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Evaluation of Magnet Journey to Nursing Excellence Program in Russia and Armenia

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Abstract

Objective—To provide an outcomes-evaluation of an intervention to strengthen professional nursing practice in Russian and Armenian hospitals.

Design—The Nursing Quality Improvement Initiative using Forces of Magnetism to develop professional nurse practice was implemented in four hospitals in Russia and Armenia. Cross-sectional survey data were collected at two time points from 840 nurses in wave 1 and 859 nurses in wave 2. Comparisons were undertaken between targeted units in each hospital compared to non-targeted units, and each hospital served as its own control in surveys that took place in year one and three of the demonstration.

Methods—Descriptive information on the nurse samples were derived from survey items. Changes in characteristics of nurse practice environments, nurse-reported patient care quality, and nurse burnout in Russia and Armenia, overall and separately for targeted and non targeted units, were tested using chi-square statistics and difference of means tests.

Findings—Practice environment features, such as nurses' involvement in hospital affairs, better collegial relationships with physicians, more support for nursing care from administration, and continuity of nursing care improved after the intervention. Resource adequacy indicators did not change over the demonstration period. There were favorable changes in indicators of patient care quality, though differences in changes in targeted and non-targeted units were equivocal.

Conclusions—Changes consistent with evolving professional nursing practice were associated with program implementation. Forces of Magnetism appear to have the same potential for transforming nursing practice in countries with fewer resources as in wealthier Western countries.

Clinical Relevance—Magnet Recognition, an evidence-based best practice for improving the nursing care environment developed in Western countries was feasible to implement in countries with transitioning economies, limited resources, and truncated professional nursing education.

Keywords

Magnet; Nursing Quality Improvement; Nurse Practice Environment

After the Soviet Union collapse in 1991, new national governments were established in the New Independent States (NIS). During the transition, the social, economic, and political infrastructure in the NIS underwent tremendous change that damaged social and health services (McKee, 2005). Hospitals lacked funding, the workforce was often not paid, and necessary supplies and equipment were lacking (Difazio, Lang, & Boykova, 2004). NIS countries had been isolated for decades from advances in medical science and technology, and their medical and nursing practices were far outdated. In Soviet times, more emphasis was placed on equity of access to health care than on quality and patient-centered care and modern medical and nursing education (Twigg, 2002).

International aid to NIS countries included support of health care reforms focused on improving the quality and outcomes of health care (Lock, Andreev, Skolnikov, & McKee, 2002). Shortly after the fall of the Soviet Union, the U.S. Agency for International Development (USAID) began funding the American International Health Alliance (AIHA) Healthcare Partnership Model using peer-to-peer twinning partnerships between U.S. health care providers, academic institutions, and communities and counterpart entities in the NIS (AIHA, 2003). The concept of twinning is not new although the terminology has come into more common usage recently in international health programs, particularly those of AIHA which has sponsored over 100 twinning programs first in NIS countries and now in other parts of the world. "In its broadest sense, twinning refers to the partnering of two entities with shared characteristics to achieve a common goal" (AIHA, 2008). The key elements of twinning in AIHA programs include voluntarism where both partners make significant in-kind and material contributions, commitment of entire institutions to program goals, peer-to-peer collaboration in which partners work together as equals, professional exchanges and mentoring, and sustainable capacity development. The approach was "grass roots" in the sense that the partnerships involved twinning people throughout organizations including nurses, physicians, administrators, and researchers, in contrast to "top down" government to government programs. The intent was to build lasting clinical, managerial, scientific, and leadership capacity in nongovernmental organizations in NIS countries in order to significantly improve health care quality.

