

# Factors predicting quality of nursing care among nurses in tertiary care hospitals in Mongolia

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**Background:** An increasing nursing shortage, high workloads and poor working environments are affecting the quality of nursing care in many countries including Mongolia.

**Aim:** To explore the level of quality of nursing care, nursing competency and nursing practice environment, as well as the predictability of nurses' personal factors, nursing competency and nursing practice environment on quality of nursing care as perceived by nurses in Mongolia.

**Methods:** We collected data from 346 registered nurses, randomly selected and working in seven general public tertiary care hospitals in the capital city of Ulaanbaatar, and four regions of Mongolia. Instruments used were the Good Nursing Care Scale, the Competency Inventory for Registered Nurses and the Practice Environment Scale of Nursing Work Index. Data were analysed using descriptive statistics and multiple regression analysis.

**Results:** The overall quality of nursing care and nursing competency was perceived to be at a high level, whereas nursing practice environment was at a favourable level. Nursing competency and nursing practice environment were found as significant predictors of nursing care quality, while personal factors were found as non-significant predictors.

**Discussion:** Improving nursing competency and practice environment enhances the quality of nursing care. However, a study limitation is that self-reporting may not have reflected the accuracy of variables.

**Conclusion:** Findings provide important evidence for the use of measures and strategies to enhance the quality of nursing care by improving nursing competency and the nursing practice environment.

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## Conflict of interest

There is no conflict of interest reported by the authors.

**Implications for nursing and health policy:** Policymakers, administrators and nurses need to work together to develop and implement policies to enhance and support the competency and practice environments of the Mongolian nurses.

*Keywords:* Mongolia, Nursing Competency, Nursing Practice Environment, Quality of Nursing Care

## Background

The last few decades have witnessed important changes in the health needs of global populations. Such changes are challenging current healthcare systems across the world to be more responsive and efficient to care for the health needs of populations, a responsibility that cannot be met without ensuring good quality of nursing care (QNC). In order to address this issue, there has been a significant increase in studies exploring different aspects of the QNC, and a paradoxical imbalance between nursing shortages and increasing nursing workloads has been evidenced (Aiken et al. 2017; Koy et al. 2015). This is serious considering that nursing occupies 90% of all healthcare services globally and QNC is one of the main components of healthcare quality (Nilsson et al. 2014).

Given the relevance of QNC to positive patient outcomes, several studies have investigated QNC factors, such as nursing skill mix compared to patient mortality and patient ratings (Aiken et al. 2017), enough time spent with clients (Koy et al. 2015), nursing competency (NC) (Kieft et al. 2014) and nursing practice environment (NPE) (Ma et al. 2015). Additionally, nurses are advised to effectively put into practice their acquired knowledge and skills to build adequate career decisions for higher NC (Tsai et al. 2014). Studies have also shown that improved NPE is associated with lower hospital mortality, and the maintenance and promotion of suitable working environments, which in turn promotes nurses' satisfaction and QNC (Aiken et al. 2011; Koy et al. 2015). Another major component of QNC relates to an appropriate patient-to-nurse ratio, but there are significant fluctuations in nurse-patient ratios across countries globally, as depicted on the World Health Organization (WHO) Global Health Observatory website (WHO 2018). Positive patient outcomes have direct relationships to low nurse-to-patient ratios, as well as the working environments (Boonpracom et al. 2018). In addition, nurses' personal factors affecting QNC have also been researched, finding that age (AMN Healthcare 2015), level of education (Aiken et al. 2014), and working experience (Mudallal et al. 2017) have a significant effect on QNC. Patients' health outcomes improve when there is a higher proportion of nurses with more advanced degrees rather than a diploma (Blegen et al. 2013), for example, several studies have found fewer deaths associated with care by

baccalaureate-prepared nurses compared to diploma-prepared nurses (Aiken et al. 2014; Tourangeau et al. 2007). Likewise, longer work experience improves nursing capacity to assess and identify patients' needs and so deliver appropriate care. In contrast, a Jordanian study found that working experience is negatively correlated with QNC, that is, the more years of nurses' work experience, the less the QNC (Mudallal et al. 2017).

In the particular case of Mongolia, there had been no research on factors predicting the QNC prior to this study. Only one descriptive correlational study had been conducted, finding that QNC was at a high level (Tsogbadrakh et al. 2016) but this did not explore other potential influencing factors of QNC.

