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Nurses' impact on quality of care: lessons from RN4CAST

Vpliv zdravstvene nege na kakovost zdravstvene obravnave: priporočila za ravnanje na osnovi raziskave RN4CAST

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Key words: patient safety; recruitment and retention; nurse; staffing; qualification; nursing work environment; burnout

Ključne besede: varnost pacientov; zaposlovanje in stalnost zaposlitve; medicinske sestre, izobrazba; delovno okolje; izgorelost

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ABSTRACT

Introduction: The RN4CAST - study (acronym for Nurse Forecasting in Europe) was launched in 2009 and ended in 2011 under the European Union's Seventh Framework Programme. The aim of the RN4CAST-study was to study how features of work environments and qualifications of the nurse workforce impact nurse retention, burnout among nurses and patient outcomes.

Methods: The study was conducted in twelve European countries and was conducting a cross-sectional survey in 500 hospitals in which more than 33,000 nurses and more than 11,000 patients were involved. These data were linked to patient outcome data from administrative databases.

Results: The study showed that patient outcomes such as patient mortality and patient satisfaction is highly related to nurse staffing characteristics such as patient-to-nurse ratios, nurse qualification and nursing work environment. Also nurse outcomes such as burnout, intention-to-leave, job satisfaction are related to staffing adequacy and nursing work environment.

Discussion and conclusion: The RN4CAST study generated a large evidence base of nurse workforce issues across European health systems which is quite unique in terms of the number and qualification of nursing staff, the quality of working environments, burnout rates, job satisfaction rates, intention-to-leave rates that can be used for policy making.

IZVLEČEK

Uvod: Raziskava RN4CAST (akronim za Nurse Forecasting in Europe) se je pričela leta 2009 in se zaključila leta 2011, skladno s 7. okvirnim programom Evropske unije. Namen te raziskave je bil ugotoviti, v kolikšni meri delovno okolje in izobrazba medicinskih sester vplivajo na menjavanje zaposlitve, izgorelost delavcev v zdravstveni negi in zdravstveno stanje pacientov.

Metode: Raziskava je potekala v dvanajstih evropskih državah kot presečna študija, v katero je bilo vključenih 500 bolnišnic. V raziskovalno anketo je bilo vključenih več kot 33.000 medicinskih sester ter več kot 11.000 pacientov. Dobljene podatke smo povezali s podatki o izidih zdravljenja, ki smo jih pridobili iz podatkovnih administrativnih baz.

Rezultati: Rezultati raziskave kažejo, da so izid zdravljenja in tudi umrljivost ter zadovoljstvo pacientov močno povezani s številskim razmerjem med pacienti in medicinskimi sestrami, izobrazbeno stopnjo medicinskih sester ter njihovim delovnim okoljem. Prav tako je število medicinskih sester ter njihovo delovno okolje povezano z izgorelostjo, stalnostjo zaposlitve ter zadovoljstvom na delovnem mestu.

Diskusija in zaključek: Z raziskavo RN4CAST smo pridobili obsežno podatkovno bazo o problemih delavcev v zdravstveni negi v različnih evropskih zdravstvenih sistemih. Dobljeni podatki lahko predstavljajo osnovo za oblikovanje enotnejše zdravstvene politike, saj se ti sistemi razlikujejo glede števila in izobrazbe medicinskih sester, primernosti delovnih okolij, številčnosti primerov izgorelosti, stopnje zadovoljstva na delovnem mestu ter stalnosti zaposlitve.

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Introduction

In 1996, the Institute of Medicine (IOM) published a report on adequacy of nursing staff in hospitals and nursing homes (Wunderlich, et al., 1996). At that time they found little evidence that the quality of care is affected by the staffing patterns of nursing personnel. It launched the research agenda to fill the gaps in the understanding of the changing hospital environment and the impact of staffing on patient outcomes. In the years following the report, several landmark studies were published in leading medical and nursing research journals such as the *New England Journal of Medicine* (Needleman, et al., 2002), *JAMA* (Aiken, et al., 2002). A 2007 systematic review and meta analysis of the association of nurse staffing levels and patient outcomes identified 96 studies with sufficient rigor to be included in the analysis (Kane, et al., 2007). That review concluded that there were statistically significant associations of nurses per patient day and a wide range of outcomes including mortality, failure-to-rescue, length-of-stay and various other complication rates. Despite growing evidence in the United States of America (USA), little evidence has been available to evaluate them internationally. The first study, conducted in the United Kingdom (UK) (Rafferty, et al., 2007), showed the same impact of nurse staffing on patient outcomes as has been found in the USA. The RN4CAST study was extending the existing evidence to wider Europe and across healthcare systems.

The RN4CAST-study (acronym for Nurse Forecasting in Europe) was launched in 2009 and ended in 2011 under the European Union's Seventh Framework Programme. It is one of the largest studies on nurses ever conducted. The study is well reported in the scientific literature generating until now more than 50 scientific publications. An overview can be found on the RN4CAST website www.rn4cast.eu. The aim of the RN4CAST-study was to study how features of work environments and qualifications of the nurse workforce impact nurse retention, burnout among nurses and patient outcomes.

