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Surviving a life-threatening crisis: Taiwan's nurse leaders' reflections and difficulties fighting the SARS epidemic

Fu-Jin Shih, Sue Turale, Yaw-Sheng Lin, Meei-Ling Gau, Ching-Chiu Kao, Chyn-Yng Yang and Yen-Chi Liao

Aim. This study explored Taiwan's nurse leaders' reflections and experiences of the difficulties they encountered and survival strategies they employed fighting the severe acute respiratory syndrome epidemic and the background context framing these phenomena.

Background. On several continents in 2002–2003, the highly infectious severe acute respiratory syndrome overwhelmed health care systems and health professionals who had to provide care in situations involving high personal risk and stress, some becoming infected and dying. Nurse leaders in Taiwan had to develop new strategies and support systems for nursing care.

Design. A two-step within-method qualitative triangulation research design.

Methods. Focus group in-depth interviews held with 70 nurse leaders from four Northern Taiwan hospitals involved in the severe acute respiratory syndrome epidemic. Participants then completed an open ended questionnaire. Content analysis was undertaken with data and stages and themes generated. Data were then analysed using Hobfall's concepts of conservation of resources to further discuss participants' reactions and actions in the severe acute respiratory syndrome crisis.

Results. Participants worked under incredible stress to lead the profession through a period of crisis. Five stages arose in the participants' involvement against severe acute respiratory syndrome over 12 weeks: facing shock and chaos; searching for reliable sources to clarify myths; developing and adjusting nursing care; supporting nurses and their clients; and rewarding nurses.

Conclusion. Nurse leaders become important executors of intervention in this health disaster, requiring emotional intelligence to manage their internal conflicts and interpersonal relationships effectively. They developed sociopolitical and analytical abilities and crucial requirements for planning and implementing strategies in areas where none previously existed. Building support systems was an important resource for managing conflicts between familial and professional roles.

Relevance to clinical practice. Findings will assist nurse leaders to prepare themselves and the profession to better deal with disaster management in similar infectious outbreaks in the future.

Key words: leadership, nursing, severe acute respiratory syndrome, Taiwan, triangulation research, workforce issues

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Authors: *Fu-Jin Shih*, DNSc, RN, Professor and Dean, School of Nursing, National Yang-Ming University, Taipei, Taiwan; *Sue Turale*, DEd, MNSt, RN, RPN, FRCNA, FACMHN, Professor of International Nursing, Yamaguchi University Faculty of Health Sciences, Ube, Japan; *Yaw-Sheng Lin*, PhD, Associate Professor, Department of Clinical and Counselling Psychology, National Dong Hwa University, Hualien, Taiwan; *Meei-Ling Gau*, PhD, RN, Professor and Director, Graduate Institute of Nurse-Midwifery, National Taipei College of Nursing, Taipei, Taiwan; *Ching-Chiu Kao*, MSN, RN, Director and Lecturer, Department of Nursing, Taipei Medical University's Wan-Fang Hospital, Taipei, Taiwan; *Chyn-Yng Yang*, MSN, RN, Director and Lecturer, Department of Nursing, Taipei Medical University Hospital, Taipei, Taiwan; *Yen-Chi Liao*, MSN, RN, PhD Student, Graduate Institute of Medical Science, College of Medicine, Taipei Medical University, Taipei, Taiwan

Correspondence: Yen-Chi Liao, Director of Finance Department, Shin-Kong Wu-Hon Shih Memorial Hospital and PhD student of Graduate Institute of Medical Science, College of Medicine, Taipei Medical University, 95 Wen-Chang Rd (Shih-Lin), Taipei, Taiwan 11221, Taiwan. Telephone: +886 2 2833-2211.

