfare; Sexual offenses; Sexually transmitted infections

Received: April 10, 2021

Revised: June 30, 2021

Accepted: July 9, 2021

Corresponding author:

Eunjung Oh

Division of HIV/AIDS Control,
Korea Disease Control and
Prevention Agency, 187
Osongsaengmyeong 2-ro,
Osong-eup, Heungdeok-gu,
Cheongju 28159, Korea
E-mail: dmswj3@korea.kr

Introduction

Incidents of child abuse have been reported in Korea on an ongoing basis, and social interest in the topic has been increasing due to media coverage. According to Article 3, Section 1 of

the Child Welfare Act, a child is considered a person below the age of 18 years. Article 3, Section 7 defines child abuse as harm to the health or welfare of the child or physical, emotional, or sexual violence, or harassment inflicted by an adult, including the child's guardian, as well as the abandonment or neglect of a child by the child's guardian, that might impede the healthy development of a child.

Child abuse is broadly classified into physical abuse, emotional abuse, neglect, and sexual abuse [1]. Physical abuse refers to any non-accidental act in which an adult causes or allows the infliction of bodily harm to a child. Examples include bodily harm inflicted directly or through the use of a tool(s), force, or harmful substances. Emotional abuse refers to verbal insults, emotional threats, locking up a child, restraint, and other abusive behaviors towards a child by an adult and can also be termed verbal, mental, or psychological abuse. Other than offensive verbal abuse, emotional abuse can include not putting a child to bed or expulsion from the home without clothes. Neglect refers to the act of a guardian placing a child in a dangerous environment or failing to provide the child with essential food, clothing, shelter, necessary education, or medical attention [2]. Finally, sexual abuse refers to any sexual activity performed by an adult, including the child's guardian, against a child below the age of 18 years for the purpose of satisfying the adult's own sexual desire, specifically when the child does not consent to or is not old enough to legally consent to the sexual activity [3].

Sexual abuse can lead not only to physical disabilities, but also to a range of mental health problems such as mental disorders, cognitive disorders, and social maladjustment [4]. Hence, there is a pressing need for a national effort to prevent recurrence and new incidents. Current national efforts for the prevention of child abuse include regulation of the roles of the local governments by Article 22 Section 1 of the Child Welfare Act and Article 23 of the Enforcement Decree of the Child Welfare Act, the installation and operation of emergency telephone lines, and events and promotions pertaining to the designated annual Child Abuse Prevention Day (November 19). In addition, education about the duty to report child abuse, as well as counseling and education for perpetrators of child abuse, are recommended. Nevertheless, in cases of sexual abuse, which requires a close examination of clinical symptoms and continuing treatment by a clinician, Article 10 of the Act on Special Cases concerning the Punishment of Child Abuse and Article 34 of the Act on Protecting Children and Adolescents from Sexual Abuse offer vague criteria on the reporting of child abuse, making it difficult for representatives of the local government to understand and

fulfill their duty to report cases.

The 7 types of sexually transmitted infections (STIs) that can be contracted from sexual abuse are classified as level 4 legal communicable diseases. Although epidemiological investigations are conducted for other level 4 communicable diseases such as hand, foot, and mouth disease with complications, influenza, rotavirus, respiratory syncytial virus, acquired immune deficiency syndrome, and novel communicable diseases [5], no epidemiological investigations are being conducted on STIs. Moreover, there might be limitations to conducting fact-based investigations due to prejudices and stigma regarding sexual activity. This study aimed to examine the incidence of STIs based on the number of cases reported in the sentinel surveillance systems over 10 years (2010–2019) and analyzed the high-risk age groups. These findings will help in suggesting national prevention and management guidelines to reduce the incidence of STIs in children in the future.

Materials and Methods

Currently, patient reports for the 7 types of STIs are obtained through a sentinel surveillance system at select institutions. The STIs that require reporting of suspected or confirmed patients are gonorrhea, genital herpes, and condyloma acuminata, while the STIs that require reporting of confirmed cases are chlamydial infections, chancroid, and syphilis, and carriers of human papillomavirus (HPV) must also be reported [6].

