Analysis of the Knowledge Map and Knowledge Modelling Based on CSSCI: A Case of China's Drug Problem Study

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Abstract. In this paper, CiteSpace software is used to quantitatively analyze 568 related literature in CSSCI database from 2009 to 2019, and draw the knowledge map of research keywords. Despite of a simple data or information flow diagrams, we also used the mathematical modelling to make a more comprehensive analysis. On this basis, the development history and research focus of drug research are summarized. The results show that: at present, the research on drug problem has expanded from drug problem itself to drug-related problem, mainly focusing on law and history; the research field has been refined, and quantitative research methods have been increased.

Keywords. Drug problem; Knowledge map; CSSCI; CiteSpace; Knowledge modelling

1. Introduction
Drug problem has a long history, and has developed into a worldwide problem, and gradually presents new characteristics. China has been suffering from drug abuse for many years, but the effect is not satisfactory. Domestic scholars have also carried out a lot of theoretical and empirical research on the drug problem, but mainly focused on the analysis of the characteristics and harm of drugs, drug-related crimes, and from the perspective of punishment to explore whether the specific legal punishment of drug-related crimes is reasonable. For example, the mechanism of recovering illegal gains from drug-related crimes is studied, and the relevant legal systems such as the standard of proof, the burden of proof and property preservation measures should be improved. Some scholars have analyzed the judicial problems of the crime of illegal possession of drugs, trying to provide reference for judicial practice. There are also many young scholars to study the identification methods of new drug problems, providing reference for drug control. For example, the application of Raman spectroscopy in the rapid detection of new drugs has been studied. It is found that the use of Raman spectroscopy can effectively identify traces of methamphetamine and potassium powder residues, and also can identify the authenticity of drugs. Traditional literature review methods are subjective in terms of literature selection, classification criteria and hot spot interpretation, with low efficiency and limited literature coverage.

2. Research methods and data sources

2.1. The Establishment of Knowledge Mapping and Modelling
Knowledge Map and Modelling were conducted in various research areas, an evaluation model can also be established to evaluate China’s drug problem study. In this paper,
CiteSpace software is used as a tool and the method of knowledge mapping is used to quantitatively analyze all the literatures in a long time span, sort out the research hot-spots, preface and change rules, and draw an intuitive visual knowledge map, which provides a more comprehensive reference for the follow-up research.

2.2. Research methods
Knowledge map, also known as the map of scientific knowledge, is developed on the basis of information visualization technology and citation analysis theory. [4] Using visualization technology to describe the knowledge resources and their carriers owned by human beings over time, it is a graphic expression way of drawing, mining, analyzing and displaying scientific and technological knowledge and their interrelationship. In this paper, CiteSpace software is used as the analysis tool. CiteSpace software can co-exist, co-citation and coupling of keywords, authors, institutions, source journals, fund projects and other contents of the sample literature, and get intuitive analysis results through differentiated icons, lines, colors, words and other visual forms. Currently, there are no scholars using cite in crime related fields Space software studies the drug problem, only a few scholars use this method to study money laundering, [5] campus violence, juvenile delinquency.[6]

2.3. Data sources
At present, there are two kinds of domestic database sources used in the research of knowledge mapping: CNKI database and CSSCI database. The data scale of CNKI database is larger, but the literature types are more complex. The literature types of CSSCI database are controlled in journals, which have higher academic level, greater influence, stronger timeliness, more strict selection of papers, more standardized editing and publishing, and stronger comparability of basically unified data type and academic level of various documents, so this paper adopts CSSCI number According to the source of literature.

In the CSSCI database, "drug" was searched as a key word, and the retrieval time was from 2009 to 2019. Then, the retrieval results were sorted out and 568 literature works were selected as the research object of this paper after eliminating the irrelevant literature.

