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Review

Assessment tools of nursing work environment in magnet hospitals: A review



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In the 1990s, the American Nurses Association established a certification program called the Magnet Recognition Program through the American Nurses Credentialing Centre (ANCC) to complement the quality care provided to patients by hospitals. After the program was recognised, hospitals were identified as magnet hospitals [1]. Some studies show that magnet hospitals provide a healthier working environment for nurses, accompanied by higher nurse satisfaction and better patient prognosis than non-magnet hospitals [2–5]. The nursing work environment is the sum of various elements that directly or indirectly affect the patient care system [6]. Improving the nursing work environment is a focal point and challenge for nursing administrators. Therefore, administrators in magnet hospitals usually apply a variety of assessment tools for effective evaluation of the nursing work environment to maintain and improve the health of the environment. As

researchers in related fields have developed a variety of assessment tools to evaluate whether a hospital has a healthy work environment, we aimed to review these tools to provide a reference for evaluation studies of the nursing work environment in China.

1. Assessment tools of nursing work environment and their application in magnet hospitals

1.1. Assessment tools of the nursing work environment

1.1.1. Nursing Work Index (NWI)

Based on qualitative interviews with nursing staff in magnet hospitals, Kramer and Hafner [7] developed the Nursing Work Index (NWI) in 1989 to facilitate the evaluation of nurse satisfaction and perception of quality of care. A total of 65 items were identified, reflecting the organisational traits of a hospital. The subscales of the NWI encompasses management style, leadership, organisational structure, clinical practice, and professional development. The items included are subject to three nurse-centred conditions: “This is important to my job satisfaction”; “This is important to my being able to give quality patient care”; and “This factor is present in my current job situation”. The NWI uses a 4-point Likert scale; responses range from strongly agree (4 points) to strongly disagree (1 point), where higher scores indicate more significant traits of magnet hospitals. The content validity of the scale was not tested by statistical methods, but was recognised by three out of four experts on research of magnet hospitals. However, over the past 20 years, some items in the NWI have become outdated, and the tool itself

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resembles a list of factors in the nursing work environment that affected nurse satisfaction and quality of care in the 1980s.

1.1.2. Revised NWI (NWI-R)

Aiken and Patrician [8] developed the revised NWI (NWI-R) based on the NWI. Through proof-of-concept study emphasising the correlation of items and their potential to reflect the traits of a healthy working environment, the new scale ultimately contained 57 items after relatively less correlated items in the original scale were excluded. Aiken and colleagues [9] used the NWI-R for the first time in 1994 in a controlled study of 39 magnet hospitals and 195 non-magnet hospitals, and found lower patient mortality and significantly higher NWI-R scores in magnet hospitals than in non-magnet hospitals. Based on this scale, follow-up studies attempted to develop subscales to evaluate related content in the nursing work environment [10–12]. The total Cronbach's α coefficient of the NWI-R is 0.96; the coefficient for each subscale ranges from 0.75 to 0.79.

In recent years, researchers in various countries have conducted localised research using the NWI-R. In Australia, Joyce and Crookes [13] constructed the Australian version of the NWI through cultural adaptation, adjusting the language, content, and presentation of the original scale. In France, Bonneterre and colleagues [14] extended the NWI-R and developed the NWI-Extended Organization (NWI-EO) by verifying its reliability and validity through a survey of 4085 nurses from 214 hospitals. The scale included three dimensions (team cohesion, work organisation, support from management personnel) and 19 items. However, items in the NWI-R are still outdated, which was their drawback. Moreover, this tool is insufficiently related to the magnet work environment, such as the new item “team nursing as the nursing delivery system”, which cannot effectively distinguish between a magnet and non-magnet work environment. In addition, the NWI-R is no longer applicable for evaluating nurse satisfaction or the perception of quality care, which are traits of magnet hospital organisation.

1.1.3. Practice Environment Scale of the NWI (PES–NWI)

As the NWI contains 65 items, it requires too much time to complete a questionnaire survey. Lake [15] screened out 48 items associated with the nursing practice environment from the NWI and constructed the Practice Environment Scale of the NWI (PES–NWI). Through covariance matrix and factor analysis identified five subscales (nurse participation in hospital affairs, nursing foundations for quality of care, staffing and resource adequacy, nurse manager ability, leadership, support of nurses and collegial nurse–physician relationships) and 31 items. The first two dimensions reflect the overall hospital nursing practice environment, the remaining three reflect the nursing practice environment in individual units. The Cronbach's α coefficient of the PES–NWI is 0.82; the coefficient for each subscale ranges from 0.71 to 0.84. Lake indicated that the use of this scale helped to build and maintain an efficient, quality nursing practice environment. Researchers in other countries used the PES–NWI in attempts to identify the relation between the nursing practice environment and clinical nursing satisfaction and patient outcomes. They found that higher

