

## *A Study of the Social Causes of Over-Medication in China*

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### **Abstract**

This paper seeks to examine the root causes of the pharmaceutical drugs over-use or over-medication in China. By this mean, there is considerable evidence of this overuse, and it appears to be more extensive than in western countries. I have applied 'Countervailing Power' as a theoretical model to explore how this overuse relates and interacts with the power of government, pharmaceutical industry, medical profession and patient. The research is expected to contribute the strategies and recommendations to reduce this overuse and improve healthcare system with policy design, implementation, and evaluation, doctors prescribing behaviour, and the doctor-patient relationship. The analytical results of this research will also shed some critical light on the current global issues addressing the role of the state and effective healthcare policy implementation in the healthcare domain. The study has mainly used qualitative methodology. The primary methods of data collection are: 1) structured and semi-structured interviews and survey that focus on doctors in Shandong province, my home province, 2) review of documents and literatures obtained from government (e.g. MOH report and year book of public health) and non-government sources.

**Keywords:** Over-medication, Overuse, Countervailing Power

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## **Background**

As the launch of market-oriented socio-economic reforms in China since 1978, China's health care system has been changed tremendously. However, the health care market is far from mature in the absence of an effective management system and self-regulation, this medical system has come under strain and conflicts. Studies in this field thus far have shown that China's healthcare sector has encountered deep problems since these reforms were initiated, and one of most important problems need to be solved is that over-medication. It is a very controversial issue in China. Recently, it is a commonly acknowledged phenomenon in China, and has become the focus of the public.

Based on a report of WHO 1985, over-medication is properly defined as an inappropriate medical treatment that occurs as a patient takes excessive or unnecessary medications. Over-medication is highly related to over-prescription, which is defined here as the practice of over-prescribing medicines, prescribing unnecessary costly medicines, and I will discuss this over-prescription later.

Medication overuse in China is prominently manifested in the overuse of antibiotics. One former study found that 98% of outpatients with a common cold were prescribed antibiotics (Zhan et al., 1998). Another study has estimated that about 50% of antibiotic prescriptions in China were medically unnecessary (Cheng, 2005). More recent study found that around 75% of patients with seasonal influenza are estimated to be prescribed antibiotics, and the rate of antibiotic prescription to inpatients is 80% (Zheng and Zhou, 2007).

As a comparison research conducted by IMS Health in 2005, it is clear that the number of antibiotics prescribed per capita was significantly higher in China than in other developed and developing countries observed. WHO also notes that the antibiotics in Chinese hospitals have been prescribed in as many as 80% of all patient visits, compared with the WHO recommended the international average rate of 30% for the antibiotic usage. However, researcher found that antibiotic use is high among outpatients in China as well: 40-60% use antibiotics. In comparison, in the U.S., the outpatient rate of antibiotic use is from 15% to 18% (Dong et al., 1999; Roumie et al., 2005; Zhang et al., 2008).

## **Methodology**

Donald Light (1995) used the concept of countervailing power in his analysis of health care services and distinguished four main powers: the state, the medical-industrial complex, the medical profession and the public. He argued that countervailing powers are powers in dynamic relation each other, if one power is dominant, its dominance tends to elicit a reaction from another power or powers to redress this imbalance. I have applied Light's 'Countervailing Powers' as a theoretical model to explore how this overuse relates and interacts with the power of government, pharmaceutical industry, medical profession and patients. The aim of the research is to explore how and to what extent these four key actors caused over-medication in China?

The research will mainly use qualitative method and compared with the quantitative data. I have reviewed the relevant documents and literatures, and compared with the quantitative data obtained from diverse sources, such as China's Ministry of Health (MOH) report and year book of public health from government and some other non-government sources, which will be used to examine the power of government and pharmaceutical industry. However, since there are very few studies addressing doctors' behaviour in relation to over-medication in China, so I have used the structured and semi-structured survey interviews to collect for the target doctors' groups.

Interviews have been done in Shandong province, my home province. My personal biography experience influenced my choice of Shandong as my fieldwork site. I understand that Shandong cannot represent China as a whole, but as one of the major provinces in economy, agriculture, and culture, second largest population in China, it is considered to have the best resources in healthcare and a superb management mechanism. Shandong is also in the frontline for healthcare policy implementation. So data collected in Shandong is expected to be representative.

