

# Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution

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## Abstract

**Background:** The outbreak of SARS in 2003 had a dramatic effect on the health care system in Toronto. The main objective of this study was to investigate the psychosocial effects associated with working in a hospital environment during this outbreak.

**Methods:** Questionnaires were distributed to all willing employees of Sunnybrook and Women's College Health Sciences Centre between Apr. 10 and 22, 2003. The survey included questions regarding concern about SARS, precautionary measures, personal well-being and sociodemographic characteristics; a subsample also received the 12-item version of the General Health Questionnaire (GHQ-12).

**Results:** Of the 4283 questionnaires distributed, 2001 (47%) were returned, representing 27% of the total hospital employee population of 7474. The proportions of respondents who were allied health care professionals, nurses and doctors and who worked in areas other than patient care were representative of the hospital staff population as a whole. Of the 2001 questionnaires, 510 contained the GHQ-12. Two-thirds of the respondents reported SARS-related concern for their own or their family's health. A total of 148 respondents (29%) scored above the threshold point on the GHQ-12, indicating probable emotional distress; the rate among nurses was 45%. Masks were reported to be the most bothersome infection control precaution. Logistic regression analysis identified 4 factors as being significantly associated with increased levels of concern for personal or family health: perception of a greater risk of death from SARS (adjusted odds ratio [OR] 5.0, 95% confidence interval [CI] 2.6–9.6), living with children (adjusted OR 1.8, 95% CI 1.5–2.3), personal or family lifestyle affected by SARS outbreak (adjusted OR 3.3, 95% CI 2.5–4.3) and being treated differently by people because of working in a hospital (adjusted OR 1.6, 95% CI 1.2–2.1). Four factors were identified as being significantly associated with the presence of emotional distress: being a nurse (adjusted OR 2.8, 95% CI 1.5–5.5), part-time employment status (adjusted OR 2.6, 95% CI 1.2–5.4), lifestyle affected by SARS outbreak (adjusted OR 2.2, 95% CI 1.4–3.5) and ability to do one's job affected by the precautionary measures (adjusted OR 2.9, 95% CI 1.9–4.6).

**Interpretation:** Our findings indicate that the SARS outbreak had significant psychosocial effects on hospital staff. These effects differed with respect to occupation and risk perception. The effect on families and lifestyle was also substantial. These findings highlight the need for interventions to address psychosocial distress and concern and to provide support for employees during such crises.

During the spring of 2003, Toronto was in the midst of the first of 2 phases of a SARS outbreak. As the principal tertiary referral hospital, Sunnybrook and Women's College Health Sciences Centre (SWC) admitted 71 patients with SARS, of whom 23 were health care workers, between Mar. 14 and May 24. Over 1000 patients were seen at the SWC SARS assessment clinic.

The effect of SARS on the health care system in the greater Toronto area was dramatic.<sup>1–6</sup> At various times during the outbreak, 3 hospitals were closed. Health care workers were at increased risk and many were quarantined, which resulted in severe staff shortages. On Mar. 28, following the closure of a second hospital, new and intensive infection control directives were issued for all hospitals in the greater Toronto area and surrounding area. At SWC the directives included cancellation of all hospital-based outpatient clinics, significant visitor restrictions, mandatory wearing of surgical masks by all staff at all times (and N95 masks in patient care areas), limited hospital entrance and mandatory screening of everyone entering the building (symptom/exposure questionnaire and temperature reading). Health care workers were instructed to work at 1 health care institution only, and off-work contact between health care workers from different institutions was discouraged. The SWC SARS Management Team met daily to implement Ministry of Health directives, organize care of patients with and without SARS and deal with staffing issues. With clinic and operating room closures and quarantined staff, staff redeployment to screening at entrances and other essential services became necessary. After Apr. 17, staff not involved in patient care no longer had to wear masks; however, most of the other infection control directives were kept in place well into the summer months.