Methods

The methods used in the RN4CAST-study are in depth described by Sermeus and colleagues (2011). We will focus on the sample, instruments and measures, translation and ethical approval.

Setting and sample

The study was conducted in twelve European countries (Belgium, England, Finland, Germany, Greece, Ireland, Norway, Poland, Spain, Sweden, Switzerland, and The Netherlands) that were selected on the basis of research expertise, availability of patient discharge data from hospitals, geographic distribution,

and duration of membership in the European Union. Next to the large-scale European part of the RN4CAST project, three International Cooperating Partner Countries of the European Union (EU) (Botswana, China and South Africa) participated in the project consortium. Two of the three countries performed the study as well what provided a very broad international perspective on the study results.

The setting for the RN4CAST-study focused on general acute hospitals (with at least 100 beds). In each of the 12 countries 30 hospitals were selected randomly. Within each hospital a minimum of 2 nursing units (1 general surgical and 1 general medical nursing unit) were randomly selected from a master list of nursing units. The study sample included only adult medical surgical care nursing units since the science of linking different elements of nursing practice environment (including nurse staffing) to patient safety and clinical outcomes is best documented within this area. Specialized nursing units (e.g. intensive care and high dependency units) were excluded from the sampling frame. In each country all staff nurses providing direct care to patients on the selected nursing units were included in the nurse survey. 'Nurses' are defined in each country as those meeting the EU definition of trained and licensed nurses according to Directive 2005/36/EC (2005).

In eight countries (Belgium, Germany, Ireland, Poland, Greece, Finland, Spain and Switzerland) also patients were included in the survey. A one-day census approach was used to select patients of the selected nursing units. All eligible patients (i.e. able to speak and understand the language of the questionnaire and to respond to the questions), present on the selected nursing units on the day of the census, were included in the study sample.

Instruments and measures

Drawing on previous experience of the 'International Hospital Outcome Study', the existing instruments were used wherever possible. Three surveys were conducted: nurse survey, patient survey, hospital survey. These data were linked to patient outcome data based on routine hospital discharge data.

Nurse survey

Nurses were surveyed using a core battery of well-known and extensively validated instruments and questions. The survey contains 118 questions comprising nursing work environment, burnout, job satisfaction, nurse-perceived quality of care, nurse staffing levels (number and education), and a demographics section.

The Practice Environment Scale of the Nursing Work Index or PES-NWI was used to measure elements of nurses' work environments. Burnout

was measured using the Maslach Burnout Inventory (MBI). MBI captures three dimensions of burnout: emotional exhaustion, depersonalization, personal accomplishment. Job satisfaction was measured by a single question (with scores ranging from 1 to 4). The quality of nursing care was reported via: (1) nurses' reports of the quality of nursing care on their unit on their last shift, and changes in the quality of nursing care over the last year; (2) readiness of patients for discharge; (3) estimate of the frequency of a variety of adverse events involving themselves and their patients (e.g. medication errors, nosocomial infections, patient falls with injuries, pressure ulcers after admission, urinary tract infection). In addition, 7 questions derived from the Agency for Healthcare Research and Quality (AHRQ) safety culture questionnaire were included to measure the safety culture in the selected nursing units/hospitals.

Nurse staffing levels were reported by asking each nurse to report, the number of nurses and patients present on the nursing unit and the number of patients cared for during the last shift or workday. Based on these questions nurse-to-patient ratio were calculated. Nurse qualification levels were reported by asking nurses the country where each nurse received their basic nursing education, years since first licensure as a nurse, years working in the current country, hospital, and position, and highest achieved level of education in nursing. The surveys were completed in 2009–2010 by 33,659 medical-surgical nurses working in 488 hospitals across the 12 European countries. The nurse response rates across the 12 countries averaged 62 %.

Patient survey

Patients' experiences about their stay in the hospital were measured using the Consumer Assessment of Healthcare Providers and Systems survey (CAHPS), developed by the AHRQ. This instrument which asks patients 27 questions about their experiences in the hospital related to communication with nurses and doctors, responsiveness of hospital staff, pain management, communication about medicines, discharge information, cleanliness and quietness of the hospital environment, overall rating of the hospital, and willingness to recommend the hospital to friends and family. 11,318 patients in 210 of these hospitals completed the survey. The overall response rate for patients was 73 %.

Hospital survey

For each hospital the organizational profile (e.g. size of the hospital in terms of beds and patient activity, the types of technology available, total expenditure), as well as detailed information on staffing for all categories of hospital workers (RNs, second level

nurses, unlicensed assistive personnel, physicians and others) was measured. The total of 488 general acute care hospitals in 12 European countries participated in the study. The hospital response rate of hospitals ranged from 37 % in the Netherlands to 97 % in Norway, and averaged 64 % in total.