Target informant groups are medical doctors from urban cities, and rural counties and villages (Eligible informants will be 18+). The study have utilized a snowballing technique to approach subjects, and I have used the personal networks to approach subjects and then requesting existing informants to introduce their friends or colleagues who meet the criteria to participate, a sample of 120 doctors has been collected, including 52 doctors from three urban hospitals and 68 doctors from four rural hospitals and health clinics in Shandong.

### The survey research design

I have employed survey interviews in my fieldwork. The survey research I carried out consists of two stages (the Pilot Survey and the Main Survey) as shown in this diagram. In order to design the main survey's questionnaires, semi-structured interviews were chosen as the preferred method for the pilot survey, which aimed to explore the research questions and identify key themes.

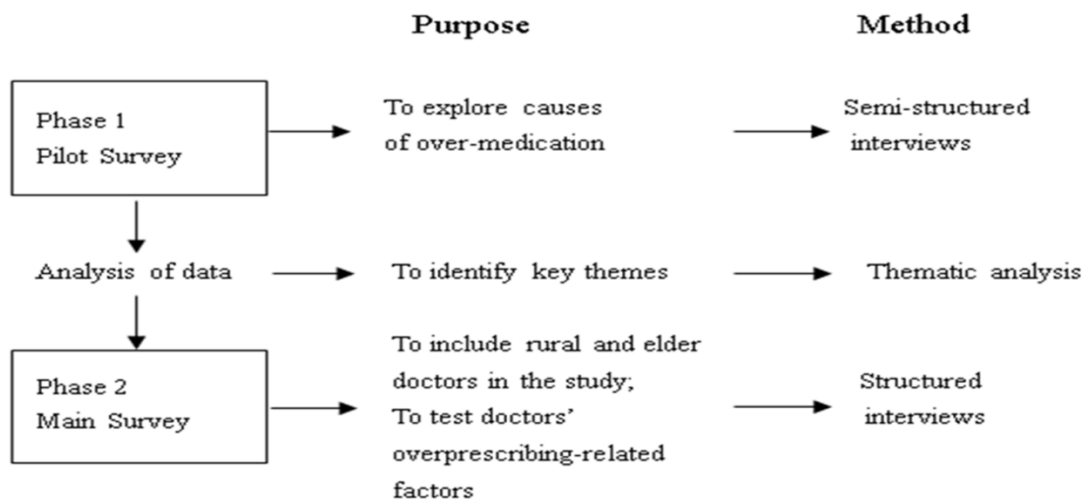


Figure 1: The survey research design

There were two main limitations of the pilot survey sample. Initially, I only focused on urban hospital doctors and did not include rural hospital or health clinic doctors. However, in the pilot interviews of urban doctors, in which they were asked about over-medication in China, most urban doctors actually found it difficult to focus purely on urban issues, often comparing urban and rural hospitals. I therefore had to make adjustments to the survey and questionnaire. Hence, I recognized from the interviews, urban hospital doctors are not representative of Chinese doctors as a whole, and I also noticed how important it was that I collected data from rural doctors to compare with that of the urban doctors. In order to represent rural doctors, I needed to include country hospital doctors and health clinic doctors in the main survey. The main survey aimed to explore the factors that encourage over-prescribing by doctors, hence over-medication in China.

### **The content of the main survey questionnaires**

The questionnaire of the main survey was generated from the results of the pilot survey. Through the reviews of relevant documents and literatures, it appeared that doctors' overprescribing behaviour is related to three key factors that I call "medicine interventionism", "professional knowledge" and "financial incentives". I sought in both interviews and questionnaires to explore these areas.

Consequently, in the main survey, the questionnaire consisted of 25 questions. However, I initially decided to remove some questions that did not link to the findings from the first stage, and add some questions based on the results of the pilot survey. The areas covered by this questionnaire are shown in this table.

<b>Factors/Variables</b>	<b>Contents</b>
<b>Medicine interventionism</b>	<b>Frequency of prescription</b>
	<b>Increasing dosage of medicine</b>
<b>Professional knowledge</b>	<b>Knowledge of Choosing drugs</b>
	<b>Definition of over-medication</b>
<b>Pharmaceutical industry related financial incentives</b>	<b>Pharmaceutical marketing</b>
	<b>Profit-oriented prescribing</b>

Table 1: The content of the main survey questionnaire

The first part of the questionnaire concerned medicine intervention and concerned the doctor's wish/plan to "doing something for the patient", in some contexts to increase the prescription in order to avoid taking any risk involved in not treating patients. The second part the questionnaire considers the doctors' knowledge on the use of medicines, addressing their prescribing decisions, how they know about drugs' information and characteristics, and how to choose suitable medicines. The third part of the questionnaire is about financial incentives for over-prescribing behaviour. Since there is a profit-chain between the pharmaceutical industry and doctors, these questions are designed to investigate the doctor's prescribing behaviour driven by financial incentives such as kickbacks, bonus and rewards, etc.

