



ELSEVIER

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/jval

The Impact of China's National Essential Medicine Policy and Its Implications for Urban Outpatients: A Multivariate Difference-in-Differences Study

Liman Ding, MMSc, Jing Wu, PhD*

School of Pharmaceutical Science and Technology, Tianjin University, Tianjin, China

ABSTRACT

Objectives: To evaluate the effects of the National Essential Medicine Policy (NEMP) on outpatient service utilization and expenditure in Tianjin, China. **Methods:** All government-owned general primary health care centers (PHCs) within the Urban Employee Basic Medical Insurance in Tianjin were involved in the study. Of these, 49 PHCs implemented the NEMP in April 2009, and constituted the intervention group, and the remaining PHCs constituted the control group. Patients who had visited only one of the two groups at least once pre-NEMP (April 2008 to March 2009) and post-NEMP (April 2009 to March 2010) were included in the correspondent group. A difference-in-differences (DID) analysis was used to estimate the impacts adjusting for patients' sociodemographic characteristics and health status. Sensitivity was tested using the propensity score matching method. **Results:** A total of 23,362 and 4,148 patients from the intervention and control groups were identified, respectively. The patients in the intervention group were older (63.7 years vs. 58.8 years; $P < 0.001$)

and in worse health status, as indicated by the Quan-Charlson comorbidity index (1.0 vs. 0.7; $P < 0.001$), than their counterparts in the control group. The DID results controlling for other confounders indicated that the annual outpatient visits, total annual expenditure, drug expenditure, and out-of-pocket expenditure per capita for the intervention group were not significantly different from those of the control group. Propensity score matching-adjusted DID regression models demonstrated similar results. **Conclusions:** The China NEMP implementation did not affect the annual outpatient visits, total expenditure, drug expenditure, and out-of-pocket expenditure in the short term and the original policy goals were not met.

Keywords: China, difference-in-differences, essential medicine, policy evaluation.

Copyright © 2016, International Society for Pharmacoeconomics and Outcomes Research (ISPOR). Published by Elsevier Inc.

Introduction

The rapid increase in drug expenditure has become, more than ever, a critical obstacle in providing suitable health care services in countries around the world, and its control is a key objective for health care policymakers [1]. China is no exception. Policy efforts to contain drug expenditure in China have been focusing on controlling the price of pharmaceuticals. Recent reports, however, show that the impact of such policies on drug expenditure is limited [2–4]. Moreover, in some incidences, reductions in drug prices were accompanied by a decrease in availability and production as a response to the reduced profits [5].

In an attempt to provide a solution, China introduced the National Essential Medicine Policy (NEMP) in April 2009, aiming to promote the availability and affordability of medicines while reducing the economic burden on health care recipients. The NEMP was initially designed for primary health care centers (PHCs). Under the NEMP, PHCs were directed to prescribe drugs only from the National Essential Medicines List (NEML) and the supplementary provincial essential medicines list. In addition, all

essential medicines should be sold at zero markup (no markup from procurement to retail price). The initial introduction of the NEMP in PHCs aimed to attract more patients to the PHCs, reduce patients' economic burden, and effectively reduce patient visits to higher level hospitals by reducing the price of essential medicines [6,7]. The Chinese health system allows patients to choose their treating institution, including PHCs along with all other kinds of hospitals as their initial resource for treatment. Patients, however, prefer to consult tertiary care hospitals directly [8].

Tianjin was chosen to be one of the pilot cities to adopt the NEMP starting on April 1, 2009 [7,9,10]. The pilot policy included the establishment of the Tianjin basic community health service administration formulary, namely, the Tianjin essential medicines list; the centralized bidding and purchasing procedure for essential medicines; and the conducting of a zero markup policy at the PHCs level. The amount of nonessential medicines provided in PHCs was not permitted to exceed 10% of the total items on the Tianjin essential medicines list at that time. The first batch to adopt the NEMP in Tianjin city was a group of 49

* Address correspondence to: Jing Wu, School of Pharmaceutical Science and Technology, Tianjin University, 92 Weijin Road, Nankai District, Tianjin300072, China.

E-mail: jingwu@tju.edu.cn.

1098-3015\$36.00 – see front matter Copyright © 2016, International Society for Pharmacoeconomics and Outcomes Research (ISPOR).

Published by Elsevier Inc.

<http://dx.doi.org/10.1016/j.jval.2016.10.018>

government-owned general PHCs [9]. But the principles and standards of selecting pilot PHCs adopting the NEMP were not publicly announced by the Tianjin government. Furthermore, the Chinese health system allows patients to choose their treating institutions, including PHCs, irrespective of the distance from their residence. Nevertheless, Tianjin being one of the pilot cities to adopt the NEMP, the Tianjin government may hope to observe the impact of the NEMP in the short run, and so they might be inclined to select the PHCs that served more citizens in downtown Tianjin city. The pilot PHCs had relatively more patients with older age, and worse health status than the PHCs that did not adopt the NEMP.

In previous studies, the effects of China's NEMP on outpatient visits were measured by the annual number of outpatient visits per PHC [11,12] or the number of visits per certified doctor per day [13]. Results showed that outpatient visits to the institutions with NEMP remained unchanged [13] or decreased [11,12] after the implementation of the policy. The effects of the NEMP revealed by such indicators were at the level of health care centers or the doctors, and not at the patient level. The patient-level data can better reflect patients' visit choices and the economic consequences.