Patient outcomes based on administrative databases

Routinely collected administrative database information, hospital discharge abstract datasets in particular, were used to calculate patient outcomes. Hospital discharge data include a facility identifier indicating where the hospitalization occurred, patient demographics, characteristics of the admission, principal and secondary International Classification of Diseases (ICD) diagnosis and procedure codes, payer, length of stay, discharge status (alive/dead) and destination, and Diagnosis Related Groups (DRG) assignment. Nine out of 12 countries (except Germany, Greece, Poland) had the required hospital abstracts available in a format that allowed cross-country comparisons. For the nine countries and the selected hospitals 3,987,469 patient records were collected using ICD-10 data in 5 countries, ICD-9-CM data in 4 countries. Data varied from 2009 in 7 countries, 2008 in Finland and 2007 in Belgium.

Survey translation

The English core battery of survey instruments was translated into the 10 primary languages (Dutch, German, Greek, French, Italian, Finnish, Norwegian, Polish, Swedish, and Spanish) using translation-back translation method. No changes to the template (questions and tools, as well as items within tools) of the core questionnaire were allowed. In each country the quality of the translated instruments were assessed by a panel of 7 to 11 bilingual experts to obtain content validity indexes. The translation process was described in depth by Squires and colleagues (2013). The cross-cultural evaluation process produced CVI scores for the instrument ranging from 0.61 to 0.95.

Ethical issues

The project has been granted financial support from the European Commission. Depending on national legislation, the study protocol was approved by either central ethical committees (e.g. national or university) or local ethical committees (e.g. hospitals).

Results

A special issue of the *International Journal of Nursing Studies* (Aiken, et al., 2013) gave a descriptive report about the state of hospital nursing practice in Europe. The survey showed

large differences throughout Europe. Nurse job dissatisfaction varied dramatically across the 12 European countries, and the sources of dissatisfaction varied as well. No country was immune from nurses' negative work perceptions. In spite of these seemingly high levels of dissatisfaction, fewer than 1 in 4 nurses in all countries except Greece (40 %) and Ireland (28 %) reported being dissatisfied with their choice of nursing as a career. Nonetheless, between 2 in 10 and 5 in 10 nurses in every country intended to leave their current job in the next year and of those that expressed such intentions, somewhere between 2 in 10 and 4 in 10 indicated that the job they would seek would be outside of nursing.

The average staffing ratio (or the number of patients per nurse) that we estimated in the different countries ranges from roughly 4 or 5 patients per nurse in Norway, the Netherlands, Switzerland, and Sweden to 9 or in Belgium, Greece, Poland, Germany and Spain to 11, with the other countries having ratios in-between. While most nurses in virtually all countries reported favourable nurse–physician relations, the majority of nurses in most countries reported that there were not enough nurses or adequate support services and that features shown to be related to supportive professional nurse workforce management, such as management listens and responds to employee concerns and opportunities for nurses to participate in policy decisions, were lacking.

What is the impact of this on patient experiences and outcomes? A study of Aiken and colleagues (2012) reported on the relationship of nurse staffing and working environment on patient experiences. The percentages of patients who gave high overall ratings to their hospital ranged from 35 % in Spain to close to 60 % in the USA, Switzerland, Finland, and Ireland. High patient ratings were associated with recommending the hospital. An improved work environment had a substantially positive effect on both positively scaled patient measures in all countries (that is, a favourable influence). Patients in hospitals with better work environments were more likely to rate their hospital highly and to recommend their hospital. Patients in hospitals with higher ratios of patients to nurses (that is, increased nurse workload) were less likely to rate their hospital highly and to recommend their hospital.

What is the impact on nurse outcomes such as burnout, job satisfaction and intention-to-leave? The results were adjusted for hospital characteristics (teaching status, high technology, bed size), nurse characteristics (age, sex, and full time employment status), specialty of unit, and country. Each additional patient per nurse increased the odds of nurses reporting burnout, job dissatisfaction, intention to leave in the next year. The work environment effect was generally stronger than the specific staffing effect.

What is the effect on patient outcomes? These

findings were published in the *Lancet* in 2014 (Aiken, et al., 2014). For this study, we obtained discharge data for 422,730 patients aged 50 years or older who underwent common surgeries (orthopaedic surgery, vascular surgery, general surgery) in 300 hospitals in nine European countries. Administrative data were coded with a standard protocol to estimate 30-day in-hospital mortality by use of risk adjustment measures including age, sex, admission type, 43 dummy variables suggesting surgery type, and 17 dummy variables suggesting comorbidities present at admission. Surveys of 26,516 nurses working in study hospitals were used to measure nurse staffing and nurse education. The average crude 30-day mortality in Europe for the selected group of patients was on 1.3 % varying from 1 % in Sweden up to 1.5 % in the Netherlands. The variability among the 300 hospitals was much larger than among countries and varied between 0 % up to 7.2 %. 12 % of the hospitals had a mortality rate higher than 2 % and these hospitals could be found in all nine countries. Explanatory variables for 30-day in-hospital mortality are nurse staffing as well as nurses' qualification. An increase in a nurses' workload by one patient increased the likelihood of an inpatient dying within 30 days of admission by 7 %, and every 10 % increase in bachelor's degree nurses was associated with a decrease in this likelihood by 7 %. These associations imply that patients in hospitals in which 60 % of nurses had bachelor's degrees and nurses cared for an average of six patients would have almost 30 % lower mortality than patients in hospitals in which only 30 % of nurses had bachelor's degrees and nurses cared for an average of eight patients.