Nursing was identified as an important but underdeveloped key resource in achieving quality of care improvements and patient-centered services in NIS countries (Bloor, McHugh, & Pearson, 2004; Driever, Perfiljeva, Callister, & McGivern, 2005; Picard & Perfiljeva, 1995; Weinstein, 2007). Nurses were relatively numerous in NIS countries but had limited roles in care (Ivanov & Paganpegara, 2003). Nursing practice primarily involved implementation of physicians' orders and performing technical tasks such as giving injections or changing wound dressings (Zimmerman, Putland, & Hughes, 1997). Nurses in the NIS had been isolated from the changes that had occurred globally in nurses' leadership roles in clinical care, interdisciplinary practice, and health services management. AIHA sought to harness the potential of nurses in the NIS to contribute to improving quality through twinning partnerships with nurses in institutions in the U.S. that had successfully implemented professional nurse practice models. The purpose of this paper is to provide an outcomes-evaluation of the AIHA Nursing Quality Improvement Program that aimed to develop professional nursing practice in NIS hospitals.

The Intervention

AIHA initiatives were built on evidence-based innovation and practice, a concept that was new in the NIS but critical to successful and sustainable reform. The Nursing Quality Improvement Program was designed to replicate the evidence-based best practice model of professional nursing practice codified in the formal certification program known as Magnet Recognition (Aiken, Havens, Sloane, 2000; Aiken, 2005; McClure & Hinshaw, 2002). Magnet certification

developed over a 20 year period bolstered by a robust research literature documenting that institutions characterized by “Forces of Magnetism” were more successful than others in attracting and retaining qualified nurses and their patient outcomes were superior (Aiken, 2002; Aiken, Smith, & Lake, 1994). The formal certification program for Magnet was sponsored by the American Nurses Credentialing Center (ANCC), a subsidiary of the American Nurses Association. In 2001, over a hundred hospitals had achieved formal Magnet Recognition in the U.S., and a successful pilot initiative in England demonstrated the applicability of the concept outside the U.S. (Aiken, Buchan, Ball, Rafferty, 2008). Today almost 300 hospitals in 4 countries (U.S., England, Australia, and New Zealand) have achieved Magnet Designation (American Nurses Credentialing Center, 2008).

The Nursing Quality Improvement Initiative was a strategic partnership between AIHA and ANCC launched in 2001 (Weinstein and Brooks, 2003; Aiken, 2005). Four NIS hospitals that had successfully participated in previous AIHA twinning partnerships with U.S. hospitals and which were innovative by NIS standards—two in Russia and two in Armenia—were invited to participate. They included in Russia, Central Clinical Hospital in Moscow and Sokolov Medical Center in St. Petersburg, and in Armenia, Erebouni Medical Center and St. Grigor Lusavorich Medical Center both in Yerevan. The ANCC solicited volunteer institutions from among Magnet hospitals to establish twinning relationships with the four NIS hospitals. The U.S. twinning partners were North Shore University Hospital, Long Island, NY; Robert Wood Johnson University Hospital, New Brunswick, NJ; Aurora Health Care, Milwaukee, Wisconsin; Wake Forest University Baptist Medical Center, Winston-Salem, NC. The U.S. Magnet partners bore all the expenses of their involvement and the costs of exchanges with NIS hospitals. AIHA supported supplemental technical assistance by U.S. nurse leaders with established relationships with the demonstration NIS hospitals and an ANCC Magnet consultant. The University of Pennsylvania's Center for Health Outcomes and Policy Research directed an outcomes evaluation. The intervention was 3 years in length involving three exchange visits between twinned institutions each year plus ongoing communications. The ANCC designated the project a “pilot” since it was the first to take place in countries with transitional economies where resources and technologies were limited and where the primary language was not English. If the intervention hospitals achieved substantial improvement in the establishment of professional nursing practice, they and their U.S. partner hospitals would receive the ANCC Journey to Nursing Excellence Award, a designation that could be a step toward full Magnet designation at a later time. The concept of an incremental step toward full Magnet recognition first tested in this project laid the groundwork for a newly announced ANCC program in 2008 available to hospitals in the U.S. and abroad, Pathway to Excellence (American Nurses Credentialing Center, 2008).

