

# 行政院國家科學委員會專題研究計畫 成果報告

## 病人知覺風險及就醫決策的實證研究--以 2003 年 SARS 流行 為例

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## ABSTRACT

The 2003 outbreak of SARS (severe acute respiratory syndrome) affected many countries. In Taiwan, where in-hospital contamination was the major source of infection, seeking hospital care became a health risk. Here we study people's perception of health risk and its impact on their use of healthcare services. Degree of public apprehension was measured by the number SARS-related news articles, and information on the number of visits to hospital outpatient departments and community clinics was taken from claims submitted to Bureau of the National Health Insurance (NHI) by such medical facilities. We found that the increase in SARS-related news articles reduced the outpatient visits dramatically during April and June 2003, when the number of suspected SARS case was the highest. During the SARS outbreak period there was an almost 25 percent decrease in volume of outpatient healthcare. We found that, possibly because SARS patients were treated at larger hospitals, the bigger the hospital, the more dramatic the reduction. The impact of the SARS epidemic on people's health, especially with regard to its possibly discouraging people from seeking needed health care, needs long-term monitoring.

## INTRODUCTION

First starting in China in February 2003, SARS (severe acute respiratory syndrome) broke out in several other countries, including Canada, United States, Singapore and Taiwan.<sup>1,2</sup> In Taiwan, the unfortunate death of two doctors and several nurses, who had treated SARS patients, gave rise to great public fear.<sup>3</sup> Indeed, Taiwan's major source of infection was the hospitals, themselves.<sup>4</sup> The possibility of contracting the disease in a hospital setting made a visit to such medical facilities risky. In addition, mass media communication, especially unfavorable information, is considered to have influence on consumer behavior.<sup>5,6</sup> The increased number of SARS-related news reports may bring a decrease in healthcare utilization.

With the implementation of National Health Insurance (NHI) in 1995, people in Taiwan are able to enjoy a high degree of freedom in choosing health care providers without a referral requirement.<sup>7</sup> With 14 visits per year per citizen, Taiwan has the highest number of visits to physicians in the world. One study has shown that the implementation of the NHI, making healthcare easily accessible and cheaper, doubled the number of outpatient visit of newly insured individuals.<sup>8</sup> With the hospitals, themselves, becoming possibly dangerous, Taiwan people, who had greatly increased

their number of visits to healthcare services, now had to weigh expected gain from doctor's treatment against risk of contracting SARS.<sup>9</sup> This article attempts to measure the impact of perception of SARS risk on people's utilization of healthcare services.

## MATERIALS AND METHODS

Three sources of information were used to examine the impact of SARS on utilization of healthcare services: the weekly number of SARS suspect cases reported on the Taiwan CDC website<sup>10</sup>; the number of SARS-related news reports found in popular United Daily News database (consisting of 5 daily news papers) in Taiwan using the keyword SARS; and the claim data of hospitals and clinics from the Taipei branch of the Bureau of the NHI, which handles about one third of the nation's NHI healthcare services and the majority of SARS cases living in this region.<sup>10</sup>

The 2003 SARS epidemic in Taiwan can be divided into pre-SARS period, SARS outbreak period, and post-SARS period. April 24 marks the outbreak of SARS in Taiwan. On this day the Taipei City Government suddenly without pre-warning closed the Municipal Ho-Ping Hospital quarantining about 1,000 people, including

SARS patients, medical staff members, all hospitalized patients and their visitors.

This dramatic and panicky closure raised the public's level of apprehension over SARS significantly. July 5<sup>th</sup>, the day WHO (World Health Organization) removed Taiwan from list of SARS areas, marked the post-SARS period. The NHI claim data of the first 10 months of 2003 and 2002 were used to assess the changes in volume of outpatient visits during the SARS epidemic. Analysis of variance (ANOVA) was used to examine the changes in services volume.

## FINDINGS

The first SARS suspect case in Taiwan was diagnosed on February 24 and was reported on March 10, 2003. The increase in SARS suspects and serious SARS events brought an increase in the number of SARS-related news counts (Fig. 1A and 1B). The Ho-Ping Hospital event (on April 24, the 17<sup>th</sup> week) created a panic situation in Taiwan, reflected by the dramatic increase in SARS-related news articles, which rose from about 900 news articles per week to 2700 a week. During the 19<sup>th</sup> week, once the peak of SARS epidemic had passed, the number of news began to decrease steadily from the 20<sup>th</sup> week to the 43<sup>rd</sup> week in the end of October 2003.