Little is known about the psychological effects of this type of disease outbreak on health care and other hospital workers. Maunder and colleagues<sup>1</sup> described the experiences of a small number of patients and staff at a Toronto hospital during the initial SARS outbreak. They observed that the staff were fearful for their own and their family's health and found caring for colleagues as patients emotionally difficult. Mitchell and associates<sup>7</sup> reported increased feelings of stigmatization among nurses during an outbreak of vancomycin-resistant enterococci in a hospital in Australia; feelings of alienation and isolation were also noted. A literature review revealed no large, systematic studies of the effect of a

disease outbreak on hospital staff, particularly in cases with a high risk of nosocomial spread, as is the case with SARS.<sup>2,4,8-10</sup>

The main objectives of this study were (a) to determine the self-reported psychosocial effects associated with working in a hospital environment during the peak of a disease outbreak, specifically psychological distress and effects on the work and personal lives of employees, and (b) to examine the determinants of these effects.

## Methods

We distributed a self-administered questionnaire to employees of SWC, a large teaching hospital, between Apr. 10 and 22, 2003. The hospital comprises 3 campuses: the Sunnybrook site, the Women's College site and the Orthopaedic and Arthritic site. During the first phase of Toronto's SARS outbreak most patients with SARS were admitted to the SARS unit of the Sunnybrook site. The Women's College site was the location for Toronto's first SARS screening and assessment clinic.

**Table 1: Demographic characteristics of 2001 staff at Sunnybrook and Women's College Health Sciences Centre surveyed during the first phase of the SARS outbreak in 2003**

Characteristic	No. (and %) of respondents
<b>Sex</b>	<i>n</i> = 1983
Male	420 (21.2)
Female	1563 (78.8)
<b>Age, yr</b>	<i>n</i> = 1983
< 30	269 (13.6)
30-39	510 (25.7)
40-49	606 (30.6)
≥ 50	598 (30.2)
<b>Education</b>	<i>n</i> = 1986
High school or less	152 (7.6)
Undergraduate university or college	1357 (68.3)
Medical or graduate school	477 (24.0)
<b>Occupation</b>	<i>n</i> = 1857
Allied health care professional*	615 (33.1)
Non-patient-care occupation†	593 (31.9)
Nurse	476 (25.6)
Doctor	173 (9.3)
<b>Tenure in current occupation, yr</b>	<i>n</i> = 1982
< 1	212 (10.7)
1-3	374 (18.9)
4-9	380 (19.2)
≥ 10	1016 (51.3)
<b>Employment status</b>	<i>n</i> = 1966
Full-time	1645 (83.7)
Part-time/casual	321 (16.3)
<b>Self-rated health</b>	<i>n</i> = 1956
Very poor to fair	260 (13.3)
Good to excellent	1696 (86.7)

\*Includes social workers, pharmacists, medical imaging technologists, physiotherapists, dietitians, audiologists and respiratory therapists.

†Includes administration, food services, maintenance and research.

Questionnaires were distributed to all willing employees (both health care and non-health-care workers) entering the hospital between 5:45 am and 7:15 pm (covering all major shift changes) over a 3-day period. Access at each campus was limited, making it possible to ensure that most people working that day were handed a questionnaire and explanatory letter. Completed questionnaires were deposited in drop boxes located at specified hospital locations over the following 2 weeks. Reminders to staff were sent out by email. Announcements were made at 2 staff fora on SARS held during the study period, and questionnaires were handed out to those who, when asked, stated that they had not received a questionnaire previously.

The questionnaire consisted of 5 main sections: occupation and work history; closed and open-ended questions about the respondent's concerns about SARS; closed and open-ended questions about the use and effects of SARS precautionary measures; standard sociodemographic characteristics; and the 12-item version of the General Health Questionnaire (GHQ-12),<sup>11</sup> a frequently used and well-standardized measure of recent emotional distress. We pilot-tested the survey instrument among clinicians and health care services researchers to assess its face validity. Owing to resource constraints, the distribution of the GHQ-12 was limited to a subsample of staff made up of only those who received the questionnaire on day 2 of data collection. A copy of the questionnaire is available from the authors on request.

We coded the response categories on the GHQ-12 items using the GHQ-12 scoring method as recommended by Goldberg and Williams<sup>11</sup> and calculated a total score. Following the example of numerous authors,<sup>12-15</sup> we used a threshold score of greater than 3 to identify the presence of emotional distress manifested as a break from normal functioning (e.g., loss of sleep, loss of self-confidence or inability to make decisions). The  $\alpha$  reliability coefficient for the GHQ-12 in this study was 0.85.

We analyzed the data using SPSS (version 11.1, SPSS Inc., Chicago) and included bivariate and multivariate techniques. Bivariate analysis was used to identify potential explanatory variables for outcomes of interest. Multivariate logistic regression analysis was used to assess the association between outcome variables and potential predictors, while adjusting for other identified explanatory variables.

