Author's response to reviews

Title: Patterns of ambulatory care utilization in Taiwan

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Point-to-Point Responses to Reviewers’ Comments

Article title: Doctor-shopping in Taiwan: A Socio-cultural Factor in the Spread of Emerging Infectious Diseases?  
MS ID: 1569546549884433  
Authors: Tzeng-Ji Chen, Li-Fang Chou and Shinn-Jang Hwang

Dear Sirs

Thank you very much for reviewing our manuscript for publication in *BMC Health Services Research*.

Following the reviewers’ advice, we have changed the article title to “Patterns of ambulatory care utilization in Taiwan”.

As to the reviewers’ comments, we would like to answer as followings:

**The first reviewer (Prof. Gabriel Leung):**

**Major compulsory revisions:**

C1. Title and Introduction – I am unclear as to the relevance of infectious disease spread in relation to the primary objective of describing the pattern of health care utilization (especially the phenomenon of doctor shopping) based on a national health insurance claims database. If this is simply to provide a topical raison d’etre for the manuscript, I suggest it may distract more than help. Studying the “ecology” of health care seeking and consumption is a worthy research goal per se without needing to resort to a secondary justification.

R1. Yes, the SARS was originally taken as a prologue to our study. Indeed,
such an approach had blurred the main point of our study. Following the reviewer’s advice, we have changed the title to “Patterns of ambulatory care utilization in Taiwan”. The implication for the SARS was then mentioned peripherally.

C2. Methods – I strongly suggest prosecuting the dataset to the fullest possible extent, given the unique and large resource. Given the unique (albeit scrambled) identifier, I suggest 2 additional layers of analysis:-

a. Adding a temporal (longitudinal) component to the analysis to distinguish between very poor health/catastrophic illness within a single year leading to multiple episodes of care and seeking bona fide second opinions masquerading as doctor shopping vs more discretionary (even frivolous) use patterns due to moral hazard.

b. Characterising those who are high vs low utilisers and those who doctor shop vs those who do not, etc by personal characteristics (demographics, geography, and socioeconomics if available and so on). Currently the analysis is on the ecologic level which is prone to the ecologic fallacy and does not allow readers and fellow researchers to properly and deeply understand health care utilization patterns in Taiwan.

R2. Following the reviewer’s advice, we have described the dataset in more details in the Methods section.

a. We have identified the patients (n = 5419) with catastrophic illness and the visits (n = 46349) because of catastrophic illness. Of course, patients with catastrophic illness tend to have more visits. But they were only 13% (465 in 3557) of high users (annual visit count > 52).

b. Because of privacy protection, the data about residence, income etc. are not available in the anonymized datasets. We have calculated the age-sex distribution in each group of patients by annual visit count. Following the reviewer’s advice, we have added this analysis to the manuscript.

C3. Methods – is the diagnosis code available in the claims database? If so, this could help in better defining doctor shopping and reducing misclassification bias.

R3. Up to three diagnostic codes in ICD-9-CM exist in the claims for each visit. We have calculated the distribution of principal diagnoses by ICD chapter (as a new Table 3) to illustrate the patterns of ambulatory visits in Taiwan.

Because the claims diagnoses at the ambulatory sector were usually tentative for administrative purpose, we did not use them for defining doctor shopping. Instead, we used the physician’s specialty for our analysis.

C4. Are the authors are passing normative judgement on “one-stop shopping” events? Surely, if all the different specialty visits were medically necessary, it would be better to arrange for the patient to visit different clinics on the same day.

R4. We just tried to quantify a unique phenomenon in Taiwan. Frankly
speaking, the referral system of Western standard did not exist in Taiwan. The Taiwanese have great freedom in choosing medical care facilities and specialties. The outpatient departments, even at the academic medical centers of the tertiary care, operate like the department stores. The hospitals and the NHI don’t set the limit of visits within a day for each patient.

Following the reviewer’s advice (as in the Comment 2 of minor essential revisions), we have added a couple of paragraphs (in the Methods section) summarizing the Taiwanese health care system as contextual information.

C5. Given the way “specialties” are defined, medically appropriate need (by whatever objective normative criteria) would typically involve at least 3 different such specialties, eg GP, Chinese medicine and dentistry, perhaps plus 1 or 2 others for bona fide referrals by the GP for a consult. This point should be clarified and emphasised, in fact, in the Discussion.