3. Number of papers and time distribution of research hot-spots
The number of published papers reflects the active degree of the research field. The annual distribution statistics of published papers in the drug research field is shown in the figure (Figure 1). It can be seen that the number of published papers shows a downward trend of fluctuation. Through CiteSpace, all the papers on drugs published in CSSCI from 2009 to 2019 are analyzed. The software extracts the important concepts in the articles, extracts them according to frequency and time to generate a map, so that people can quickly and intuitively understand the hot spots and changes of previous researchers in this field by reading the pictures.
From the time distribution chart of research hot-spots, we can see the transfer of research hot-spots (Figure 2). The position of the time axis corresponding to the keywords indicates the earliest occurrence time of the word. The size of keywords and cross marks indicates the frequency of keywords. The larger the size, the higher the frequency.

Social hot spots and policy focus have great influence on the amount of papers published and the transfer of research hotspots. Before 2009, opium has always occupied the main drug market, and affected by the Golden Triangle region, the drug problem in Asian countries has been relatively serious. In December 2014, NATO announced that the International Security Assistance Force (ISAF) in Afghanistan officially ended its combat mission, and foreign troops withdrew in succession. Afghanistan's domestic security situation deteriorated further. As the Shanghai Cooperation Organization (SCO), Afghan drugs brought serious social problems to SCO member states. In 2016, the interpretation of the Supreme People's Court on the application of law in the trial of drug-related crimes started to become a hot spot.

4. Keywords and their clustering analysis
CiteSpace software extracts keywords according to the occurrence frequency and intermediary centrality of the phrases in the input literature, and selects the highest frequency
of each year for a certain regulation calculation, and then generates the keyword co-occurrence map (Figure 3). The size of the cross icon below the keyword text indicates the frequency of keywords; the thickness of keywords indicates the degree of close connection; the thicker the keyword, the closer the relationship.

Figure 3. Key words co-occurrence map.

From the map we can see that: the relationship between keywords has a more obvious structural relationship, with several important keywords as the center and radiates around; the meaning of key words is clear, and there is a clear logical relationship between words. CiteSpace software calculates and groups closely related keywords, which is called keyword clustering. The software calculates the literature of this study and forms nine different keyword clusters (Figure 4).

Figure 4. Keywords cluster map.

(1) Drug crime
At present, the drug crime group has a tendency of being younger and feminization. Internet plus logistics has become a new mode of drug crime. The new characteristics of drug-related crimes make the academic circles begin to study drug-related crimes again.

(2) Afghanistan
At present, Afghanistan is the largest producer of illegal opium in the world. Since the 1990s, Afghanistan has produced about 75% of the international market on average. It is also the
second largest producer of illicit cannabis in the world. Afghanistan in the heart of the country is one of the world's largest poppy growers.

(3) Adolescent

According to the data of the office of the national anti drug Commission of China (2018), by the end of 2017, there were 2.553 million drug users in China, of which 1.486 million were young drug users, accounting for 59.3% of the national drug users. There is still a long way to go in drug control and drug prevention education for adolescent.

5. Summary and Prospect

Based on the literature of CSSCI database, CiteSpace software is used as the main research tool to systematically analyze the relevant literature, and the following conclusions are obtained

(1) From the analysis of key words, we can see that the current research on drug problem has expanded from drug problem itself to drug-related problem. Focus on drug abuse among young people.

(2) According to the analysis of the number of published papers and keywords, the fluctuation of the number of published papers has decreased since 2013, and will increase significantly in some periods, which is closely related to national policies.

(3) From the perspective of publishing institutions and literature sources, there are mainly three categories: Law, history and education. This paper discusses the penalty of drug-related crimes, the historical experience of drug control at home and abroad, and the adverse consequences of drug-related crimes.

With the in-depth development of technology, drug-related criminal activities show a variety of forms, with increased secrecy and greater difficulty in combating. However, it is the consensus of all countries in the world to deal with the drug problem, so it needs close cooperation among countries. In addition, the participants of drug activities often cover different ages and occupations. Understanding the current situation and causes of drug-related among different groups can provide reference for comprehensively tackling the drug problem. Future research can be carried out in the following aspects:

(1) Penalty characteristics of drug crimes at home and abroad

(2) Feasibility of international cooperation

(3) Drug related problems of different groups

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