

Public attitudes toward SARS and their implications for societal preparedness for other emerging infections

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Abstract

Introduction:

This study examined public attitudes toward Severe Acute Respiratory Syndrome (SARS) in Hong Kong three months after the peak of the 2003 outbreak in order to shed light on SARS-related complaints received by the Equal Opportunities Commission of Hong Kong.

Methods:

A cross-sectional telephone survey was conducted three months after the SARS outbreak of 1,023 randomly selected Chinese-speaking residents in Hong Kong.

Results:

Most of the respondents (72.2%) reported worry about contracting SARS. They attributed their anxiety to the perceived danger of the disease, the government's unsatisfactory style of crisis management, and inconsistent health information dissemination. The majority of respondents endorsed up to 3 avoidant (67.8%) and 3 imposing (72.7%) attitudes toward individuals and/or situations considered to be at risk of

spreading SARS. Logistic Regression analyses indicated that the odds for avoidant and imposing attitudes increased significantly for those who were middle aged (35-54), employed full-time or part-time, and worried over contracting SARS.

Conclusions:

Public attitudes that endorsed avoidant and imposing behaviors were common during the outbreak of SARS. While essential for preventive health practices, they might bring about workplace conflicts, stigma, and other negative interpersonal experiences. These problems may complicate public health efforts to control the epidemic. They may also suggest ways in which societal preparedness for future emerging infections can be improved.

Introduction

Pandemics of infectious diseases incur a high cost to society as a result of their significant mortality and morbidity, sometimes over an extended period of time. Plaque, smallpox, "Spanish flu" are examples of past epidemics, while Severe Acute Respiratory Syndrome (SARS) is the most recent. SARS is an acute respiratory tract infection with high infectivity and significant mortality. Paradoxically, while the overall death toll of SARS was small compared to previous epidemics, it nevertheless brought with it global economic loss¹ and societal disruption.

In Hong Kong, the outbreak of SARS between 15 February and 31 May 2003 led to 302 deaths, of a total of 1,755 infected individuals.² Because of widespread fears about its uncertain routes of transmission and media-propelled fears of extreme contagiousness and high mortality, the SARS epidemic led to a wide range of preventive health practices such as rigorous surveillance and quarantine procedures; these might be experienced as stigmatizing. Indeed, stigmatizing practices related to SARS penetrated many levels of

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everyday life in Hong Kong. Some funeral homes refused to handle the bodies of SARS victims. Certain medical and paramedical staff were reluctant to care for SARS patients. Some SARS patients and their family members were shunned and forced out of employment. Employees who had recently been to the hospital or to parts of mainland China where SARS was reported were asked to take annual leave. Many people who were not infected but residing in buildings associated with SARS were asked to take leave and refused basic services. Residents of Amoy Gardens, a residential complex with 17,000 inhabitants where a significant number of SARS cases occurred, were isolated in camps and shunned by co-workers and schoolmates, who would not share elevators or hallways with them.³

Conceivably, SARS-related perception of stigma can result in management problems in the workplace. During the outbreak, the Equal Opportunities Commission of Hong Kong filed 79 formal complaints and received hundreds of inquiries from the general public on issues of stigma and discrimination related to SARS. The scenarios of these complaints were predominantly connected with unfair treatment in the workplace (70%) and, to a lesser extent, denial of access to goods and services (29%).⁴ This study examines public attitudes in the workplace and other social settings in order to shed light on these SARS-related complaints.

Methods

Subjects & procedures

After obtaining ethical approval from The Chinese University of Hong Kong, we conducted a cross-sectional telephone survey between July 3rd and July 8th 2003 of Chinese-speaking Hong Kong residents aged 15-64 years using random-digit dialing. Telephone numbers were randomly selected from the most recent residential telephone directory. Since over 99% of the residents in Hong Kong had a residential phone line, sampling telephone lines based on the residential telephone directory should be very close to sampling households. In order to capture unlisted numbers, the last two digits of the phone numbers were replaced by two-random digits.

Fieldwork for this study was conducted by highly trained interviewers at the Hong Kong In-

stitute of Asia-Pacific Studies of The Chinese University of Hong Kong. Throughout the data collection, survey supervisors continuously monitored interviewing to ensure consistency of questionnaire administration and interviewing techniques. Each interview took an average of 10 minutes to complete.

