

# **Priority-setting for nursing research in the Republic of China**

Teresa J.C. Yin RN PhD

Veterans General Hospital and National Yang-Ming University, Taipei

Nanly Hsu RN PhD

Veterans General Hospital and National Yang-Ming University, Taipei

Sing Ling Tsai RN PhD

Veterans General Hospital and National Taiwan University, Taipei

Bette Wei Wang RN BSN

Veterans General Hospital and National Yang-Ming University, Taipei

Fu Ling Shaw RN MSN

Veterans General Hospital and National Yang-Ming University, Taipei

Fu Jin Shih RN DNSc

National Taiwan University, Taipei

Wen-Yin Chang RN PhD

Taipei Medical College, Taipei, Taiwan, Republic of China

and Beverly Henry RN PhD FAAN

Weimar Institute, Weimar, California, USA

Accepted for publication 11 November 1999

---

YIN T.J.C., HSU N., TSAI S.L., WANG B.W., SHAW F.L., SHIH F.J., CHANG W.-Y. & HENRY B. (2000) *Journal of Advanced Nursing* **32**(1), 19-27

## **Priority-setting for nursing research in the Republic of China**

The question of how public funds for research should be allocated has led to participatory priority-setting in prosperous democracies like Taiwan, Republic of China. Useful criteria for research priorities are scientific merit, social benefit and feasibility. Taking a health needs approach and using these criteria, nearly 200 nurses from service and education in a national forum participated in describing research priorities. Through the group method of idea-writing, for clinical nursing, of high priority were assessing quality, care of the elderly, and preventing infectious disease. For nursing education, research addressing advanced role preparation and bridging nursing education and practice were priorities. For nursing management, research of highest priority pertained to economic evaluation, personnel administration, and effectiveness. These suggestions from the deliberation of a committed group of nurses can help shape future national decisions about research funding and training.

Keywords: nursing research, research priorities. Republic of China

## **INTRODUCTION**

Scientific communities, including the community of nurses, are responsible for proposing coherent, balanced and realistic agendas through consensus of participants. In many organizations and countries, choices must be made about future scientific initiatives (Cromwell et al. 1998). Would that we could, but for the cost, do all the research that needs to be done to advance knowledge and ensure the highest quality of care. However, this is not possible. Therefore, agendas have to be set which include a listing of high priority research that a community thinks will result in scientific initiatives that are the most meritorious, beneficial and feasible. Dutton & Crowe (1988 p. 602), in their discussion of prioritizing, stated the following.

There is no reason scientists should not attempt to perceive and apply the criteria that will in fact shape national decisions about scientific initiatives; they should not relinquish the advantage to be gained by taking a broader perspective in their deliberations and recommendations.

With clear, agreed-upon objectives, decisions about research funding are more likely to improve the future quality and cost-effectiveness of scientific initiatives (Persons & Beck 1998). Dutton & Crowe (1988) provide three useful criteria for prioritizing: scientific merit, social benefit and feasibility. Scientific merit includes breadth of interest, the potential for new discoveries, and unique-ness. Social benefit is the extent to which a study contributes to improving the human condition, promotes international understanding, and contributes to national pride and prestige. Feasibility pertains to community readiness, the cost of a proposed research project, and the availability of supportive infrastructures.

### **Health problems and research in Taiwan**

Cancer has been the leading cause of death in the Republic, a country of 22 million, since 1972. Cerebro-vascular disease, accidents, and heart disease are the second, third and fourth major causes. Taiwan's National Science Council funds clinical studies addressing prevention of chronic disease including cancer, infection control, and Chinese and Western drug management. Quality of care and long-term care are also priorities, as are organization, evaluation, productivity analysis, and nursing education. At the National Taiwan University, School and Graduate Institute of Nursing, nearly US \$1 million in 1998 was awarded for research in all clinical specialties and management and education. Studies focusing on patient education, women's health, cancer and cardiac care, and community health indicators, have been funded. Yin et al. (1997) stated that future high priorities for doctoral education in nursing management include health needs and quality of care assessment, organizational analysis, health education, and cost accounting.