The number of outpatient visits decreased significantly during the SARS epidemic (Fig 1C). While ignoring the annual drop that takes place every Chinese New Year vacation in February, we found that the weekly number of outpatient visits decreased in 2003 after the SARS outbreak (in the 17<sup>th</sup> week) and fell to its lowest volume in the 22<sup>nd</sup> week (May 25-31). The decrease in number of outpatient visits was observed along with an increase in number of SARS-related news articles. The number of outpatient visits gradually returned to normal levels, those comparable to 2002 levels in early September 2003 (in the 36<sup>th</sup> week).

We then compared the number of outpatient visits during the same periods in 2002 and 2003 to examine the impact of the SARS epidemic. Since the SARS cases were diagnosed and treated in big hospitals with higher accreditation levels<sup>11</sup>, these facilities were found to have suffered the greatest decrease in number of outpatient visits. The outpatient visits decrease or increased based on level and size of the hospitals (Fig 2). We observed a 25% decrease in number of outpatient visits during the SARS outbreak period. In hospitals designated as medical centers and regional hospitals, meaning large-scale hospitals, there was a 48.4% and a 42.8% decrease in outpatient visits, respectively, whereas community clinics experienced a 14.5% drop in use of outpatient services.

## DISCUSSION AND CONCLUSION

During the SARS outbreak, Taiwan experienced a 25% decrease in the number of visits to outpatient visits. This drop in utilization of healthcare service can be explained by people's fear of contracting SARS in a hospital setting. The reduction in outpatient visits varied significantly from 48.4% to 14.5% depending on accreditation level and size of the medical facility. In Taiwan, higher accredited hospitals such as medical centers and regional hospitals are large-scale hospitals with advanced medical equipment, so patients with more severe or complex conditions, including SARS, are normally drawn to their facilities. During the SARS outbreak, the reduction in number of hospital visits was positively associated with level of hospital accreditation: the higher the accreditation level, the greater the fear of contracting SARS.

The fear of contacting SARS in a hospital setting discouraged unnecessary physician visits which might be associated with the generosity of the NHI, and may have even discouraged people with real health problems from seeking medical care. The question may be clarified through a comparison with similar analyses in other SARS affected countries. The impact of the SARS epidemic on people's health, especially

on whether it prevents people from seeking needed medical attention, needs long-term monitoring.



