

An empirical study of the factors affecting moral hazard for doctors based on fraud theory

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Abstract. Doctor moral hazard behavior is a topical and sensitive issue in medicine. Recognition of the factors that influence doctor moral hazard behavior is fundamental to controlling or preventing it. Researchers have identified the factors that influence doctor moral hazard behavior based on models of fraud risk. In this present study, these factors were categorized into five dimensions: motivation, opportunity, rationalization, exposure, and punishment. A literature review and in-depth interviews with experts led to the development of a scale of the factors that affect doctor moral hazard. The scale has good reliability and validity. Data were obtained by interviewing medical staff. By using IBM SPSS 20.0 and AMOS 20.0, nine factors with strong explanatory power were extracted: economic pressure, pressure to undertake scientific research, decision-making autonomy, patient participation, treatment uncertainty, systemic deficiencies, probability of exposure, threat of hospital punishment, and threat of social punishment. The development of the scale and the extraction of the key influencing factors clarified the scope and the nature of factors that influence doctor moral hazard behavior. The analysis also provides a basis for governments and hospitals to govern doctor moral hazard behavior.

1 Introduction

Moral hazard is an insurance-related term used in economics that describes a type of opportunistic behavior^[1] in which an individual who takes on a financial risk does not bear the downside costs. Moral hazard is inevitable in medicine because of information asymmetry. The idea that there is moral hazard in medicine was first published by Arrow in "Uncertainty and the welfare economics of health care" in 1963^[2]. Moral hazard includes both moral hazards for the demander and the supplier of medical services. The central agent in supplier moral hazard is the doctor. In the 1970s, Victor Fuchs of Stanford University and Robert Evans of the University of British Columbia separately proposed a theory of induced demand and the concept of doctor-induced demand^[3,4]. Tancredi and Barondess introduced the concept of defensive medical behavior in 1978^[5], which then was defined as

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“the use of diagnostic and end-treatment measures explicitly for the purposes of averting malpractice suits^[6]”. It can be seen that medical decisions are not always made entirely in a patient’s interest.

Previous research has shown that moral hazard in health care is mainly found in patient examinations, hospitalization and drug administration^[7]. Evans found that doctor moral hazard behavior was manifest in unnecessary or expensive examinations and the prescription of expensive or overused drugs^[7]. More recent studies have shown that overcharging and receiving financial gifts unrelated to treatment were also aspects of doctor moral hazard^[8,9]. Doctor moral hazard has led to the rapid growth of medical expenses in various countries. For example, medical expenditure in the United States increased from \$26.9 billion in 1960 to \$1149.1 billion in 1988, accounting for 14% of GDP^[10]. On March 23, 2010, President Barack Obama signed the Patient Protection and Affordable Care Act (ACA) to reduce medical costs for individuals and governments^[11]. In April 2009, China launched the New Medical Reform and introduced a series of measures to rebuild the country’s medical system and, in so doing, emphasized government leadership of public welfare organizations. The control of medical expenses and the close supervision of medical procedures have gradually become the principal targets of medical reform. These are activities that are closely related to doctor moral hazard. Thus there is an urgency to the reformation and control of doctor moral hazard.

Information asymmetry, opportunity and rationalization are generally considered to be necessary conditions for doctor moral hazard to obtain^[12]. For example, A common rib fracture patients, in general, through the ordinary chest film can be diagnosed. But doctors can also say that in order to make a better diagnosis, they guide patients to do CT or even 3D reconstruction, because he will say that ordinary chest films may cause missed diagnosis. In this case, doctors will consider it reasonable to reduce the rate of missed diagnosis. Researchers have offered different perspectives on doctor moral hazard by studying specific factors that affect it. For example, Zhang et al. found that third-party payment was a principal driver of doctor moral hazard in the medical field and that it increased management costs. They suggested that appropriate incentives and restraints should be adopted to minimize the likelihood of doctor moral hazard. Research into moral hazard as experienced by farmers and project managers suggests that a lack of effective government supervision will lead to a high incidence of moral hazard^[13,14].