Organizational priorities for nursing research have been delineated at the largest of Taiwan's medical centres — Veterans General Hospital (VGH) — with more than 2000 nurses, 3000 beds, and nearly 2-5 million annual outpatient visits. Research priorities at VGH for clinical care are nosocomial infections, adaptation to illness, and patient education. Priorities for nursing management include occupational hazards, clinical paths, information systems, and research utilization (Taipei VGH Document 1998).

## Purpose

In the Republic, to the best of our knowledge, there has been no systematic effort to set national nursing research priorities by involving practitioners and educators and asking for their ideas. Our purpose therefore was to use the consensus technique of idea-writing to explore the thinking of many nurses about future high-priority nursing research and in so doing build commitment to scientific research. Idea-writing as a group method is recognized as useful for pooling intelligence and creating commitment (Moore 1987). We believe that groups can do some things better than individuals working alone. We also believe that, to affect policy, it is wise to include in preliminary activities those responsible for acting on eventual policy. Our assumption was that health needs and problems should be the starting point and that practising nurses who are with patients daily are well positioned to deliberate. Our goal was to generate priorities from a large group of committed nurses which would be useful for future consideration by national scholars responsible for research funding. The exercise was not intended to be definitive. Rather, it was to provide suggestions on which others may build.

## DESIGN

In May 1999, a conference on nursing management and research was sponsored by VGH. Attending were 195 nurses from 30 service and education agencies. Their job titles are shown in Table 1. About half (56) were employed at VGH, 44 were employed in 29 other institutions (26 hospitals and three schools).

**Table 1** Participant demographics

	<i>n</i> (%)	<i>n</i> (%)
<i>Nursing service</i>	164 (84%)	
Director		8 (4%)
Associate director		5 (2%)
Supervisor		15 (8%)
Head nurse		52 (27%)
Assistant head nurse		31 (16%)
Staff nurse		53 (27%)
<i>Nursing education</i>	31 (16%)	
Dean		1 (0.5%)
Professor		1 (0.5%)
Associate professor		13 (7%)
Assistant professor		1 (0.5%)
Instructor		14 (7%)
Lecturer		1 (0.5%)
<i>Total</i>	195 (100%)	

## Method

The first day of the conference was devoted to discussion of leadership with an emphasis on nurses' management of quality, cost, and access to care. On the second day 'health

needs as the basis for nursing research' was discussed, then scientific merit, social benefit and feasibility were addressed. Idea-writing as a group method, to make specific previously held general ideas, was agreed on with enthusiasm. To begin, the trigger question to participants was as follows.

The Republic of China, like every country, has limited resources for all research including nursing research. Schools must be built. Roads must be maintained. Primary health care must be implemented and medical research must also be supported. The question is, therefore: With limited funds available for nursing research, what research for which populations should be of highest priority? Given your understanding of Taiwan's health needs and problems, and the feasibility of doing meritorious research, describe the research you think should be of highest priority for clinical nursing, nursing education, or nursing management.

### **Data analysis**

Once the research ideas were collected, a team of nurses from service and education met for 2 hours to translate, transliterate and group the responses as practice, education and management. Frequency of mention of a research idea was the unit of analysis with more frequent mention being higher priority. Findings were reported in writing back to the total group and a panel of six national leaders summarized and discussed the implications. Following the conference, two authors working together and separately back-translated a random sample of 30 (20) questions to strengthen validity by corroborating the team translation and transliteration. Two authors separately then together also grouped the responses for inter-rater agreement of 95. Where two or more research ideas were written in a single item, judgement calls were made using frequency of mention and idea dominance to determine the final grouping.

