Using CiteSpace Knowledge Information Visualization Software in the Visual Analysis of the Law Research: Set Juvenile Sexual Assault as an Example

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Abstract. The crime of sexual assault is of one essential aspect of law research in China nowadays. At present, the number of domestic research literature on the crime of sexual assault on minors is rising. In this paper, CiteSpace knowledge information visualization software, SPSS, excel analysis software are used to analyze all the sexually assaulting juvenile literatures collected in CNKI in the past 10 years, and show the current situation and structural characteristics of the research on sexual assault juvenile crime in the form of knowledge network atlas, so as to grasp the current situation of the research on juvenile sexual assault crime in China from a macro perspective. This paper aims to provide a valuable reference for the research on the attack and prevention of juvenile sexual assault.

Keywords. Minors; Sexual assault; Literature analysis; Visual analysis; Law Research

1. Introduction

In recent ten years, as one essential aspect of law research, the crime of sexual assault on children occurred frequently in our country, which aroused the attention of the society. Especially, teachers use their positions to threaten and lure minors to sexually abuse them. Compared with the traditional sexual assault crimes, their concealment is enhanced, the span of time is long, and the psychological and physiological harm to minors is even worse. Due to the frequent occurrence of sexual assault on minors, the state's legislative crackdown on juvenile sexual assault is also deepening. For example, the Supreme People's court, the Supreme People's Procuratorate, the Ministry of public security and the Ministry of Justice jointly issued the "opinions on punishing crimes of sexual assault on minors according to law" in 2013 to severely punish the bad acts of sexual assault on minors. In 2015, the criminal law amendment (IX) expanded the object of indecent crime to men, and abolished the crime of whoring with a young girl and changed it into the crime of rape, so as to strengthen the protection of sexual assault on minors.

2. Research process and data sources

Based on the data collected by CNKI database, the subject of "sexual assault on minors" was conducted from February 1, 2010 to October 1, 2020. A total of 816 literatures were retrieved and exported in ref works format with the help of CiteSpace Knowledge information visualization software, found the keywords of sexual assault juvenile crime, and cluster analysis of the keywords, and then on this basis, with the help of SPSS and Excel software, further hot spot analysis and frontier analysis of sexual assault juvenile crime, clear the current research status and development direction of sexual assault juvenile crime in China, which is more intuitive in the form of chart. This paper shows the hot issues in recent years. In the past ten years, the literature about sexual assault on minors can be roughly divided into three stages. First, from 2012 to 2013, the number of published articles increased rapidly, from 5 in 2012 to
101 in 2013; second, during the stable period from 2013 to 2018, the number of articles published each year was close to 100. Thirdly, the number of papers published in 2019 will be 213, and the number of papers predicted by CNKI in 2020 will be 200.

3. Analysis of research hotspots
This paper uses CiteSpace information visualization software to transform the data of 816 related literatures collected by CNKI, and then further analyzes and obtains the co-occurrence map of keywords in the study of juvenile sexual assault crime in China; and then clusters the high-frequency keywords according to the years to get the cluster analysis Atlas of keywords, and at the same time, lists the high-frequency keywords list of sexual assault juvenile crime research (as shown in Table 1) and high centrality keyword list (as shown in Table 2), in order to determine the research hotspots of sexual assault on minors in recent years in China; finally, the time-series graph of keywords is obtained by representing the clustering time zone diagram with time dimension, which is used to analyze the research frontier of sexual assault on minors in China in recent years, and analyze and list the list of mutation words.

### Table 1. Keywords and rate.

| Number | Key words                  | Rate | Number | Keyword          | Rate |
|--------|----------------------------|------|--------|------------------|------|
| 1      | juveniles                  | 175  | 11     | Protect          | 10   |
| 2      | Sexual assault on Minors   | 80   | 12     | Crime            | 35   |
| 3      | Sexual abuse               | 61   | 13     | Procuratorial recommendations | 9 |
| 4      | Minor victims              | 44   | 14     | Supreme People's Procuratorate | 8 |
| 5      | children                   | 23   | 15     | Supreme People's Court | 7 |
| 6      | Sex education              | 23   | 16     | Rights and interests of minors | 7 |
| 7      | Child molestation          | 23   | 17     | Sexual assault on campus | 7 |
| 8      | Protection of minors       | 19   | 18     | Prohibition of employment | 19 |
| 9      | Information disclosure     | 17   | 19     | Sexual rights    | 14   |
| 10     | Crime of rape              | 16   | 16     |                  |      |

According to the above analysis results, the relevant data are obtained and compared with the corresponding network summary table to obtain the key words table of high and middle degree (as shown in Table).