The substance of the twinning partnership was driven by the ANCC Application for Magnet Designation (ANCC, 2001). Achieving Magnet recognition required the submission of evidence that 14 Forces of Magnetism in support of a professional nursing practice environment were present. The Forces included: quality of nursing leadership, organizational structure, management style, personnel policies and programs, professional models of care, quality of care, quality improvement, consultation and resources, autonomy, community and the hospital, nurses as teachers, image of nursing, collegial nurse-physician relationships, and professional development. The intervention began with a gap analysis identifying areas in which work would be required to achieve each of the 14 Forces. Resources and materials were very scarce, particularly in Armenian hospitals, requiring innovative problem-solving. There was limited, if any, computerization. AIHA established a Nursing Resource Center in each facility to promote nurses' access to the Internet and to facilitate partner communications.

The intervention work plan for the 3 years evolved from the gap analysis. Following the requirements in the ANCC Magnet application, the intervention hospitals worked with their

partners to put in place an infrastructure for professional nursing that included development of a mission statement for the hospital, a patient Bill of Rights, written roles and responsibilities of nurse leaders and clinicians, requirements for evaluation of clinical competence of nurses and certification of mastery of new knowledge and expertise, evidence-based practice guidelines, clinical care documentation standards, quality improvement programs, and policies for nurse involvement in institutional decision-making. These innovations were all hospital-wide and could be expected to improve care throughout the hospital. Additionally several units within each hospital were targeted for intensive role modeling of professional nursing practice and educational investments in the nurse managers and clinicians including on-site meetings with Magnet nurses from partner institutions and visits to the U.S. Magnet partner hospital. Hence, the intervention had two components: a hospital-wide emphasis on professional nursing practice infrastructure development and targeted unit-based mentoring and professional nurse role modeling.

Methods

Research Design

The overall research design was informed by methods and measures employed in the International Hospital Outcomes Study (IHOS) of five Western countries (Aiken, Clarke, & Sloane, 2002). The NIS demonstration hospitals were selected because they were more advanced relative to other hospitals in their countries and thus matched control hospitals did not exist. The quality of the nurse work environment and nurse outcomes were measured through surveys of bedside clinical care nurses in the demonstration hospitals using a strategy to study organizational innovation in nursing that had been developed and widely tested prior to use in this evaluation (Aiken, Sochalski, Lake, 1997; Aiken et al., 2001). A pre-post design was used with round one of nurse surveys taking place in the first year of the intervention, not technically a pre-intervention measure, and round two of the nurse survey was undertaken in year three of the intervention. The design allowed for comparisons of nurse responses at two points in time for each hospital, and within hospitals comparisons were possible between intervention targeted units which we refer to as “Magnet targeted units” and other units.

Settings, Study Population, and Sampling Strategy—The nurse survey included all direct care professional nurses working in inpatient units. Across all four hospitals 840 nurses (460 in Russia and 399 in Armenia) responded in wave 1 and 859 nurses (439 in Russia and 364 in Armenia) responded in wave 2. Response rates from two Russian sites were above 75 percent in both waves and over 95 percent in both Armenian hospitals. Over 90% of nurses in the targeted Magnet units in both countries responded in both surveys.

Survey instruments

The survey included items from the Nursing Work Index- Revised (NWI-R) (Aiken & Patrician, 2000) to measure nurse practice environments. Items of the original Nursing Work Index (NWI) were developed from research on professional nursing practice (Kramer & Hafner, 1989), and have been shown to differentiate Magnet designated from other hospitals (Aiken 2002). This 35 item instrument asked nurses the extent to which a list of organizational attributes that characterize professional nursing practice were present in their work setting. Domains covered in the instrument include nurse involvement in hospital affairs, leadership ability of nurse managers, relations between physicians and nurses, quality improvement program, and adequacy of staffing resources. It asks nurses to judge on a 4-point scale from strongly agree to disagree, the degree to which these items are present in their practice setting. Focus groups prior to data collection informed us that some of the concepts included in the NWI-R were not understood by nurses in Russia and Armenia. Thus we chose to use individual items to characterize the work environment rather than scales developed largely in the U.S.

The 12 items we report findings on were shown in focus groups to be understandable and also had little missing data, another indication of comprehension.