**Table 2** Nursing research priorities (*n* = 148)

Clinical nursing research ( <i>n</i> = 65, 44%)	Nursing education research ( <i>n</i> = 21, 14%)	Nursing management research ( <i>n</i> = 62, 42%)
Quality of care ( <i>n</i> = 15)	Role preparation ( <i>n</i> = 8)	Economic evaluation/cost analysis ( <i>n</i> = 21)
Care of the elderly ( <i>n</i> = 10)	Education — practice ( <i>n</i> = 7)	Personnel administration ( <i>n</i> = 10)
Infection, infectious disease ( <i>n</i> = 8)	Trends in nursing education ( <i>n</i> = 4)	Effectiveness and productivity ( <i>n</i> = 10)
Patient education ( <i>n</i> = 6)	Continuing education ( <i>n</i> = 2)	National health system effects ( <i>n</i> = 8)
Women's and child health ( <i>n</i> = 5)		Nursing status/standing ( <i>n</i> = 6)
Clinical protocols ( <i>n</i> = 4)		Ethics, values ( <i>n</i> = 3)
Cancer care ( <i>n</i> = 4)		Computer, information system ( <i>n</i> = 2)
Suicide, accidents, violence ( <i>n</i> = 4)		Errors, safety ( <i>n</i> = 2)
Pain management ( <i>n</i> = 2)		
Alternative therapy ( <i>n</i> = 2)		
Dental health care ( <i>n</i> = 2)		
Mental health care ( <i>n</i> = 1)		
Vision, eye care ( <i>n</i> = 1)		
Sexual behaviour ( <i>n</i> = 1)		

## FINDINGS

A total of 148 research priorities were submitted with 65 (44) for practice, 21 (14) for nursing education, and 62 (42) for nursing management. The priorities in three groupings are shown in Table 2. Priority ideas and questions ordered by frequency or logic were as follows.

### Clinical research

As shown, the clinical research mentioned most often pertained to quality of care, care for the elderly, and control or prevention of infection or infectious disease.

#### *Quality of care*

Several aspects of quality, including standards, indicators and satisfaction, were cited as priorities. Examples of the ideas and research questions pertaining to quality included the following.

- Standards: What are the most appropriate standards for quality care?
- Quality indicators: What are the most useful quality of care indicators for nursing?
- Staffing and quality: What is the relationship between staffing in the health services and quality of care?
- Patient satisfaction: How satisfied are hospitalized patients with their nursing care?
- Continuity of care: How can continuity of care in community settings be improved?
- Evidence-based care: How should research outcomes be utilized to improve the quality of nursing care?

### *Care of the elderly*

The priorities pertaining to care of the elderly focused on health needs and long-term care.

- Health needs: What are the main health care needs of Taiwan's elderly population?
- Long-term care: What are the effects of long-term care? How can long-term care be improved? What are national long-term care goals?

### *Infections, infectious disease*

Hepatitis and infectious disease as well as infection control were mentioned most frequently. Priority ideas and questions included the following.

- Hepatitis: Which is the most vulnerable population for hepatitis and what are the implications for prevention?
- Infection: What are the most significant out infection control?
- Screening: What are the most effective sc hepatitis and cancer in Taiwan?
- Waste management: How should the volume from the health services be reduced?

### *Other*

Eight additional clinical priorities mentioned more than once and the research questions were as follows.

- Patient education: What health-related knowledge and information is needed (especially about cancer, hyper-tension and diabetes) by patients and the public?
- Child development screening: What is the most effective method to screen the health development of children in schools?
- Clinical protocols: How valid are rehabilitation proto-cols for specific populations with chronic disease?
- Cancer care: What are the most appropriate cancer screening and prevention strategies for Taiwan?
- Suicide: What are the most effective strategies to prevent teenage violence and suicide?
- Pain management: What are the most effective nursing interventions to reduce patients' pain following surgery?
- Alternative therapy: What are the effects of alternative therapies?
- Dental health: How should dental cavities be reduced, oral hygiene improved, and oral cancer prevented?

### **Education research**

Research suggested in this category most often pertained to role preparation and education-practice concerns. Trends in nursing education and continuing education were also priorities.

### *Role preparation*

Six questions pertained to nurses' present and future roles. A seventh priority was the most useful theories for nursing management and an eighth, research training.

- Practitioners, specialists: How should the role of nurse practitioners and clinical specialists be evaluated?

- Role definition: How should the future role of the nurse be defined in the context of Taiwan's national health system?
- Theory: What are the most useful theories to prepare nurse managers in the 21st century?
- Research training: How should nurses be educated to improve nursing research in Taiwan?

#### *Education-practice*

Bridging education and practice was a priority mentioned by five participants. Linking nursing education and geriatric care was also of priority.

- Bridge: How can we bridge the gap between nursing education and clinical practice?
- Gerontology training: What are the main problems in long-term care of the elderly and what nursing education programmes are needed to solve these?