Doctors are the principal providers of medical services and therefore play a decisive role in how medical services are allocated. They are therefore key to the prevention and control of doctor moral hazard. There are individual differences in doctor moral hazard: doctors in different hospitals and different doctors in the same hospital experience moral hazard to different degrees. Previous research has focused on the macro level rather than on the behavior of individual doctors and what influences them. Macro causes and institutional factors influence doctor behavior by exploiting individual differences between doctors. Thus, the key to resolving problems of moral hazard is to explore the factors that affect doctor moral hazard and the mechanisms by which they exert influence on individual doctors.

2 Theoretical framework

There has been no authoritative literature on the connotation of fraud. After reference, the explanation of fraud in Longman Dictionary is "the illegal act of deceiving others in order to obtain something, such as money, goods, etc." Oxford Dictionary defines it as "illegal or criminal deception for financial or personal benefit". Cambridge Dictionary defines it as "the crime of obtaining money by cheating others". In Collins dictionary is fraud defined as "deliberate deception, fraud or cheating in order to gain an advantage". The definition in

modern Chinese dictionary is "to do things against the law and discipline in a deceitful way". It can be seen from the above that many definitions emphasize the two essential characteristics of fraud, namely, the subjective intention of the fraud perpetrators and the illegal nature of the behaviour itself. Its subjective intention contains the intrinsic and tractive characteristics of moral hazard, and the illegal nature is tantamount to the characteristics of harming others and benefiting doctors themselves^[7].

For patients in the process of diagnosis and treatment, the essence of doctor moral hazard behaviour is fraudulent behaviour, which, in other words, is the speculative behaviour at the expense of others. From this point of view, the analysis of doctor moral hazard behaviour can refer to fraud theory. For the antecedents of fraud, there have been a series of research results, including related theories and influencing factors of fraud. The main theories and contents are as follows.

W.Steve Albrecht put forward the triangle theory of fraud, which attributed the emergence of corporate fraud into three elements, pressure, opportunity, and rationalization^[8]. Bologna et al further developed the "GONE" theory on the basis of the fraud triangle theory. The four factors referred to greed, opportunity, need and exposure^[9]. According to the theory, the motivation of fraud can be divided into general factors and individual factors. General factors are from the organizational level, including the opportunity of fraud, the possibility of exposure, the probability and intensity of punishment, etc.; individual factors are from the level of fraud conductors, including the moral level and fraud motivation of managers, etc^[10]. Wolfe and Hermanson further developed the fraud triangle theory in 2004^[11]. The core of this theory was to put forward the factors of fraud ability. Gbegi and adebisi (2013) put forward a new diamond theory of fraud from the perspective of legal accounting, based on a detailed study of Wolfe and Hermanson's diamond theory of fraud, combined with the relationship between other theoretical models of fraud motivation and the fraud motivation theory^[12]. And Tugas (2012) summed up the fifth factor of accounting fraud, namely external supervision^[13], so as to develop the Pentagon theory of fraud based on Wolfe and Hermanson's diamond theory of fraud (2004). The main connotation of external supervision is exposure and punishment.

To sum up, the pertinent research of fraud theory has demonstrated that the influencing factors of fraud can be divided into five aspects, motivation, opportunity, rationalization, exposure and punishment, as shown in the Figure 1. An examination of previous studies enabled us to abstract the factors that affect doctor moral hazard. In-depth interviews with experts and empirical research on medical staff were conducted to examine the degree to which these factors influence doctors. SPSS 20.0 and AMOS 20.0 were used in empirical research to determine the characteristic factors of moral hazards for individual doctors. Then, an understanding of medical behavior of doctors can be gained for governments and hospitals to develop a management framework for preventing or controlling moral hazard. Then, the questionnaire survey was used to propose the specific influencing factors of each dimension of doctor's moral hazard, and exploratory and confirmatory factor analysis was carried out.

