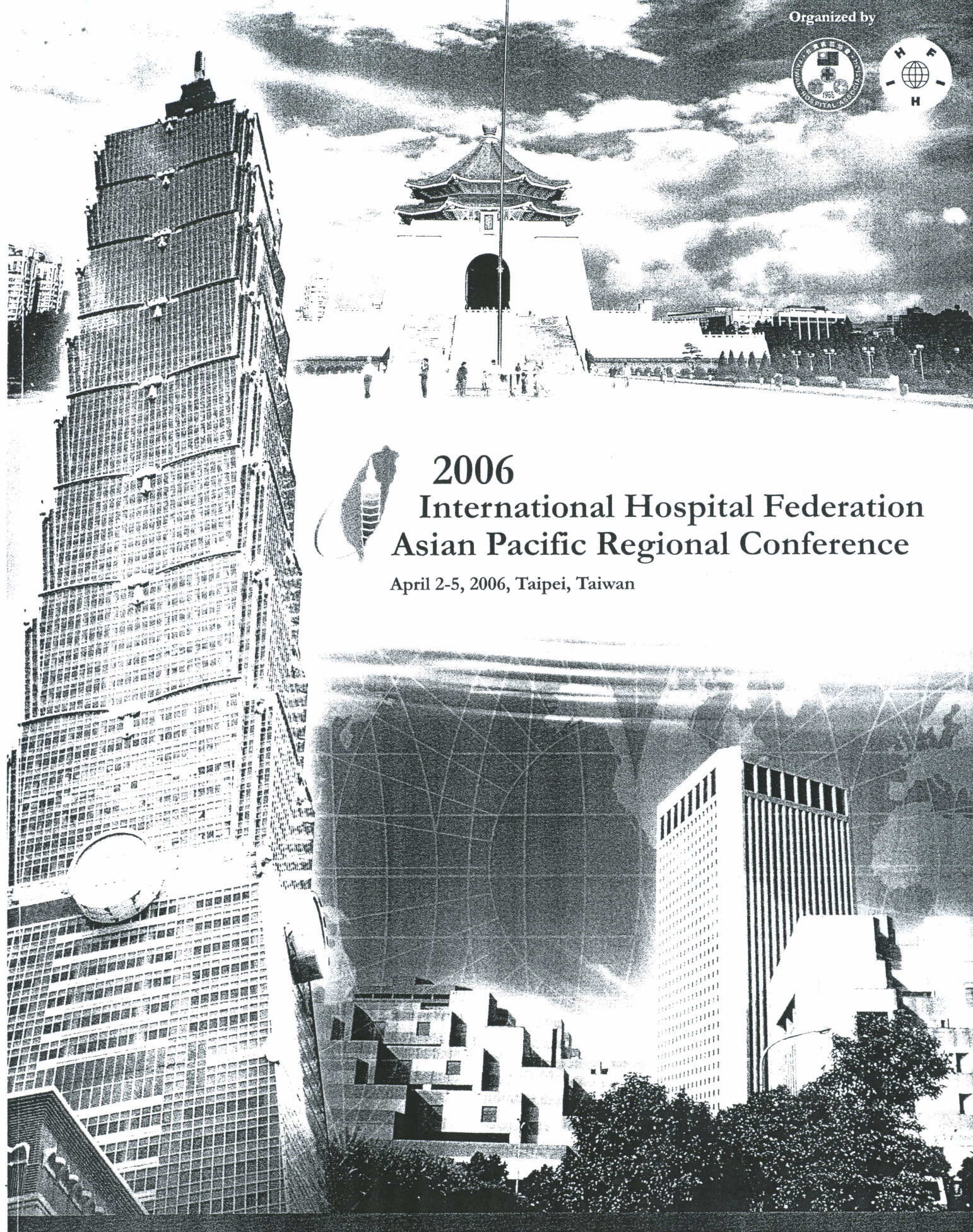


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2006

International Hospital Federation Asian Pacific Regional Conference

April 2-5, 2006, Taipei, Taiwan

Abstract Book

Health for All - Challenges of Hospitals in 21st Century



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COMPARISON BETWEEN NEGATIVE PRESSURE ISOLATION ROOM AND RELATIVE NEGATIVE PRESSURE ISOLATION ROOM IN THE INFECTION CONTROL OF SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