Burnout was measured by the Emotional Exhaustion (EE) subscale of the Maslach Burnout Inventory (MBI), which is a widely used instrument to measure burnout (Maslach & Jackson, 1981). The EE subscale describes people's feelings of being emotionally exhausted because of the work burden. Higher mean scores on this subscale indicate evidence of high burnout. The EE subscale of the MBI has strong psychometric properties (Aiken & Sloane, 1997a). It asks nurses to describe their feelings on a 7-point scale, ranging from never having those feelings to having those feelings a few times a week.

Other outcome measures such as quality of care, confidence in management's willingness to address problems in care, and patients' readiness for discharge were measured by single items. Quality of care was measured by asking nurses to rate the quality of care during their last shift on a 4-point scale from excellent to poor. Similar 4-point scales ranging from very confident to not at all confident were used to measure the confidence items.

The questionnaire also collected other information about nursing care and nurses' job characteristics as well as demographic information such as age, gender, and nursing experience.

Data Collection

English questionnaires were translated into Russian and Armenian, and then translated back into English by different translators. The back translations were compared with the original instrument to ensure the fidelity of the translation. The translation was followed by a pilot-testing of the questionnaire in focus groups for revision and cultural adaptation. Pre-testing was conducted in non-study sites to avoid contaminating the study sites.

The data collection process was somewhat different in each country. Although a common instrument was used in all countries, in Russia the self-administered paper questionnaires were distributed to nurses in the hospitals by their head nurses. Nurse respondents were instructed to complete the survey in private and return them in sealed envelopes to a secured box on each unit. In Armenia, an independent research organization distributed the surveys to nurses in group sessions with approximately 20–25 nurses per group. The sessions were repeated four to five times per day to accommodate nurses serving on all shifts and to minimize disruptions to patient care. Group sessions were supervised by research assistants from the independent research organization and each nurse filled out their questionnaire individually and without consultation with other nurses. At each site, it took 2–3 days to complete data collection.

The study protocol was reviewed and approved by the Institutional Review Board (IRB) of the University of Pennsylvania and the American University of Armenia, the institution directing data collection in Armenian hospitals. Since nursing research was a new concept in Russia and Armenia, significant efforts were taken by researchers to inform nurses about the voluntary nature of the study and how the confidentiality of the survey data would be protected. Each questionnaire was accompanied by a letter that clearly explained the volunteer nature of the participation, potential risks, and benefits, and the nurses' roles and rights as participants.

Data analysis

Descriptive data on the samples of nurses in Russia and Armenia are provided to indicate nurses' age, experience and sex, as well as the length of shifts they typically worked, whether they intended to leave their jobs, and whether they thought it would be difficult to find another job. The percentage of nurses agreeing that certain characteristics that typify Magnet hospitals were present in their work, and the percentages that thought the care provided to patients in their hospitals was good or excellent and who were confident of favorable outcome for their

patients, were calculated before and after the program implementation, as were differences in average nurse burnout scores. The significance of the changes first for the overall samples of Russian and Armenian nurses, and then for the nurses in the targeted and non-targeted subsamples, were tested using simple chi-square statistics and (in the case of the burnout measure) F-statistics. All of the data analysis was conducted using SPSS 12.0.

Results

Table 1 presents the characteristics of the nurse sample. The average age of nurses in Russia was about 36 years and in Armenia 34 years. Nurses in Russia and Armenia had been working in nursing for roughly 15 and 13 years respectively, and nurses in both countries had been working in their current hospitals for roughly 10 years. Virtually all nurses in both samples were female. About 62% of nurses in Armenia worked 24-hour shifts compared to 50% of Russian nurses. In Russia, 12% of nurses reported having plans to leave their job within the next year compared to only 4% of nurses in Armenia, while 44% of the Russian nurses and 75 percent of the Armenian nurses had no plans to leave at all. This last difference is undoubtedly related to the fact that many more nurses in Armenia (85%) than in Russia (46%) thought it would be difficult for them to find another job. Table 2 shows the percentages of nurses in Russia and Armenia that thought that certain characteristics of magnet hospitals were present in their workplace. In general, the nurses in Armenia were, at both time points, more likely than the Russian nurses to indicate that these attributes were present. For all of the different domains measured by these items, except for resources, the percentages of nurses who indicated that these magnet-like characteristics were present were greater after the program implementation than before, and a sizable number of these differences were significant in both countries. All of the changes in the items involving resources were insignificant, except for the item related to having enough nurses, which declined over time—that is, fewer Russian nurse thought their were enough nurses in their workplace to provide quality care after the program implementation than before.