Institutions that are a part of the STI surveillance system include local health center, clinic- or hospital-level medical institutions with urology or obstetrics/gynecology (OB-GYN) departments, and public hospitals. There is one designated institution for every 100,000 persons in cities, counties, and districts. In cities and counties with a population of less than 100,000, public health center is designated. Reports of patients and suspected cases from the previous week (Sunday to Saturday) are sent by web or fax to the local public health center within 7 days (every Tuesday) and then each province sends the reports to the Korea Disease Control and Prevention Agency each week (Figure 1). Data from the 590 STI surveillance institutions in local health center and clinic- or hospital-level medical institutions with urology or OB-GYN departments, and public hospitals reported between 2010 and 2019 in the integrative disease management system at the Korea Disease Control and Prevention Agency as of December 2020 were included. Furthermore, reports on syphilis, which had been reported for mandatory surveillance until December 31, 2019 were excluded.

Results

Total Number of Cases

In the last 10 years, 172,645 cases of STIs were reported, of

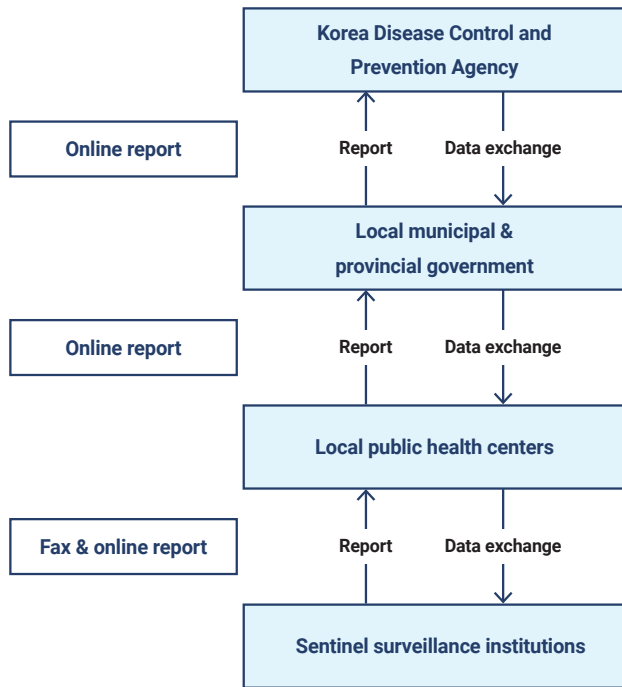


Figure 1. Sexually transmitted infection (STI) reporting system. Upon confirmation of a STI listed under the 7 legal communicable diseases, the sentinel surveillance system (in local health centers, medical institutions, public hospitals) must alert and report to the local public health center, local municipal & provincial government, and the Korea Disease Control and Prevention Agency through the web reporting system.

which 2,179 were cases of STIs in children below the age of 18 years. Among them, the most commonly reported STIs were as follows: 997 cases (45.75%) of chlamydial infections, 592 cases (27.17%) of gonorrhea, 338 cases (15.51%) of condyloma acuminata, 250 cases (11.47%) of genital herpes, and 2 cases (0.09%) of chancroid. The incidence of chancroid has been decreasing each year since 2008; of the 4 cases reported in 2019, 2 were reported in individuals aged 17 years (Figure 2).

An assessment of the annual number of reported cases of STIs revealed the highest incidence of chlamydial infections across all the years and a steady increase each year. The incidence of gonorrhea, condyloma acuminata, and genital herpes was generally high, while the incidence of chancroid was lowest (Figure 3). As of 2015, there has been a general increase in STIs. Chlamydial infections have been increasing each year, while the incidence of gonorrhea peaked in 2016, decreased slightly thereafter, but increased once again in 2019. The incidence of genital herpes has been steadily increasing since 2012, while high numbers of cases of condyloma acuminata were reported in 2019.

Reporting by Sex and Age Group

Among the total of 2,179 cases, girls accounted for 1,499 cases (68.79%), which was approximately 2.2 times higher than the number in boys, who accounted for 680 cases (31.21%) (Figure 4). Among the 680 cases reported in boys, there were 36 cases (5.29%) of genital herpes, 344 cases (50.59%) of gonorrhea, 110 cases (16.18%) of condyloma acuminata, 190 cases (27.94%) of chlamydial infections, and 0 cases (0.0%) of chancroid. Among the 1,499 cases reported