It might be of use to readers to introduce a brief profile of Mongolia which is an upper middle-income country. The total population is 3 121 772 which has an average life expectancy of 69.6 years, low compared to other countries (World Bank 2018). Of the total population, 68.9% live in cities and the remaining 31.1% in rural areas (Center for Health Development 2016). The current Mongolian healthcare system is fraught with problems of low quality in care provision, a shortage of human resources, inadequate training and insufficient ongoing education for health workers, and poor working environments (Asian Development Bank 2014). There are only 10 948 registered nurses (RNs) to provide care for the total population (Ministry of Health Mongolia 2016). In 2014, the ratio of nurses and midwives was just 4.068 per 1000 population (WHO Global Health Observatory 2018), and a report that was focused on nurses' workload stated that they spent most of their time doing injections, paperwork and ward maintenance instead of patient care (Nurzedmaa et al. 2013).

The conceptual framework for this study was underpinned by the Good Nursing Care Model of Leino-Kilpi (1996) who defined QNC as the level of excellence in patient care that addresses their physical, psychological, emotional, social and spiritual needs. The following predictive factors for QNC based on the literature review and examined in this study were NC, NPE and nurses' personal factors of age, educational level and working experience. We hypothesized that nurses with a high level of NC, a favourable NPE, a high level of education, >10 years work experience, and were mid-life nurses, were more likely to provide high QNC to patients.

This study aimed to examine the level of QNC, NC and NPE, and the predictability of NC, NPE and nurses' personal factors on QNC in tertiary care hospitals in Mongolia.

## Methods

### Design

A descriptive predictive design

### Sample and setting

In order to draw the sample, the first step consisted of listing all public tertiary care facilities in Mongolia. These comprised (1) 16 hospitals in Ulaanbaatar, the capital city, (three providing general public tertiary care and 13 providing specialized care) and (2) four regional hospitals, called regional diagnostic and treatment centres (two from the central region, and one each from the western and eastern regions). The final sample was drawn from seven settings in three general public hospitals in Ulaanbaatar and the four regional centres. Then, from the target population of 1257 RNs in these seven settings, a random sample was determined as 304, using Yamane's formula (1973). To deal with possible missing data, an extra 20% or 60 nurses were added, so the total sample size needed was 364. The inclusion criteria were being an RN and having worked as a nurse for at least one year. Nursing supervisors and nurses on maternity or vacation leave were excluded from the study.

### Instruments

Four instruments were used to collect data.

1 A demographic data form (DDF), developed by the researchers, that requested participants' gender, age, marital status, level of education, religion, working experience, work unit and monthly income.

2 The Good Nursing Care Scale (GNCS) was developed by Leino-Kilpi (1996) and used to measure QNC. It consists of 58 items within six dimensions: staff characteristics, care-related activities, preconditions for care, physical environment, progress of nursing process and cooperation with relatives. It has a 7-point Likert scale varying from 0 = do not know to 6 = always. Total possible scores range from 0 to 348, and good nursing care total scores are interpreted as 0–116 = low, 116.01–232 = moderate and 232.01–348 = high.

3 The Competency Inventory Registered Nurses (CIRN) was developed by Liu (2005) and used to measure NC. It consists of 55 items within seven dimensions: clinical care, leadership, interpersonal relation, legal/ethical practice, professional development, teaching-coaching, critical thinking and research

aptitude. It uses a 5-point Likert scale ranging from 0 = not competent to 4 = very competent. The total score range is 0–220. A high total score indicates high overall competency. Total mean scores are categorized into three levels: 148–220 = high, 74–147 = moderate and 0–73 = low.

4 The Practice Environment Scale of the Nursing Work Index (PES-NWI) was developed by Lake (2002). It has 31 items within five dimensions: nurses' participation in hospital affairs, nursing foundation for quality of care, nurse manager ability, leadership and support of nurses, staffing and resource adequacy, and collegial nurse–physician relationship. A 4-point Likert scale is used, ranging from 1 = strongly disagree to 4 = strongly agree. The total PES-NWI score is calculated as the mean of the five subscales' scores. A mean subscale score of >2.5 calculated on 4 or 5 subscales represents a favourable practice environment. A mean score >2.5 indicates favourable, whereas <2.5 indicates an unfavourable practice environment.

Copyright owners granted permission to the principal investigator (PI) to use and translate the GNCS, CIRN and PES-NWI. Three bilingual experts were invited to be involved in the forward–backward translation process into the Mongolian language (Gray et al. 2017). Instrument reliability was pilot-tested with 20 nurses, who had similar characteristics with study sample. The Cronbach's alpha coefficients of the GNCS, CIRN and PES-NWI were 0.94, 0.86 and 0.95, respectively.

### Ethical considerations

Research approval was obtained from the research ethics committee of the Faculty of Nursing, Chiang Mai University (approval no. 070/2016), and this was endorsed by the Mongolian National University of Medical Sciences, Ulaanbaatar. Study permission was obtained from seven hospital directors. All participants signed on the consent form prior to data collection and their rights to privacy and confidentiality.