#### *Trends*

Challenges and trends for the present and future were the main ideas in this category, as follows.

- Trends: What are the current and future trends in nursing education and how can we improve these?
- Challenges: What are the main challenges for future nursing education in Taiwan?

#### *Continuing education*

The two questions about continuing education pertained to the amount of continuing education and the following.

- Life-long learning: How should we bridge the gap between nursing education and nurses' continuing education?

### **Management research**

As shown in Table 2, research suggested most often for nursing management pertained to economic evaluation, personnel administration, effectiveness and productivity, and the effect of Taiwan's national health system.

#### *Economic evaluation, cost analysis*

Priority research in this category was analysing, controlling, and reducing cost. Examples of priority ideas and questions included the following.

- Cost and human resources: What is the most useful form of cost analysis to evaluate the cost and outcomes of nursing personnel performance?
- Intervention evaluation: How are the costs and benefits of nursing interventions best evaluated?
- Cost reduction: How should health care costs be reduced in Taiwan?
- Cost and collaboration: How cost-effective is medical-nursing collaborative practice?
- Nursing home costs: What are the costs and benefits of nursing home care?

#### *Personnel, effectiveness, productivity*

In these closely related categories, nurses' performance and competence were the focus. The following exemplify the priorities.

- Performance and care: How should nurses' performance and the quality of care be improved?
- Staffing and acuity: What is the relationship of staffing and patient acuity?
- Retention: What is the relationship of nurses' management competence and nurse retention?
- Productivity: How should nurse productivity be evaluated?
- Satisfaction and environment: What environmental factors in service organizations contribute most to nurses' satisfaction and performance?
- Community resources: How should community resources be used to improve nurses' effectiveness and people's health?
- Continuity of care: How can cross-organizational link-ages improve the effectiveness of health care?

#### *National health system*

The following priorities were suggested for studies addressing the effects of Taiwan's national health system and national health insurance.

- Effect: How have nurses' functions changed with health system reform and the advent of national health insurance coverage?
- Nurse contribution: What are the nursing contributions to Taiwan's health care system?

#### *Other*

Four remaining priorities focused on nursing status, ethics/values, computerization, and errors.

- Status: What is the social status of nursing in Taiwan and how should this be improved?
- Ethics, values: What are the main values, ethics, and philosophies in modern nursing?
- Information systems: What computerized data bases for long-term care should be established?
- Errors: What systems should be created to reduce and control errors in the work place?

## **DISCUSSION**

Life expectancy in Taiwan at birth is 74 years for men and 80 years for women (The World Factbook 1998). Infant mortality is six per 1000 live births. Health problems in the Republic are similar to developed countries. As noted, cancer is the leading cause of death, along with cerebro-and cardiovascular disease and accidents. Successful infectious disease control has greatly reduced the incidence of pneumonia and tuberculosis. Problems such malaria and malnutrition have essentially disappeared (Liu 1998). However, as for many countries, hepatitis is problematic and with migration to the cities have come drug abuse, highway accidents, suicide and violence. Several participants suggested, as priority, research addressing the prevention of suicide and teenage violence, and accidents, this latter an important priority where accidents are a leading cause of death.



A 'new' health problem because of the increasing number of elderly includes the need for long-term care (Liu 1998). Taiwan's population has only recently begun to age with 9 (about 2 million) 65 years and over (The World Factbook 1998). Cancer and cerebro- and cardio-vascular disease are diseases of ageing. Therefore, it was not surprising to find research on the elderly and their care, and educational training for nurses in elder care among the highest priorities. Also, in view of the prevalence of hepatitis B, prevention of infectious disease as a priority was anticipated. A related priority was waste management. Waste management can benefit from future research not only in terms of infection control but also cost-reduction (Garcia 1999).

Chen et al. (1996) state that 15 to 20 of the general population in Taiwan are chronic hepatitis B virus (HBV) carriers, with hepatocellular carcinoma and liver cirrhosis among the leading causes of death. Perinatal transmission of HBV accounts for about half the carriers. A nation-wide hepatitis B vaccination programme (Lee & Ko 1997) was initiated in Taiwan in 1984 first for neonates and later for all pre-school children with a subsequent drop in the incidence of liver cancer in children. Screening theory, especially as elucidated by Kramer et al. (1999), for secondary prevention of hepatitis and for liver, lung, breast and ovarian cancer, promises to be important for future nursing research.