### Table 2. Key words table of high and middle degree of mind.

| Number | Key words                  | Degree | Number | Key words                  | Degree |
|--------|----------------------------|--------|--------|----------------------------|--------|
| 1      | juveniles                  | 0.45   | 14     | Rights and interests of minors | 0.08 |
| 2      | Sexual assault on Minors   | 0.31   | 15     | Sexual assault on campus   | 0.08   |
| 3      | Sexual abuse               | 0.18   | 16     | Prohibition of employment  | 0.08   |
| 4      | Minor victims              | 0.18   | 17     | Supreme People's Procuratorate | 0.08 |
| 5      | children                   | 0.17   | 18     | Supreme People’s Court    | 0.08   |
| 6      | Sex education              | 0.14   | 19     | Sexual rights              | 0.06   |
| 7      | Child molestation          | 0.14   | 20     | Criminal law regulation   | 0.06   |
| 8      | Protection of minors       | 0.1    | 21     | Guardianship               | 0.06   |
| 9      | Information disclosure     | 0.1    | 22     | Law on the protection of minors | 0.05 |
| 10     | Crime of rape              | 0.09   | 23     | victim                     | 0.04   |
| 11     | Protect                    | 0.09   | 24     | prevention                 | 0.04   |
| 12     | Crime                      | 0.08   | 25     | Secondary victimization    | 0.03   |
| 13     | Procuratorial recommendations | 0.08 | 26     | Supreme People's Procuratorate | 0.04 |
As can be seen from table 2, in recent years, there are 22 keywords with centrality above 0.05. Among them, 9 keywords are more than 0.1, which are the key nodes in my sexual assault on minors in recent years. To sum up, in recent years, China's sexual assault juvenile crime research has the characteristics of many keywords and high centrality, which also fully proves that China's sexual assault juvenile crime involves relatively more specialties and fields and is relatively comprehensive.

In order to further analyze the current situation and development of the research on sexual assault and juvenile delinquency in China in recent years, based on the parameter setting of keyword co-occurrence map analysis, using the automatic clustering function of CiteSpace, LLR algorithm and Mi algorithm, the keywords are mainly divided into 6 clusters, and the keyword clustering table is formed by "cluster Explorer" (as shown in Table 3).

Table 3. Results of keyword cluster analysis.

| Number | Number of nodes | Number of centers | Year | LLR | MI |
|--------|-----------------|-------------------|------|-----|----|
| 0      | 38              | 0.87              | 2015 | Campus infringement; sexual abuse of minors; children's sexual rights; judicial identification | Indecent behavior; inner conviction; crime management; sexual behavior; public places; |
| 1      | 31              | 0.924             | 2017 | Sexual assault prevention education; legal protection; social work; judicial protection; intervention countermeasures | Countermeasures; consciousness of rule of law; judicial protection; intervening countermeasures; |
| 2      | 26              | 0.923             | 2016 | Minors; psychological counselors; sexual assault cases | Criminal victimization; protection; judicial social workers; protection and prevention; |
| 3      | 25              | 0.721             | 2017 | Countermeasures; rural "left behind girls"; legal improvement | Information registration; residence restriction; reason analysis; legal defects |
| 4      | 19              | 0.717             | 2016 | Sexual assault; judicial center; special protection; | Witness procedure; children's physical and mental health; juvenile trial work |
| 5      | 15              | 0.922             | 2018 | Procuratorial suggestion; Supreme People's Procuratorate; guardianship | Social governance innovation; case handling mechanism; guardianship intervention |

Sexual assault on minors is the largest cluster with 38 nodes, which reflects the focus of domestic research on juvenile sexual assault in 2015, mainly focusing on campus sexual abuse, children's sexual rights, and the identification of sexual assault on minors.

The number of cluster nodes of anti sexual assault education is 31, which indicates that the domestic research on sexual abuse minors in 2017 is mainly reflected in the prevention of sexual abuse education and judicial protection.

The number of nodes of guardian cluster is 26, which reflects the hot spot of domestic sexual assault juvenile crime in 2016 as countermeasures, mainly including the research on psychological counseling of victims and civil compensation.

The number of nodes of the cluster of sexual assault crimes is 25, which shows that the domestic juvenile sexual assault crimes mainly focus on the rural "left behind girls" in 2017.

The number of nodes in the cluster of sexual crimes is 22, which reflects that in 2014, the most research focus on campus security and public guardianship system.

The number of sexual assault clustering is 19, which shows that the research on sexual assault juvenile delinquency in 2011 focused on the prosecution and trial stage, mainly in the court hearing procedure and the prohibition of criminal suspect's prohibition.
The number of nodes in the cluster of procuratorial suggestions is 15, which indicates that the hot spot of domestic sexual assault on juvenile delinquency in 2018 is social governance innovation, including the improvement of juvenile registration system, residential restrictions, etc.

4. Conclusion and Prospect

1) From the key words analysis, the current research on sexual abuse of minors mainly focuses on campus sexual abuse, children's sexual rights, as well as the identification of sexual abuse of minors. The research focus changes from post relief to pre-prevention; the research scope is further expanded to social governance innovation, including the improvement of juvenile registration system, residential restrictions, etc.

2) According to the analysis of the number of papers and keywords, the number of research is closely related to the changes of national policies. In the past 10 years, due to the frequent occurrence of sexual assault on minors, the state's legislative crackdown on sexual assault on minors is also deepening. For example, the criminal law amendment (IX) in 2015 expanded the object of indecent crime to men, and abolished the crime of whoring with a young girl and changed it into the crime of rape, so as to strengthen the protection of sexual assault on minors. In 2020, the 22nd session of the 13th Standing Committee of the National People's Congress passed the revised law on the protection of minors.

3) From the background of the researchers, there are four types of domestic researchers about the crime of sexual assault on minors. First, teachers engaged in investigation and law studies in law schools of political science and law colleges and normal universities; second, prosecutors of the People's Procuratorate; third, Youth Legal Aid and Research center and Women's Federation; fourth, undergraduate and graduate students majoring in law. Generally speaking, the academic background of researchers is unbalanced and single.

In view of the fact that the current theoretical research on the crime of sexual assault on minors is out of date, with few innovative achievements and relatively single academic background of researchers, future research can broaden the scope of theoretical research, increase the research on foreign related crimes, and combine the crime with other types of crime.

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