E-mail: fjshih@ym.edu.tw

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Background

In 2002–2003 a widespread epidemic occurred, severe acute respiratory syndrome (SARS), then an atypical pneumonia of unknown aetiology that respected no geographical boundaries (Hall *et al.* 2003). From 1 November 2002–7 August 2003, 8422 victims were reported in 32 countries/regions across Europe, America, Africa and particularly Asia (WHO 2003). Its spread was aided by increasing movements of people around the world, inadequate structures and processes to cope with epidemics and unsuspecting health care workers. SARS moved with unprecedented speed, overwhelming hospitals and public health facilities (Twu *et al.* 2003). Unprotected health workers, including nurses, doctors and ambulance officers, bore the brunt of the crisis, some becoming infected or dying, or suffering psychological and physical stress when trying to cope with the outbreak (McGillis *et al.* 2003, Thompson *et al.* 2003, Chung *et al.* 2005, Mok *et al.* 2005, Chang *et al.* 2006). Taiwan, in close proximity to SARS epicentres in Guangdong Province and Hong Kong, experienced the first wave of infections (Twu *et al.* 2003), having the third largest number of infections and deaths (Esswein *et al.* 2004). Hospital care workers accounted for around one third of morbidity and 16·4% of 84 Taiwanese deaths (Chang *et al.* 2006).

Nursing and SARS

Taiwan's health professionals, nurse clinicians and especially nursing leaders, were unprepared to effectively and efficiently respond to SARS (Literary News 2003): unprepared instrumentally, psychologically, or cognitively (Lee 2003a) to face the fear of contagion and the lethality of SARS (Chang *et al.* 2004). In an era of global threats of bioterrorism or disease from new and deadly strains, the biggest perceived danger in epidemics like SARS may be the possible invasion of health professionals' internal and external work environments and their loss of control. So it is not difficult to understand why a mysterious ailment like SARS would generate fear (Gregg 2003), as unknown threats are often more terrifying those that can be seen. Early in the epidemic, some nurse clinicians and leaders reported to the media that authorities in their institutions had failed to honestly inform them of the presence of victims with SARS-related conditions or the risks involved in their care. Remarkable international media attention focused on nursing (Hall *et al.* 2003) as the SARS crisis worsened. Numerous Taiwan nurses urgently indicated the collapse of healthcare delivery system, giving evidence of system failure to provide efficient and effective coaching, communication, decision-making and collaboration with patients and families, health professionals and government agencies. This included quality of patient care, protection of one's own health, psychological comfort, crisis management consultation and financial security (Shih *et al.* 2005, 2007). During the most difficult days, many nursing leaders remained beside nurses involved in the clinical care of SARS victims. They tried hard to speak forcefully about the difficulties and needs that clinicians were encountering and help the public understand clinicians' incredible courage, love and wisdom as they worked around the clock in extremely difficult circumstances and with great personal sacrifice (ICN 2003, Lee 2003b, Lu 2003, Taiwan Nurses Association 2003, Palmer 2004).

The epidemic continued into late June 2003, but cases were being successfully treated and mortality decreasing. At that time public attention highlighted the value and critical importance of nurses and the fact that they showed great dedication and stamina in carrying out their work. Nursing values were visually exemplified and nurses honored by international health societies and the public (Lee 2003a,b, Lu 2003, STTI 2003, 2004). The International Council of Nurses (ICN) expressed pride in these nurses and gratitude for their professional commitment (International Council of Nurses 2003).

There is an important and growing body of nursing literature examining perspectives and findings related to SARS. This includes: in Toronto, a study on nurses' portrayals in the media (Hall *et al.* 2003); in Taiwan, an investigation of nurses' professional obligations in infection control (Tzeng 2004), psychological distress of nurses (Chen *et al.* 2005), relationships between commitment to the job and intention to leave (Chang *et al.* 2006), nurses surviving SARS care (Shih *et al.* 2005, 2007); and in Hong Kong, caring for patients (Chung *et al.* 2005, experiences of nurses who contracted SARS (Mok *et al.* 2005), SARS and nursing models (Chan *et al.* 2006a) and nursing issues for SARS paediatric patients (Chan *et al.* 2006b). However, there is a paucity of studies examining the perspectives of Asian nurse leaders during this time. The SARS threat still continues, so it is imperative to continue to explore not only the clinical manifestations of the disease, but also the experiences and learning of nurses who must be prepared to lead others to care in risky and turbulent environments.