Also of high priority for future research is ever greater emphasis on quality and cost — their indicators and measures. Research priorities mentioned most often at the conference were quality of care and evaluation of care cost in the context of the national health system. Discussing healthcare systems in East Asia, Beck & Mays (1998) note that health care professionals in Asian countries including Taiwan are becoming more interested in systematic evaluation of the use, cost and outcomes of all health care services. This is extremely positive and should be widely reflected in future nursing education and management research. Standards development for quality of services is needed in nearly all countries, as the beginning point. Then indicators can be derived and measures can be developed for analysis of the efficacy and efficiency of nursing processes and outcomes compared to standards.

Peabody & colleagues stated in 1995 about Taiwan, 'A system to measure quality processes and health outcomes still needs to be developed' (Peabody et al. 1995 p. 780). Han (1998 p. 10) stated that Asian countries, 'have a relatively shallow tradition of quality activities in health care, and they are in the initial stages'. To our way of thinking, this is the case for nearly all countries. In the United States, health care quality is at a crossroads (Coye & Detmer 1998). Meagre improvements and 'widespread and substantial gaps between best practices and current practice and the associated harm' (Coye & Detmer 1998 p. 760) are of grave concern. Moreover, there is a lack of systems to support quality improvement and reduce deficiencies (Schuster et al. 1998).

Considerable attention has been paid in nursing for several decades to auditing structural factors to assess quality. There is now a vast and rapidly building body of research in medicine, health services management, and nursing on quality of care standards, indicators and outcome measures which can serve as a useful basis for future research. Outcome studies are needed in Taiwan analysing the effect of individuals, organizations and systems on satisfaction, morbidity and mortality, especially from cancer. To link outcomes and cost, economic evaluation of nursing technologies is needed using, for example, cost-benefit analysis (CBA) and cost-effectiveness analysis (CEA). The methodological principles defined by the US Panel on Cost-Effectiveness in

Health and Medicine (Gold et al. 1996) and analyses of these for nursing by Chang & Henry (1999) can be of help in this regard. In Australia (Cromwell et al. 1998), priority-setting for future health services that links measures of health gain and service effectiveness is also worth considering.

For quality and effectiveness analysis, benchmarking research using computerized data bases should also be of priority. Benchmarking is a new concept for bringing comparative service improvement within and across organizations. Nurses are beginning to contribute to research designed to assess such basic data as full-time equivalent employees, patient case mix, nursing acuity, infection rates, and so forth. Activity-based costing is only infrequently done in Taiwan, but nursing research in this regard is needed, as reflected in the suggested priorities, to improve decision-making about spending, especially as more citizens turn to publicly funded care (Jaklevic 1998). The recent excellent research by Kovner & Gergen (1998) linking staffing levels and adverse events can serve as a guide.

A significant but surprising finding of our deliberations was that only two priorities pertained to alternative or traditional medicine. Perhaps some nurses think, as did Unschuld (1976) a quarter of a century ago, that having two health care systems side by side is not advantageous. However, given the wide-spread national commitment in Taiwan to both traditional and western medicine, the funding priorities of Taiwan's National Science Council, and the rapidly expanding interest in traditional Chinese medicine in many Western countries, we anticipate more attention will be paid in the future by nurse scientists to traditional care. Research outside the Western medical model has promise for improving care and patients' satisfaction with their care.

In 1997, a consensus Development Statement on Acupuncture was formulated by the US National Institutes of Health (NIH). A useful science-based information bank is available from the NIH Center for Complimentary Medicine at [HTTP://altmed.od.nih.gov](http://altmed.od.nih.gov). The World Health Organization lists several conditions that can benefit from acupuncture or moxibustion including nausea, pain, addictions, asthma and stroke rehabilitation. Maley (1997), in her discussion of complementary therapies for nursing, describes massage, reiki, acupressure, reflexology and nutrition therapy, noting that people in many countries have developed a global approach to their health care options that goes beyond Western medicine. Researchers in Taiwan are in a unique position to contribute to improved understanding of alternative forms of care.