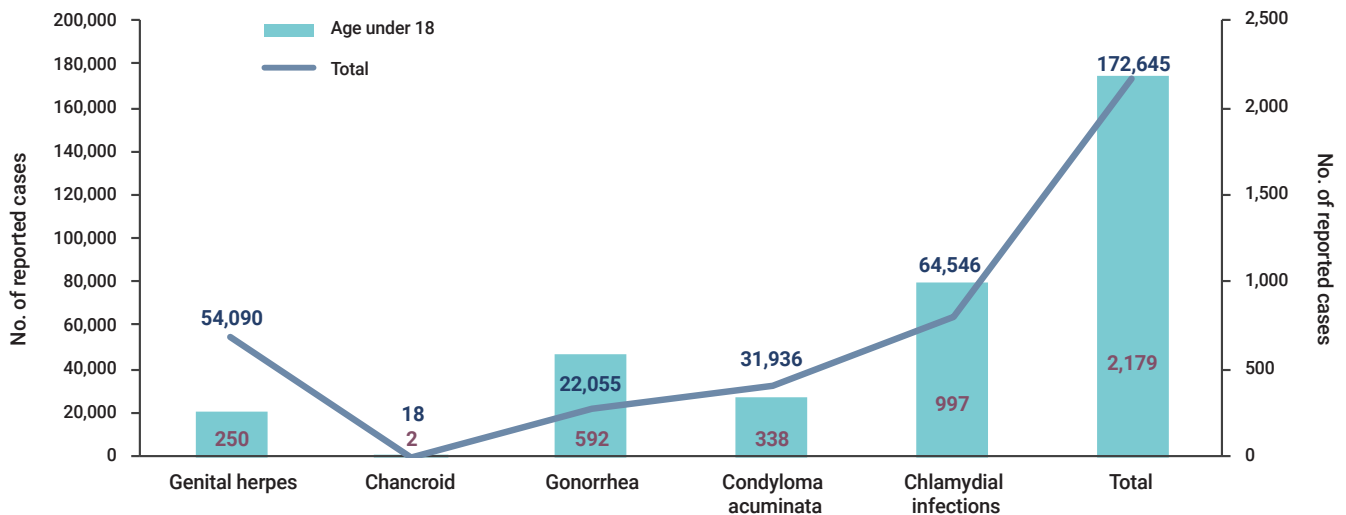


Figure 2. The number of reported cases of sexually transmitted infections (STIs) involving children below the age of 18 years. In the last 10 years (2010–2019); the number of reports of STIs in children has been increasing. The incidence of chlamydial infections was the highest, while that of chancroid was the lowest.