Aim of study

This study explored Taiwan's nurse leaders' reflections and experiences of the difficulties they encountered and survival strategies they employed, while fighting the SARS epidemic and the background context framing these phenomena.

Findings will assist nurse leaders to prepare themselves and the profession to better deal with disaster management with similar infectious outbreaks in the future.

Methods

Design and sampling

To enhance the completeness of phenomena of interest, a two-step within-method qualitative triangulation research design (focus-group interviews and an open-ended questionnaire) was used to measure the same variables (Shih 1998, Wendler 2001, Risjord *et al.* 2002, Shih *et al.* 2007). Data were analysed by qualitative content analysis. Inclusion criteria were twofold: having worked as an registered nurse and administrative leader taking care of SARS patients in one of Northern Taiwan's teaching hospitals; and being willing to share his/her experiences. Potential participants who expressed interest in this project were individually approached.

Ethical considerations

This project was approved by the ethics committees of the four different study sites. Participants received careful explanation of the project, including their rights and interviews were conducted when written and verbal consent was obtained. Interview tapes were securely stored and then destroyed at the end of the project. Confidentiality and anonymity of participants and data were preserved throughout.

Data collection and analysis

Data were collected in two steps. Semi-structured interviews of approximately 50 minutes were conducted with 70 nurse leaders, in focus groups of four to eight people at their preferred time. All had busy schedules so one-to-one appointments were unrealistic. These interviews brought together people with similar backgrounds and experiences to discuss major issues affecting them. They were a good way of eliciting high-quality data in a social context where people can consider their own views in the context of others and so provided rich qualitative and evaluative information (Academy for Educational Development 1989, Patton 1990). After an interview each participant was then invited to complete an open-ended questionnaire allowing them to communicate additional concerns, suggestions and comments confidentially. This was done to avoid potential conflicts and power struggles and differences in status during focus-group interviews. It also enabled participants who were not highly orally communicative to share their views (Patton 1990, Shih *et al.* 2007). The same questions were asked in interviews and the questionnaire.

Interview guides were developed on the basis of an extensive literature review, the empirical experiences of four investigators who had been RNs taking care of SARS patients and their families and consultations with five well-known experts: two senior nurse clinicians and two nurse administrators with SARS experiences in Taiwan and a faculty member familiar with qualitative triangulation methods.

Interview data were transcribed from an audiotape in the participant's native language (Mandarin or Taiwanese) using written Chinese. Both interview and questionnaire data were subjected to content analysis and arising categories, themes and concepts were firmly grounded in participants' actual experiences. The context of phenomena were then thematically analysed to determine the conceptual bases of the participants' narrative descriptions. Following this, Hobfoll's (1989, 1991) concepts of conservation of resources were used to further elucidate findings.

Trustworthiness

During interviews, if participants 'got stuck' when expressing or distinguishing differences between their feelings and meanings (DeVault 1990), they were encouraged to describe their perceptions in their own way or words. Similarities and differences in the meanings and types of terms were contrasted (Yang *et al.* 2004). Accurate transcriptions and translations of both descriptions of the interviews and questionnaire reflections were prepared and results of analysis were confirmed by each participant to enhance study rigor. Negative cases were investigated and analysed (Berg 1995). Results of the qualitative content analysis were carefully discussed by research team members every two weeks.