What is the explanation for these effects on patients' experiences and patient outcomes? A study on nursing care left undone was published by Ausserhofer and colleagues (2014). Nursing care left undone reflects the process of care and was defined as necessary nursing activities that were missed due to the lack of time. Thirteen nursing care activities related to direct physical care and monitoring, planning and documenting care, and psychosocial care were defined. Nurses were asked to select those activities that were necessary but left undone due to the lack of time during their most recent shift. The nursing care left undone composite measure for each nurse was calculated as the sum score of how many of these 13 nursing care needs were left undone. Across European hospitals, the most frequent nursing care activities left undone included "Comfort/talk with patients" (53 %), "Developing or updating nursing care plans/care pathways" (42 %) and "Educating patients and families" (41 %). In hospitals with more favourable work environments, lower patient to nurse ratios, and lower proportions of nurses carrying out non-nursing tasks frequently fewer nurses reported leaving nursing care undone.

Discussion

The RN4CAST study generated a large evidence base of nurse workforce issues across European health systems that is quite unique in terms of the number and qualification of nursing staff, the quality of working environments, burnout rates, job satisfaction rates, intention-to-leave rates. What we see is a high variability in nurse workforce issues across Europe. It is interesting that their variability is higher within a country than between countries. The second contribution of RN4CAST is that it shows the relationships of these nurse workforce issues to patient experiences, patient outcomes such as mortality rates, nurse outcomes related to burnout and retention rates.

Policy implications

RN4CAST is contributing to EU policy making. It is involved in European projects such as Joint Action of Health Workforce Planning and Forecasting (<http://www.euhwforce.eu>) (2013-2016) and a EU study on "effective recruitment and retention for health workers" (2014-2015) (http://ec.europa.eu/health/workforce/policy/recruitment/index_en.htm). The Lancet paper that was published in February 2014 came too late to have an impact on the modernization of the professional qualification Directive (2013/55/EU) that was published in December 2013. The conclusions of the Lancet paper that the nurse qualification is related to patient mortality is definitively influencing further decision making on the European nursing qualification structure to position nurses' education on a bachelor level. The variability of patient-to-nurse ratios in European hospitals has created a momentum in several national policies not lowering their nurse staffing ratios in a moment of austerity because of economic crisis. In the UK, safe nurse staffing ratios in adult patient wards in acute hospitals have been recommended by the National Institute for Health and Care Excellence (NICE) (<http://www.nice.org.uk/guidance/sg1>) since July 2014.

Because of the richness of the data and the comparability across Europe, some countries took the initiative to replicate RN4CAST in their own country. In 2013, a replication of the RN4CAST study was done by Portugal. In 2015, replications of RN4CAST are planned in Cyprus and Italy. Also the USA and Germany are collecting RN4CAST data in 2015.

Conclusion

As Norma Lang stated it long ago: "If we cannot name it, we cannot control it, practice it, teach it, finance it, or put it into public policy" (Clark & Lang, 1992). The main added value of RN4CAST is that it helps nurses,

managers and policy makers to understand and to clarify how nursing care impacts patient care.

Slovenian translation/Prevod v slovenščino

Uvod

Medicinski inštitut/Institute of Medicine (IOM) je leta 1996 objavil poročilo o številu zaposlenih medicinskih sester v bolnišnicah in negovalnih bolnišnicah (Wunderlich, et al., 1996). Poročilo ugotavlja, da obstajajo le skopi podatki o vplivu števila in strukture medicinskih sester na kakovost zdravstvene nege. Zato so oblikovali načrt raziskovanja, da bi spoznali povezavo med spreminjajočim se bolnišničnim okoljem in vplivom številčnosti medicinskih sester na izid zdravljenja. V naslednjih letih so bile o tej tematiki objavljene številne prelomne študije v vodilnih raziskovalnih revijah na področju medicine in zdravstvene nege, kot na primer *New England Journal of Medicine* (Needleman, et al., 2002) in *JAMA* (Aiken, et al., 2002). Sistematični pregled literature in meta analiza ugotavljata povezavo med številčnim razmerjem medicinskih sester in pacientov, ki jih obravnavajo v enem dnevu. Rezultati so pokazali, da je kriterije za podrobno analizo izpolnjevalo 96 strokovnih in znanstvenih študij (Kane, et al., 2007). Zbrani podatki potrjujejo, da število medicinskih sester in število pacientov, ki jih obravnavajo v delovnem dnevu, statistično pomembno vplivajo na zdravstveno stanje slednjih, kot tudi na stopnjo mortalitete, neuspešno zdravljenje, podaljšano bolnišnično bivanje ter številne druge zdravstvene zaplete. Navkljub vedno večjemu številu sorodnih raziskav v Združenih državah Amerike, zbrani podatki v preteklosti niso omogočali mednarodnih primerjav. Prva podobna študija, ki so jo opravili v Združenem kraljestvu (Rafferty, et al., 2007), potrjuje ugotovitve ameriških raziskav, da ima število in izobrazbena struktura medicinskih sester pomemben vpliv na zdravje pacientov. Raziskava RN4CAST je ta spoznanja razširila na številne evropske države in različne sisteme zdravstvenega varstva.