A total of 2,780 phone calls were made and the responses were as follows: no suitable interviewee ($n = 416$); incomplete interviews ($n = 111$); hung-up at the beginning ($n = 379$); refusal ($n = 615$); and completed interviews ($n = 1,023$). The completion rate for the valid sample was therefore 58.5% ($1,023/1,023+615+111$). The final sample included 1,023 respondents with a maximum sampling error of 3.06% at 95% confidence interval. To adjust for sampling bias, we weighted the sample according to the latest age and sex distributions of the Hong Kong Census and Statistics Department.⁵

The survey questionnaire included 21 questions covering sociodemographic characteristics, worry about contracting SARS, and attitudes toward avoidant and imposing behaviors at the peak of the outbreak. Avoidant behaviors referred to those aimed at avoiding certain situations or individuals perceived to be at high risk of spreading infection. Imposing behaviors referred to behavioral measures for reducing the perceived risk of SARS infection. The questions were derived from a content analysis of transcriptions of 4 focus groups made up of recovered SARS patients, their family members, residents from a building where SARS outbreak had occurred, and members of the general public. Sixteen of the questions were about attitudes toward avoidant and imposing behaviors in the workplace and other social settings. These questions reflected the most frequent complaints received at the Equal Opportunities Commission during the SARS crisis.

Socio-demographic characteristics of respondents were summarized using descriptive statistics. Chi-square tests were performed to explore whether avoidant and imposing attitudes were associated with worry over contracting SARS, risk of infection, and other socio-demographic characteristics. Multivariate contingency analyses were performed to explore the relationship between avoidant and imposing attitudes and worry over contracting SARS while

Table 1: General socio-demographic characteristics of respondents

	N	%
Total Sample	1023	100
Gender		
Male	491	48.0
Female	532	52.0
Age (years)		
15-34	307	30.4
35-45	392	38.9
46-64	310	30.7
Education level		
Primary school or below	126	12.4
Secondary school	643	63.3
Tertiary or above	246	24.2
Marital status		
Single	390	38.6
Married /Divorced	621	61.4
Annual household income (USD)		
High income (3,841 and above)	232	29.5
Average income (1,923-3,846)	284	36.1
Low income (640-1,920)	271	34.4
Employment status		
Employed (full-time or part-time)	610	59.6
Students	114	11.1
Unemployed	91	8.9
Housewives	170	16.6
Retired	37	3.7
Occupational type		
Managerial	172	29.9
White Collar	259	45.0
Blue Collar	145	25.1

controlling for other demographic variables. Logistic regression analyses were performed to identify significant predictors for avoidant and imposing attitudes. Statistical significance was based on two-tailed tests evaluated at the 0.05 level.

Results

The respondents (n=1,023) included 48.0% males and 52.0% females aged between 15 and 64. (Table 1) Most were middle aged (35-54 years old) (48.2%), employed (57.8%), married (61.4%), and had received a secondary education (63.3%). Most of them (72.2%) reported worry about contracting SARS at the time of the interview. 10.4% of respondents resided in buildings

with infected resident(s) and were considered to be at high risk of infection. Respondents generally attributed their worry to dissatisfaction with the government's crisis management (79.4%), inconsistent dissemination of information (71.3%), and conflicting views expressed by health care professionals (68.9%).

The frequencies of "yes" responses to the 16 questions on avoidant and imposing attitudes are summarized in Table 2. The mean number of avoidant and imposing attitudes among respondents were 2.81 (sd 1.93) and 2.52 (sd 1.71) respectively. Pearson correlation indicated that avoidant and imposing attitudes were significantly correlated ($r=.537$, $p<.000$). The majority of respondents reported 3 or less avoidant

(67.8%) and imposing (72.7%) attitudes. They were classified as low avoidant and imposing groups. The remaining 32.2% and 27.3% respondents, who endorsed more than 3 avoidant and imposing attitudes, were classified as high avoidant and imposing groups

The high and low avoidant and imposing

groups were compared according to socio-demographic characteristics, worry over contracting SARS, and risk of infection. (Table 3) The results indicated that respondents who were male, middle aged (35-54), married, employed, had tertiary education, average to high income, and worried over SARS were significantly more likely to