We constructed 2 logistic regression models for the dependent

**Table 2: Reported levels of SARS-related health concerns and emotional distress**

Variable	No. (and %) of respondents
<b>Degree of concern about personal health</b>	<i>n</i> = 1988
Not concerned	701 (35.3)
Slightly to somewhat concerned	810 (40.7)
Very to extremely concerned	477 (24.0)
<b>Degree of concern about family's health</b>	<i>n</i> = 1971
Not concerned	735 (37.3)
Slightly to somewhat concerned	660 (33.5)
Very to extremely concerned	576 (29.2)
<b>Emotional distress*</b>	<i>n</i> = 510
No	362 (71.0)
Yes	148 (29.0)

\*Measured with the 12-item version of the General Health Questionnaire.<sup>11</sup> We used a threshold score of greater than 3 to indicate the presence of emotional distress.

variables: GHQ-12 threshold score and concern for the health of oneself or one's family. We ran models using a backward stepwise selection algorithm. Variables were determined to contribute to the model if the significance level for the Wald inclusion test statistic was less than 0.05. Owing to its a priori importance, sex was forced into every model, regardless of its contribution. The analysis of the data for all open-ended questions involved grouping like responses into categories and then analyzing the categories quantitatively using bivariate and multivariate techniques, as described in the preceding paragraph.

Ethics approval for the study was obtained from the SWC Research Ethics Board.

## Results

We distributed 4283 questionnaires across the 3 hospital sites, of which 2001 (47%) were returned, representing 27% of the total SWC employee population of 7474. Of the 2001 returned questionnaires, 510 contained the GHQ-12. With the exception of occupation, no significant differences were found between the subsample that completed the GHQ-12 and the full sample. There was a higher proportion of nurses and a lower proportion of allied health care professionals in the full sample than in the subsample.

The demographic characteristics of the respondents are shown in Table 1. Of the 1983 respondents who indicated

their sex, 1563 (78.8%) were women. Of the 1857 who indicated their occupation, 615 (33.1%) were allied health care professionals, 593 (31.9%) worked in areas other than patient care (e.g., administration, food services, maintenance or research), 476 (25.6%) were nurses, and 173 (9.3%) were doctors; these proportions are representative of the hospital staff population as a whole. Half of the respondents stated that they had worked 10 or more years in their current occupation, and 83.7% (1645/1966) reported full-time status.

In all, 64.7% of the respondents reported concerns about their own health during the SARS outbreak, and almost the same proportion (62.7%) reported concerns about their family's health (Table 2). Among the various occupations, nurses were most frequently concerned (363 [76.3%]), and doctors were least frequently concerned (104 [60.1%]). Almost all (93.8%) of those who reported concerns felt that they had friends, family or other people to talk to about those concerns (data not shown).

Of the 510 respondents who completed the GHQ-12, 148 (29.0%) scored above the threshold of greater than 3, indicating probable emotional distress (Table 2). Statistically significant differences ( $p < 0.001$ ) were found between

**Table 3: Perceptions of SARS-related precautionary measures**

Perception	No. (and %) of respondents
<b>Precautionary measures in workplace were:</b>	<i>n</i> = 1970
Sufficient	1460 (74.1)
Not sufficient	156 (7.9)
Don't know	354 (18.0)
<b>Most bothersome precaution*</b>	<i>n</i> = 1970
Mask	1386 (70.2)
Restricted access (own hospital)	276 (14.0)
Restricted meetings	108 (5.5)
Restricted access (other hospitals)	98 (5.0)
Gloves	61 (3.1)
Goggles	59 (3.0)
Other†	96 (4.9)
<b>Precautionary measures affect ability to do job</b>	<i>n</i> = 1966
Yes	820 (41.7)
No	1146 (58.3)
<b>Wearing mask is particularly bothersome</b>	<i>n</i> = 2001
Yes	1710 (85.4)
No	291 (14.5)
<b>If mask is bothersome, in what way?‡</b>	<i>n</i> = 1710
Physical discomfort	1588 (92.9)
Difficulty communicating	804 (47.0)
Difficulty recognizing people	409 (23.9)
Sense of isolation	222 (13.0)

\*The sum of responses is greater than 2001 because some respondents reported 2 precautions as most bothersome.