### Data collection and analysis

Data were collected between October 2016 and April 2017. The instruments were distributed by research assistant in each hospital and collected in a sealed folder to give to the PI. The four instruments took around 30–45 min to complete. A total of 364 questionnaires were distributed to nurses, and 346 (95.5%) were completed for data analysis. The scores of the studied variables were analysed using descriptive statistics. Predicting factors of QNC was tested using stepwise multiple regression analysis after the assumptions of multiple regressions were confirmed.

## Results

### Demographic characteristics

Most of the participants' were female (96.24%); ages ranged from 21 to 56 years with an average of 35.86, married (71.68%) and Buddhist (79.77%). Nearly half (47.98%) had between 1 and 10 years of working experience and a bachelor degree (49.71%). Approximately one-third (31.50%) worked in a medical ward, and 37% received a low monthly income of around 466 285 to 469 798 Mongolian Togrog (around US \$183–184 per month).

### Description of study variables

The participants perceived QNC and NC to be at a high level overall in regard to each dimension of QNC. The subsets of QNC corresponding to the cooperation with relatives and the progress of the nursing process scored at a moderate level. The subsets of NC corresponding to teaching and coaching were found at a moderate level (Tables 1,2). NPE dimensions scored at a favourable level except for the staffing and resource adequacy, which were ranked at an unfavourable level (Table 2), and multivariate regression analysis found that NC and NPE were significant predictors of QNC (Table 3) and explained 32.9% and 35.3%, respectively, of the variability in QNC. Personal factors were found to be non-significant predictors of QNC.

## Discussion

### Quality of nursing care

The overall mean score of QNC was a high level. The subsets of nursing process and cooperation with relatives require special attention since it was scored at a moderate level, implying that patients and relatives might not receive care interventions appropriately. NPE was scored at a favourable level overall while staffing and resource adequacy was scored as unfavourable. This is consistent with the low Mongolian nurse-to-patient ratio previously mentioned (WHO Global Health Observatory 2018), and it is plausible to suggest that inadequate staffing and resource allocation may in turn help explain the lower scores for nursing process and cooperation with relatives. This explanation is consistent with the findings of Nantsupawat et al. (2011) that described nurses' insufficient time for discussions with patients and relatives within adequate staffing and resources. We also found the high QNC surprising given the very high patient workloads and the unfavourable level of staffing and resource adequacy. This contradiction begs the question: How are nurses able to provide high QNC given the low staffing and resources available?

**Table 1** Range, means, standard deviation, and level of overall QNC and NC and each dimension of QNC and NC as perceived by the sample (*n* = 346)

Variable	Possible range	Actual range	$\bar{X}$	SD	Level
Quality of nursing care					
Overall QNC	0–348	156–348	246.28	38.11	High
Staff characteristics	0–42	22–42	37.03	4.31	High
Care-related activities	0–114	51–114	87.39	13.16	High
Preconditions for care	0–48	16–48	36.88	6.12	High
Physical environment	0–12	2–12	9.52	2.16	High
Progress of nursing process	0–60	2–60	33.95	11.10	Moderate
Cooperation with relatives	0–72	0–72	41.48	13.11	Moderate
Nursing competency					
Overall NC	0–220	45–220	164.17	28.79	High
Clinical care	0–40	10–40	29.47	6.01	High
Leadership	0–36	6–36	27.67	5.61	High
Interpersonal relationship	0–32	8–32	24.67	4.56	High
Legal and ethical practice	0–32	3–32	24.67	4.66	High
Professional development	0–24	1–24	18.54	4.55	High
Teaching and coaching	0–24	3–24	16.70	4.26	Moderate
Critical thinking and research aptitude	0–32	1–32	22.43	5.65	High

**Table 2** Mean, standard deviation, favourable/unfavourable practice environment of overall and each dimension of NPE as perceived by the sample (*n* = 346)

Variable	$\bar{X}$	SD	Favourable/Unfavourable
Overall NPE	2.79	0.51	Favourable
Nurse participation in hospital affairs	2.86	0.56	Favourable
Nursing foundation for quality of care	2.84	0.56	Favourable
Nurse manager ability	2.91	0.63	Favourable
Staffing and resource adequacy	2.39	0.77	Unfavourable
Collegial nurse–physician relations	2.93	0.64	Favourable

However, this finding is also consistent with previous studies conducted in Bhutan and Myanmar (Chimi 2014; Myint 2010), countries which may face similar working conditions

**Table 3 Multiple regression analysis of the factors predicting QNC ( $n = 346$ )**

Variables	B	$\beta$	SE(B)	t
Constant	104.968		10675	
Nursing competency	0.634	0.479	0.68	9.394**
Nursing practice environment	13.336	0.181	3.768	3.539**

$R = 0.59$ ,  $R^2 = 0.329$ ,  $0.353$ , Adjusted  $R^2 = 0.349$ ,  $F = 93,485$ , \*\* $P < 0.00$ .

and scarce resources like Mongolia where Tsogbadrakh (2014) also found a high level of QNC. On the contrary, our finding was inconsistent with a Lao study (Mouioudomdeth 2012) where nurses perceived QNC to be at a low level.