Results

Seventy nurse leaders participated, 65 females, five males, aged from 22–56 years. Nurse leaders were classified into six levels and two groups: director, deputy director and supervisor of a nursing department (n = 13, 18·57%); and head nurse, assistant head nurse and floor unit senior leader (n = 57, 81·43%). Their professional nursing experience ranged from 2–24 years (mean = 13·52 SD 3·4). Sixty-nine per cent (n = 48) reported no particular religious affiliation, but followed Confucianism or *E-Quan* Taoism. Others were Buddhist (17·14%), Protestant (11·43%), or Catholic (2·86%) (Table 1). Five stages arose in the participants' involvement in the struggle against SARS: facing shock and chaos; searching for reliable sources to clarify myths;

Table 1 Description of the sample (n = 70)

Demographics	Mean (SD)	Range	*n*	%
Age (years)	27·61 (4·50)	20–30	20	28·57
		31–40	25	35·71
		41–50	18	25·71
		51–60	7	10·00
Gender		Female	65	92·86
		Male	5	7·14
Educational level		College	22	31·43
		University	30	42·86
		Graduate	18	25·71
Marital status		Single	42	60·00
		Married	27	38·57
		Other	1	1·43
Religious affiliation		Confucianism	40	57·14
		Buddhism	12	17·14
		E-Quan Taoism*	8	11·43
		Protestantism	8	11·43
		Catholic	2	2·86
Professional position		Floor unit senior leader	22	31·43
		Assistant head nurse	20	28·57
		Head nurse	15	21·43
		Supervisor	10	14·29
		Deputy director or Director	3	4·29
Duration of total nursing career (year.month)	13·52 (3·4)	2·1–3·0	18	25·71
		3·1–5·0	15	21·43
		5·1–10·0	12	17·14
		10·1–15·0	10	14·29
		15·1–20·0	10	14·29
		21·1–25·0	5	7·14
Duration of nursing career at working site (year.month)	4·62 (3·11)	≤ 1·0	5	7·14
		1·1–2·0	8	11·43
		2·1–3·0	19	27·14
		3·1–5·0	12	17·14
		5·1–10·0	17	24·29
		10·1–15·0	8	11·43
		15·1–20·0	1	1·43

**E-Quan* Taoism is a well-known branch of Taoism in Taiwan.

developing and adjusting nursing care; supporting nurses and their clients; and rewarding nurses. Participant difficulties encountered in each stage were identified. The total time period for these stages lasted three months and the time period of some stages were found to overlap rather than be distinctly separate from each other.

Stage 1: facing shock and chaos: weeks 1–4

Initially, the SARS outbreak centred in Taiwan's capital, Taipei City, then spread to several counties in the north. Participants described being cognitively overwhelmed and psychologically shocked when they were informed by health professionals and media reports of the severity and loss of control associated with this contagious disease. Meanwhile, many front-line health professionals, but not nurses, were frequently reported to be refusing to approach patients with a fever or SARS-like condition. Some participants were frightened by their hospital superintendent's order that they stay with patients when some physicians refused to come and help. They further complained about suffering due to overwhelming rumours that nurses were being sacrificed and this seemed the case. Participant statements included:

> All of our colleagues including physicians, nurses, clerks and housekeepers were nervous when watching TV in the dining room of our floor unit when we would learn the latest news about this unheard-of disease. Reporters repeatedly stressed the increasing numbers of deaths related to SARS and nurse clinicians' anger at the higher-level authorities in an affected Taipei municipal city hospital. This was because nurses had not been informed of the true nature of this disease and they were forbidden from leaving the hospital after their shift duties were completed.

> The superintendent in our hospital did not respond to our questions about this life-threatening disease, although we were the top nursing administrators in the hospital.

Stage 2: searching for reliable sources to clarify myths: weeks 1–8

In this stage, scientists found more questions than answers about the infectious routes of SARS, so treatment and nursing protocols remained unelucidated and uncertainty contributed further to a widespread state of fear. Lacking reliable information and adequate tangible support from administrative authorities, participants continually asked for reliable human resources within a close nursing network to demystify the chaos. Helpful resources for participants included: other nurse administrators and front-line nurses with experience in crisis management; infection control and respiratory care physicians and nurses; experienced pharmacists; leaders in material supply departments; public health personnel; national and international websites of health institutions like the World Health Organization (WHO), Centres for Disease Control and others in Taiwan, Hong Kong, Canada and the USA; Taiwan Nurses Association; and daily media reports. Some comments included:

> I asked for help from all possible national and international professionals with good reputations in epidemic crisis management. I needed information about true infection and mortality rates for patients and nurses, useful and useless infection control strategies, nursing manpower plans and equipment and material needs.

