



# Lessons Learnt from China: National Multidisciplinary Healthcare Assistance

This article was published in the following Dove Press journal:  
*Risk Management and Healthcare Policy*

Tianan Yang 

Hubin Shi 

Jiahao Liu 

Jianwei Deng 

<sup>1</sup>School of Management and Economics, Beijing Institute of Technology, Beijing, People's Republic of China; <sup>2</sup>Sustainable Development Research Institute for Economy and Society of Beijing, Beijing 100081, People's Republic of China

**Purpose:** In response to the transmission of COVID-19, China adopted the “national multidisciplinary healthcare assistance”. This commentary evaluates whether it is effective and sustainable to contain the COVID-19.

**Methods:** We adopted the “Difference-in-difference Method” to investigate whether the national multidisciplinary healthcare assistance policy could provide significant benefits in areas affected by COVID-19 by increasing their recovery rates. A total of 578 panel data samples were taken from the Ministry of Health in China.

**Results:** We observed that the number of recovered cases per day increased by 39.36 as a result of this policy. GDP per capita and land area were significantly negatively correlated with the number of recovered cases while the resident population was significantly positively correlated with it.

**Conclusion:** The national multidisciplinary healthcare assistance was an effective intervention to reduce the burden of COVID-19 and ease pressure on the healthcare system in Hubei and China. To quickly formulate and promulgate effective response policies for emergent public health crises, the national government should introduce the concept of emergency management into policy agendas and highlight the importance of “problem streams”.

**Keywords:** anti-epidemic, COVID-19, difference-in-difference method, healthcare system

A large amount of recently published literature has shown the effectiveness of a number of interventions, such as lockdowns and limits on transportation, which were implemented to stop the spread of COVID-19 in China.<sup>1,2</sup> There have been calls to further promote such measures due to their ability to effectively reduce the speed of COVID-19 transmission worldwide.<sup>3</sup> Since assistance could also effectively control the transmission of infectious diseases<sup>4</sup> and alleviate overload on the healthcare system in Hubei Province, the Chinese government implemented the “national multidisciplinary healthcare assistance” initiative<sup>5</sup> by coordinating medical, healthcare management, disease control, and other professionals from 19 provinces to support 16 cities in Hubei (excluding Wuhan). The national multidisciplinary healthcare assistance is a Chinese policy to coordinate inter-regional, inter-industrial, and inter-departmental cooperation at a national level, combining financial disclosure, business disclosure, and scientific evaluation mechanisms to achieve effective prevention and control of the current epidemic.

We adopted the difference-in-difference method to investigate whether the national multidisciplinary healthcare assistance policy could provide significant benefits in areas affected by COVID-19 by increasing their recovery rates. The approach has been proven to be effective in evaluating policy implementation.<sup>6</sup> We selected 11 cities as intervention group, including Huangshi, Xiangyang, Shiyan, Jingzhou, Yichang, Jingmen, Ezhou, Xiaogan, Huanggang, Xianning and Suizhou. The Enshi autonomous prefecture, Xiantao,

Correspondence: Jianwei Deng  
School of Management and Economics,  
Beijing Institute of Technology, 5 South  
Zhongguancun Street, Haidian District,  
Beijing, People's Republic of China  
Tel +86-10-6891-8057  
Fax +86-10-6891-2483  
Email dengjianwei2006@163.com

**Table 1** The Impact of “National Multidisciplinary Healthcare Assistance” on the Number of Recovered Cases per Day (Mixed OLS Regression Results)

Variable	Observations	Mean	SD	$\beta$	95% CI	P
Permanent population (10 <sup>4</sup> people)	578	428.26	189.20	0.07	0.04 to 0.10	***
Land area (10 <sup>4</sup> square kilometers)	578	1.40	0.65	-9.30	-13.62 to -4.98	***
GDP per capita (10 <sup>4</sup> Yuan)	578	5.71	2.05	-1.13	-2.08 to -0.17	*
Medical beds (10 <sup>4</sup> )	578	2.60	1.15	-4.15	-10.06 to 1.77	0.17
Policy implementation (0,1)	578	0.47	0.50	4.83	0.10 to 9.56	*
Whether it is an intervention group (0,1)	578	0.65	0.48	8.06	3.77 to 12.35	***
DID (0,1)	578	0.30	0.46	34.53	28.65 to 40.41	***
R <sup>2</sup>				0.57***		

**Note:** \*p<0.05, \*\*\*p<0.001.

**Abbreviations:** DID, the interaction item between policy implementation and whether it is an intervention group; SD, standard deviation;  $\beta$ , unstandardized regression coefficient; 95% CI, 95% confidence interval.

