

**Research Grants Council of Hong Kong
Hong Kong – Scotland Partners in Post Doctoral Research
Completion Report**

Part A (To be completed by the Awardee)

1. General Information

Name: WANG, Haoxiang Harry

Home Institution: The Chinese University of Hong Kong

Project Period: 23/06/2013 to 22/12/2013

Project Title: Primary care models of managing patients with multimorbidity in Scotland and Hong Kong/China: comparisons and lessons for healthcare reform

Host Institution: University of Glasgow

2. Summary of Fellowship

2.1 Objectives as per original application.

1. Exploration of differences in the multimorbidity profiles under different primary care models between Scotland and Hong Kong/China;
2. Strengths and weakness of the Scottish primary care models for multimorbidity management.

3. Research Outcome

3.1 Major findings and research outcome

(maximum one page; please make reference to Part 2.1 where necessary)

Healthcare system with different primary care infrastructure leads to differences in the multimorbidity profiles and its healthcare service utilisation. China, as one of the major countries in transition in Eastern Asia, has its health system underpinned by nation-wide social medical insurance that largely relies on monthly contributions from both employers and individuals. Scotland, which locates in the northernmost in the UK, has its National Health Services (NHS) financed almost entirely out of general taxation. Hong Kong, as one of the most westernised societies with a typical laissez faire health care system in Asia, has maintained both public and private healthcare sector. The major findings of the research project include that multimorbidity is common in all three countries, and it strongly correlates with healthcare service utilisation especially secondary-level hospital admission, with the

effect exacerbated by socio-economic status. Female gender, low education level, smoking, drinking, salty diet, and physical inactivity were independent strong predictors of multimorbidity thus more health care services might be needed. In a healthcare system with strong primary care and that is based on need not the ability to pay, deprivation increases hospital admissions in those with multimorbidity who indeed might have more health care needs; while in a healthcare system with poor primary care and that is based on the ability to pay, deprivation decreases the healthcare service utilisation among those with multimorbidity. Healthcare reform strategies seeking to address health and healthcare inequalities must take into consideration of the growing problem of multimorbidity.

Based on the literature review and research findings in multimorbidity and primary care, two book chapters were written up to be published. One is on long-term conditions/non-communicable disease, co-authored with the host supervisor, to be published in the book - "*Practical General Practice, Seventh Edition*", Elsevier: Churchill Livingstone publisher. The other is on developing primary care in China, to be published in the book - "*Routledge Handbook of Global Public Health in Asia*", Oxford: Routledge publisher. In addition, one manuscript on the multimorbidity profiles in China has been submitted to the *Lancet*, and another manuscript on the comparison of the effect of multimorbidity on hospital admission has been written up and the *PLoS Medicine* is the proposed venue of journal to be submitted.

3.2 Potential for further development of the research and the proposed course of action (maximum half a page)

In the present research, all chronic diseases were collected from patient's self report and its diagnosis came from different healthcare providers, thus there exists the possibility of under-diagnosis and misclassification of diseases. Ideally, physical examination shall be carried out on-site among the general population so that the recall bias can be largely reduced. Potential development of the research in the next stage also includes the development of a specific multimorbidity measurement index incorporating the combination and severity of chronic disorders for the Chinese population, and the assessment of other healthcare service utilisation parameters including health care cost, non-hospitalisation due to un-affordability, etc, which shall provide more evidence.

4. The Layman's Summary

(describe in layman’s language the nature, significance and value of the research project, in no more than 200 words)

There is a global trend to strengthen primary care, especially for both Hong Kong and China, where primary care-oriented healthcare reforms are taking place through the establishment of the Primary Care Office in Hong Kong and the Healthy China 2020 ambitious strategic plan for China. Meanwhile, with the great transition of disease burden, long-term chronic conditions are becoming the number one health threat. There is a rising prevalence of multimorbidity, i.e., the co-existence of two or more chronic diseases within an individual) which is associated with high mortality, high morbidity, and increased health care service utilisation in both primary care and secondary care. This research project was conducted by using large, nationally representative data to explore the differences in the multimorbidity profiles of the resident population under different primary care systems between Scotland and Hong Kong/China. Together with further literature review and in-depth interviews with researchers, primary care practitioners, and policy makers, the project brings about the conclusion that multimorbidity is common in all three countries, and it strongly correlates with hospital admission with the effect exacerbated by socio-economic status. Healthcare reform strategies seeking to provide equitable health care must take into consideration of the growing problem of multimorbidity.

5. Peer-reviewed journal publication(s) arising directly from this research project
(Please attach a copy of each publication and/or the letter of acceptance. All listed publications must acknowledge RGC’s funding support by quoting the specific grant reference.)

The Latest Status of Publications				Author(s) <i>(bold the authors belonging to the project teams and denote the corresponding author with an asterisk*)</i>	Title and Journal/Book <i>(with the volume, pages and other necessary publishing details specified)</i>	Attached to this report <i>(Yes or No)</i>	Acknowledged the support of this Joint Research Scheme <i>(Yes or No)</i>
Year of publication	Year of Acceptance <i>(For paper accepted but not yet published)</i>	Under Review	Under Preparation <i>(optional)</i>				
		✓		Wang HHX, Wang JJ, Wong SYS, Wong MCS, Li FJ, Wang PX, Zhou ZH, Zhu CY, Griffiths SM, Mercer SW*	Title: Epidemiology of multimorbidity and implications for equitable healthcare: Cross-sectional survey among 162,464 community household residents in southern China / Journal: <i>Lancet</i>	Yes	Yes (The support of this Joint Research Scheme will be acknowledged in the full paper accepted for publication.)

			✓	Wang HHX, Wang JJ, Wong SYS, Wong MCS, Li FJ, Wang PX, Zhou ZH, Zhu CY, Yeong JY, Griffiths SM, Mercer SW*	Title: Multimorbidity and its effect on hospital admission in different healthcare systems: Evidence from three population-based studies in China, Scotland, and Hong Kong/ Journal: <i>PLoS Medicine</i>	Yes	Yes (The support of this Joint Research Scheme will be acknowledged in the full paper accepted for publication.)
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6. **Recognized international conference(s) in which paper(s) related to this research project was/were delivered** *(Please attach a copy of each conference abstract/paper)*

Month/Year/Place	Title	Conference Name	Attached to this report (Yes or No)	Acknowledged the support of this Joint Research Scheme (Yes or No)
N/A	N/A	N/A		

7. **Other impact** *(e.g. award of patents or prizes, collaboration with other research institutions, technology transfer, etc.)*

This research project has greatly evoked interest of policy makers, healthcare service researchers, and healthcare professionals to realise the wider and deeper significance of achieving an equitable primary care system, and especially for dealing with challenges of chronic diseases and multimorbidity. The findings of the research project shall be relevant and informative to the current healthcare reform in Hong Kong/China. A coordinated and comprehensive approach in detection, treatment, and management for the large population with multimorbidity at primary care level would benefit both the healthcare sector and the general population in the long term in Hong Kong.