3 Methods

3.1 Questionnaire design

In order to obtain the influencing factors of doctor's moral hazard as much as possible, the interview focused on the possible factors of doctor's moral hazard, including motivation, opportunity, self rationalization, exposure, punishment and so on. The interviewees fully

expressed the internal and external factors that may affect the moral hazard of medical students. Finally, we interviewed 10 hospital managers, 10 doctors, and medical science. There are 5 professors, 5 nurses, 10 patients and their families, and 5 people from all walks of life. A large number of influencing factors were obtained through interviews.

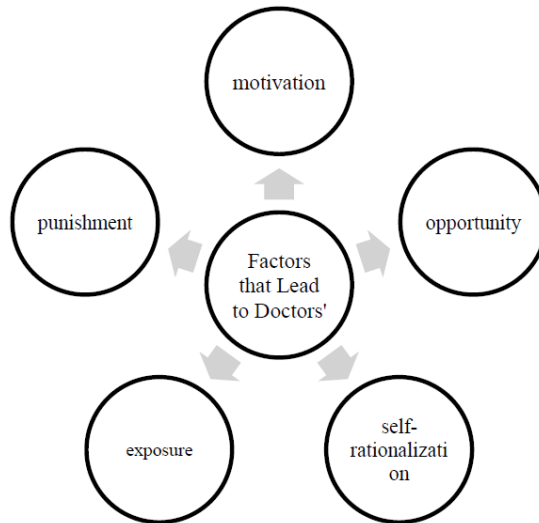


Fig. 1. Conceptual model of doctor's moral hazard intention factors.

According to the interview results, more than 50 specific factors affecting doctors' moral hazard were determined. The first draft of the questionnaire was formed, and 10 managers who had a better understanding of doctors' moral hazard were selected to conduct a pre test. In the prediction test, the respondents were required to complete the pre-test questionnaire according to the normal survey status. After the questionnaire was completed, they were asked how they felt in the process of answering the questionnaire, whether there were any understanding problems, and whether there were suggestions for the improvement of the questionnaire. Finally, a formal questionnaire was formed. The questionnaire collected basic information and used a five-point Likert scale as a metric for additional data-gathering questions: 1, the impact is not significant; 2, the impact is general; 3, the impact is relatively significant; 4, the impact is very significant; 5, the impact is extremely significant.

3.2 Data collection

Because the purpose of this study is to grasp the specific content of the influencing factors of doctor's moral hazard under the Chinese medical situation. The research population is mainly doctors, taking into account the hospital managers who have a better understanding of doctors' medical behavior. Doctors may be more sensitive to the investigation of this topic. Therefore, the questionnaire is completed by the way of on-site distribution, and the respondents can leave no trace. For the selection of hospitals, in order to ensure the coverage of hospitals of different levels and regions, the study was carried out in Zhejiang, Jiangsu, Beijing, Guangxi and other provinces.

The scope of the survey involves 800 questionnaires distributed in this survey, 608 of which are recovered, with a recovery rate of 76%; for the first time, 17 questionnaires with missing items are deleted; for the second time, 11 questionnaires with obvious self-contradictory options are deleted. After twice screening, 580 valid questionnaires were

obtained, and the effective rate was 95.4%. The descriptive statistical results of the samples are shown in Table 2. The gender, age, professional title and education background of the samples are reasonable, and the type and nature of the units are also in line with the actual situation of Chinese hospitals, so they are generally representative. According to the research needs, 290 out of 580 valid questionnaires were used for exploratory factor analysis and 290 for confirmatory factor analysis.

Table 2. Descriptive statistics of valid samples.