R5. The GP system of British style (as in UK, Canada, Australia, Hong Kong, etc.) did not exist in Taiwan. The Taiwanese have great freedom in choosing medical care facilities and specialties; they are not bound (registered) to any clinic. Following the reviewer’s advice (as in the Comment 2 of minor essential revisions), we have added a couple of paragraphs (in the Methods section) summarizing the Taiwanese health care system as contextual information.

C6. Discussion – I would have preferred more in-depth dissection and explicit linking of the economic behaviour (ie health care seeking) of the population and the financial incentives/disincentives of NHRI reimbursement rules. This would then allow the authors to draw lessons that can and should be learnt by other countries who are thinking about using the fruits of development to launch a social insurance scheme for universal and comprehensive coverage. Lastly, it would be useful to directly compare the patterns observed in Taiwan to other western social insurance systems, Canada and the Bismarckian European systems, in addition to Japan and Korea as regional neighbours sharing also strong socio-cultural/historical ties.

R6. Because the patient’s income status was not available, we could not have an in-depth analysis of economic behavior at the patients’ side. At the suppliers’ side, the reimbursement within Taiwan’s NHI was on a fee-for-service (fee for each item of services) basis under the global budgeting (similar to the German system).

The aim of our study was to quantify the patterns of ambulatory care utilization in Taiwan. The patterns were certainly conditioned by the health care and socio-cultural systems. While a direct comparison of data with other countries might be too superficial, an in-depth comparison might be beyond the scope of our study. Following the reviewer’s advice (as in the Comment 2 of minor essential revisions), we have added a couple of paragraphs (in the Methods section) summarizing the Taiwanese health care system as contextual information.
Minor essential revisions:

C1. The Abstract is very long – suggest some aggressive pruning and tightening.
R1. Following the reviewer’s advice, we have shortened the abstract to 250 words.

C2. Introduction – it would be enormously helpful to international readers if the authors could add a couple of paragraphs summarising the Taiwanese health care system as contextual information.
R2. Following the reviewer's advice, we have added a couple of paragraphs (in the Methods section) summarizing the Taiwanese health care system as contextual information.

C3. How were the 200,000 “randomly” selected from the total claims database? Are they geographically representative, as well as on other basic sociodemographics, of the general Taiwanese population?
R3. Every resident in Taiwan has a unique ID number officially. After scrambling of the original ID number, the new number remained unique in the claims datasets. The 200,000 persons were randomly sampled from 23,753,407 persons who had ever been insured under the NHI from March 1, 1995 to December 31, 2000. According to the NHIRD, the randomization used the function (linear congruential random number generation) of Sun Work Shop C 5.0. The distributions of age, sex and utilization were representative of the population. The data of residence and income were not available in the NHIRD (The Bureau of National Health Insurance did not release such data).

C4. Since NHRI just celebrated its 10th anniversary in 2005, and there were several major adjustments (e.g. premiums) along the way. I wonder if the choice of reference year (2002 in the current set of analyses) would make a difference in the results? In addition, if the authors agree with my comment #1 under “major compulsory revisions”, perhaps they should consider updating the analysis to 2004.
R4. The behavior is dynamic. One of the main points in our study was to analyze the temporal pattern of a patient’s visits (e.g. how a patient has visited the same specialty at other healthcare facilities in the past 7 days?). If the approach of our study could be recognized, we might plan to have a trend analysis in the near future.

C5. p.7 – please elaborate on the definition of the denominator.
R5. Our analysis was limited to the year 2002. The cohort originated from the people insured between 1995 and 2000. Because of death and emigration, not every person was still present in 2002. Thus, we took the persons still insured in 2002 as the denominator. Following the reviewer’s advice, we have explained the denominator in more details in the Methods section.

C6. Results, p.8 and Table 1 – why the very high utilisation proportion for
ENT? Is the definition of this specialty similar to western standards?

R6. Although the specialists of ENT in Taiwan were trained as surgeons (of Western standard), they made the business by having common cold as their major ambulatory practice. It might be also a unique phenomenon in Taiwan.

C7. A related comment leads me to Parkinson’s Law – perhaps it would be helpful to add a column showing the supply side figures in terms of no of doctors in different specialties per 100,000 population.

R7. Following the reviewer’s advice, we have added a column to Table 1, showing the supply side figures in terms of no. of different specialists per 100,000 population.

C8. Table 2 – add a footnote to explain why the column totals exceed 100% for the “no. of patients” for easy comprehension.

R8. Following the reviewer's advice, we have added a footnote to Table 2.