Raziskava RN4CAST (akronim za Nurse Forecasting in Europe) se je pričela leta 2009 in se zaključila leta 2011, skladno s 7. okvirnim programom Evropske unije. To je ena najboljšežnejših do sedaj opravljenih raziskav, ki zadevajo poklic in delo medicinske sestre. (Opomba uredništva: izraz medicinska sestra v tej raziskavi pomeni medicinsko sestro, ki je izobrazbena v skladu z evropsko direktivo.) Izsledki raziskav so bili objavljeni v več kot petdesetih znanstvenih publikacijah. Pregled raziskave je dostopen na spletni strani RN4CAST www.rn4cast.eu. Cilj raziskave je bil prepoznati, kako značilnosti delovnega okolja ter izobrazba medicinskih sester vplivajo na menjavanje zaposlitve, izgorelost delavcev v zdravstveni negi in izid zdravljenja.

Metode

Metode, uporabljene v raziskavi, so podrobno opisane v *BMC Nursing* (Sermeus, et al., 2011). Prispevek predstavlja predvsem vzorec raziskave, raziskovalna orodja in meritve, prevod raziskovalnih instrumentov in soglasje etične komisije za izvedbo raziskave.

Opis poteka raziskave in vzorca

Raziskava je potekala v dvanajstih evropskih državah (Belgija, Anglija, Finska, Nemčija, Grčija, Irska, Norveška, Poljska, Španija, Švedska, Švica in Nizozemska), ki so bile vanjo vključene na temelju raziskovalnih znanj in izkušenj, dostopnosti podatkov o bolnišničnem odpustu, geografskega položaja ter trajanju članstva v Evropski uniji. V obširni raziskavi RN4CAST, ki je potekala v evropskih državah, so v konzorciju projekta sodelovale tudi tri partnerske države Evropske unije (Bocvana, Kitajska in Južna Afrika). Dve od treh držav sta izvedli svojo raziskavo in omogočili široko mednarodno primerjavo rezultatov študije.

Raziskava je potekala v splošnih bolnišnicah z najmanj 100 posteljami. V vsaki sodelujoči državi je bilo naključno izbranih 30 bolnišnic, kjer sta bila za raziskavo naključno izbrana vsaj dva bolnišnična oddelka (na področju splošne kirurgije in splošne interne medicine). Raziskava se je omejila le na negovalne enote z odraslimi kirurškimi pacienti, saj so elementi okolja zdravstvene nege (vključno s številom zaposlenih) ter varnost in zdravje pacientov na teh oddelkih znanstveno najboljše dokumentirani. Specializirane enote kirurške zdravstvene nege, kot npr. enota intenzivne nege in pol intenzivne nege, v raziskavo niso bile vključene. V anketi so sodelovale vse medicinske sestre na izbranih oddelkih, ki izvajajo neposredno zdravstveno nego pacientov. Poklic medicinske sestre v posameznih državah članicah Evropske unije je opredeljen v Evropski direktivi o medsebojnem priznavanju poklicev 2005/36/EC. V osmih od dvanajstih sodelujočih držav (Belgija, Nemčija, Irska, Poljska, Grčija, Finska, Španija, Švica) so bili po kriterijih izbora iz raziskave vključeni tudi nekateri pacienti. Sodelovali so tisti pacienti, ki so bili na dan raziskave obravnavani na teh oddelkih in ki so izpolnjevali kriterije izbora (npr. zmožnost sporazumevanja, poznavanje jezika v vprašalniku in zmožnost odgovarjati na vprašanja).

Opis instrumenta in meritve

Glede na izkušnje z Mednarodno raziskavo o izidih bolnišničnega zdravljenja (*International Hospital Outcome Study*) so bili v tem projektu uporabljeni obstoječi raziskovalni instrumenti, kjer je bilo to mogoče. Izvedene so bile ankete med medicinskimi

sestrami, pacienti in bolnišnicami. Te podatke smo povezali z rutinskimi podatki o zdravstvenem stanju pacientov ob odpustu.

Anketa med medicinskimi sestrami

Anketo smo izvedli z osnovnim sklopom poznanih in široko validiranih raziskovalnih instrumentov in vprašanj. Vprašalnik obsega 118 vprašanj, ki zadevajo delovno okolje medicinskih sester, izgorelost na delovnem mestu, zadovoljstvo zaposlenih, čustveno izčrpanost, brezosebnost, kakovost zdravstvene nege po oceni medicinskih sester, število in izobrazbo medicinskih sester in drugi demografski podatki sodelujočih.