As Table 3 shows, the change over time in nurse reported quality of care was also favorable in Armenia, and in both countries there were favorable changes in the percentages of nurses that were confident that patients could manage their care after discharge, and confident that management could resolve care issues related to their patient. Nurse burnout also lessened significantly over time in Russia, though no change was detected in Armenia.

Tables 4 and 5 show the changes over time for Russian and Armenian nurses on these same indicators, though here they are shown separately for nurses in the targeted (magnet) units and non-targeted (comparison) units. Here our results are somewhat equivocal in the sense that significant changes are not disproportionately found for the nurses in the targeted units. Except for the items related to resources, and especially the one item related to having enough nurses to provide high-quality patient care (which declined significantly in the magnet units in Russia), all of the items in Table 4 in both of the units showed favorable changes. The same is true for the bulk of the items in Table 5, though here there is one anomaly, involving the significant decline in the percentage of targeted unit nurses in Russia who reported that the care provided to patients on their units was good or excellent. It is noteworthy though, that the opposite was true of the nurses in the targeted units in Armenia, and that the percentages of Russian nurses in the magnet units who were confident that patients weren't being discharged prematurely, and that management could resolve patient problems, increased significantly. A significant change in nurse burnout was detected only in the comparison units in the Russian hospitals, though in both the targeted and non-targeted units in both countries the average burnout scores were lower than in virtually any other hospital settings we have investigated, both at the first and second time points.

Discussion

This study evaluated outcomes in two Russian and two Armenian hospitals associated with the 3-year implementation of the Nurse Quality Improvement Program using a twinning partnership with U.S. Magnet hospitals to develop professional nurse practice environments. The Program employed as an intervention framework the ANCC Magnet designation application. The overall findings demonstrated improvements in the nurse practice environment consistent with an evolving professional nurse practice model. Markers of patient care quality also improved over the course of the program.

Findings regarding changes in the targeted versus comparison units are more mixed than the overall findings comparing all units at time 1 and time 2. In some instances the comparison units also experienced significant improvement. This could conceivably be an example of the Hawthorne effect resulting from hospital-wide enthusiasm associated with participating in an international project focused on nursing. The Nurse Quality Improvement Program was highly visible in the institution because of its international character and although more specific attention was devoted to implementing the Forces of Magnetism on a subset of units, there were clearly spillover effects to other parts of the hospital over the three year program. Indeed, the ANCC at the end of the program awarded the entire demonstration hospitals as well as their U.S. Magnet twinning partners The Journey to Nursing Excellence Award (Aiken, 2005).

A competing explanation for the lack of consistently better outcomes in the targeted units is that many of the practice environment improvements associated with the Forces of Magnetism impact entire hospitals, not just specific units. For example, the development of job descriptions and criteria for evaluating clinical competence that were the focus of the intervention were applied hospital-wide. We have previously documented that many of the items included in the NWI-R measure practice environment features that are not unit-specific (Aiken & Sloane, 1997b). Nurse involvement in hospital affairs, a quality improvement program, and responsiveness of hospital management to problems nurses identify at the bedside are all features of hospitals that involve hospital-wide reforms.

While the Program was successful in improving some important aspects of the nurse work environment, dimensions that involved resources such as improved staffing and salaries were not shown to be affected by the program, as would be expected given the depressed economies of both countries at the time. However both perceptions of success and objective evidence of change in the nurse work environment show that progress in quality of care and improved care environments are possible even in very challenging economic contexts.