As a senior nurse administrator as well as a nursing professor, I had a good network with national and international health professionals. In the late evening, I often e-mailed my inquiries to health professionals in Taiwan and other countries to ask for help in clarifying questions and providing reliable suggestions for nurses and other core decision-makers.

During those days, rumours about the SARS epidemic reported by the media soon spread throughout Taiwan. Most of the media stressed the public's frightened feelings rather than providing helpful information from the government. We were grateful for one cable channel which released useful SARS media information. This channel invited multidisciplinary leaders from Taipei Medical University Hospital to provide reliable daily information and answer the public's questions.

Stage 3: developing and adjusting nursing care: weeks 2–8

Updating nursing care procedures became the daily work of higher ranking nurse administrators. Participants continued to establish rapport and relationships with various health societies and international and domestic experts. They passed along the updated, reliable information to other leaders and front line nurse in different health institutions and nursing associations. Nurse clinicians continued updating care strategies to meet patients' needs. When necessary, workshops were held sharing conceptual and empirical nursing experiences. Through the accumulation of empirical experiences and cooperation among nursing teams, participants began to gain confidence in crisis management and their ability to provide better care for victims. Participant remarks included:

Every day, I checked the websites of the WHO and public health institutions in Taiwan to get updates on clinical protocols. Helpful data included prevalence and mortality rates, infection sources and routes, safety and warning guidelines for equipment and materials for health professionals.

Face-to-face meetings among nurses were not recommended because of the possibility of cross-infection, so we exchanged care experiences through e-mails and phone calls. Nurse leaders and infection control nurses from many hospitals called me for daily consultations.

It was a challenge for nursing leaders from different medical centres to reach a consensus on care protocols since their medical and caring models and theories differed. So, we asked for help from the Taiwan Nurses Association to hold seminars to share clinical experiences and provide suggestions for both nurse leaders and front-line nurses.

Stage 4: supporting nurses and clients: weeks 1–8

Participants provided psychological support to each other and front-line nurses to ensure the quality of care for SARS patients. Useful tangible support cited by participants involved: clarifying concerns of nurse colleagues, patients and their family members about SARS and care plans; asking dieticians to provide easily digestible and tasty nutrition and fluid to patients; asking environmental-safety personnel to create and maintain safe and comfortable environments for all concerned; conveying to higher authorities nurses' needs for particular equipment or materials to ensure safety; taking initiatives in communicating with patients and their families and exploring needs; and sharing nurse clinicians' care burdens to meet patients' needs.

Psychological support was important to promote nursing teams' willingness and creativeness in establishing stronger kinship-bonding relationships. Significant support from other nurse leaders and clinicians, health professionals, patients and the public allowed life meaning exploration during the crisis-management process. Useful support strategies included: taking initiatives to provide hospitality to others; encouraging oneself, clients and health team members to practice daily positive thinking; sharing complaints with good friends or reliable nurse leaders; encouraging others with empathetic words, a smiling face and therapeutic touch; and daily appreciating others' kind thoughts, good deeds, or special talents.

Half of the participants acknowledged three kinds of support from their family members and religious beliefs. First, internal and external support provided them with immediate and intimate psychological comfort to ease their fear generated by incessant, negative news reports about SARS uncertainties and the high risk of infection. Second, family members took over participants' family roles to care for their dependent family members during their absence because of long working hours or their isolation during observational periods in the hospitals. Last, participants with strong religious affiliations relied on the inner strength from the promise and power of their god(s) to carry them through the life crisis that SARS represented. Some Protestant participants reported a willingness to give up their lives during the care delivery process; sacrificing their life as a blessing to others was thought to be God's plan for them.