PES–NWI scores indicated lower nurse burnout and turnover rates and better patient prognosis [16]. In China, Chen and colleagues [17] undertook a nationwide cross-sectional survey using the PES–NWI to evaluate the nursing work environment in different units. They found that the “collegial nurse–physician relationships” dimension scored the highest among all of the dimensions in all types of units, while the “staffing and resource adequacy” and “nurse participation in hospital affairs” scores were the lowest. Moreover, the nursing work environments of intensive care units were poorer than that of internal and surgical units. Concerning the current domestic situation that the use of PES–NWI are restricted in investigation research, we suggest further study on the correlation between the nursing practice environment and nurse satisfaction and turnover rate and patient outcomes, which would aid in providing a reliable foundation for the long-standing demands for a healthier working environment.

1.1.4. Essentials of Magnetism (EOM) instrument

The Essentials of Magnetism (EOM) tool emphasises the traits of a healthy nursing work environment and aids evaluation of the status of magnetism of the environment, forming the basis for administrators to decide whether a hospital is qualified to apply for the Magnet Recognition Program. The tool was invented by Kramer and Schmalenberg [18] in 2004, and its revision, Essentials of Magnetism II (EOMII), was unveiled in 2005. The EOM contains 54 items and eight dimensions (cultural values, nurse manager support, control of nursing practice, clinical autonomy, adequacy of staffing, nurse–physician relationships, nurses' clinical competency, support for education). The EOM uses a 4-point Likert scale, with responses ranging from strongly agree (1 point) to strongly disagree (4 points), and has good internal consistency. The EOMII [19] has 58 items and eight dimensions, two of which differ from the EOM in terms of items and content (nurses' clinical competency, support for education). Currently, the EOMII has been translated and adapted into a Turkish version [20], while the Chinese version was developed by Bai and colleagues [21]. It has been suggested that magnet hospitals should use this tool for self-assessment to maintain and continuously improve the nursing work environment, while non-magnet hospitals are advised to use it to draw a clearer picture of the gap between non-magnet and magnet hospitals so as to implement reform programs. It is worth noting that the data collected should include indicators reflecting certain information about individual nurses, nursing groups, units, and hospitals with the aim of thoroughly evaluating the magnet status of hospitals.

1.1.5. Perceived Nursing Work Environment (PNWE) instrument

The Perceived Nursing Work Environment (PNWE) instrument was completed by the American researchers Choi and colleagues [22] in 2004, and it uses the same scoring method as the NWI. It has 42 items and seven dimensions (professional practice, staffing and resource adequacy, nursing management, nursing process, nurse/physician collaboration, nursing competence, positive scheduling climate). The coefficients of the first six dimensions range from 0.70 to 0.91, while the last has a low coefficient of 0.56, which is probably because this dimension includes only three sub-items. The total

Cronbach's α coefficient of the PNWE is 0.95. In 2005, Cimiotti and colleagues [23] used the PNWE to conduct a questionnaire survey of more than 2000 nurses to compare the nursing work environment between three kinds of hospitals (magnet hospitals, hospitals applying for magnet recognition, non-magnet hospitals), and reported that the nurses in magnet hospitals had a more positive perception of their nursing work environment. In China, Chen and colleagues [24] translated and revised the PNWE to perform a preliminary evaluation of the overall condition of the nursing work environment.

1.1.6. Revised Individual Workload Perception Scale (IWPS-R)
The Revised Individual Workload Perception Scale (IWPS-R) is a revision of the IWPS; both were developed by Cox to evaluate nurse perception of the nursing work environment. The original IWPS [25] had 46 items and used a 5-point Likert scale, with responses ranging from strongly disagree (1 point) to strongly agree (5 points). The Cronbach's α coefficient of the IWPS-R is 0.96 and the coefficient of each subscale ranges from 0.61 to 0.83. In 2006, Cox [26] revised the original scale based on its usage and reduced it to 29 items, but retained the same dimensions in the original scale. The content validity of the scale was evaluated by five experts in nursing administration and the psychometric field with a total Cronbach's α coefficient of 0.92, and the coefficient of each subscale ranged from 0.68 to 0.88. In Taiwan, Lin and colleagues [27] translated and revised the PNWE following a survey involving Taiwanese nurses. Applying principal component factor analysis, they excluded five items whose factor loadings were insufficient and identified 24 items in total. The Cronbach's α coefficient of the scale is 0.88, and coefficients of the subscales range from 0.61 to 0.85. The PNWE is mainly used to evaluate support from administrators, peer-staff, and clinical units, as well as workload and intention to stay. However, compared to other scales, the PNWE is greatly dependent on the subjective perception of nurses, which may result in discrepancy with the actual status of the nursing work environment.