Several limitations of the study should be noted. Only two hospitals from each country participated in the program and they were not representative of other hospitals in their countries. Each hospital served as its own control using data collection at two points in time but there were no control hospitals to suggest whether all hospitals in these countries were experiencing improvement. The baseline study took place in the first year of the intervention rather than before program implementation, which could have masked changes from a true baseline. By the time of the wave 1 survey, international experts had visited the participating hospitals twice but the process of writing the magnet application did not begin in earnest until after the baseline measure. This was the first research initiative for many of the participating nurses and there was an evident hesitation for them to be honest in their ratings of their hospitals as evidenced by the high average rankings of quality of care despite observations by international nurses of many quality deficits. Indeed, over time, reports of some of the dimensions of the professional care environment declined somewhat and we attribute that to the nurses learning more about acceptable standards of practice as well as trust in the confidentiality of their responses. Also very high response rates—100% in Armenia—give rise to concerns that nurses perceived

participating in the survey to be required as a condition of employment, despite our explanations to the contrary. Time and resources were not available to fully validate NWI-R subscales, which led to our use of individual items in our analyses. Objective data on patients were not available given the lack of standardized medical records and computerization. This project is typical of international programs in that dedicated funds for an outcomes evaluation were not included thus affecting the scale, scope, and timing of the research.

The intervention and its evaluation study were done during difficult economic times for both countries but Armenia's economy was particularly poor. Hospitals had trouble meeting their payrolls but nurses and others continued their work in part because there were no other jobs in the country. Also, because of the poor state of the economy in both countries, hospital occupancy rates were low. Low occupancy rates, long lengths of stay, limited technology, and the presence of family caregivers in the hospital produced a context that made 24 hour shifts for nurses somewhat less of a safety threat than Western nurses might imagine. These nurses were able to rest for periods during their shifts. A prime rationale for the 24 hour shifts was to decrease commuting costs in view of very low nurse wages averaging about \$90 a month in Russia (Difazio et al., 2004) and \$10–50 for a month in Armenia, and often payments were delayed for several months (Bentson, Latayan, Olander, & Rocco, 2005; Schoen-Angerer, 2005). Certainly some of the workforce policies including 24 hour shifts will be very hazardous for patients and nurses when modernization of hospitals advances along with reforms to introduce more complex medical technologies, reduce average length of stay, and increase occupancy rates.

In addition to the promising findings suggesting that the Nursing Quality Improvement Program resulted in some measurable and positive changes in hospital nursing in Russia and Armenia, two other general findings are suggested that require additional follow-up. One is that an evidence-based best practice for improving the nursing care environment developed in the U.S. and wealthy Western countries is feasible to implement in countries with transitioning economies, limited resources, and truncated professional nursing education. This adds to an accumulating knowledge base that there are many similarities across countries in the nature of hospital care, and that innovations that are successful in any country to improve the quality of the care environment and professional nursing might also be successful in a variety of other countries (Aiken et al., 2001). Second, this study provides additional evidence that the Magnet Journey is a transformational intervention that helps improve the care environment and serves as a catalyst for improved workforce and patient outcomes (Aiken, 2008).

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Table 1

Characteristics of the Samples of Nurses in Russia and Armenia

	Russia (N=460)	Armenia (N=399)
Age in years (mean, SD)	36.3(12.0)	34.0(9.0)
Experience in years (mean, SD)		
In Nursing	15.2 (11.4)	12.8 (8.6)
On Current Unit	9.6 (8.7)	10.0 (7.4)
Sex (%)		
Female	99.1	99.0
Male	0.9	1.0
Length of shift (%)		
8 hours	34.7	29.1
12 hours	9.0	2.9
24 hours	50.0	62.3
Other	6.4	5.8
Intentions to leave the job (%)		
Yes, within 6–12 month	12.0	4.0
No plans within the next year	43.9	21.3
No plans at all	44.1	74.7
Find another job (%)		
Easy	53.8	14.9
Difficult	46.2	85.1

Table 2
Professional Practice Indicators in Russian and Armenian Hospitals Before and After Program Implementation