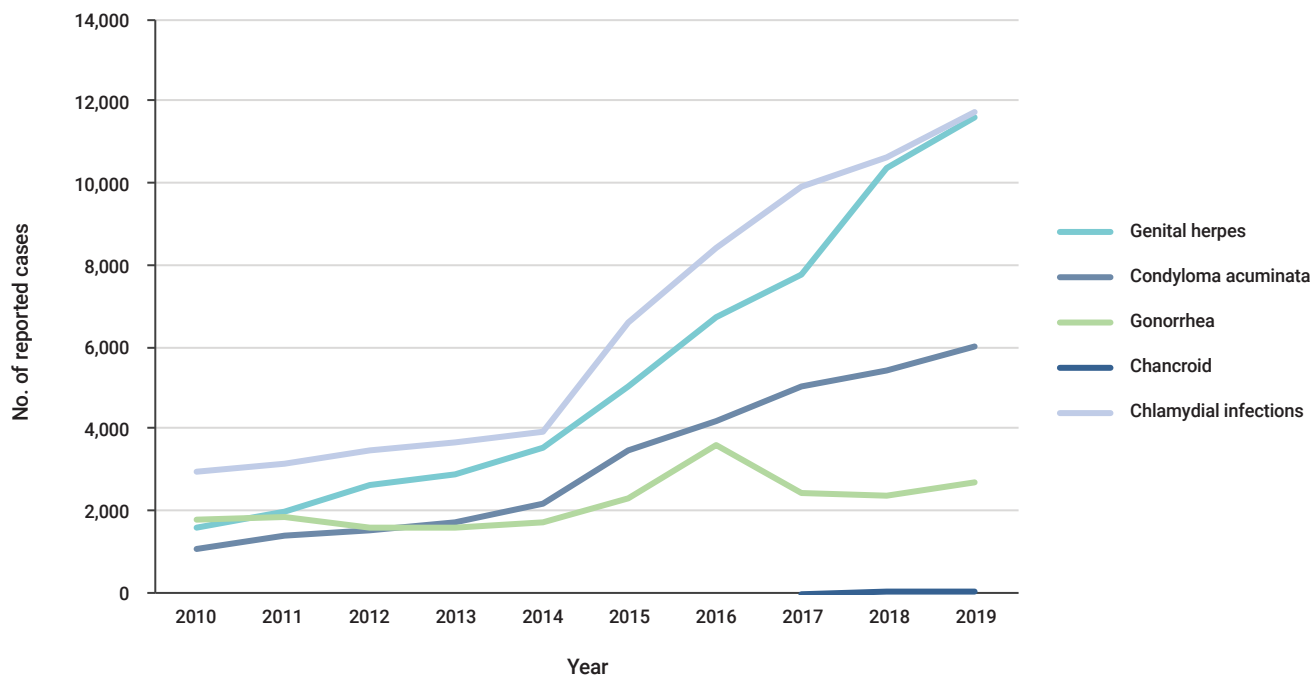


Figure 3. The number of reported cases of sexually transmitted infections (STIs) in children in Korea, by type of STIs. The most commonly reported STIs in children in Korea were as follows: chlamydial infections, gonorrhoea, genital herpes, condyloma acuminata, and chancroid.

in girls, there were 214 cases (14.28%) of genital herpes, 248 cases (16.54%) of gonorrhoea, 228 cases (15.21%) of condyloma acuminata, 807 cases (53.84%) of chlamydial infections, and 2 cases (0.13%) of chancroid. Thus, it is evident that the most commonly reported STIs in boys and girls were gonorrhoea and chlamydial infections, respectively. In cases reported by age group, reports of chlamydial infections were highest in all age groups at 997 cases (45.75%), followed by gonorrhoea (592 cases, 27.17%), condyloma acuminata (338 cases, 15.51%), genital herpes (250 cases, 11.47%), and chancroid (2 cases, 0.09%) (Figure 5).

Discussion

An analysis of the reported data revealed a total of 172,645 cases of STIs over 10 years (2010–2019), of which 2,179 cases (1.26%) were in children below the age of 18 years. An analysis of the 2,179 cases of STIs in children revealed that there were approximately 2.2 times more cases in girls (1,499 cases, 68.79%) than in boys (680 cases, 31.21%). The most commonly reported STIs were chlamydial infections (997 cases, 45.75%), gonorrhoea (592 cases, 27.17%), condyloma acuminata (338 cases, 15.51%), genital herpes (250 cases, 11.47%), and chancroid (2 cases, 0.09%). Chlamydial infections, genital herpes, and gonorrhoea were common among adolescents aged between 14 to 17 years. Condyloma

acuminata, in particular, were consistently reported in children below the age of 14 years.

The limitations of this study are as follows. Since the analyzed data were only cases reported from the 590 designated surveillance sites, it was difficult to identify cases in other institutions. Furthermore, previous reports of syphilis potentially caused by sexual abuse were excluded, as reports were documented under mandatory surveillance only until 2019. Finally, although a child is defined as an individual below the age of 18 years under the Child Welfare Act, the age listed in local government guidelines for reporting STIs has been adjusted to children below the age of 10 years to reflect the trend among younger individuals to engage in sexual activity. Thus, the number of reported cases might actually be higher than those in the analyzed data. In terms of the guidelines for STIs treatment, the World Health Organization and other nations have listed reporting standards involving specific STIs in which sexual abuse is highly suspected [7]. Such STIs listed in the United States include trichomonas, genital herpes, and condyloma acuminata [8], while in Canada, the list includes gonorrhoea and trichomonas in children under 6 years of age, with an obligation to report chlamydial infections as a suspected case of sexual abuse [9].