Table 2: Frequency of avoidant and imposing attitudes

a. Avoidant attitudes	Yes n (%)	No n (%)	Don't know n (%)	Not available n (%)
Will avoid going out/ dining with colleagues who have fever	360 (35.2)	195 (19.1)	23 (2.2)	445 (43.5)
Will avoid coughing in public areas	634 (62.0)	375 (36.6)	14 (1.4)	0 (0.0)
Will avoid going out/ dining with friends who have chronic illness	544 (53.2)	431 (42.1)	48 (4.7)	0 (0.0)
Will avoid people who cough on the subway train	514 (50.2)	491 (48.0)	18 (1.8)	0 (0.0)
Will avoid going out/ dining with colleagues who reside in high-risk buildings	274 (26.8)	280 (27.4)	24 (2.3)	445 (43.5)
Will avoid going out/ dining with colleagues whose family members are infected	176 (17.2)	387 (37.8)	15 (1.5)	445 (43.5)
Will avoid going out/ dining with friends who have just recovered from SARS	272 (26.6)	716 (70.0)	35 (3.4)	0 (0.0)
Will avoid going out/ dining with colleagues who are recovered SARS patients even after post-discharge quarantine	110 (10.8)	604 (59.0)	9 (0.9)	300 (29.3)
b. Imposing attitudes				
Office management should force employees to take leave if they have fever	362 (35.4)	182 (17.8)	34 (3.3)	445 (43.5)
Office management should adopt preventive measures against employees who reside in high-risk buildings	345 (33.7)	208 (20.4)	25 (2.4)	445 (43.5)
Office management should adopt preventive measures against employees whose family members are infected	245 (23.9)	310 (30.3)	23 (2.3)	445 (43.5)
High risk employees should take leave and be quarantined if they work in the service and retail industries	435 (42.5)	553 (54.1)	35 (3.4)	0 (0.0)
Recovered SARS patients should continue to wear face masks in public places	393 (38.4)	567 (55.4)	63 (6.2)	0 (0.0)
Office management should adopt preventive measures against employees who have recovered from SARS	265 (25.9)	440 (43.0)	18 (1.8)	300 (29.3)
High risk employees should be put on unpaid leave	342 (33.4)	609 (59.5)	72 (7.1)	0 (0.0)
Job applicants should be screened to find out if they and their family members have a history of SARS	198 (19.4)	757 (74.0)	68 (6.6)	0 (0.0)

Table 3: Socio-demographic characteristics and the difference between high and low avoidance and imposing groups

Socio-demographic characteristics	n (%)	High avoidance (>3 avoidance attitudes) n (%)	Low avoidance (<3 avoidance attitudes) n (%)	p value	High imposing (>3 imposing attitudes) n (%)	Low imposing (<3 imposing attitudes) n (%)	p value
Total Sample	1023 (100.0)	329 (32.2)	694 (67.8)		279 (27.3)	744 (72.7)	
Gender							
Male	491 (48.0)	181 (36.9)	310 (63.1)	$X^2=9.57$, $p<0.05^{**}$	152 (31.0)	339 (69.0)	$X^2=6.462$, $p<0.05^{**}$
Female	532 (52.0)	148 (27.8)	384 (72.2)		127 (23.9)	405 (76.1)	
Age (years)							
15-34	420 (41.6)	108 (25.7)	312 (74.3)	$X^2=23.57$, $p<0.05^{**}$	97 (23.1)	323 (76.9)	$X^2=20.43$, $p<0.001^{**}$ *
35-54	486 (48.2)	193 (39.7)	293 (60.3)		163 (33.5)	323 (66.5)	
55-64	103 (10.2)	25 (24.3)	78 (75.7)		16 (15.5)	87 (84.5)	
Education							
Primary school or below	126 (12.4)	28 (22.2)	98 (77.8)	$X^2=15.96$, $p<0.001^{**}$ *	16 (12.7)	110 (87.3)	$X^2=17.15$, $p<0.001^{**}$ *
Secondary school	643 (63.3)	198 (30.8)	445 (69.2)		181 (28.1)	462 (71.9)	
Tertiary or above	246 (24.2)	102 (41.5)	144 (58.5)		80 (32.5)	166 (67.5)	
Marital status							
Single/ never married	390 (38.6)	99 (25.4)	291 (74.6)	$X^2=12.58$, $p<0.001^{**}$ *	96 (24.6)	294 (75.4)	$X^2=2.14$, $p>0.05$, ns
Married /Ever married	621 (61.4)	224 (36.1)	397 (63.9)		179 (28.8)	442 (71.2)	
Annual household income (USD)							
High income (3841 and above)	232 (29.5)	96 (41.4)	136 (58.6)	$X^2=9.42$, $p<0.05^{**}$	84 (36.2)	148 (63.8)	$X^2=12.08$, $p<0.05^{**}$
Average income (1923-3846)	284 (36.1)	95 (33.5)	189 (66.5)		83 (29.2)	201 (70.8)	
Low income (640-1920)	271 (34.4)	77 (28.4)	194 (71.6)		60 (22.1)	211 (77.9)	
Employment status							
Employed (full-time or part-time)	591 (57.8)	279 (47.2)	312 (52.8)	$X^2=147.24$, $p<0.001^{**}$ *	254 (43.0)	337 (57.0)	$X^2=178.21$, $p<0.001^{**}$ *
Students	132 (12.9)	11 (8.3)	121 (91.7)		9 (6.8)	123 (93.2)	
Unemployed	92 (9.0)	15 (16.3)	77 (83.7)		12 (13.0)	80 (87.0)	
Housewives	167 (16.3)	21 (12.6)	146 (87.4)		4 (2.4)	163 (97.0)	
Retired	41 (4.0)	3 (7.3)	38 (92.7)		0 (0.0)	41 (100.0)	
Occupational type							
Managerial	172 (29.9)	85 (49.4)	87 (50.6)	$X^2=1.98$, $p>0.05$, ns	80 (46.5)	92 (53.5)	$X^2=1.39$, $p>0.05$, ns
White Collar	259 (45.0)	125 (48.3)	134 (51.7)		111 (42.9)	148 (57.1)	
Blue Collar	145 (25.1)	61 (42.1)	84 (57.9)		58 (40.0)	87 (60.0)	
Anxiety							
Yes	739 (72.2)	273 (36.9)	466 (63.1)	$X^2=27.89$, $p<0.001^{**}$ *	219 (29.6)	520 (70.4)	$X^2=7.50$, $p<0.05^{**}$
No	284 (27.8)	56 (19.7)	228 (80.3)		60 (21.1)	224 (78.9)	
Risk of infection							
High	104 (10.4)	36 (34.6)	68 (65.4)	$X^2=2.61$, $p>0.05$, ns	36 (34.6)	68 (65.4)	$X^2=3.06$, $p>0.05$, ns
Low	893 (89.6)	287 (32.1)	606 (67.9)		237 (26.5)	656 (73.5)	