Percent of Nurses Reporting these Indicators in their Practice Environments	Russia		Armenia	
	Before	After	Before	After
Nurse Participation in -				
Policy decisions	50.0	62.8***	64.3	72.0*
Hospital governance	49.2	54.8	67.1	73.4
Collegial relationships				
Physician value nursing observations	67.0	73.6*	82.6	80.3
Collaborations between nurses and physicians	78.8	89.9***	88.0	91.2
Teamwork between nurses and physicians	83.9	89.2*	85.8	89.5
Administrative Support				
Administration listens to nurses concerns	65.0	68.9	78.5	85.5*
Support for ideas	47.3	58.4***	73.5	77.9
Continuity of care by nurses	43.3	50.2*	77.3	86.3**
Resources				
Enough nurses to provide patient care	63.9	53.5*	92.6	89.5
Enough staff to get the work done	51.0	46.3	92.3	92.8
Adequate support services	64.4	66.3	93.2	93.9
Satisfactory salary	16.1	20.2	53.4	53.1

Note: Significance (chi-square) tests were calculated to determine whether changes within countries were significant. Single, double, and triple asterisks indicate tests that were significant at the .05, .01, and .001 levels, respectively.

Table 3

Patient and Nurse Outcomes in Russian and Armenian Hospitals Before and After Program Implementation

Nurse Reported Patient/Nurse Outcomes	Russia		Armenia	
	Before	After	Before	After
Percent reporting good or excellent quality patient care	89.3	85.7	86.1	94.1***
Percent confident in patients to manage their care after discharge	47.2	56.1**	48.6	54.1
Percent confident in management to resolve care issues	32.1	42.4**	52.4	59.5*
Mean nurse burnout	17.6	14.7*	10.5	11.3

Note: Significance (chi-square) tests were calculated to determine whether changes within countries were significant. Single, double, and triple asterisks indicate tests that were significant at the .05, .01, and .001 levels, respectively.

Table 4
Professional Practice Indicators in Magnet Targeted and Comparison Units Before and After Program Implementation

Percent of Nurses Reporting these Indicators in their Practice Environments	Russia		Armenia	
	Magnet Units Before	Magnet Units After	Comparison Units Before	Comparison Units After
Nurse Participation in -				
Policy decisions	53.2	57.9	48.2	64.8***
Hospital governance	51.5	55.0	47.8	54.7
Collegial relationships				
Physician value nursing observations	62.8	67.9	69.4	76.3
Collaborations between nurses and physicians	75.2	86.9*	80.9	91.4***
Teamwork between nurses and physicians	84.0	83.8	83.8	91.8**
Administrative Support				
Administration listens to nurses concerns	65.1	66.7	64.9	69.9
Support for ideas	44.6	52.6	48.8	60.9**
Continuity of care by nurses	52.2	57.9	37.9	46.8*
Resources				
Enough nurses to provide patient care	77.8	56.3***	55.9	52.2
Enough staff to get the work done	56.8	53.7	47.7	42.9
Adequate support services	72.1	77.8	59.9	61.1
Satisfactory salary	14.0	16.4	17.3	22.0

Note: Significance (chi-square) tests were calculated to determine whether changes within countries and types of unit were significant. Single, double, and triple asterisks indicate tests that were significant at the .05, .01, and .001 levels, respectively.

Table 5
Patient and Nurse Outcomes in Magnet Targeted and Comparison Units Before and After Program Implementation

Nurse Reported Patient/Nurse Outcomes	Russia				Armenia			
	Magnet Units		Comparison Units		Magnet Units		Comparison Units	
	Before	After	Before	After	Before	After	Before	After
Percent reporting good or excellent quality patient care	92.8	84.7*	87.2	86.1	86.5	95.1*	85.9	93.5**
Percent confident in patients to manage their care after discharge	46.2	58.5*	47.8	55.0	50.8	48.3	47.6	57.8*
Percent confident in management to resolve care issues	34.1	46.2*	30.8	40.7*	49.2	60.0	53.9	59.2
Mean nurse burnout	14.9	16.5	19.1	14.1***	11.4	12.3	10.0	10.6

Note: Significance (chi-square) tests were calculated to determine whether changes within countries and types of unit were significant. Single, double, and triple asterisks indicate tests that were significant at the .05, .01, and .001 levels, respectively.