However, the Korean STI treatment guidelines published in 2016 don't have enough information about the sexual abuse

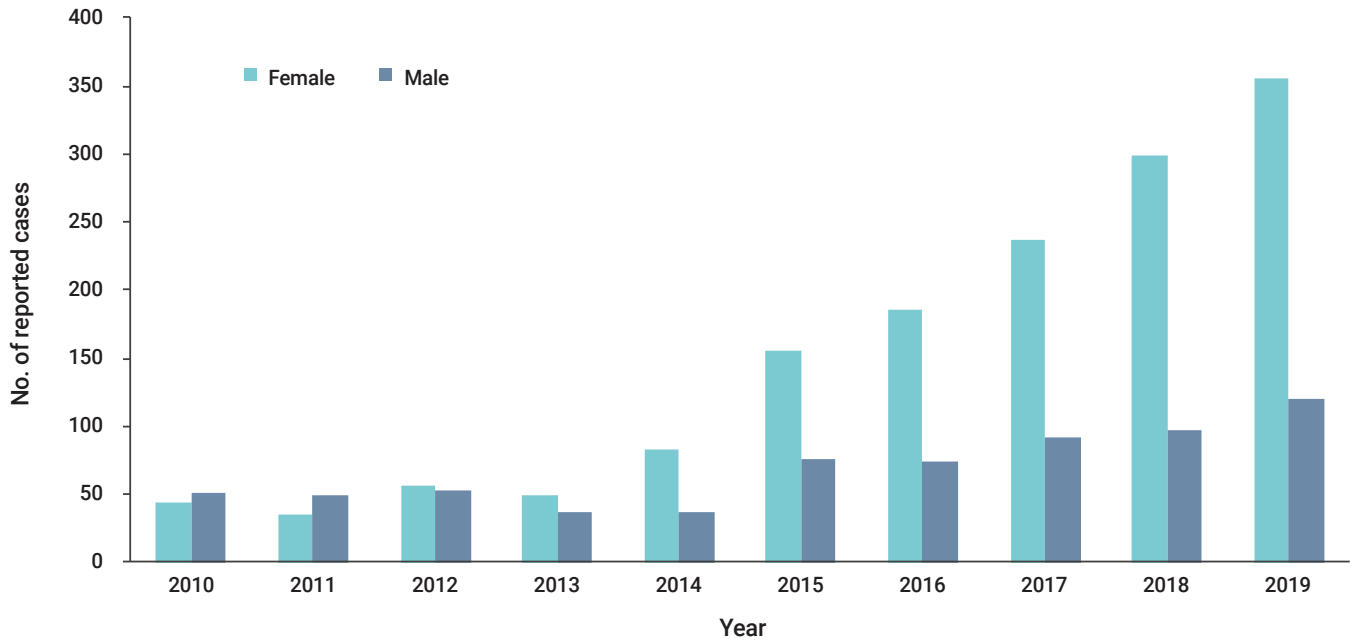


Figure 4. The number of reported cases of sexually transmitted infections in children in Korea, by sex. Although there were more cases reported in boys until 2010/2011, the number of cases reported in girls has significantly increased since 2012.