#### Nursing competency

The participants also perceived NC to be at a high level, and this is consistent with the perception of staff nurses in a Chinese study (Ying 2006). We found that NC is a strong predictor for QNC, a finding consistent with a Finnish study (Istomina et al. 2011). Based on nurses' personal factors, it may be possible that in our study, the high level of NC could be explained by the nurses' educational level and their working experience. We found that more than half (52.02%) of the nurses' working experience was >10 years and 51.16% of them held baccalaureate and master degrees. Thus, it could be assumed that Mongolian nurses apply their qualifications, knowledge and skills efficiently to build their effective career decisions for higher NC (Tsai et al. 2014) and may help to explain that they perceived their NC as contributing to QNC.

#### Nursing practice environment

As far as NPE is concerned, a positive NPE is a crucial mandate for nurses to provide QNC to the patients. This finding was consistent with a USA study (Patrician et al. 2010) but inconsistent with a Bangladeshi study (Mondal 2013). A possible explanation that perceived favourable level of NPE might be due to the implementation of hospital quality management programmes in Mongolia that focus on positive work environments (Ministry of Health 2013). In fact, the latest statistics available on nurse–patient ratios in public tertiary care hospitals in Mongolia ranges between 1:12–18 during the day shift and 1:50–100 during night shift (Ministry of Health 2013). These is critically important evidence since improving NPE, including nurse–patient ratios, may enhance nurse workforce as well as improve QNC, as found in previous studies in United States (Olds et al. 2017; Patrician et al. 2010).

## Conclusions

Our study has determined the level of QNC, NC and NPE in seven public tertiary care hospitals in Mongolia, as well as examined whether NC, NPE and nurses' personal factors were predictors of QNC in the same context. The participants perceived the overall QNC and NC in tertiary care hospitals in Mongolia to be at a high level. However, these nurses perceived NPE at a favourable level except for staffing and resource adequacy, which as evaluated as unfavourable. As far as predictors of QNC are concerned, NC and NPE resulted in being significant predictors of the QNC, while personal factors were non-significant predictors of this. Based on these findings, nurses with more competence and a positive working environment are in a better position to provide good care for the patients.

## Limitations

The findings of this study cannot be generalized to all levels of hospital settings, and further research is needed. While our results are relevant in that they provide an initial overview of the state of QNC in public tertiary care hospitals in Mongolia, they also need to be used cautiously as they are a limitation to this study. Collecting data by self-report may not have depicted the actual level of QNC. In the experience of the PI, Mongolia is characterized with having an 'honor saving culture' so the nurses might have felt obligated to answer positively about QNC to protect their own reputation or that of their institution instead of answering with honesty.

## Implications for nursing and health policy

These have been international calls over many years to improve the level of QNC, and in the last decade, an increasing number of studies have been undertaken on various aspects of this. For example, in 2017, the International Centre for Human Resources in Nursing (ICHRN 2017) developed a position statement on positive practice environments. This document strongly urged countries to work to overcome the global health workforce crisis and focused on making positive changes to the working environments, to the recruitment and retention of nurses and to improving patient outcomes. Other nursing organizations have added voice to enhancing initiatives to improve the quality and safety of nurses' work and health care in general to improve patient outcomes, and one important way is to improve nursing leadership through education (Sherwood et al. 2017). In particular, the International Council of Nurses (ICN 2018) released a position statement calling for governments and policymakers to increase investment in safe staffing levels in nursing, a matter which is relevant to the findings of this study since there are high patient

workloads for the nurses' in Mongolia, and especially on night shift. In addition, hospital and nurse administrators need to develop strategies to enhance nursing competencies and improve nurses' work environments in order to ensure QNC. Lastly, in a far-reaching document, the WHO (2016) has set out strategic directions globally to strengthen nursing and midwifery practice, education and ongoing professional development, leadership, and the political will of nurses around the world. Clearly, this mandate has links with focus of this study, that is, investigating to gather evidence to improve the QNC in Mongolia will require concerted effort from nurses within the country and hopefully with the support of international community of to develop strategies for change.

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### Author contributions

Study design: KHG, WK, TA, OW, ST

Data collection: KHG

Data analysis: KHG

Study supervision: WK, TA, OW

Manuscript writing: KHG, WK, ST, TA, OW

Critical revisions for important intellectual content: WK, ST, TA, OW

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