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Background: Severe Acute Respiratory Syndrome (SARS) caused by a novel coronavirus emerged recently as a highly contagious disease. In 2003, Taiwan was classified as a serious epidemic area due to high prevalence of SARS infection by the World Health Organization. During the period, several hospital outbreaks of SARS occurred. Many health care workers, patients and visitors were infected without using adequate precaution when contact with a patient with SARS. How to efficiently interrupting the transmission of the virus remain an important issue. For better understanding the infection control strategy during SARS outbreaks, we conducted a retrospective study to compare the difference of the SARS infection rate in healthcare worker who worked at negative pressure isolation room and relative negative pressure isolation room.

Material and Methods: The study was conducted between 5 May and 3 June 2003 in the Wan-Fang Hospital. We choose two kinds of wards for comparison. All rooms in the A ward were negative pressure isolation rooms. All rooms in the B ward were relative negative pressure isolation rooms where "relative negative pressure" was created by installation of exhaust fans. Suspect and probable SARS cases were randomly admitted to the A or B ward. During the study period, all patients, medical doctors, nurses, administrative personnel and volunteers in both A and B wards were enrolled to evaluate for SARS.

All healthcare workers received strict infection control education including zones of risk, traffic control and the importance of hand-washing before caring patients and used the standard personal protective equipment (PPE) advised by the Department of Health, Taiwan when caring patients. Flow charts of equipment procedures were posted at each important zone throughout the wards.

Case definition

The SARS case definition was based on World Health Organization (WHO) case definitions. A suspect case was defined as an epidemiologically confirmed patient who met the clinical criteria of moderate respiratory illness. A probable case was defined as a patient who met the criteria for a suspect case with severe respiratory illness (e.g. pneumonia or respiratory distress syndrome).

Statistics Chi-square test or fisher's exact test were used for categorical variables. Student t test was used for analyzing continuous variables.

Results: A total of 23 and 20 patients were collected during the study period in the A and B wards, respectively. Probable cases was 7 in the A ward, and 8 in the B ward. Suspect cases was 11 in the A ward, and 9 in the B ward. The age distribution, sex, and underlying diseases were not different between patients admitted in the A or B ward. The percentage of positive SARS-CoV PCR in patients of the A ward was not different with that in patients of the B ward. There was 20 healthcare workers in the A ward and 27 healthcare workers in the B ward. The mean age and seniority were not different between healthcare workers in the A or B ward. During the one month, no healthcare worker in the A and B ward had positive SARS-CoV PCR result. There was also no healthcare workers got fever or cough those were suspected as SARS infection sign during the study period.

Discussion: In our study, the SARS nosocomial infection rate was not different between healthcare workers who work in the negative pressure isolation room and relative negative pressure isolation room. The results indicate that relative negative pressure isolation room is an good alternative choice when negative pressure isolation room is not available. Standard PPE, hand-washing, concepts of traffic control and zones of risk are more important in interrupting the transmission of SARS virus.

Table 1 : The demographic data of patients in the A and B wards

	A ward	B ward	<i>p</i> value
patient number	23	20	
Age, years (mean ±SD)	45.78±21.78	54.8±23.42	NS ^a
sex: male/female	14/9	12/8	NS ^a
Probable case	7	8	NS ^c
Suspect case	11	9	NS ^c
Positive SARS-CoV RT-PCR	3	4	NS ^b
Underlying disease			
Hypertension	3	0	NS ^b
Renal disease	1	1	NS ^b
DM	2	4	NS ^b
Liver disease	3	2	NS ^b
Heart disease	1	2	NS ^b
Cardiovascular disease	1	1	NS ^b
COPD	1	2	NS ^b

^a student T-test ^b chi-square test ^c Fisher's exact test NS:non-significant

Table 2 : The demographic data of healthcare workers in the A and B wards

	A ward	B ward	<i>p</i> value
Healthcare worker number	20	27	
Age, years (mean ±SD)	26.75±4.53	25.96±3.14	^a NS
Seniority, years	3.7±2.11	3.1±2.0	^a NS
Infected person	0	0	
Positive SARS-CoV RT-PCR	0	0	

^a student T-test NS:non-significant