Qianjiang, Tianmen and Shennongjia forest were excluded due to their different administrative levels. Xinyang (from Henan Province), Xinyu and Jiujiang (from Jiangxi Province), and Changde, Yueyang, and Shaoyang (from Hunan Province) were included as a control group due to their similar demographics and social development status with the selected 11 cities in Hubei. A total of 578 panel data samples from January 23 to February 25, 2020 were analyzed in the SPSS 25.0, which were collected from the official website of the Ministry of Health in China<sup>7</sup> and the Chinese Statistical Yearbook.<sup>8</sup> In our analysis, we included policy implementation, whether it was in the intervention group, and the interaction between these two variables as independent variables. The number of recovered cases per day was included as a dependent variable, and health resources, GDP per capita, resident population, and land area were included as covariates. Since the regression coefficient for the cases recovered on whether they were in the intervention group was not significant ( $\beta = -0.12$ ,  $p = 0.16$ ), the investigation was implemented. Based on our findings, no significant difference in the development trend of the recovered cases before the policy was implemented ( $\beta = 0.72$ ,  $p = 0.10$ ). The number of recovered cases per day was significantly negatively correlated with GDP per capita ( $\beta = -1.13$ ,  $p < 0.05$ ), land area ( $\beta = -9.30$ ,  $p < 0.001$ ), and significantly positively correlated with the resident population ( $\beta = 0.07$ ,  $p < 0.001$ ). After controlling for the impact of the above variables, the number of recovered cases per day increased by 39.36 as a result of the national multidisciplinary healthcare assistance (Table 1). The number 39.36 is the sum of the regression coefficient of policy implementation and DID term. Therefore, the national multidisciplinary healthcare assistance possibly contributed to reduce the burden of

COVID-19, and eased pressure on the healthcare system in Hubei and China.

To effectively combat the current global public health crisis and reduce the risk of overloading our healthcare systems in the future, we recommend the following points for policies-makers. First, National governments need to take control of overall planning and rational distribution of medical resources at a national level to substitute volunteers for future emergencies. This will be based on the level of economic and social development, geographic location, severity of the epidemic, and other factors affecting local governments, so as to enhance their ability to improve outcomes in the worst-affected areas. Second, a holistic governance model should be constructed to promote information disclosure, public understanding, resource complementarity, and risk-sharing among stakeholders, in order to ensure the proper implementation of public health policies for such crises. For instance, (1) China’s national medical teams provided long-distance multidisciplinary consultation services to Hubei Province through online platforms; (2) the national health commission of China released multiple versions of plans for the diagnosis and treatment of COVID-19 based on the latest clinical experience of various regions of China; and (3) community workers and volunteers in Hubei Province fully supported the work of medical teams. Third, to quickly formulate and promulgate effective response policies for emergent public health crises, the national government should introduce the concept of emergency management into policy agendas and highlight the importance of “problem streams”.

## Ethics

The ethical approval is not required in this article as it used the data available published literature or freely available in the public domain.

## Acknowledgments

This research was funded by National Science Funding of China (grant nos. 71804009, 91746116, 71974011, 71972012, 71603018, 71601020, and 71704011), Special Fund for Joint Development Program of Beijing Municipal Commission of Education.

## Disclosure

The authors report no conflicts of interest in this work.

## References

1. Tian H, Liu Y, Li Y, et al. An investigation of transmission control measures during the first 50 days of the COVID-19 epidemic in China. *Science*. 2020;368:638–642. doi:10.1126/science.abb6105
2. Yu X, Li N. How did Chinese government implement unconventional measures against COVID-19 pneumonia. *Risk Manag Healthc P*. 2020;13:491–499. doi:10.2147/RMHP.S251351
3. Editorial. Sustaining containment of COVID-19 in China. *Lancet*. 2020;395:1230.
4. Thomas D, Heidi M, Moses M, et al. Impact of interventions and the incidence of Ebola virus disease in Liberia – implications for future epidemics. *Health Policy Plann*. 2016;32:205–214.
5. National Health Commission of the People's Republic of China. The national health commission of the People's Republic of China has established a mechanism for interprovincial support to the prevention and treatment of COVID-19 in cities other than Wuhan in Hubei province. Available from: <http://www.nhc.gov.cn/xcs/yqfkd/202002/212cad8932249fa9961d6c312cd2026.shtml>. Accessed June 25, 2020.
6. Dimick JB, Ryan AM. Methods for evaluating changes in health care policy: the difference-in-differences approach. *JAMA*. 2014;312(22):2401–2402. doi:10.1001/jama.2014.16153
7. National Health Commission of the People's Republic of China. Do a good job in the prevention and control of new coronavirus pneumonia. Available from: [http://www.nhc.gov.cn/xcs/xxgzbd/gzbd\\_index.shtml](http://www.nhc.gov.cn/xcs/xxgzbd/gzbd_index.shtml). Accessed June 25, 2020.
8. National Bureau of Statistics of China. *China Statistical Yearbook*. Beijing: China statistics press; 2019.

Risk Management and Healthcare Policy

Dovepress

Publish your work in this journal

Risk Management and Healthcare Policy is an international, peer-reviewed, open access journal focusing on all aspects of public health, policy, and preventative measures to promote good health and improve morbidity and mortality in the population. The journal welcomes submitted papers covering original research, basic science, clinical & epidemiological studies, reviews and evaluations,

guidelines, expert opinion and commentary, case reports and extended reports. The manuscript management system is completely online and includes a very quick and fair peer-review system, which is all easy to use. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/risk-management-and-healthcare-policy-journal>