Basic information		Sample size	Proportion (%)
Gender	Male	382	65.9
	Female	198	34.1
Age	Less than 25 years	16	2.8
	26-35 years	62	10.7
	36-45years	318	54.8
	46-55years	168	29.0
	Over 56years	16	2.8
Education	Associate degree	26	4.5
	Undergraduate	410	70.7
	Master's degree	120	20.7
	Doctor's degree	24	4.1
Hospital grade	First class hospital	370	63.8
	Second class hospital	92	15.9
	Other	118	20.3
Public or private hospitals	Public hospitals	552	95.2
	Private hospitals	28	4.8
Titles of doctors	Preliminary	290	50
	Vantage	74	12.8
	High	182	31.4
	Higher	34	5.9

4 Results

4.1 Reliability

A reliability test evaluates the internal consistency and stability of the scale by calculating the alpha coefficient. We used the criteria which were given in Devillis (1991): the alpha coefficient of the total scale is required to be above 0.8, but an alpha coefficient between 0.7 and 0.8 is acceptable; the alpha coefficients of the sub-scales are required to be above 0.7, but alpha coefficients between 0.6 and 0.7 are acceptable^[17]. The consistency test showed that the alpha coefficient of the total scale was greater than 0.9 and the alpha coefficients of each subscale were greater than 0.8. The specific values are shown in Table 3. For each scale, if, after deleting a measurement item, the alpha coefficient of the scale did not improve significantly, thus showing that the reliability of the scale was unchanged, the deleted item was not considered. Each scale was found to be reliable, and therefore the questionnaire was reliable.

4.2 Validity

Content validity and construct validity are commonly used to establish the validity of a questionnaire. The measurement items were reviewed by individuals with backgrounds in

the medical field and they were modified and improved many times over four rounds of reviews. The first round focused on the comprehensiveness of the questionnaire to ensure it covered all aspects of doctor moral hazard. In the second round, the experts combined items that repeated statements to emphasize key points. In the third round, expressions that were easy to misunderstand or difficult to understand were amended and optimized. Finally, hospital managers, clinical experts and retired doctors were invited to assess the questionnaire. Thus the questionnaire used in this study has a high degree of content validity.

Table 3. Alpha coefficient of each scale.

Scale	Alpha coefficient in pre-investigation stage	Alpha coefficient in formal investigation stage
Total scale	0.961	0.965
Scale of motivation dimension	0.897	0.908
Scale of opportunity dimension	0.919	0.908
Scale of rationalization dimension	0.867	0.871
Scale of exposure dimension	0.922	0.923
Scale of punishment dimension	0.889	0.941

Construct validity includes convergent validity and discriminant validity. The construct validity of a questionnaire is usually determined using exploratory factor analysis. The evaluation criteria are: when a measurement item becomes unrelated to any factor, it should be deleted; when the loading of a measurement item for a particular factor is greater than 0.5, it has convergent validity; if the loading of each measurement item for a particular factor is large but is small for other factors, then there is good discriminant validity; and if the loadings of a measurement item for all factors are less than 0.5 or the loadings for two or more factors are greater than 0.5, the item is a cross factor measure and should be deleted. We combined exploratory factor analysis with confirmatory factor analysis to determine the validity of the questionnaire.

4.3 Exploratory factor analysis

The Kaiser–Meyer–Olkin test (KMO) and Bartlett’s test were used to ensure that the questionnaire data were suitable for exploratory factor analysis. Factor analysis was carried out for the five dimensions of the factors that affect doctor moral hazard according to the method described in Bentley and Chou (1987)^[18].

KMO and Bartlett’s test were calculated using IBM SPSS 20.0. The KMO values for each dimension were 0.774, 0.845, 0.862, 0.816 and 0.843; all values are >0.5 . The significance level of the Bartlett test was $0.000 < 0.001$, indicating that there was a strong correlation between variables. The correlation matrix was not a unit matrix, indicating suitability for factor analysis. However, values of 1.6 in the motivation dimension and 2.7 in the opportunity dimension were too low on average ($P < 0.5$), indicating that they should be deleted. After recalculation, the KMO values of each dimension were 0.771, 0.838, 0.852, 0.816 and 0.822; all values are > 0.5 . The significance level of the Bartlett test was $0.000 < 0.001$, indicating that each dimension scale was suitable for factor analysis.