## **The power of government**

In China, there is a risk for low thresholds in the regulation of drug registration and approval process due to the official corruption, which leads to more 'new' drugs come into the market. For example, Xiaoyu Zheng, who is the Chief of China Food and Drugs Administration (SFDA) from 1998 to 2005, he was convicted of taking bribes 6.5m yuan (\$850,000; £650,000) from pharmaceutical companies to register and issue the approvals of new drugs, so there are astonishing number of more than 150,000 "new" medicines issued in 2004, most of those 150,000 medicines were the products of the eight pharmaceutical companies, an average of unbelievable 100 times that of the US FDA, Zheng was also guilty of dereliction of duty, personally order approval of their products without making them undergo the necessary checks. As a result, government officials taking the bribes from pharmaceutical companies lead to a considerable number of so-called "new" drugs appeared in the market annually, which also increase the risk of prescribing unnecessary expensive drugs when dispensing those "new" medicines (Santoro and Liu, 2009).

In China, structural and economic changes imposed by the transition to a market economy have had a profound impact on the healthcare sector (Berman and Bossert 2000). As the unintended consequence of devolution, the local governments have allowed private medical practices, given increasing autonomy to public health institution, suggested the public health institution to contract operation and partly outsource the services etc (Zhang, 1987; Kan, 1990). In rural areas, village health clinics were sold or contracted to individual, township hospitals were closed or sold to private practitioner, public health facilities reduced quickly with rapid expansion of private medical care. The central government issued a series of new policies regarding hospital reforms since 1980s, main points of which included: allowing hospitals to make profits by providing medical services and selling drugs, and deregulating price control.

In 2000s, the government allowed hospital pharmacies to charge a 15% mark-up on the wholesale price of drugs, it encourages hospitals and medical profession to overprescribe pharmaceutical drugs. However, manufacturers can apply for special pricing permission for higher prices if their drugs have greater efficacy. Consequently, this loophole in the government price policy ambiguously leaves a gap for pharmaceutical manufacturers to allow them setting higher prices, seeking for more profits by "differentiation" for their products, which I will talk about it in the next slide.

The reduction of government funding of health services, which also has a significant effect on prescribing through distorted incentives for hospitals and doctors arising from insufficient government subsidies and poor medical salaries. For example, public health care providers such as public hospitals, face financial pressures as shrinking government budgets caused dramatic cuts in subsidies. There was a gradual shift in hospital financing from an average of 50% government provision of public hospital revenues in the 1980s to less than 10% in 2000, it also means that the average percentage of Chinese state-owned hospital income from government sources declined 40% within two decade (Eggleston and Yip, 2004; Ramesh and Wu, 2009). Although these hospitals continued to be called public, this reduction meant that public hospitals, the large majority of hospitals in China, were forced to operate like

for-profit private providers in order to generate sufficient revenue (Yip and Mahal, 2008). In this context, the reduced government role in subsidizing and regulating the healthcare sector builds incentives for the profit-seeking behaviour into the healthcare provision system, which leads to the collusion between the pharmaceutical industry and the hospital to encourage overuse of pharmaceutical drugs.

Finally, although the government has a role for making guidelines to the public on safe use of medication, mostly indirect advice via medical profession and the pharmaceutical industry, so guidelines have less effect on controlling drug use or reducing over-medication.

### **The power of the pharmaceutical industry**

Firstly, I argue that the loose regulation of drug approval and pricing loopholes in China, allows pharmaceutical manufacturers to use these loopholes to circumvent price policy by differentiating drug products in a rather superficial way. In addition, they give bribes to government officials in exchange for “new” drugs approvals, while pharmaceutical companies claim that these “new” drugs are “more effective” or “better” drugs. However, in fact, “most new drugs offer little or no advantage over existing drugs to offset their greater risk” (Light, 2010: 2). A “new” drug is a means for the industry to secure a higher price. These new drugs encourage hospitals and doctors to dispense/prescribe more “new” expensive drugs in larger quantity than might be necessary.