To help bridge nursing education and practice, a priority concern to participants, we anticipate that, in the future, a priority for nursing education research may well be studies to improve understanding of the knowledge and skill required in the traditional Chinese health model. Chinese medicine is appealing to some nurses because of its patient-orientation and to nurse managers because of the direction it can provide for population-based forms of primary health care (PHC). The research question raised by participants for nursing education, about the most useful theories for future nursing administration, might beneficially be addressed by developing and testing systems theory derived from Confucian philosophy for the creation of unique, accessible service structures in new Asian forms of PHC.

Future nursing research should also focus on Taiwan's health system, of high priority to several participants. Priority nursing research suggested by the World Health Organization (Hirschfeld 1998) and the Taiwan National Science Council includes

evaluation of the effects of health systems and their reform on health services and nursing practice. Kleinman (1980), in his outstanding analyses of culture and medicine, discusses Taiwan's health system as encompassing both traditional Chinese and Western medicine. He found that most Taiwanese use alternative systems to some degree including traditional and folk medicine with ritual curing. Acupuncture, fire-less moxibustion, and Chin value detection, among others, are covered by Taiwan's National Health Insurance Programme (Liu 1998).

The 1995 National Health Insurance Programme removed economic barriers and overcame several inequalities in system availability. However, several unfortunate side-effects are problems with geographical access (Cheng & Chiang 1998), over-prescription of drugs, a high incidence of Caesarean sections, and coercion of women into birth control programmes (Liu 1998). Health system design to improve access and continuity of care, and to overcome the existing problems is extremely complex. However, we think well-prepared nurse scientists in the Republic can contribute significantly to solving these problems if they are educationally grounded in Asian and Western theories. These latter include theories of complex systems and networks, inter-organization cooperation, and resource-dependence. For improved understanding of access to health care, Gulzar's (1999) recent concept analysis of access is useful.

Several key features of high performing health systems include community-based interventions, encouragement of innovation, and an information structure capable of monitoring the most relevant aspects of care (Coye & Detmer 1998). Knowledge and understanding of computerized information systems are required for benchmarking and manpower analyses. Research pertaining to computerized information system was mentioned by only two participants. We think, however, that information technology should figure larger as a priority in future nursing research in the Republic. For example, to improve patient education, a priority topic, patients can be empowered using on-line and other computer-based programmes. Gustafson's (1999) report of CHES (Comprehensive Health Enhancement Support System) may be helpful. Graber et al.'s (1999) analysis of the readability levels of patient education material on the Web is also informative. Computer technology industries in Taiwan are extremely advanced. Nursing services and nursing education should capitalize on these.

Of priority, too, should be research to improve understanding of the efficacy of practice. It is no longer sufficient to simply ask if what nurses do is done right. Research questions must also be asked to ascertain if nurses are doing the right thing — if their practice is efficacious. As mentioned by two participants, errors and adverse events should be a research priority. Policy analyst Lucian Leape (Leape et al. 1991, Leape 1994) has been studying errors and adverse events for a dozen years at the RAND corporation and Harvard University. Leape estimates that about 4 of all hospitalized patients in the United States suffer an adverse event caused by mistakes. He states that at least two-thirds of all adverse events are preventable, noting that, for the United States, this means about 1 million preventable injuries occur each year at an annual cost about US\$ 100 billion (Buerhaus 1999).

How work is designed appears integrally related to the occurrence of adverse events, a research area ripe for future nursing management research. For this, new forms of systems analyses and national guidelines with on-line data bases of existing guidelines

and protocols, which can serve as road-maps, hold great promise. These should be future research priorities.

In closing, the results of the priority-setting appear useful, but several strengths and limitations are worth noting. It was validating to find congruence between the priorities and National Science Council funding. However, about half the nurses taking part were employed at a single institution. Although extremely large and diverse, nevertheless, VGH's mission and philosophy may be overly represented. Also, the theme of the conference — nursing management and research — may have affected the number and types of ideas. Quite probably had the exercise been undertaken at a conference on nursing education, education research would have figured more prominently.