We used principal component analysis to extract common factors by orthogonal rotation when the eigenvalue was > 1 and the cumulative variance contribution was $> 60\%$. Two common factors were extracted from the motivation dimension, with a cumulative variance contribution of 73.414%; two common factors were extracted from the opportunity dimension, with a cumulative variance contribution of 65.796%; two common factors were extracted from the rationalization dimension, with a cumulative variance contribution of 69.188%; one common factor was extracted from the exposure dimension, with a cumulative variance contribution of 73.661%; two common factors were extracted from the

punishment dimension, with a cumulative variance contribution of 70.430%. Each common factor was named according to its specific content. The common factors extracted from each dimension are shown in Table 4.

Table 4. Common factors extracted and the definition of common factors for each dimension.

Motivation dimension	Scientific research pressure	Economic pressure	Opportunity dimension	Decision-making autonomy	Patient participation	Rationalization dimension	Treatment uncertainty	System defect	Punishment dimension	Hospital punishment	Social punishment	Exposure dimension	Probability of exposure
1.2	0.900		2.5	0.673		3.1	0.792		5.1	0.918		4.1	0.740
1.3	0.855		2.6	0.828		3.2	0.797		5.2	0.902		4.2	0.848
1.4	0.647		2.8	0.581		3.3	0.698		5.3	0.643		4.3	0.911
1.9	0.649		2.9	0.693		3.4	0.756		5.4	0.623		4.4	0.898
1.10	0.893		2.10	0.813		3.5	0.839		5.5	0.772		4.5	0.861
1.11	0.880		2.11	0.862		3.6	0.527		5.6		0.705	4.6	0.753
1.1		0.554	2.1		0.735	3.7		0.843	5.7		0.872	4.7	0.764
1.5		0.743	2.2		0.782	3.8		0.786	5.8		0.902	4.8	0.664
1.7		0.733	2.3		0.669	3.9		0.787	5.9		0.853		
1.8		0.677	2.4		0.824				5.10		0.914		
			2.7		0.620				5.11		0.902		

The results of validity testing showed that all loadings for each item in the questionnaire were greater than 0.5 and that no item loading was for a single factor or cross factors. The results also showed convergent validity and discriminant validity for each dimension scale, and thus each dimension showed construct validity.

Table 5. Goodness-of-fit of confirmatory factor analysis.

Model	Chi-square value / Degree of freedom	GFI	AGFI	CFI	RMSEA
Motivation dimension	2.493	0.978	0.943	0.989	0.072
Opportunity dimension	2.656	0.968	0.930	0.976	0.076
Rationalization dimension	2.930	0.975	0.934	0.970	0.082
Exposure dimension	2.297	0.992	0.962	0.996	0.067
Punishment dimension	3.421	0.971	0.923	0.985	0.092
Models meet the verification criteria	<3	>0.9	>0.85	>0.9	<0.1

4.4 Confirmatory factor analysis

We used AMOS 20.0 to analyze the second set of 290 data items to eliminate invalid terms and to evaluate the goodness-of-fit of the model and the validity of each variable.

Chi-square values (χ^2) for degrees of freedom (DF), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative goodness-of-fit index (CFI) and root mean square of approximate error (RMSEA) were used to evaluate the confirmatory factor analysis. When $\chi^2 / DF < 3$, $GFI > 0.9$, $AGFI > 0.85$, $CFI > 0.9$, and $RMSEA < 0.1$, the model has a high goodness-of-fit. We used AMOS 20.0 to perform confirmatory factor analysis on the five dimensions, as shown in Figure 5. We deleted terms with poor goodness-of-fit. The parameter values were significant, and the overall effect of the model was ideal. Overall, the measurement items for each dimension measured that dimension well, showing that the scale of each dimension had good structural validity.

Table 6. Confirmatory factor analysis of the second half of samples (N=290).