Obviously, this partial regulatory measure leaves space for manufacturers and hospitals to circumvent governmental regulation. In fact that pharmaceutical manufactures in China have a lot of alternatives, such as transform the generic drug to so called “new” drugs by changing such specifications, dosage and package or adding a little irrelevant ingredient to avoid the government regulation. Moreover, it also implies that in order to obtain “new” drugs approval, some pharmaceutical companies give bribes to the government officials in exchange for new drug approvals. For example, as mentioned early, in 2004, 150,000 approvals have been issued, but only about 22 new drugs among them were innovative with intellectual property rights.

Secondly, I argue that extensive marketing campaigns directly targeted at doctors is a concrete way that pharmaceutical companies attempt to influence prescribing practice, thereby encouraging the greater use of drugs to boost sales. In order to persuade doctors to use their products, the industry tries to develop favourable relations with hospital administrators and doctors by various promotional activities, such, free drug samples, entertainment, and funding for continuing medical education, as well as kickbacks and bribes. For example, the well-known British multinational pharmaceutical company GSK was the ringleader involved in a half a billion dollar bribery corruption linked with 700 companies in China. The managers in GSK’s China business had used travel agencies for making money with arbitrage to sponsor such trips, dinner, medical conference and seminars, then giving gifts to some hospital doctors. As well as the French multinational pharmaceutical company Sanofi bribed 503 doctors with so-called “research grants” of 1.69 million Yuan (\$276,000, £169,000) for 79 hospitals in Beijing, Shanghai, Guangzhou in China in late 2007 (Yap & Burkitt, 2013). The evidence indicates that people who attend events that pharmaceutical company holds or accept gifts or grants that pharmaceutical company

offers tend to prescribe that company's drugs (Goldacre, 2012). Also, doctors rely heavily on the information and products provided by the industry, and sales representatives of drug companies are often the most important source of information about new medicines. Consequently, there is an overlap or duality of interest of both the pharmaceutical industry and doctors in respect to encouraging the great use of drugs.

Thirdly, pharmaceutical marketing tactics not only persuade hospital administrators and doctors to use more of their prescription drugs, but also "educate" or more accurately persuade the public to use the drugs the companies produce by the slogans and images used in advertising. This is largely done via the advertisements on TV, newspapers, journals, and on-line, etc., which significantly influences beliefs and behavior of the public in the pattern of drug use, and it may encourage the greater use of self-medication. This may also lead to a considerable impact on what the public purchase for OTC drugs and request from doctors, increasing the risk of unnecessary drug use by self-medication and the demand for prescription drugs. In addition, some patient groups have been financially supported by drug companies, addressing patients directly to advocate the greater use of their pharmaceutical products.

### **The power of the medical profession & over-prescribing**

Medical profession play a crucial role on use of medications, and prescribing is not a straightforward practice, and the dominant factors are not yet well understood. However, I have examined the doctors' prescribing process using my own data, in order to demonstrate the way in which the medical profession exercise its power in a way that influences prescribing patterns. I found that the fundamental factors such as professional knowledge, the range of perceptions, attitudes, experiences, and the preferences of doctors and patients, all have more or less influence on medication use in China. Although the overriding responsibility of medical profession is to try to cure the disease, doctors may misuse their power in any of the three dimensions of power: social authority, knowledge and finance, and this lead to an inappropriate prescribing or unnecessary medication.

Only licensed doctors have prescribing powers in China, unlike in the UK, where non-physician healthcare professionals (e.g. nurses and pharmacists) other than doctors can write a limited range of prescriptions. Therefore, the medical profession has a monopoly power over the prescribing in China, and the clinical decision-making process is also mainly dominated by medical practitioners and with patients tending to quest what doctors say in a rather unique sharing manners due to a more paternalistic style of consultations and large information asymmetry (Thistlethwaite et al., 2010: 239).

Since the medical profession largely has a monopoly power over the prescribing of medicines, they crucially play a gate-keeping role, officially rationing and regulating patient access to specialized medicines, deciding which to prescribe and whether any drug is needed. This role is important firstly as doctors have authority over identifying illness, officially defining whether a person is ill and determining whether a specific medication is necessary or not (Freidson, 1988); secondly, doctors have the most extensive power to prescribe with the increasing number of available medicines, and may also recommend OTC drugs.