Elemente delovnega okolja smo merili s PES-NWI (*The Practice Environment Scale of the Nursing Work Index – Merjenje kakovosti delovnega okolja medicinskih sester*). Izgorelost na delovnem mestu smo ugotavljali z vprašalnikom Maslachove o izgorelosti/*The Maslach Burnout Inventory (MBI)*, ki izgorelost označuje kot multidimenzionalen konstrukt, sestavljen iz treh pojmovno različnih, a empirično povezanih dejavnikov, tj. čustvene izčrpanosti, depersonalizacije in znižane osebne izpolnitve. Zadovoljstvo na delovnem mestu smo preverjali samo z enim vprašanjem na lestvici od ena do štiri. Podatke o kakovosti zdravstvene nege smo pridobili iz poročil medicinskih sester o kakovosti zdravstvene nege na njihovih oddelkih na njihovem zadnjem delovnem dnevu ter spremenjeni kakovosti dela v zadnjem letu. Drugi podatki so vključevali pripravljenost pacientov za odpust ter ocene pogostosti in različnosti neželenih dogodkov, ki so vključevali medicinske sestre in paciente (npr. napake pri zdravljenju s predpisanimi zdravili, bolnišnične okužbe, padci s poškodbami, razjede zaradi pritiska, okužbe urinarnega trakta). Za merjenje bolnišnične kulture varnosti na posameznih oddelkih smo izbrali sedem vprašanj iz vprašalnika Agencije za raziskave in kakovost zdravstvene obravnave/*Agency for Healthcare Research and Quality (AHRQ)*.

Medicinske sestre so zagotovile podatke o številu medicinskih sester ter številu obravnavanih pacientov v zadnjem delovnem dnevu, na osnovi česar se je izračunalo številčno razmerje medicinska sestra – pacient. Medicinske sestre so odgovarjale tudi na vprašanja o doseženi strokovni izobrazbi (kje so pridobile temeljno izobrazbo na področju zdravstvene nege, koliko let že imajo dovoljenje za samostojno opravljanje dela, kako dolgo že delajo v državi, kjer so trenutno zaposlene, v kateri bolnišnici so zaposlene in na katerem delovnem mestu, katera je njihova najvišja stopnja izobrazbe na področju zdravstvene nege).

Anketiranje je bilo zaključeno v letih 2009 in 2010. Končni vzorec je vključeval 33.659 medicinskih sester na področju kirurgije, zaposlenih v 488 bolnišnicah v 12 evropskih državah. Stopnja odzivnosti je bila 62 %.

Anketa med pacienti

Zadovoljstvo pacientov med bivanjem v bolnišnici smo merili z anketo Ocenjevanje zdravstvenih delavcev in sistemov s strani uporabnikov/The Consumer Assessment of Healthcare Providers and Systems (CAHPS), ki jo je razvila Agencija za raziskave in kakovost zdravstvene obravnave. Ta vprašalnik zajema 27 vprašanj, ki se nanašajo na izkušnje pacientov v komunikaciji z medicinskimi sestrami in zdravniki, odzivnost zdravstvenega osebja, lajšanje bolečin, nudenje informacij o zdravlilih, smernice in nasvete ob odpustu, čistočo in hrupnost prostorov, celovito oceno bolnišnice in priporočila bolnišnice sorodnikom in prijateljem. 11.318 pacientov v 210 bolnišnicah je izpolnilo anketni vprašalnik. Stopnja odzivnosti je bila 73%.

Anketa v bolnišnici

V tem sklopu anketiranja smo iskali podatke o organizacijskih značilnostih posameznih bolnišnic (npr. velikost bolnišnice glede na število postelj in zmožnosti samooskrbe pacientov, tehnični in prostorski pogoji, celotni stroški ustanove), kot tudi o izobrazbeni strukturi vseh zdravstvenih delavcev (npr. različne kategorije medicinskih sester, zdravnikov in drugih sodelavcev). V raziskavi je sodelovalo 488 splošnih bolnišnic iz 12 evropskih držav. Stopnja odzivnosti se je gibala od 37 % (Nizozemska) do 97 % (Norveška). V povprečju je vprašalnike izpolnilo in vrnilo 64 % bolnišnic.

Podatki o zdravstvenem stanju pacientov, ki so bili pridobljeni iz administrativnih baz podatkov

Za ocenjevanje izidov zdravljenja smo uporabili rutinsko zbrane podatke v podatkovnih administrativnih bazah, še posebej podatke iz odpustnic. Ti podatki vključujejo bolnišnico, kjer se je pacient zdravil, pacientove demografske podatke, podatke o pacientovem stanju ob sprejemu, glavno in sekundarno diagnozo po sistemu Mednarodne klasifikacije bolezni/International Classification of Diseases (ICD) in kode intervencij, naziv plačnika, trajanje hospitalizacije, status ob odpustu (živ/mrtev), destinacijo po odpustu ter razvrščanje v skupine primerljivih primerov (Diagnosis Related Groups – DRG) na podlagi analize statističnih podatkov.