†Includes responses such as constant hand washing and protective gowns.

‡The sum of responses is greater than 1710 owing to multiple responses.

**Table 4: Other effects of the SARS outbreak**

Effect	No. (and %) of respondents
<b>Changes to regular job duties</b>	<i>n</i> = 1972
Yes	1015 (51.5)
No	957 (48.5)
<b>Working overtime</b>	<i>n</i> = 1975
Yes	449 (22.7)
No	1526 (77.3)
<b>Financial losses</b>	<i>n</i> = 1973
Yes	285 (14.4)
No	1688 (85.6)
<b>Being treated differently because of working in hospital</b>	<i>n</i> = 1952
Yes	542 (27.8)
No	1410 (72.2)
<b>Personal or family's lifestyle affected</b>	<i>n</i> = 1986
Yes	749 (37.7)
No	1237 (62.3)
<b>SARS situation had positive outcomes</b>	<i>n</i> = 2001
Yes	1161 (58.0)
No	840 (42.0)
<b>If yes, what?*</b>	<i>n</i> = 1200
Increased awareness of disease control	493 (41.1)
Learning experience	317 (26.4)
Increased sense of togetherness and cooperation	285 (23.8)
Less busy than usual	44 (3.7)
Greater appreciation of life and work	26 (2.2)
Other†	35 (2.9)

\*The sum of responses is greater than 1161 because some respondents reported more than 1 outcome.

†Includes responses such as examinations cancelled and good business for mask and glove companies.

the occupational groups in the proportion with a score greater than 3: 45.1% (37/82) of nurses, 33.3% (66/198) of allied health care professionals, 17.4% (8/46) of doctors and 18.9% (28/148) of staff not working in patient care (data not shown).

Wearing a mask was the precaution most frequently cited as most bothersome (Table 3). The most commonly cited difficulty with the mask was physical discomfort (92.9% [1588/1710] of respondents). Three-quarters of the respondents reported that the control measures were sufficient to prevent contracting SARS.

Reported negative effects of the SARS outbreak included financial losses, being treated differently by people because of working in a hospital and changes to personal and familial lifestyle (Table 4). Frequently mentioned lifestyle changes included avoiding public spaces (e.g.,

restaurants and shopping centres) and avoiding interaction with family or friends. Over half of the respondents (1161 [58.0%]) also reported at least 1 positive effect (Table 4). A total of 493 (41.1%) felt there was an increased awareness of disease control, 317 (26.4%) found the SARS outbreak to be a learning experience, and 285 (23.8%) felt an increased sense of togetherness and cooperation. Other positive aspects included being less busy than usual and feeling a greater appreciation of life and work.

Logistic regression analysis identified 4 factors as being significantly associated with increased levels of concern for personal or family health: perception of a greater risk of death from SARS (adjusted odds ratio [OR] 5.0, 95% confidence interval [CI] 2.6–9.6), living with children (adjusted OR 1.8, 95% CI 1.5–2.3), personal or family lifestyle affected by the SARS outbreak (adjusted OR 3.3, 95% CI