1.2. Comparison of nursing work environment assessment tools

1.2.1. Distinctive characteristics of the tools

We have introduced six nursing work environment assessment tools that are widely used among administrators in magnet and non-magnet hospitals. Some of these tools have been translated into other versions and are used in other countries for the reference of nurse managers. The purpose of almost every tool remains consistent: to focus on disadvantages, implement targeted measures, and evaluate the effectiveness of continuous improvement in the nursing work environment based on the responses of nurses for each item and dimension. However, the dimensions and items of each tool are different; the most common dimensions are participation in hospital affairs, job autonomy, management support, and interpersonal relationships. As the most representative nursing work environment assessment tool, the NWI covers the widest range of content, but some items are obsolete and not applicable for reflecting the actual status of the work environment, justifying the generation of the NWI-R. As a derivative of the NWI-R, the PES–NWI has a

particularly prominent advantage in evaluating the nursing practice environment at hospital level. The EOM tool is most characteristic of magnetism, while the PNWE and IWPS-R emphasise subjective perception of the nursing work environment.

1.2.2. The need to develop optimised work environment assessment tools

Notably, research on the development of work environment assessment tools still warrants much attention. First, further proof-of-concept study on the nursing work environment is required. Secondly, using evidence-based research, Lake [28] indicated that effective evaluation of the nursing work environment should cover the following eight elements: quality of care, involvement in nursing practice, career development, supportive leadership, collegial nurse–physician relationship, supportive peers, job autonomy, as well as sufficient personnel and resources. However, none of the tools can assess all of the above so far.

2. Prospects of magnet nursing work environment research in China

2.1. Attempts to establish a magnet nursing work environment in China

Some hospitals in China have begun to introduce the magnet management philosophy and undertake certain measures to improve the nursing work environment and nurse satisfaction. Sir Run Run Shaw Hospital affiliated to the Zhejiang University School of Medicine applied to the ANCC for the Magnet Recognition Program in 2012 [29], and the Shenyang Military Region General Hospital has begun constructing a magnet nursing work environment in the outpatient department based on the magnet management model [30]. In 2008, the Obstetrics and Gynecology Hospital affiliated to the Zhejiang University School of Medicine introduced magnet evaluation standards and used them to evaluate the effectiveness of producing a supportive nursing work environment by measuring patient satisfaction and nurse burnout [31]. In Taiwan, there is high-quality patient care based on the magnet model [32]. Therefore, it seems to be that attempts of nursing administrators to establish a magnet nursing work environment in China have achieved initial results.

2.2. Recommendation to develop a Chinese characteristic assessment tool for magnet nursing work environment

Taking into consideration our review of nursing work environment assessment tools, we suggest the following practices for developing assessment tools for the Chinese magnet nursing work environment: 1) translation and revision of widely recognised foreign tools; 2) there are Chinese versions of some tools; however, there are regional limitations to the verification environment of their reliability and validity. We recommend that clinical validation be applied among the general nursing population and in the general national area to ensure universal adaptability of the tools; 3) full

implementation of the magnet model for evaluation throughout the initial phase, continuous quality improvement, and feedback.

In summary, evaluating the nursing work environment is a challenging task partly because it encompasses complex and diverse contents, and most of the development and application of the representative assessment tools takes place in the Western countries. Assessment tools tailored to the medical environment in China should be developed. Management methods such as the Deming cycle, Plato analysis, and quality control circles should be utilised to construct a magnet nursing work environment with high autonomy and involvement in hospital affairs. We strongly propose creating a magnet model with Chinese characteristics, actively improving the leadership style of nursing administrators, work environment satisfaction, professional image and skills, and patient care quality, as well as reducing the nurse turnover rate.

Conflict of interest

We declare no potential conflicts of interest with respect to the research and/or publication of this article.