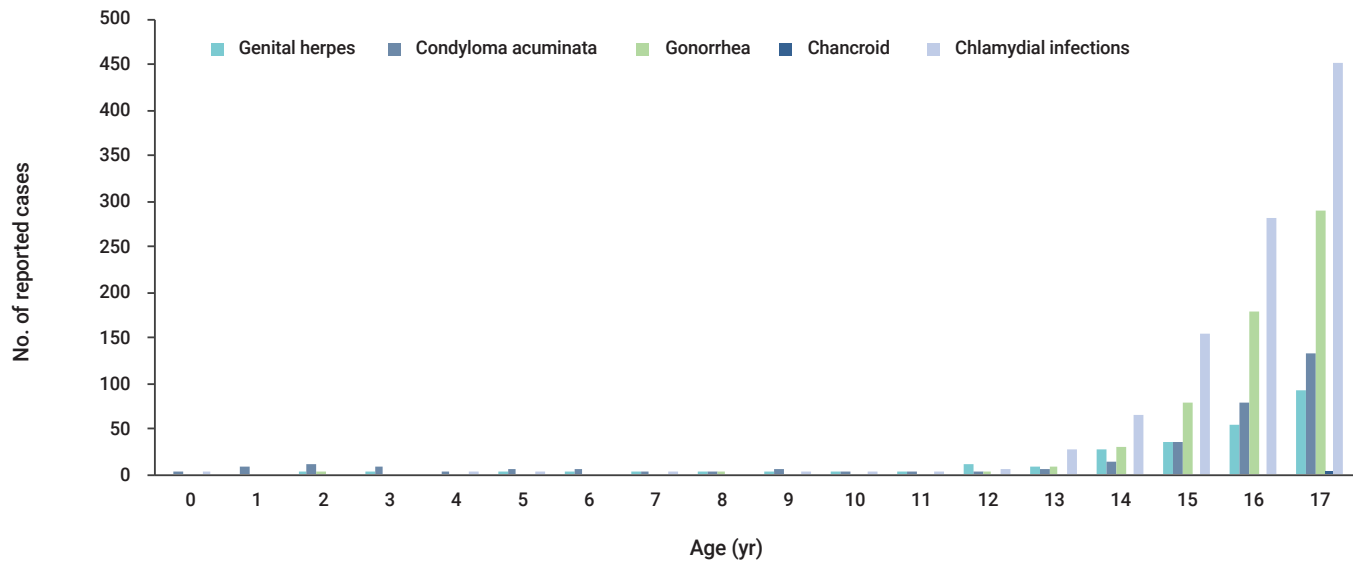


Figure 5. Number of reported cases of sexually transmitted infections (STIs) in children in Korea, by age. The highest incidence was observed in children aged 17 years or older. In all age groups, the most commonly reported STIs were genital herpes, gonorrhea, and condyloma acuminata.

of children [10]. According to the 2020 STIs management guidelines, confirmed cases of STIs are to be reported to local police, local child protection services, and the ‘112’ phone line, while no additional measure or examinations are conducted for suspected cases with visible clinical symptoms. Condyloma acuminata, which have been regularly

reported in adolescents, are growths that occur on the external genitals from HPV infections and can be prevented with HPV vaccines. Although HPV vaccines are included in the mandatory vaccination program in Korea, they are limited to girls aged 11 to 12 years. However, in countries such as the United States, Canada, England, and Australia, the

HPV vaccine is also considered mandatory for boys in the same age group.

Legal and institutional arrangements for the protection of children from sexual abuse must be made to foster a safe and healthy environment for the proper physical and emotional development of children. There is a need to establish specific management protocols in local governments and associated organizations for the recovery or management of STIs in children. Furthermore, for cases of STIs in which sexual abuse is highly suspected, there is a need to establish guidelines for reporting by responsible local government personnel and the response following the reports. Boys should also be considered in the mandatory HPV vaccination program to prevent HPV infections. Finally, to reduce the incidence of STIs in specific age and sex groups, special attention should be paid to evidence-based promotion and education.

Notes

Ethics Approval

Not applicable.

Conflicts of Interest

The authors have no conflicts of interest to declare.

Funding

None.

Availability of Data

All data come from the studies included in references.

References

1. World Health Organization (WHO). World report on violence and health. Geneva: WHO; 2002.
2. Korea Ministry of Government Legislation. Act on special cases concerning the punishment, etc. of child abuse crimes, Act No. 16248 [Internet]. Korea Ministry of Government Legislation; 2019 Jan 15 [cited 2021 Feb 21]. Available from: https://elaw.klri.re.kr/eng_service/lawView.do?hseq=515578&lang=ENG.
3. Murray LK, Nguyen A, Cohen JA. Child sexual abuse. *Child Adolesc Psychiatr Clin N Am* 2014;23:321–37.
4. Chen LP, Murad MH, Paras ML, et al. Sexual abuse and lifetime diagnosis of psychiatric disorders: systematic review and meta-analysis. *Mayo Clin Proc* 2010;85:618–29.
5. Korea Disease Control and Prevention Agency (KDCA). Infectious disease portal [Internet]. Cheongju:KDCA;2020 [cited 2020 Jan 16]. Available from: <http://www.kdca.go.kr/npt/biz/npp/nppMain.do>. Korean.
6. Korea Disease Control and Prevention Agency (KDCA). Case definitions for national notifiable infectious diseases. Cheongju: KDCA; 2020. Korean.
7. World Health Organization (WHO). Guidelines for the management of sexually transmitted infections. Geneva: WHO; 2001.
8. Workowski KA, Bolan GA, Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines, 2015. *MMWR Recomm Rep* 2015;64(RR-03):1–137.
9. Public Health Agency of Canada (PHAC). Canadian guidelines on sexually transmitted infections. Ottawa: PHAC; 2020.
10. Korea Disease Control and Prevention Agency (KDCA). Sexually transmitted infections management guideline. Cheongju: KDCA; 2020. Korean.