

CORRESPONDENCE

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To the Editor:

Tam *et al.* (2004) and Cheng *et al.* (2004) last month drew attention to psychological morbidity related to the SARS outbreak in Hong Kong in the spring of 2003. Both studies are welcome for their detailed assessment of the mental health of health-care workers (HCWs; Tam *et al.* 2004) and SARS survivors (Cheng *et al.* 2004) in response to a novel and highly lethal virus which could present just like the common cold. However interpretation of both sets of results perhaps bears a degree of re-evaluation in light of other published data on psychological morbidity at the peak of the SARS epidemic in Hong Kong.

At the height of hospital admissions for SARS in mid-April 2003, we assessed stress and psychological responses of front-line HCWs working inside SARS isolation units and SARS patients (Chua *et al.* 2004*a,b*). In addition to the optimal timing of data collection, matched community controls were also sampled. For all groups the response rates were 80% [in contrast to 40% (Tam *et al.* 2004) and 42% (Cheng *et al.* 2004)].

For HCWs (Chua *et al.* 2004*a*) stress levels measured using the Perceived Stress Scale (PSS; Cohen *et al.* 1983) were elevated well above community normative values but surprisingly, the HCWs did not differ significantly from matched community controls (who had no health-care background, nor contact with SARS patients). Moreover, the HCWs in SARS isolation units reported more positive psychological affects of SARS than the community controls. This paradoxical observation extends Tam *et al.*'s (2004) record of positive changes in attitude post-SARS. It is particularly convincing given that these selections were collected in a 'free-response' format where the respondent could choose from an exhaustive list of responses to the outbreak of which only 40%

of which were considered 'positive' and 60% 'negative'. It is possible that this 'positive response' to SARS to some extent protected the HCWs against developing an expected higher level of stress. Thus, while the elevated stress and negative psychological sequelae suffered by HCWs was undeniable, it deserves to be interpreted in the broader context of a community also highly stressed by the risk from a pathogen perceived as highly noxious to life (Chua *et al.* 2004*b*).

Regarding SARS patients (Chua *et al.* 2004*b*), our group also collected a real-time snapshot of psychological morbidity during the height of the epidemic when they were receiving treatment in hospital. Comparing them with matched community controls, we found that patients (PSS=20) did indeed have significantly higher stress levels than controls (PSS=18.0, cf. non-epidemic community norm PSS=12.0). Thus both studies agree that patients with SARS have a high degree of psychological morbidity which may require intervention. However, we also measured positive responses to the outbreak (e.g. awareness of hygiene, focus on current affairs, civic mindedness, care for others, feeling united) and these in fact outnumbered negative responses. This result is most striking given that the balance of the questionnaire was 60% negative. In addition the subgroup of patients in our sample (39%) who were HCWs had significantly more positive responses than any other group. It is plausible that such a positive appraisal of life during SARS alters psychological outcome, but this possibility was not directly examined by Cheng *et al.* (2004). Therefore, there is potentially a problem of interpretation in Cheng's study, given that the 57.6% of people who did not respond may have included individuals whose positive cognitive style was not addressed in the material they received. Untangling the extent to which the psychological health of SARS survivors is determined by their mixture of positive and negative responses is going to be vital to meeting

patients' needs and preparing for any future emerging infectious disease outbreak.

In highlighting observations that the community at large was under unprecedented stress during SARS and that many people found they could muster positive feelings during this devastating period, there is no intent to minimize the extraordinary pressures and suffering that HCWs and patients experienced. Rather, it is hoped by obtaining the broadest perspective we can recognize the needs of the whole community and build upon positive coping strategies should another epidemic return. Indeed, one year on, the HCWs and patient groups have been comprehensively evaluated in order to determine their psychological adjustment and recovery. This will help inform whether exposure to SARS has longer-term implications for psychological health.

Declaration of Interest

None.

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The Authors reply:

Dr McAlonan and colleagues comment that the interpretation of our results for SARS survivors (Cheng *et al.* 2004a) may need re-examination in light of their findings and data collected at the peak of the SARS outbreak (Chua *et al.* 2004) for two major reasons: (a) the relatively low response rate in our sample, and (b) the absence of measuring and controlling the potentially confounding effects of positive responses or appraisals.

First of all, our focus on the timing of the psychological impact of SARS lies in one-month recovery (in contrast to that of the peak of the epidemic, Chua *et al.* 2004). Given the presence of significantly higher negative appraisals (Cheng *et al.* 2004a) and the corroborative evidence for prominent psychological impact of SARS in the acute phase (Cheng *et al.* 2004b; Sheng *et al.* 2004), we opine that the SARS-related psychiatric and psychological problems in convalescence are comparatively less severe.

Second, though the response rate (42%) of our study is relatively lower than that of other published data (e.g. Chua *et al.* 2004), the representativeness and generalizability of our findings tend to remain robust for the following reasons. In our data, we detect no significant differences in any major clinical features such as the rates of admission to Intensive Care Units (ICU) and of chronic illness between the respondents and non-respondents. Our study enjoys a relatively large sample size (180 *versus* 79 in Chua's study). When compared to the proportion of health-care workers (HCWs) infected with SARS in the 2003 outbreak (22% in Hong Kong, 21% globally; WHO, 2004), ours (20%) is closely comparable (in contrast to 39% in Chua's study). Moreover, one should be aware of the reliable findings that this group of patients has significantly more distress than the non-HCW group (Cheng *et al.* 2004a,c; Chua *et al.* 2004; Sheng *et al.* 2004). Furthermore, in another cohort of 100 SARS patients, we replicate a strikingly similar finding – two-thirds of the respondents were suspected cases with a psychological problem when measured by the GHQ-28 following short-term recovery (Cheng *et al.* 2004c).

Third, it is argued that positive responses to SARS are common, may alter psychological

outcome, and hence can create a problem of interpretation in our results, as we have excluded this construct in the study. However, this argument seems to be fragile. For instance, while Chua *et al.* (2004) reported a significant positive association between negative psychological responses and perceived stress, there was no report on any inverse significant relationship between positive responses and stress. A closer examination of the three most commonly reported items of 'positive responses, which comprise awareness of hygiene, focus on current affairs, and awareness of physical state, reveal the possibly underlying fear-driven nature of the items. Unsurprisingly, HCW patients were found to have not only more stress and negative psychological responses, but also more 'positive responses' (Chua *et al.* 2004). These findings not only offer evidence against the argument, but also indicate the importance of negative appraisals in association with distress. Review studies on post-traumatic growth, an orthodox conceptualization for positive appraisals, summarize that about 30–90% of people who experience a traumatic event later report some form of benefit from their experience (Calhoun & Tedeschi, 1999; Linley & Joseph, 2004). However, investigations on the relationship between post-traumatic growth and psychological distress often yield mixed findings (Linley & Joseph, 2004). In our recent investigation, we find that specific factors (e.g. personal growth) rather than global positive appraisals (post-traumatic growth) can significantly account for the variance of distress (Cheng *et al.* unpublished observations). Moreover, while personal growth is inversely related to negative appraisals and distress, its effects on anxiety symptoms become non-significant when entered together with negative appraisals into the regression. Taken together, we appreciate Dr McAlonan and colleagues' insight into the potential role of positive appraisals on distress among the SARS survivors, but have reservations in agreeing with their conceptualization, inference and conclusion. Nevertheless, we agree that there are solid collective empirical findings pointing to

the enormous psychological impact of SARS on the sufferers in the acute and convalescent phases, that the long-term effects of SARS should be closely monitored, and that appropriate intervention should be designed to combat these impacts (Cheng & Wong, 2004).

Declaration of Interest

None.

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