Vse države razen Nemčije, Grčije in Poljske so imele zahtevane povzetke podatkov v formatu, ki je omogočal mednarodno primerjavo. Podatki za 3.987.469 pacientov v preostalih devetih bolnišnicah so bili zbrani z uporabo MKB-10 (5 držav) in z MKB-9-KM (4 države).

Podatki iz leta 2009 so se razlikovali v sedmih državah, leta 2008 na Finskem in leta 2007 v Belgiji.

Prevod vprašalnika

Sklop raziskovalnih inštrumentov je bil preveden v deset jezikov (nizozemščina, nemščina, grščina, francoščina, italijanščina, finščina, norveščina, poljščina, švedščina, in španščina) z metodo vzvratnega prevajanja. Pri prevajanju spremembe osnovne predloge glede vprašanj in inštrumentov kot tudi trditve v vprašalniku niso bile dovoljene. V vsaki državi je ustreznost prevoda ocenila skupina 7–11 dvojezičnih strokovnjakov, ki so preverili indekse vsebinske veljavnosti (Content Validity Indexes – CVI). Natančen postopek prevajanja so podrobno opisali Squires in sodelavci (2013). Medkulturna evalvacija je potrdila, da je indeks vsebinske veljavnosti inštrumenta med 0,61 in 0,95.

Etična vprašanja

Projekt je finančno podprla Evropska komisija. Glede na zakonodajna določila posameznih držav so soglasje za izvedbo raziskave podale nacionalne komisije za medicinsko etiko oziroma univerze ali regionalne komisije (npr. bolnišnice).

Rezultati

Aiken s sodelavci je leta 2013 v posebni številki revije *International Journal of Nursing Studies* objavil opisno poročilo, ki izkazuje velike razlike stanja zdravstvene nege v bolnišnicah po Evropi. Zadovoljstvo pri delu med medicinskimi sestrami se je med 12 evropskimi državami močno razlikovalo, prav tako tudi vzroki za nezadovoljstvo. Nobena država ni bila imuna na negativno zaznavanje dela med medicinskimi sestrami. Kljub zaznani visoki stopnji nezadovoljstva pa je manj kot ena izmed štirih medicinskih sester poročala o nezadovoljstvu s svojo izbiro poklica v zdravstveni negi (razen v Grčiji, kjer je z izbiro nezadovoljnih 40 % medicinskih sester in 28 % medicinskih sester na Irskem). Kljub temu je 2–5 medicinskih sester od 10 izrazilo namero, da bodo v naslednjem letu zapustile trenutno delovno mesto. Izmed teh, ki so izrazile svojo namero o odhodu v naslednjem letu, bodo 2–4 od 10 iskale zaposlitev zunaj stroke zdravstvene nege.

Povprečne kadrovske kapacitete oziroma število pacientov na medicinsko sestro se po ocenah študije med različnimi državami gibljejo med 4 in 5 pacientov na medicinsko sestro na Norveškem in na Nizozemskem, do 9 pacientov v Švici in na Švedskem ter do 11 pacientov na medicinsko sestro v Belgiji, Grčiji, Nemčiji, Španiji in na Poljskem. V ostalih državah so ta razmerja nekje v sredini.

Medtem ko je večina medicinskih sester skorajda v vseh državah poročala o dobrih odnosih med zdravniki in medicinskimi sestrami, pa je večina poročala tudi o nezadostnem številu medicinskih sester ali podpornih služb ter o pomanjkanju podpore strokovnega vodstva.

Medicinske sestre so izrazile željo, da bi se vodstvo odzivalo na njihove prošnje in pritožbe in da bi lahko bolj aktivno sodelovale pri sprejemanju odločitev.

Kako vse to vpliva na zadovoljstvo pacientov in izid zdravljenja?

Aiken in sodelavci (2012) so poročali o vplivu obremenjenosti medicinskih sester in delovnega okolja na izkušnje ter zadovoljstvo pacientov. Najvišje ocene bolnišnic je v Španiji dodelilo 35 % pacientov in skoraj 60 % pacientov v ZDA, Švici, na Finskem in Irskem. Visoko ocenjene bolnišnice bi priporočili tudi drugim uporabnikom. Boljše delovno okolje pomembno pozitivno vpliva na višje ocene bolnišnic v vseh državah, vključenih v raziskavo. Dobro delovno okolje vpliva na boljše oceno bolnišnic in priporočila pacientov drugim uporabnikom, da poiščejo zdravstveno pomoč v teh ustanovah. Nasprotno pa ima večja obremenjenost medicinskih sester (večje število pacientov) nasproten učinek.