**Table 5: Factors associated with experiencing SARS-related concern for personal or family's health**

Variable	No. (and %) of respondents*		Unadjusted OR (and 95% CI)	Adjusted OR (and 95% CI)†
	Concerned	Not concerned		
<b>Sex</b>				
Male	280 (66.7)	140 (33.3)	1.0	1.0
Female	1115 (71.4)	447 (28.6)	1.3 (0.99–1.6)	1.0 (0.8–1.3)
<b>Age, yr</b>				
< 30	196 (72.9)	73 (27.1)	1.0	1.0
30–39	383 (75.1)	127 (24.9)	1.1 (0.8–1.6)	0.9 (0.6–1.3)
40–49	424 (70.1)	181 (29.9)	0.9 (0.6–1.2)	0.7 (0.5–1.0)
≥ 50	392 (65.6)	206 (34.4)	0.7 (0.5–0.97)	0.6 (0.4–0.9)
<b>Managerial/supervisory position</b>				
No	1206 (73.2)	442 (26.8)	1.0	1.0
Yes	186 (57.4)	138 (42.6)	0.5 (0.4–0.6)	0.6 (0.4–0.8)
<b>Personal or family's lifestyle affected</b>				
No	765 (61.9)	471 (38.1)	1.0	1.0
Yes	635 (84.8)	114 (15.2)	3.4 (2.7–4.3)	3.3 (2.5–4.3)
<b>Being treated differently because of working in hospital</b>				
No	929 (65.9)	481 (34.1)	1.0	1.0
Yes	441 (81.5)	100 (18.5)	2.3 (1.8–2.9)	1.6 (1.2–2.1)
<b>Perceived death rate of SARS, %</b>				
< 5	798 (64.7)	436 (35.3)	1.0	1.0
5–9	267 (75.6)	86 (24.4)	1.7 (1.3–2.2)	1.6 (1.8–2.1)
≥ 10	125 (90.6)	13 (9.4)	5.2 (2.9–9.3)	5.0 (2.6–9.6)
Don't know	190 (81.5)	43 (18.4)	2.4 (1.7–3.4)	2.2 (1.5–3.3)
<b>Precautionary measures sufficient</b>				
No or don't know	442 (86.7)	68 (13.3)	1.0	1.0
Yes	944 (64.7)	515 (35.3)	0.3 (0.2–0.4)	0.4 (0.3–0.5)
<b>Live with children</b>				
No	648 (65.8)	336 (34.1)	1.0	1.0
Yes	741 (75.0)	247 (25.0)	1.6 (1.3–1.9)	1.8 (1.5–2.3)

Note: OR = odds ratio, CI = confidence interval.

\*Subtotals may vary owing to missing data.

†We used a backward stepwise selection procedure to select the model from the following variables: hospital campus, occupation, management position, length of time in occupation, employment status, lifestyle affected, being treated differently, perceived SARS risk, ability to follow precautions, perception of precautions, ability to do job affected, mask bothersome, financial loss, working overtime, change in job duties, sex, age, education, marital status, live with children and self-rated health.

2.5–4.3) and being treated differently by people because of working in a hospital (adjusted OR 1.6, 95% CI 1.2–2.1) (Table 5). Three factors were found to be significantly associated with decreased levels of concern: working in a management or supervisory position (adjusted OR 0.6, 95% CI 0.4–0.8), belief that the precautionary measures in the workplace were sufficient (adjusted OR 0.4, 95% CI 0.3–0.5) and age 50 years or more (adjusted OR 0.6, 95% CI 0.4–0.9).

Regression analysis identified 4 factors as being significantly associated with the presence of emotional distress, as identified with the GHQ-12: being a nurse (adjusted OR 2.8, 95% CI 1.5–5.5), part-time employment status (adjusted OR 2.6, 95% CI 1.2–5.4), lifestyle affected by the SARS outbreak (adjusted OR 2.2, 95% CI 1.4–3.5) and ability to do one's job affected by the precautionary measures (adjusted OR 2.9, 95% CI 1.9–4.6) (Table 6).

## Interpretation

During the peak of the first phase of the SARS outbreak in Toronto, two-thirds of SWC staff experienced concern for their own or their family's health. This finding is consistent with a recent study by Maunder and colleagues.<sup>1</sup> Those who felt that they were being treated differently by people because they worked in a hospital were more likely to report health concerns than were those who did not feel they were being treated differently. This association between stigmati-

zation and concern is in keeping with an earlier finding in a study of an outbreak of vancomycin-resistant enterococci in an Australian hospital.<sup>7</sup> In our study, being in a management or supervisory position reduced the likelihood of reporting concerns. This is consistent with previous research indicating that having some level of control (real or perceived) over a situation reduces the risk of psychosocial effects.<sup>1,16–18</sup>

A total of 29% of the respondents experienced emotional distress, as evidenced by their score on the GHQ-12. This rate is more than double that found in a recent study of the general adult population in Canada.<sup>19</sup> Other North American and British studies have typically shown prevalence rates of emotional distress in general populations of 10% to 24%.<sup>20–22</sup> In a study of nurses working under normal circumstances in 3 Singapore hospitals, 14.8% scored above the threshold point on the GHQ,<sup>23</sup> as compared with 45% of the nurses in our study. We found that part-time staff were more likely than full-time staff to experience emotional distress; we attribute this to part-time staff's receiving less current information, having a reduced sense of involvement in the hospital's response to the SARS situation and having a weaker social support network within their work environment.