As prescribing has become such a core feature of medical practice, medicine's interventionism is more likely to have an effect against doctors' gate-keeping role in prescribing medicines. This interventionism is not only founded in altruism, but is also necessary to sustain doctors' status and power, in order to retain patients who want something done for them. Medication is seen as a first-hand solution to a wide range of problems, thus a prescription provides a relatively speedy way of ending the medical encounters with a prescription. In this respect, a prescription indicates that a doctor has something to offer to help their patients, and the patients' request is "Doctor, do something" not, "Doctor, tell me if this is true or not", even though sometimes the doctors' help is unlikely to make a real difference to patients' condition (Freidson, 1988: 22; Butler et al., 1998). This interventionism is also related to what has been called the optimism bias, which is the belief that the patient will beat the odds, no matter how unlikely this might be. The optimism bias encourages patients to undertake treatments that have only tiny chances of success, in the belief that they will be part of the tiny minority that is successful, rather than part of the vast majority who are not. Consequently, the requirements of a doctor's job is to solve the practical problems that people bring to them, and try their best to provide "good results" to satisfy patients' needs (Freidson, 1988: 22).

The "good results" of medical practice rely on a sound foundation of knowledge. A significant majority of doctors in China wittingly or unwittingly contribute to the prescription drug epidemic because of inadequate knowledge, given the complexity of choosing a medication from the large variety of medicines and dosages. They may lack clear practice norms and guidelines, or professional knowledge of medicines that could meet the patients' needs. Further, most of the doctors only focus on "good results", and are mainly concerned about the effectiveness of medication, and pay less attention to side-effects.

Furthermore, the interest chain between hospitals and the pharmaceutical industry is another important factor that may encourage doctors' prescribing behaviour; and this economic incentive becomes an inducement for over-medication. The higher the drug price, the more the financial incentives to procure and prescribe it by hospitals and doctors, since there is also an insufficient funds and subsidies from government.

### **The power of the public**

On the demand side, the public or patients can choose to use doctors or self-medication (e.g. OTC), and comply or do not comply with the drug regimes. Consequently, non-use of doctors/non-adherence of the drug regimes could increase the possibility of patients' self-over-medication, otherwise patients have to be attracted, which is essential to the career of medical profession, so doctors tend to prescribe if patients requested for more medicines.

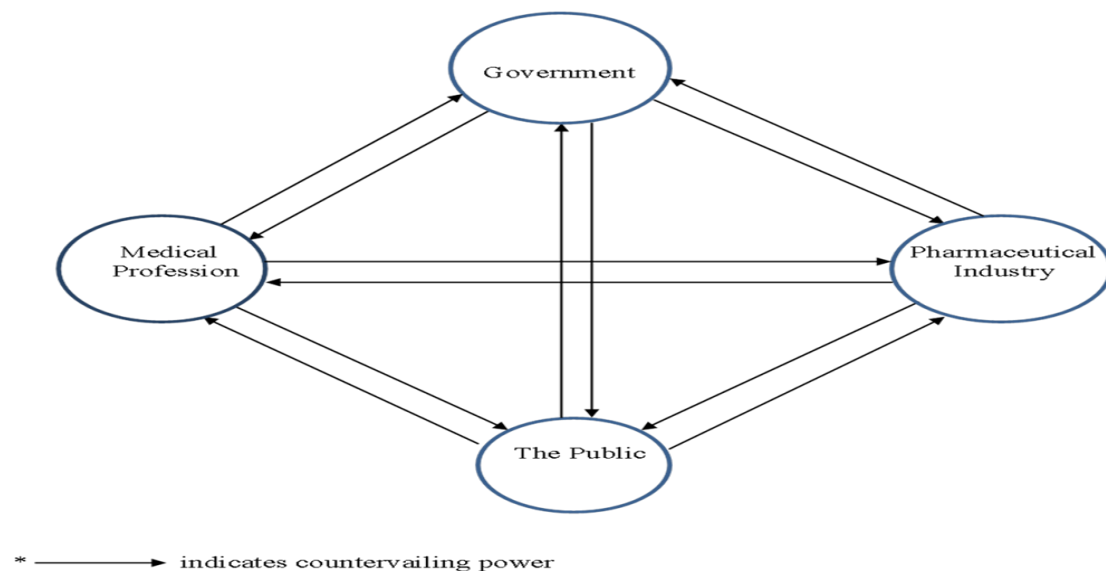
Collectively user groups share opinions (e.g. effectiveness, side effects, low quality/inferior drugs, etc.) through media (e.g. Newspaper, Journal, TV, etc), internet (e.g. Twitter, etc.) against the failure of the pharmaceutical industry. Therefore, patients have more public ideas/comments about which drug is "good" or "bad", however, some user groups can be funded/supported by the industry, and patients can demand easier access to some drugs (e.g. access some drugs online), so these would increase the use of certain drugs.