C9. Table 3 – what does the column “aggregate visits” refer to?

R9. Aggregate visits meant the total visits made by each patient group in 2002. This column served to illustrate that few people made up for a larger share of visits (similar to the 20/80 rule).

Following the reviewer’s advice, we have added a footnote to Table 3.

C10. The authors may wish to benchmark and compare some of their findings to a recently published paper on the ecology of health care utilisation in another Asian tiger economy, Hong Kong – Leung et al. Soc Sci Med. 2005;61:577-90.

R10. The medical care system in Hong Kong is far different from that in Taiwan. Based on the ecology model of K. L. White, one of the authors had also written a manuscript about mental health care in Taiwan. The manuscript was accepted for publication in Administration and Policy in Mental Health. The approach of our current study differed from the ecology model of K. L. White. Thus, a direct comparison might not be adequate.

The second reviewer (Dr. Arul Earnest):

Major compulsory revisions:

C1. Chen and colleagues have written an interesting paper in relation to the healthcare help-seeking behaviour of Taiwanese patients. Generally, the paper is well-presented and the sample size in their study is large, leading to robust estimates.

R1. We appreciate the compliments.

C2. The major deficiency of this study is that it is entirely descriptive in terms of help-seeking behaviour, and does not relate the issue of doctor-shopping with the spread of emerging infectious disease, as their manuscript title seems to suggest. The title needs to be changed.
R2. The SARS was originally taken as a prologue to our study. Indeed, such an approach had blurred the main point of our study. (Please also refer to the Major Comment 1 of the first reviewer). Following the advice of both reviewers, we have changed the title to “Patterns of ambulatory care utilization in Taiwan”. We have also toned down the importance of the SARS greatly. The implication for the SARS was then mentioned peripherally.

C3. Doctor-hopping does seem to present the opportunity for an infectious disease such as SARS to be spread across healthcare institutions. However, the authors have not provided convincing data to support this theory. The authors should share their experience in Taiwan during the 2003 outbreak. What is the help-seeking behaviour of SARS patients who transmitted to secondary cases as compared to those who did not transmit. The answer to this question should provide more evidence to support their theory.

R3. Please refer to the R2.

C4. In addition, it would also be useful to compare the previous help-seeking visits/physician switching behaviour of those presenting with influenza-like illnesses (and other infectious diseases) and see if they are different from the entire cohort (or a suitable comparison group). This would help examine the issue on a broader scale.

R4. Please refer to the R2.

C5. The authors should highlight the Taiwanese public health measures implemented during the SARS outbreak and discuss their impact on patients’ help-seeking behaviour, i.e. what were the institutional mechanisms kept in place to prevent the spread of the disease within and across institutions? For instance, in Singapore, ‘SARSWeb’, a secure website containing updated lists of suspect and probable SARS cases, community, HCW and inpatient contacts of SARS patients, including those on home quarantine orders (HQO) was set-up, together with isolation, contact tracing and quarantine procedures (see James L and Deng JF, Public Health journal, Jan 2006). See also Gopalakrishna G, EID journal, Mar 2004. The authors should discuss the impact of these measures on doctor-hopping behaviour during an outbreak of an infectious disease.

R5. Please refer to the R2.

C6. I have noticed the absence of infectious disease as a category in the list of ambulatory care visits (table 1). It would be useful to have this in the table, and also a breakdown of their help-seeking behaviour. A breakdown by several key diagnosis groups would also be helpful.

R6. Following the reviewer’s advice, we have added such a row in Table 1. We have also supplied a table (a new Table 3) by calculating the distribution of principal diagnoses (by ICD chapter) to illustrate the patterns of ambulatory visits in Taiwan.

C7. The issue of super-spreaders surfaced during the recent SARS outbreak,
where a few infected individuals transmitted the disease to many others. The authors need to discuss this and other competing risks in disease transmission. This study also lacks clinical data, which has been shown to be related to disease transmission.

R7. Please refer to the R2.

Minor essential revisions:

C1. The authors have presented means and standard deviations for the number of consultations. The distribution of some of the data looks skewed (e.g. standard deviation of 13.7 for a mean of 13.4). It would be better for the authors to present medians and interquartile ranges instead.

R1. Following the reviewer’s advice, we have supplied the data of medians and interquartile ranges where applicable.

Accordingly, we had revised the manuscript. Thanks again for the reviewers’ constructive comments.

Sincerely Yours

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