Stage 5: rewarding nurses: weeks 8–12

This final stage involved two processes: identifying an individual's contribution to his/her health institution and nursing profession and providing tangible rewards. In Stage 1, the media impulsively reported the failure of SARS-related diagnosis and treatment plans in two particular Taipei hospitals. Nurses in northern Taiwan were quickly driven into the epidemic-driven dilemma of having to choose

between remaining in or leaving the nursing profession. Most participants and their front-line nurses strongly suspected that the truth about the disease had intentionally been kept from them by the higher authorities. Some reported that the reason for their decision to remain by the bedside was that they needed their nursing job to continue to provide a stable financial income and to maintain a good social reputation. Meanwhile, since participants had limited resources with which to provide tangible rewards to their staff members, they could only motivate their colleagues' commitment to serve others by deeming it an invaluable professional honour.

As the SARS epidemic progressed, the media reported increasing numbers of infections and deaths among physicians and nurses because of confused diagnoses and lack of effective treatment plans. The public became hesitant to go to hospitals. Admission rates dropped and hospitals' financial incomes decreased. Many participants were required to limit nursing manpower. Some private hospital superintendents required some nurses to stay home with no promise of a salary, or even laid them off when their hospital's financial situation became critical. Nurse leaders and clinicians in these private hospitals were reported to have suffered from intense psychological stress due to having to strike a balance between hospital financial incomes and nursing manpower and the loss of experienced nurses who were close friends or the primary financial provider for their families.

In the latter phase of what became known as the anti-SARS process, the unique contributions to that process from front-line nurses and nursing leaders were strongly advocated by the highest-level national nursing leaders. Suggested protocols were proposed to government officials, including the President of Taiwan and the director of the Department of Health Bureau. They argued that nurses' needs for safety, proper working conditions and financial support should be met by tangible means, including financial bonuses from the government and local hospitals and being promoted professionally; certificates or recognition for the good quality of their nursing care or management; a sense of achievement from the positive feedback given by SARS victims, their family members, the public and leaders in nursing and medicine; confidence in their experience with national crisis management; and a more-profound sense of the meaning of life and of the nursing profession in his/her personal reflective thoughts. The financial rewards offered by the government were nevertheless criticised for the disparity between the sums awarded to physicians (US$29·85/day, US$1·00 ≈ NT$33·5) and those awarded to nurses (US$14·92/day). Most nurses regarded the compensation as insulting to both the nursing profession and their individual contributions. Many had stayed at the bedside of SARS patients around the clock, while many physicians had refused to visit the wards. In summary, the improvements in self-learning and problem-solving competency, expansion of relations among nursing communities and acknowledgement by clients, higher authorities and national nursing-medical associations, all contributed to participants' sense of reward from their SARS experiences.

Discussion

Hobfoll (1989, 1991) proposed the concepts of conservation of resources (COR), proclaiming that psychological stress in human beings is a reaction to existential loss or threatened loss of resources valuable to them. The resources that people are motivated to obtain, retain and protect can broadly be divided into four categories: energy (money, time, knowledge and identity), personal characteristics (skills, emotional regulation and self-esteem), objects (materials, manpower, belongings and sociopolitical abilities) and conditions (the situation, interpersonal relationships and social support). Results from our qualitative data analysis were further analysed using Hobfoll's COR to facilitate a better understanding of the context of the participants' SARS experiences and refine learning from this situation for the future. The five themes that arose are discussed below:

Energy: knowing nurse leaders are important executors of intervention in health disasters

During the SARS crisis, specific health care knowledge was often limited, health protocols for interdisciplinary health teams confusing and the quality of assessment and treatment plans for patients questioned. Facing uncertainties as the crisis developed, participants at various administrative levels had to confront the major challenges of determining how to empower themselves and their colleagues and help develop effective protocols acceptable to health team members.