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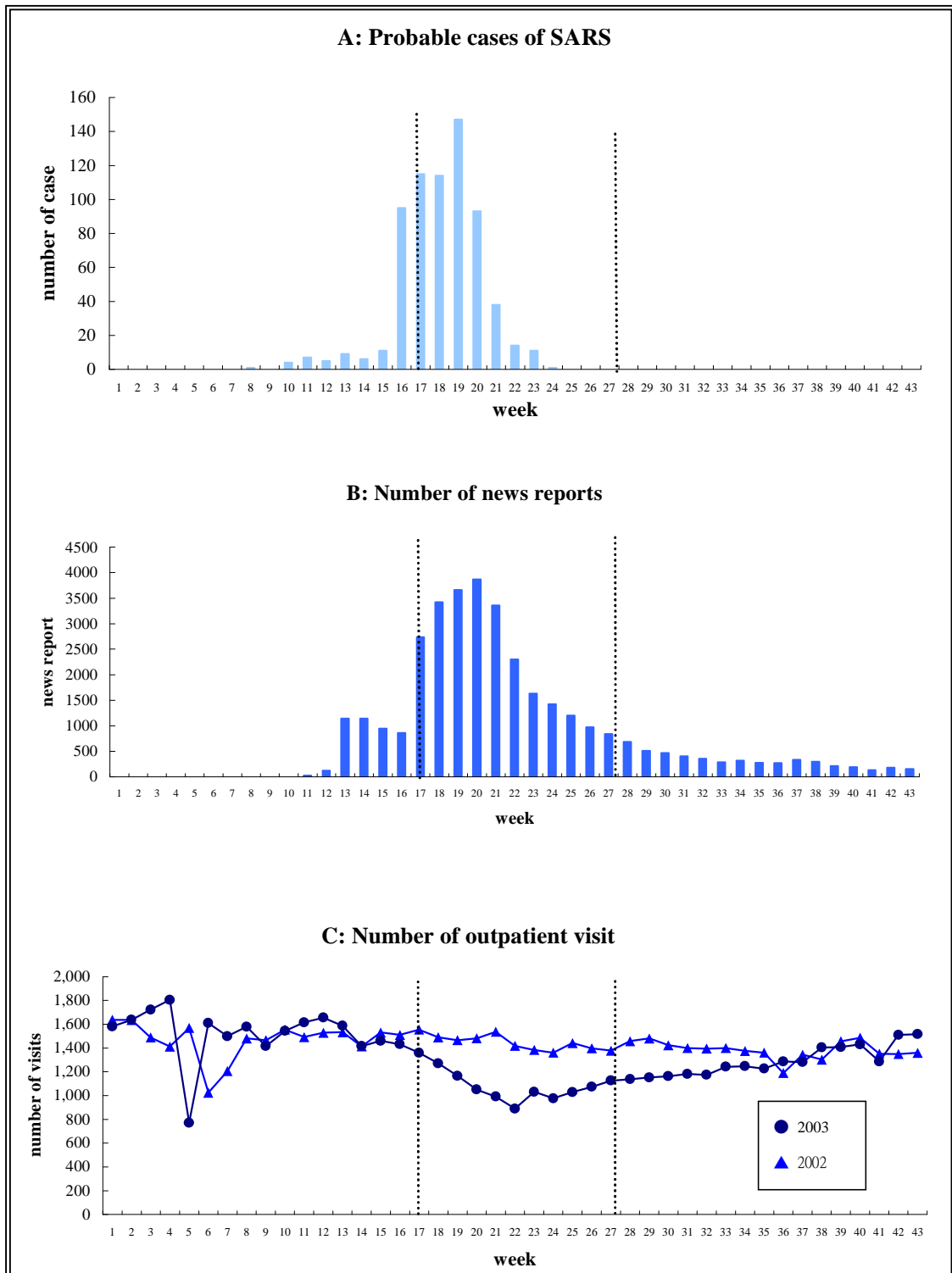


Fig 1: The weekly statistics of probable SARS cases, news reports on SARS, and the outpatient visits in Taiwan, 2003.

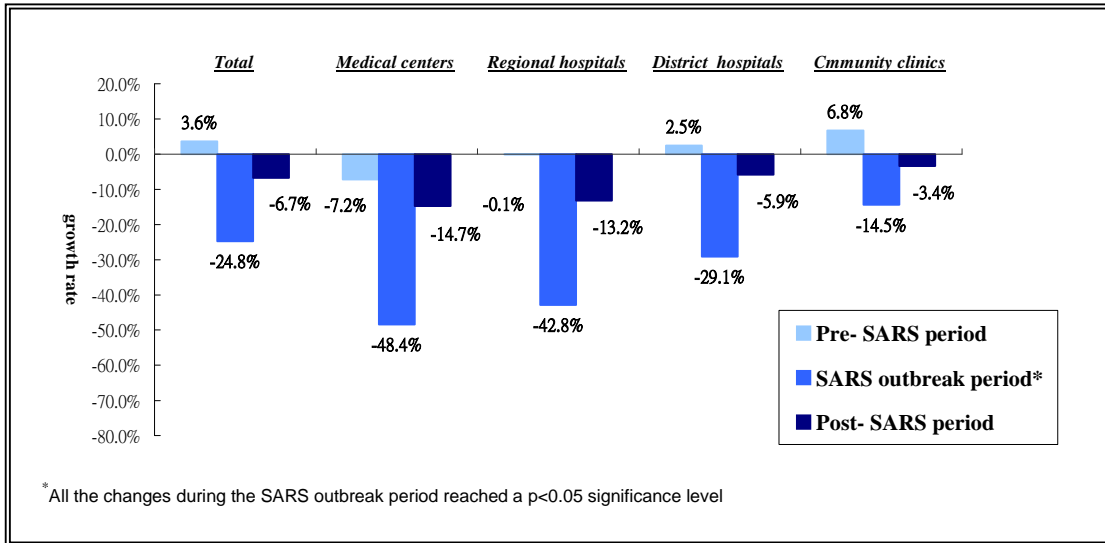


Fig 2: Percent changes compared with the previous year in the numbers of out-patient visits by hospital accreditation levels in Taiwan, 2003.