Dimension	Items	Standardize d load	CR	AVE
Motivation dimension				
Economic pressure	Economic pressure from medical groups	0.894	0.811	0.594
	Economic pressure from departments and hospitals	0.77		
	Economic pressure from peer comparison	0.625		
Scientific research pressure	Pressure of technical innovation in practice	0.827	0.915	0.783
	Pressure to obtain research funding and publish papers at all levels	0.893		
	Pressure to improve academic status	0.932		
Opportunity dimension				
Decision-making autonomy	Academic authorities have corresponding treatment guidelines	0.721	0.861	0.611
	Degree of treatment consistency	0.899		
	Transparency of treatment	0.835		
	Patients have no decision-making abilities	0.647		
Patient participation	Decision-making autonomy in diagnosis and treatment	0.703	0.753	0.507
	Degree of information asymmetry in diagnosis and treatment	0.629		
	Doctors are fully authorized by patients to diagnose and treat diseases and other medical conditions	0.794		
Rationalization dimension				
Treatment uncertainty	Uncertainty of treatment outcomes	0.677	0.820	0.534
	Traceability of diagnosis and treatment behavior	0.747		
	Patient initiatives to operate on diseases or lesions without indications	0.78		
	Severity of moral hazard behavior	0.715		
Systemic deficiency	The belief that most doctors who offend will face no punishment	0.755	0.653	0.487
	The system is not optimal, and doctor's incomes are not high enough	0.635		
Exposure dimension				
	Frequency of inspection by hospital	0.906	0.872	0.637
	Frequency of inspection by society	0.919		
	Frequency of patients voluntarily reporting adverse events	0.689		
	Frequency of peers voluntarily reporting adverse events	0.638		

Punishment dimension				
Hospital punishment	Poor evaluation of patient satisfaction	0.645	0.89 1	0.73 7
	Punishment of departments	0.935		
	Punishment by medical groups	0.96		
Social punishment	Media exposure	0.828	0.91 2	0.77 6
	Individual doctors may be threatened by patients in various ways	0.888		
	Individual doctors may be punished by law	0.924		

It can be seen from Table 6 that the normalized loading of most items on the common factor is > 0.7 . Among the items that failed to meet this standard, the items that met the minimum standard (e.g., under economic pressure, the pressure of peer comparison) also reached 0.625. Therefore, the convergence validity of the scale is good and the whole scale is acceptable. In addition, the construction reliability (CR) of most variables was > 0.8 , and the average extraction variance (AVE) was also > 0.5 (except that systemic deficiency in the rationalization dimension is slightly less than 0.5). Therefore, the variables in the scale have good construct validity.

5 Discussion

We derived five dimensions of factors that affect doctor moral hazard from a comprehensive worldwide literature study supplemented by in-depth interviews with experts: motivation, opportunity, rationalization, exposure and punishment. We extracted the common factors of each dimension using exploratory factor analysis. When we had defined the factors, we found that the factors affecting doctor moral hazard that we had extracted from the empirical data were essentially the same as those identified in the theoretical analysis and the interviews; only the rationalization dimension was different.

5.1 Motivation dimension

Exploratory factor analysis identified two factors in this dimension that affected doctor moral hazard: economic pressure and scientific research pressure. Pressure for technological innovation or staff development was not included. During interviews, doctors responded that the main pressures they felt were economic pressure and pressure to conduct scientific research. Scientific research can include technological innovation. Personnel development is the responsibility of senior doctors, who have taught and trained their juniors, completed performance evaluations, and led scientific research and education.

5.2 Opportunity dimension

We found two factors in this dimension that affected doctor moral hazard: decision-making autonomy and patient participation. Information asymmetry was not included. The degree of information asymmetry between doctor and patient is an economic factor which, for an individual doctor, presents them with opportunities to decide on non-indicated treatments. It is also an opportunity to expand their decision-making autonomy with respect to the treatment they recommend, which is often restricted by the government and hospital management. Patient participation enables a patient or their family to have some say in the recommended treatment, but that say can be limited by lack of information. Information

asymmetry can reduce patient participation and increase doctor autonomy in determining treatment.