Previous studies that investigated the effects of China's NEMP on health care expenditure focused largely on the expenditure per visit. These evaluations found that both the outpatient drug expenditure and the outpatient total expenditure per visit reduced after the implementation of the NEMP [11,14]. These studies showed promising results on reducing outpatient expenditure per visit. But these results were based on the indicator of expenditure per visit that might have been confounded by the changes in the outpatient visit frequency, leading to overestimated results. Moreover, there is no report of the effect of the NEMP on out-of-pocket (OOP) expenditure. For individuals, the OOP expenditure is a more important measure than the total health care expenditure and the drug expenditure. It provides a more direct measure of the impact of illness conditions, effects of the NEMP, and medical insurance. Therefore, the annual drug and/or total health care expenditure per capita and the number of outpatient visits might be better measurements to answer the key questions raised by the NEMP [15]. This study was designed to explore the effects on outpatient visit frequency and outpatient expenditure after the implementation of the NEMP in Tianjin PHCs.

Methods

Data and Sample Selection

Data were authorized by the Tianjin Municipal Human Resources and Social Security Bureau and obtained from the administrative claims of the UEBMI in Tianjin city from 2008 through 2010. Tianjin is located in Northern China; it includes 15 districts (6 districts in downtown Tianjin and 9 in the suburb) and 1 county and was inhabited by 15.2 million in 2014 [16]. Tianjin has the highest Gross Domestic Product per capita among all provinces and municipalities in China, which reached approximately \$16,085 in 2013 [17]. As such, in 2009, the Chinese government selected Tianjin, along with a couple of other regions, for a pilot launch of the NEMP [10], starting on April 1, 2009. The analytical sample in this study was a random sample of 30% of all enrollees of the UEBMI in Tianjin city. The data extracted included patient-level demographic information, which was combined with all the data relating to itemized medical service items and expenditure.

A quasi-experiment design was used to measure the impact of the NEMP on the outpatient service utilization and expenditure. The data of the outpatients who were continuously enrolled in

UEBMI during April 2008 to March 2010 were extracted. At the initial stage of the implementation of the NEMP in Tianjin in April 2009, there were 91 government-owned and general PHCs situated in the 6 districts of downtown Tianjin. Among them, 49 PHCs were chosen to implement the NEMP. Patients who visited only these centers at least once pre-NEMP (April 2008 to March 2009) and post-NEMP (April 2009 to March 2010) implementation period and did not visit the control PHCs constituted the intervention arm, whereas it was vice versa for the control group patients. The analysis was performed at the patient level.

Measurement

The effects of the NEMP were evaluated in terms of two sets of outcomes. The first was the annual outpatient visits per capita and the extent to which the NEMP implementation had changed the use of different levels of medical institutions, including PHCs, secondary care institutions, and tertiary care institutions. The second was the annual health expenditure for outpatient service which was summarized by calculating three variables. The total annual outpatient expenditure/drug expenditure was calculated by summing the total payment/drug payment in each year for each person. The OOP expenditure was a direct outlay of cash after being reimbursed by the UEBMI. The distribution of expenses in different levels of hospitals was highlighted.

Statistical Analysis

A difference-in-differences (DID) approach controlling for other confounders was used to estimate the effects of the NEMP on outpatient service utilization and expenditure. Within each patient group, the incremental effect of the NEMP was calculated as the difference between the post- and pre-NEMP periods for each outcome measure. These incremental effects of the NEMP were then compared between the intervention and control groups to estimate the effects of the NEMP [18]. The differences were reported in baseline characteristics and outcomes between the intervention and control groups. These comparisons were performed using the *t* test for continuous variables and the chi-square test for categorical variables. Using multivariate analyses, potential confounding factors were controlled, including patient's age, sex, working status, and health status indicated by the Quan-Charlson comorbidity index. This analysis was conducted to evaluate the effects of the NEMP on outpatient service utilization and expenditure in Tianjin. Then, outpatient visits, as a nonnegative count variable, were modeled using negative binomial regression to determine whether the frequency of outpatient visits has changed overtime. Tobit regression was used in the expenditure models because the expenditure data were continuous and censored. Estimates on annual health care expenditure from specifications with natural log-transformed dependent variables could roughly be interpreted as percent change [19].

To demonstrate the robustness of the results, we conducted a sensitivity analysis using a matched pair design with propensity score matching (PSM). PSM would balance the covariates' difference between the intervention and control groups and also provide a similar randomized processing method [20]. The covariates incorporated in the logistic regression model for PSM included age, sex, working status, and physical health status indicated by the Quan-Charlson comorbidity index. In this study, the nearest neighbor matching was performed using a caliper value of 0.0001. The caliper matching with one-to-one matches on the basis of the propensity score was used.

Statistical analyses were conducted using Stata 12.0 (Stata-Corp LP, College Station, TX). A two-sided alpha level of 0.05 was

Download English Version:

<https://daneshyari.com/en/article/5104866>

Download Persian Version:

<https://daneshyari.com/article/5104866>

[Daneshyari.com](https://daneshyari.com)