A hospital is one of the most stressful work environments (Tomey 2004). Nursing leaders manage countless challenges daily and are held responsible for the outcomes of administrative issues during crisis situations (Fahlgren & Drenkard 2002). Stress arises from: life-and-death situations; heavy workloads involving physical and mental strain; the need to know how to operate numerous pieces of equipment and deal with equipment failure consequences; awareness of the serious consequences of mistakes; communication problems among patients, their significant others and health personnel; and the obligation to report to numerous supervisors. Nursing leaders are required to coach clinicians

to manage responsibilities, carefully oversee processes and outcomes for the quality of care and help facilitate the forging of a health team consensus to prevent degradation of patient care. With such accumulated challenges and experiences, they are often in an ideal position to help coordinate and effectively intervene in health disasters such as the SARS epidemic.

Personal characteristics: emotional intelligence and a requirement to effectively manage one's internal conflicts and interpersonal relationships

During the SARS epidemic, lines of communication were hampered by increased stress levels, information overload, situational chaos, disruption of services, casualties and distractions with crowds and media. It is imperative to have influential leaders who successfully command the environment (Fahlgren & Drenkard 2002). A valuable nursing leader needs to have vital emotional competencies for effective management during a disaster situation of interpersonal skills, innovation, effective leadership and abilities to build partnerships and networks (Snow 2001).

Bandura's concepts of regulation and self-efficacy are useful for discussing the management of emotions (Pervin *et al.* 2005). Bandura proposed three steps to achieve self-efficacy. The first step is practicing self-observation by having group members examine themselves and their behaviours and to keep tabs on them. The second step is applying judgment to compare what group members consider about traditional or new standards. The last step is making appraisals of self-evaluations and setting rewards or punishment. These self-evaluations can range from the obviously tangible to more-covert feelings of pride or shame. This study showed that the personal characteristics of emotional regulation by participants also served as a self-efficacy index during the SARS outbreak. If participants could cope well with difficulties through self-regulation, the problems would gradually be solved. Otherwise, they might further suffer from emotional distress or an impasse and call for further attention.

Objects: sociopolitical and analytical abilities and crucial requirements for planning and implementing strategies

Disastrous occurrences may cause individual and collective trauma leading to crises. There is an urgency to act in an environment that may be unfamiliar or unknown, as the system of care varies from the usual context of human services. Time limitations impose pressures upon administrators and can hinder their full understanding of the nature of the problem and their decisions on appropriate alternatives for action. Response to a disaster is often a process encompassing design and implementation phases (Ahearn 1985). To gain the participation of and acceptance by others, administrators are required to demonstrate a range of sociopolitical and analytical skills and be proficient in inter- and intra-system relationships to foster participation, seek sanctions and support, marshal resources and facilitate decision-making. They must also employ multiple analytical skills like thinking, imagining, reasoning and deliberating, to gather and analyse data, assess needs, identify and weigh alternatives, set priorities and develop detailed action plans (Ahearn 1985, Fahlgren & Drenkard 2002).

Disaster management comprises four stages: buffer, preparation, response and reconstruction (Tierney 1989). During the disaster buffer and preparation phases, public awareness and professional competence in managing the disaster are challenges for government implementation of disaster plans to minimise disequilibrium and reduce disaster costs. This study showed that planning for disaster preparedness for both public and healthcare settings is essential when tragedies like SARS occur. It is critical to plan for ways of communicating throughout an organisation, educating patients and staff members, recruiting immediate-response teams, protecting nursing staff so that they can deliver patient care and determining costs and oversight of allocation (Fahlgren & Drenkard 2002). Nurse leaders are ideal personnel to coordinate these efforts. However, in this study the disparities in financial rewards for physicians and nurses was criticised by most participants as insulting to the extraordinary efforts of the nursing profession and their individual contributions.