Adverse publicity about the healthcare policy and system, demands and campaigns for the reform result in patients demand for cheaper medicines and more effective policy to control over-prescription, but they play a rather limited role here and only collectively patients group have this power.

### Key findings

The changing power structure between the social relations of government, pharmaceutical industry, medical profession and patients could be sketched as an interacting system as shown in the diagram. I identified a diamond pattern of the relationships between these four actors in China.



Note: The government's influence on the public's use of medicines is usually indirect via the medical profession and the pharmaceutical industry.

Figure 2: The framework of countervailing powers

The government has played a crucial role over other three actors in relation to regulate the healthcare sectors and medicine use, which is a powerful actor, but failed to control overuse.

Most doctors have an interest in prescribing the pharmaceutical industry's products, and in supporting the pharmaceutical industry, and often act as a partner of the industry, rather than acting as a countervailing power.

As the medical profession only rarely acts as a countervailing power against the pharmaceutical industry, whereas patients as a group or individually one are also not strong enough to neutralize it. Consequently, doctors and the pharmaceutical industry are not challenged, but contribute to over-prescribe.

Patients could only collectively be an important countervailing power against the alliance of doctors and the pharmaceutical industry, but patients have typically been

deferential towards medical profession. However, the public is now starting to play an important role in changing patterns of drug use (e.g. by increasing self-medication).

## **Conclusion**

My thesis is the very first in the English language with regard to the issue of over-medication in China offering a new critical perspective in understanding the relationship between the state, the pharmaceutical industry, the medical profession and the public. I would argue that the study of the interaction between these different groups of actors in the healthcare domain has been the key here to an understanding of “over-medication” in China. This thesis has made several contributions based on the countervailing power framework. Far from demonstrating a failure of the theory, this thesis offers and demonstrates the utility of the countervailing powers theory in China’s healthcare context. At the point of finishing this thesis, the countervailing power framework had been only applied in the western countries (e.g. UK and US).

I argue the state has, to some extent, allied with medical profession and pharmaceutical industry in China, to provide a new market in healthcare provision. The state allows the profession and industry to make profits from selling drugs, enables them access to “pharmaceuticalization” through legislation, thus creating a new market opportunity, and the doctors and pharmaceutical industry (manufacturers and companies) have picked up on that opportunity. In a sense, it may be argued that the actions of “big pharma” as the extensive power are intended to reduce the power of all other actors, whereby they seek to undermine the state, the medical profession and the public, as a means of asserting and maintaining their own dominance in the field. Meanwhile, as the role of the state is different, I also found the strong link between pharmaceutical industry and medical profession, which is a powerful “industrial-professional complex” in China’s healthcare context that lead to the difficulty for any other powers, particularly patients, to act as a countervailing power against these allies, I believe this argument in my thesis, to some extent, is an important development in Light’s theoretical argument, and it would be one well worth pursuing. The research will, I hope, contribute to the strategies and recommendations to reduce medication overuse.

The main fields of empirical research I would like to explore in the future aim to develop the “new medical sociology” using a developed “countervailing power” framework. However, it is arguable that the lessons learned from China can be also applied to other developing countries, or more broadly speaking, it is questionable whether or not this theory can be applied universally. Therefore, future research may be needed to examine the possibility of countervailing powers’ theory being applied to other developing countries or worldwide.

Moreover, it should be also noted that over-medication is not an isolated process. It should be seen within the background of healthcare system reforms. In order to control the overuse of drugs, healthcare policy should consider providing a “good” institutional background for the cultivation of healthcare provision and establish a firmly grounded foundation for the appropriate use of pharmaceuticals. Further research on the cultural background, groundwork and conditions that constitute the phenomenon of over-medication will be helpful in understanding the social causes of over-medication in China’s modern healthcare domain.

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