REFERENCES

- [1] Aiken LH, Havens DS, Sloane DM. The magnet nursing services recognition program: a comparison of two groups of magnet hospitals. *J Nurs Adm* 2009;39:55–14.
- [2] Ponte PR, Luzinski C. Comparison of patient outcomes in magnet (R) and non-magnet hospitals. *J Nurs Adm* 2012;42:65–6.
- [3] Kramer M, Schmalenberg C. Magnet hospitals institutions with excellence (Part 1). *PFLERGE* 2012;25:285–97.
- [4] Goode CJ, Blegen MA. Comparison of patient outcomes in magnet (R) and non-magnet hospitals response. *J Nurs Adm* 2011;41:517–23.
- [5] Kelly LA, McHugh MD, Aiken LH. Nurse outcomes in magnet (R) and non-magnet hospitals (vol 41, pg 428, 2011). *J Nurs Adm* 2011;41:428–33.
- [6] Zhang S, Hong W, Yang H. A large sample practical measurement study on nursing work environment evaluation indexes system. *Chin Nurs Res* 2011;24:2254–5.
- [7] Kramer M, Hafner LP. Shared values: Impact on staff nurse job-satisfaction and perceived productivity. *Nurs Res* 1989;38:172–7.
- [8] Aiken LH, Patrician PA. Measuring organizational traits of hospitals: the revised nursing work index. *Nurs Res* 2000;49:146–53.
- [9] Aiken LH, Smith HL, Lake ET. Lower medicare mortality among a set of hospitals known for good nursing care. *Med Care* 1994;32:771–87.
- [10] Grindel CG, Peterson K, Kinneman M, Turner TL. The practice environment project. A process for outcome evaluation. *J Nurs Adm* 1996;26:43–51.
- [11] Hoffart N, Woods CQ. Elements of a nursing professional practice model. *J Prof Nurs* 1996;12:354–64.
- [12] Baggs JG, Ryan SA, Phelps CE, Richeson JF, Johnson JE. The association between interdisciplinary collaboration and patient outcomes in a medical intensive care unit. *Heart lung. J Clin Nurs* 1992;21:18–24.
- [13] Joyce J, Crookes P. Developing a tool to measure 'Magnetism' in Australian nursing environments. *Aust J Adv Nurs* 2007;25:17–23.
- [14] Bonnetterre V, Ehlinger V, Balducci F, Caroly S, Jolivet A, Sobaszek A, et al. Validation of an instrument for measuring psychosocial and organisational work constraints detrimental to health among hospital workers: the NWI-EO questionnaire. *Int J Nurs Stud* 2011;48:557–67.
- [15] Lake ET. Development of the practice environment scale of the nursing work index. *Res Nurs Health* 2002;25:176–88.
- [16] Shang J, Friese CR, Wu E, Aiken LH. Nursing practice environment and outcomes for oncology nursing. *Cancer Nurs* 2013;36:206–12.
- [17] Chen J, You L, Zhen J, Liu K, Wang Y, Fang J, et al. Study on the nurse characteristics and nursing work environment in medical wards, surgical wards and intensive care units in hospitals in mainland China. *Chin Nurs Manage* 2012;7:20–3.
- [18] Kramer M, Schmalenberg C. Development and evaluation of essentials of magnetism tool. *J Nurs Adm* 2004;34:365–78.
- [19] Kramer M, Schmalenberg C. Revising the essentials of magnetism tool: there is more to adequate staffing than numbers. *J Nurs Adm* 2005;35:188–98.
- [20] Yildirim D, Kisa S, Hisar F. Validity and reliability of the Turkish version of the essentials of magnetism scale (EOM II). *Int Nurs Rev* 2012;59:570–6.
- [21] Bai J, Hsu L, Zhang Q. Validation of the essentials of magnetism II in Chinese critical care settings. *Nurs Crit Care* 2013. <http://dx.doi.org/10.1111/nicc.12041> [Epub ahead of print].
- [22] Choi JK, Bakken S, Larson E, Du YL, Stone PW. Perceived nursing work environment of critical care nurses. *Nurs Res* 2004;53:370–8.
- [23] Cimioti JP, Quinlan PM, Larson EL, Pastor DK, Lin SX, Stone PW. The magnet process and the perceived work environment of nurses. *Nurs Res* 2005;54:384–90.
- [24] Chen X, Lin P, Zhao Z. The development of perceived nursing work environment scale in Chinese vision. *Chin Nurs Manage* 2011;4:28–31.
- [25] Cox KS. Inpatient nurses and their work environment. *Nurs Lead Forum* 2002;7:34–7.
- [26] Cox KS, Teasley SL, Zeller RA, Lacey SR, Parsons L, Carroll CA, et al. Know staff's intent to stay. *Nurs Manage* 2006;37:13–5.
- [27] Lin S, Lin C, Yeh MC, Lin S, Hwang Y. A psychometric evaluation of the Taiwan version of the individual workload perception scale. *J Clin Nurs* 2011;20:494–503.
- [28] Lake ET. The nursing practice environment: measurement and evidence. *Med Care Res Rev* 2007;64. 104S–22S.
- [29] Yang L, Ye Z. Introduction of magnet certification program. *Chin J Hosp Adm* 2011;27:638–40.
- [30] Jiang X, Xing F. Establishment and influence of magnet nursing work environment in outpatient department. *Chin J Conval Med* 2011;9:858–9.
- [31] Yang X, Xu X, Luo H, Shao F. Exploration and experience of building magnet supportive nursing work environment. *Chin J Hosp Adm* 2011;27:603–5.
- [32] Sun J, Li Z. High quality care based on magnetic hospitals of Taiwan. *Chin Health Qual Manage* 2012;19:21–3.