Conditions: building up a support system as an important resource for managing conflicts between familial and professional roles

During the SARS epidemic nurses experienced traumatic and stressful care situations because of shortages of protective equipment and personnel. Many became physically and psychologically exhausted. SARS became socially stigmatised (Lee *et al.* 2005); nurses were reported to be fearful for the health of their family and themselves; and caring for colleagues as patients was emotionally difficult (Lee *et al.* 2005). Nurses experienced an exceptional amount of stress, for they not only had to work through their own reactions to the disaster, but also had to resolve conflicts between their familial and professional roles (Maunder *et al.* 2003, Nickell *et al.* 2004, Mok *et al.* 2005).

Several studies have reported the importance of a support system that acts as an antecedent to reduce the likelihood of illness or buffers the impact following the occurrence of negative life events (Weaver 2001, Davidhizar & Shearer 2002). This study showed that adequate support from important persons (families, colleagues and friends) and metaphysical strength (spiritual or religious beliefs) in times of intense strain and stress helped sustain the morale and motivation of nurses fighting SARS (Mok *et al.* 2005). Meanwhile, support from supervisors was crucial during the disaster since they were responsible for providing care for the caregivers. They are expected to protect personnel from undue stress (Tomey 2004). Providing support to colleagues by telling our stories often fosters trusting and intimate relationships. The following strategies were also cited by participants as being useful: teaching nursing staff to identify their stress symptoms and employ stress management; providing counselling and referral services; ensuring the availability of personal protective equipment at all relevant sites; providing the best nutrition to increase immunity; and establishing a counselling 'hot-line' and email access to provide the mutual support during the quarantine period.

Study limitations

This study was limited to a group of nurse leaders in Taiwan, although findings may be useful for consideration in other countries. Despite efforts to enhance the rigor of data collection, some participants' private concerns might not have been fully discussed due to a lack of adequate time or a wish to retain confidentiality. Second, the responses of the postinterview self-reporting questionnaire might have been influenced by the interactions in the focus-group interviews. Finally, 93% of the participants were female and the perceptions of the acute crisis management experiences for males might not have been identical.

Conclusions

This study demonstrated that the fight against SARS (the anti-SARS process) involved limited training, equipment, support and manpower. Numerous nursing leaders and their team members in Taiwan still remained at the bedside caring for SARS patients. A participant review of the management of SARS and SARS cases revealed both strengths and weaknesses that are as significant as the crisis itself. After understanding the complex psychological and technical reasons for these strengths and weaknesses, leaders were empowered to take preventive actions and to actively combat the crisis. Instead of just standing by and watching losses prevail, they minimised losses as long as actions were still possible (Schlevogt 2001). Panic-ridden situations were gradually transformed into bonding adaptations by surviving nursing leaders in Taiwan who suffered enormously stressful situations. They mastered self-efficacy and searched for possible support systems and were able to achieve great posttraumatic growth. The saying 'If we want life, we must conquer darkness' seems to capture their fine enduring spirit for by epidemic's end Taiwanese nurses mourned the loss of ten nurses who died in the line of duty.

Clinical implications and psychosocial responses for disaster preparation for future epidemics include the need for nurse leaders to plan clear for clear communication pathways, team cohesion, tangible rewards, a high degree of collaboration among health colleagues and administrators, define disease information resources and facilitate the development of treatment and care protocols. Both adverse and supportive media attention highlights the need for nurse leaders to be media savy in the future and to become even more politically adept at fighting attempts to devalue or sacrifice the profession and to use evidence based protocol.

SARS appears to have temporarily subsided. However, the authors concur with Booth and Stewart (2005) who stressed, communication and leadership strategies were key components in the critical-care response to SARS. Today progress is being made in many countries, including Taiwan, to have centres and systems in place to allow the rapid expansion and modification of critical care services in the event of a disease outbreak. It is hoped that the findings of this study contributes to disaster preparations of the future.

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Contributions

Study design: FJS, ST, YSL, MLG; data collection and analysis: CCK, CYY, YCL and manuscript preparation: FJS, ST.

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