Positive aspects of the SARS outbreak were also reported. For instance, staff noted an increased awareness of infection control, which may continue to benefit the hospital community in the future. Some respondents found that

**Table 6: Factors associated with the presence of emotional distress**

Variable	No. (and %) of respondents*		Unadjusted OR (and 95% CI)	Adjusted OR (and 95% CI)†
	Emotional distress	No emotional distress		
<b>Sex</b>				
Male	20 (20.8)	76 (79.2)	1.0	1.0
Female	128 (31.1)	283 (68.9)	1.7 (1.0–2.9)	1.3 (0.7–2.4)
<b>Occupation</b>				
Non-patient-care occupation	28 (18.9)	120 (81.1)	1.0	1.0
Doctor	8 (17.4)	38 (82.6)	0.9 (0.4–2.2)	0.7 (0.3–1.8)
Allied health care professional	66 (33.3)	132 (66.7)	2.1 (1.3–3.6)	1.7 (1.0–2.9)
Nurse	37 (45.1)	45 (54.9)	3.5 (1.9–6.4)	2.8 (1.5–5.5)
<b>Employment status</b>				
Full-time	134 (30.6)	304 (69.4)	1.0	1.0
Part-time/casual	13 (20.0)	52 (80.0)	1.8 (0.9–3.4)	2.6 (1.2–5.4)
<b>Personal or family's lifestyle affected</b>				
No	63 (20.3)	247 (79.7)	1.0	1.0
Yes	82 (41.8)	114 (58.2)	2.8 (1.9–4.2)	2.2 (1.4–3.5)
<b>Precautionary measures affect ability to do job</b>				
No	53 (18.7)	231 (81.3)	1.0	1.0
Yes	95 (43.4)	124 (56.6)	3.3 (2.2–5.0)	2.9 (1.9–4.6)

\*Subtotals may vary owing to missing data.

†We used a backward stepwise selection procedure to select the model from the following variables: hospital campus, occupation, management position, length of time in occupation, employment status, concern for personal or family's health, lifestyle affected, being treated differently, perceived SARS risk, ability to follow precautions, perception of precautions, ability to do job affected, mask bothersome, financial loss, working overtime, change in job duties, sex, age, education, marital status, live with children and self-rated health.

the situation provided a positive learning experience and an increased sense of togetherness and cooperation among the hospital staff, which may provide an opportunity to continue to build stronger relationships.

Our study has several potential limitations. First, the fact that the response rate was relatively low (47%) adds to the possibility of response bias. Second, staff who were in quarantine or away because of illness or vacation were not included; some of these people may have been among those most concerned and most affected by the outbreak. Third, the use of the GHQ-12 was limited to a portion of the sample, which may have affected the results. Fourth, because the study was conducted in a large, urban teaching hospital, the results may not be generalizable to other hospital or community settings. Finally, the reported financial effects of the SARS outbreak were likely underestimated, as the data were collected in the initial weeks after the infection control measures were implemented.

Our findings demonstrate a significant psychosocial impact of the SARS outbreak in Toronto on hospital staff. The effects on the family and lifestyle of staff were substantial, highlighting the need for greater personal and family support for employees during such crises in addition to educational interventions to address psychosocial distress and concern. Although the hospital provided numerous staff fora and daily SARS updates to keep staff informed and to address questions, there may be a need for other approaches for some staff. Development of less-restrictive infection control equipment that is more acceptable to staff also appears to be an important priority.

Our study was conducted during the peak of the initial phase of the SARS outbreak in Toronto, when knowledge of the disease was limited and information was rapidly changing. As the disease evolves and subsequent provincial and institutional policies and practices are developed and implemented, staff perceptions and experience may change. Future follow-up investigations, using both qualitative and quantitative approaches, will be necessary to understand the psychosocial effects of SARS on hospital staff over time.

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Contributors: Dr. Nickell conceived the study, contributed to study design, participated in data collection and was the principal writer of the paper. Mr. Crighton contributed to the study design and data collection and entry, performed the statistical analysis and contributed to the writing of the paper. Mr. Tracy contributed to data collection, statistical analysis and editing. Dr. Upshur assisted with study design and editing. Drs. Al-Enazy, Bolaji, Hanjrah, Hussain and Makhlof contributed to the study design, data collection and entry, and final editing and revision of the paper. All the authors have read and approved the final draft.

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