endorse avoidant and imposing behaviors. The endorsement of avoidant or imposing behaviors did not differ with regard to the risk of infection. Multivariate contingency table analyses indicated that these differences were still significant after controlling for age, gender and education except for imposing attitudes and worry over contracting SARS.

The significant variables were then entered in blocks into the logistic regression model as predictor variables for avoidant and imposing attitudes. Owing to the large standard error, the employment status was recoded into “employed” and “not employed.” The results indicated that the odds for high avoidant attitudes increased significantly for respondents who were middle aged (1:1.81), employed (1:5.86), and reported worry over contracting SARS (1:3.3). Similarly, the odds for high imposing attitudes increased significantly for respondents who were middle age (1:1.61), employed (1:11.05) and expressed worry (1:1.82). Test of the overall model (Model X2) indicated that these three variables were significant in predicting avoidant and imposing attitudes with employment status being the most significant predictor.

Discussion

Previous studies suggested that worry about SARS was associated with the adoption of protective health behaviors such as hand-washing and wearing face masks.⁶⁻¹⁰ The present study found that such worry was also associated with the endorsement of a range of avoidant and imposing attitudes that might mediate health behaviors. It demonstrated that anxiety played an important role in shaping people’s avoidant and imposing attitudes. These attitudes and the attendant behaviors undoubtedly played a role in prevention and might have reduced public anxiety during the SARS crisis. But they are also double-edged. In the workplace in particular, the line between appropriate cautiousness and discrimination might be blurred, especially in the context of divergent attitudes between managerial staff and manual workers.³ Our findings showed that public attitudes toward SARS were heterogeneous. Unlike the unemployed, less educated respondents with lower income, those who were employed, had high education and income were more likely to

endorse avoidant and imposing attitudes. This might be because the latter group was more likely to be health-conscious and/or held more responsibility over preventive health practice in the workplace.³

Although the present study did not measure workplace conflicts, it is possible that when these attitudes were stringently enforced, they could have triggered such conflicts and stigmatization.¹¹ This possibility is supported by the fact that 70% of the complaints that the Equal Opportunities Commission of Hong Kong received during the SARS outbreak arose in the workplace.⁴ As found in a study of SARS-related stigma among residents of a high risk building in Hong Kong, individuals who felt stigmatized might react by intentional non-disclosure which could in turn hamper public health prevention efforts.^{9, 11, 12}

Despite the emerging threat of communicable diseases such as Avian Flu, evidence suggests that employers and employees are often inadequately prepared for future epidemics.¹³ Our findings point to the importance of preparedness in the workplace; this might include more effective communication to reduce the divergent views between employees and managerial staff regarding what proper preventive health practice should be implemented.¹⁴ This could help diminish potentially discriminatory practices which are often unknowingly couched in corporate risk management terms. Our findings also affirm the importance of a consistent evidence-based approach to information dissemination during an outbreak of communicable disease.¹ Such consistency, instead of an excessive reliance on a precautionary principle,¹⁴ should allay excessive public anxiety and facilitate optimal preventive health practice.

This study has several limitations. First, the completion rate of 58.5% was only moderate and the telephone survey methodology we used might not ensure that eligible members of a household had an equal probability of being selected for interview. These factors could affect the generalizability of the findings. Second, the cross-sectional design could lead to recall bias such as in underestimating worry over contracting SARS after the peak of the crisis was over. Third, attitudes do not necessarily translate to behaviors which are highly context-dependent. Finally, the study was conducted with the intention of providing the

Equal Opportunities Commission with timely information on SARS-related public attitudes that might be associated with complaints of discrimination; consequently, the questionnaire was brief and failed to measure stigma and other sources of workplace conflicts.

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