

Evaluation of the three-in-one team-based care model on hierarchical diagnosis and treatment patterns among patients with diabetes: a retrospective cohort study using Xiamen's regional electronic health records

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Abstract: Background: Xiamen is a pilot city in China for hierarchical diagnosis and treatment reform of non-communicable diseases, especially diabetes. Since 2012, Xiamen has implemented a program called the “three-in-one”, a team-based care model for the treatment of diabetes, which involves collaboration between diabetes specialists, general practitioners, and health managers. In addition, the program provides financial incentives to improve care, as greater accessibility to medications through community health care centers (CHCs). The aim of this study was to evaluate the effectiveness of these policies in shifting visits from general hospitals to CHCs for the treatment of type 2 diabetes mellitus (T2DM).

Method and materials: A retrospective observational cohort study was conducted using Xiamen's regional electronic health record (EHR) database, which included 90% of all patients registered since 2012. Logistic regression was used to derive the adjusted odds ratio (OR) for patients shifting from general hospitals to CHCs. Among patients treated at hospitals, Kaplan-Meier(KM) curves were constructed to evaluate the time from each policy introduction until the switch to CHCs. A k-means clustering analysis was conducted to identify patterns of patient care-seeking behavior.

Results: In total, 89,558 patients and 2,373,524 visits were included. In contrast to increased outpatient visits to general hospitals in China overall, the percentage of visits to CHCs in Xiamen increased from 29.7% in 2012 to 66.5% in 2016. The most significant and rapid shift occurred in later periods after full policy implementation. Three clusters of patients were identified with different levels of complications and health care-seeking frequency. All had similar responses to the policies.

Conclusions: The “three-in-one” team-based care model showed promising results for building a hierarchical health care system in China. These policy reforms effectively increased CHCs utilization among diabetic patients.

Keywords: Health policy reform, Chronic disease, Policy evaluation, Hierarchical health care