Second, there was no public interaction in our priority setting. In the United States, to increase communication between the public and national scientists, a Council of Public Representatives was named in 1999 to increase awareness of how priorities for research are set at the US National Institutes of Health. Deliberative inclusion of the public in priority setting through the use of informed citizen juries is also reported from the United Kingdom (Dolan et al. 1999). For Taiwan, future public participation, before finalization of national priorities, is recommended.

A third factor, when scrutinizing the results, is the criteria used for priority-setting: scientific merit, social benefit and feasibility. The most appropriate and useful criteria for prioritizing research are being sought, according to WHO (1999 p. 363), by an 'increasing range of funding bodies'. The World Health Organization Ad Hoc Committee on Health Research has outlined criteria, as has the US National Institutes of Health (NIH), which accounts for around one-quarter of the world's total health research spending. The five criteria that guide NIH decisions are: health needs; scientific quality; potential for scientific progress; diversification of knowledge; and adequate support of people, equipment and facilities. A strength of our project was that considerable discussion of health needs as the basis of priorities preceded the priority-writing exercise, and our definitions of merit, benefit and feasibility encompassed scientific quality, progress and support. However, no attention was paid by us to knowledge diversification as a criterion for high-priority research, which it should be in the future.

A final limitation is the methodology of idea-writing to gain consensus about priorities. As for many consensus exercises, new data usually are not created. Rather, existing beliefs are codified. Persons & Beck (1998), in their comparison of the value of opinion vs. empirical findings, state that consensus guidelines may not be as useful as some think because experts can be biased and because opinion does not distinguish between research questions for which data are available and questions for which no data are available. Persons & Beck's (1998) discussion pertains to consensus for practice guidelines, but lessons can be inferred for research guidelines as well. In the future, basing research priorities on existing evidence is essential before final determinations are made. The US Institute of Medicine (Gross et al. 1999) proposes that the amount of disease-specific research funding be systematically and consistently compared with the burden and cost of disease.

## **CONCLUSIONS**

Research priorities are being contemplated by clinicians, educators and researchers in the Republic of China based on health needs. Hierarchy is giving way to participative forms

of decision-making by committed professionals. Taiwan's health system has undergone major reform. Policy makers are moving forward to improve quality and control cost. The National Science Council is funding nurses' research and should find these suggested priorities helpful.

Historically, in the realm of science, the Chinese were well advanced at an early stage and played a major role in the development of science in Europe. Medicine in China produced great physicians long before Hippocrates. In the 20th century, Western science blossomed and this has affected nearly the entire modern world. However, the basic foundation of Chinese science is significant for nursing and for nurses with a global mentality. This foundation and China's philosophical and aesthetic traditions, in combination with Western science, promise to contribute significantly to the future advancement of meritorious nursing research that is beneficial to the Republic, to Asia, and to the world.

## References

- Beck E.J. & Mays N. (1998) Health care system in transition II: East Asia — the roaring tigers. *Journal of Public Health Medicine* **20**, 3-4.
- Buerhaus P. (1999) Lucian Leape's insights on the causes and prevention of errors and adverse events in health care. *IMAGE: Journal of Nursing Scholarship* **31**, 281-286.
- Chang W.-Y. & Henry B.M. (1999) Methodologic principles of cost analyses in the nursing, medical, and health services literature. 1990-96. *Nursing Research* **48**, 94-104.
- Chen H.-L., Chang M.-H., Ni Y.-H. et al. (1996) Seroepidemiology of hepatitis B virus infection in children: ten years of mass vaccination in Taiwan. *Journal of the American Medical Association* **276**, 906-908.
- Cheng S.-H. & Chiang T.-L. (1998) Disparity of medical care utilization among different health insurance schemes in Taiwan. *Social Science Medicine* **47**, 613-620.
- Coye M.J. & Detmer D.E. (1998) Quality at a crossroads. *Milbank Quarterly* **76**, 759-769.
- Cromwell D.A., Viney R., Halsall J. & Hindle D. (1998) Linking measures of health gain to explicit priority setting by an area health service in Australia. *Social Science Medicine* **47**, 2067-2074.
- Dolan P., Cookson R. & Ferguson B. (1999) Effect of discussion and deliberation on the public's views of priority setting in health care: focus group study. *British Medical Journal* **318**, 916-919.
- Dutton J.A. & Crowe L. (1988) Setting priorities among scientific initiatives. *American Scientist* **76**, 599-603.
- Garcia R. (1999) Effective cost-reduction strategies in the management of regulated medical waste. *American Journal of Infection Control* **27**, 165-175.
- Gold M.R., Siegel J.E., Russell L.B. & Weinstein M.C. (1996) *Cost-Effectiveness. Health and Medicine*. Oxford University Press, New York.
- Graber M.A., Roller C.M. & Kaeble B. (1999) Readability levels of patient education material on the world wide web. *Journal of Family Practice* **48**, 58-61.
- Gross C.P., Anderson G.F. & Powe N.R. (1999) The relationship between funding by the National Institutes of Health and the burden of disease. *New England Journal of*