5.3 Rationalization dimension

We found two factors in this dimension that affected doctor moral hazard: system defects and treatment uncertainty. System defects included the beliefs of medical staff that clinical services were not properly remunerated due to social factors, such as governmental support for therapeutic drug use. Treatment uncertainty arises because a particular medical treatment does not necessarily lead to good or bad outcomes, and bad outcomes are not necessarily a consequence of bad treatment. Thus doctor moral hazard behavior can be difficult to identify from treatment outcomes.

5.4 Exposure dimension

We found one factor in this dimension that affected doctor moral hazard: the probability of exposure. For an individual doctor, audits of their behavior, spot checks or investigation of their reports are internalized as the probability that their moral hazard behavior will be discovered. This was the only common factor found by orthogonal rotation. It is perhaps appropriate to combine the probability of exposure with the threat of punishment into one dimension.

5.5 Punishment dimension

We found two factors in this dimension that affected doctor moral hazard: hospital punishment and social punishment. We found no threat of punishment from patients in this dimension, contrary to our original Hypothesis 5. Although patients can threaten doctors through complaints, prosecutions, and even medical injuries, doctors we interviewed thought that being threatened by a patient was the act of an individual patient rather than an act of punishment by the hospital or by society.

To summarize our findings, the factors that affect doctor moral hazard were categorized into five dimensions, and nine principal characteristic factors were identified. Through identification and analysis of the characteristic factors of each dimension, we are able to explore the mechanisms of influence and devise measures to prevent and control doctor moral hazard behavior.

6 Conclusion

Moral hazard is usually seen as an economic concept rather than a moral one. However, doctor moral hazard has a considerable ethical component because doctors have a duty of care towards their patients. We categorized the factors that influence doctor moral hazard behavior into five dimensions that we had identified from analysis of the literature and in-depth interviews with experts: motivation, opportunity, rationalization, exposure and punishment. We developed a questionnaire to gather empirical data and used exploratory factor analysis to identify the factors that principally influence doctor moral hazard behavior. We found that economic pressure, pressure to undertake scientific research, autonomy in decision-making, patient participation, treatment uncertainty, systemic deficiencies, the probability of exposure, and threats of hospital and social punishment had significant effects on the occurrence of doctor moral hazard behavior. It was also found that the pressure for scientific research was greater than economic pressure, which showed that

although doctor moral hazard behavior was affected by economic pressure, regulating and controlling doctors economically may not be an efficient way to reduce doctor moral hazard behavior. Instead, regulating the pressure to conduct scientific research might provide more control.

This paper contributes to the theory of doctor moral hazard in the following ways: it provides a theoretical analysis and summary of the research on factors that affect doctor moral hazard; it gives a comprehensive analysis of doctor moral hazard using the five dimensions of motivation, opportunity, rationalization, exposure and punishment; it identifies fifteen characteristics of the influential factors and recognizes nine principal characteristic factors. From the data we obtained, we developed a scale of the factors that influence doctor moral hazard behavior, using IBM SPSS 20.0 and AMOS 20.0 to establish the reliability and validity of the scale in each dimension. We extracted the nine major factors that influence doctor moral hazard behavior from the empirical data by exploratory factor analysis to provide the groundwork for government departments and medical institutions to prevent or control doctor moral hazard behavior.

The theoretical hypotheses of the paper were verified by analysis of the empirical data. However, the analysis also identified shortcomings that need to be further studied. These include improvement of the measurement scale, using additional software to refine and optimize measurement, and incremental revision of the questionnaire; and expanding the scope of the research and increasing the sampling capacity in subsequent research to gather more data, which will improve the accuracy of empirical analysis. These latter activities will enable us to conduct multi-level factor analysis of the factors that affect doctor moral hazard, so that we can better determine the importance of these factors, identify additional factors, and further analyze the mechanisms by which these factors influence doctor moral hazard behavior.

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