- Medicine* **340**,1881-1887.
- Gulzar L. (1999) Access to health care. *Image: Journal of Nursing Scholarship* **31**, 13-19.
- Gustafson D.H. (1999) Empowering patients using computer based health support systems. *Quality in Health Care* **8**,49-56.
- Han M.C. (1998) New horizon in quality care: Asia perspective. *World Hospital and Health Services* **33**, 8-13.
- Hirschfeld M.J. (1998) WHO priorities for a common nursing research agenda. *International Nursing Review* **45**, 13-14.
- Jaklevic M.C. (1998) Benchmarking East Asia. *Modern Healthcare* **2**, 33.
- Kleinman A. (1980) *Patients and Healers in the Context of Culture: An Exploration of the Borderline Between Anthropology, Medicine and Psychiatry*. University of California Press, Berkeley.
- Kovner C. & Gergen P. (1998) The relationship between nurse staffing level and adverse events following surgery in acute care hospitals. *IMAGE: Journal of Nursing Scholarship* **30**,315-321.
- Kramer B.S., Gohagan J.K. & Prorok P.C. (1999) *Cancer Screening Theory and Practice*. Marcel Dekker, New York.
- Leape L.L. (1994) Error in medicine. *Journal of the American Medical Association* **272**, 1851-1857.
- Leape L.L., Brennan T.A., Laird N.M. et al. (1991) The nature of adverse events in hospitalized patients. *New England Journal of Medicine* **324**, 377-384.
- Lee C.-L. & Ko Y.-C. (1997) Hepatitis B vaccination and hepato-cellular carcinoma in Taiwan. *Pediatrics* **99**, 351-353.
- Liu C.-T. (1998) Health care system in transition II. Taiwan, part I: a general overview of the health care system in Taiwan. *Journal of Public Health Medicine* **20**(1), 5-10.
- Maley M. (1997) Nurse complementary therapies, a return to healing. *Caring Magazine* **10**, 48-50, 52-53.
- Moore C.M. (1987) *Group Techniques for Idea Building*. Sage, Newbury Park, California.
- Peabody J.W., Yu J.C.-L, Wang Y.-R. & Bickel S.R. (1995) Health system reform in the Republic of China: formulating policy in a market-based health system. *Journal of the American Medical Association* **273**, 777-781.
- Persons J.B. & Beck A.T. (1998) Should clinicians rely on expert opinion or empirical findings? *American Journal of Managed Care* **4**,1051-1054.
- Schuster M.A., McGlynn E.A. & Brook R.H. (1998) How good is the quality of health care in the United States? *Milbank Quarterly* **76**, 517-563.
- The World Factbook 1998. Central Intelligence Agency, Washington, District of Columbia.
- Unschuld P.U. (1976) Western medicine and traditional healing system: competition, cooperation or integration. *Ethics in Science and Medicine* **3**, 1-20.
- Veterans General Hospital Document (1998) *Department of Nursing in VGH*. Veterans General Hospital, Taipei, Taiwan.
- World Health Organization (1999) USA gets to grips with priority-setting for health research. *Bulletin of the World Health Organization* **77**, 362-363.
- Yin T.J.C., Tsai J.-C. & Chang W.-Y. (1997) Health and nursing leadership in Taiwan,

Republic of China. *Journal of Nursing Administration* **27**, 10-12.