Kako to vpliva na zdravje in počutje medicinskih sester, na pojav izgorelosti, zadovoljstvo na delovnem mestu in namero menjati delovno okolje? Rezultate smo prilagodili značilnostim bolnišnic (status učne baze, visoka tehnologija, število postelj) in značilnostim medicinskih sester (starost, spol, polni delovni čas), bolnišničnim enotam in posameznim državam. Vsak dodaten pacient na medicinsko sestro je povečal verjetnost, da bodo medicinske sestre poročale o izgorelosti, nezadovoljstvu pri delu in nameri o odpovedi delovnega razmerja v naslednjem letu. Učinek delovnega okolja je običajno močnejši kot posamična značilnost zaposlenih.

Kako to vpliva na izide zdravljenja? Ugotovitve, ki zadevajo to področje, so bile objavljene v reviji *The Lancet* (Aiken, et al., 2014). Za to raziskavo smo pridobili podatke iz odpustnic 422.730 pacientov, starih 50 let in več, pri katerih so bile opravljene rutinske operacije (ortopedske, žilne in splošne) v 300 bolnišnicah v devetih evropskih državah. Želeli smo ugotoviti stopnjo mortalitete v času tridesetdnevnega zdravljenja v bolnišnici z upoštevanjem dejavnikov tveganja. Administrativne podatke smo razvrstili po standardnih protokolih, ki so upoštevali starost, spol, vrsto sprejema v bolnišnico (načrtovano, nujno), 43 umetnih ('dummy') spremenljivk za vrsto operacije ter 17 umetnih ('dummy') spremenljivk za morebitna druga obolenja/bolezni ob času sprejema. Z anketami 26.516 medicinskih sester smo merili številčnost medicinskih sester in njihovo izobrazbeno stopnjo. Povprečna groba stopnja umrljivosti v tridesetih dneh bolnišničnega zdravljenja v Evropi se giblje med 1 % na Švedskem do 1,5 % na Nizozemskem. Razlike med 300 bolnišnicami so bile mnogo večje kot razlike med državami in se gibljejo med 0 % do 7,2 %. V 12 % bolnišnic je bila mortaliteta višja kot 2 % in take bolnišnice smo našli v vseh devetih državah. Med neodvisne spremenljivke za mortaliteto v času tridesetdnevnega bolnišničnega zdravljenja štejemo

število medicinskih sester in tudi njihovo zaključeno stopnjo izobraževanja. Ugotovljeno je bilo, da povečan obseg dela za enega pacienta na medicinsko sestro poveča verjetnost za smrtnost v bolnišnici v roku 30 dni po sprejemu za 7 % in da povečanje števila diplomiranih medicinskih sester za 10 % zmanjšuje verjetnost smrtnih primerov za 7 %. Iz teh podatkov lahko sklepamo, da je v bolnišnicah, kjer je zaposlenih 60 % diplomiranih medicinskih sester in kjer vsaka v povprečju obravnava 6 pacientov, smrtnost v obdobju tridesetih dni po sprejemu za 30 % manjša kot v bolnišnicah, kjer je le 30 % diplomiranih medicinskih sester, kjer vsaka obravnava v povprečju osem pacientov.

Kako ti dejavniki vplivajo na pacientovo počutje in izid zdravljenja? Ausserhofer in sodelavci (2014) so v svoji raziskavi *A study on nursing care left undone* ugotavljali, kako pomanjkanje časa vpliva na neizpolnjevanje nujnih negovalnih intervencij in kakšne so posledice. Medicinske sestre so naprosili, da navedejo, katerih nujnih nalog zaradi pomanjkanja časa v zadnjem delovnem dnevu niso opravile. Na seznamu je bilo trinajst nalog, ki zadevajo neposredno zdravstveno nego pacienta, nadzor, načrtovanje, dokumentiranje ter psihosocialno obravnavo. Za vsako medicinsko sestro so računsko predstavili neopravljene nujne aktivnosti in ugotavljali, katere od nujnih aktivnosti medicinske sestre največkrat izpustijo. V presečni študiji v evropskih državah je bilo ugotovljeno, da so najpogosteje izpuščene aktivnosti »skrb za dobro počutje/pogovor s pacienti« (53 %), »načrtovanje in sprotne prilagajanje zdravstvene nege/klinične poti« (42 %), »zdravstveno izobraževanje pacientov in njihovih družin« (41 %). V bolnišnicah s primernejšimi delovnimi okolji, kjer je ena medicinska sestra obravnavala manj pacientov in kjer so bile v medicinske sestre v manjši meri obremenjene z drugimi nalogami, je bilo izpuščeno manj nujnih negovalnih nalog.

Razprava

RN4CAST raziskava ponuja široko bazo specifičnih podatkov o problemih, ki se pojavljajo na področju zdravstvene nege v različnih evropskih zdravstvenih sistemih. Ti podatki zadevajo število in izobrazbo medicinskih sester, kakovost delovnega okolja, stopnjo izgorelosti in zadovoljstva na delovnem mestu ter namero poiskati novo zaposlitev. Opaziti je precejšnjo raznolikost med težavami, s katerimi se soočajo medicinske sestre po Evropi. Zanimivo je, da se ta raznolikost veliko bolj odraža znotraj posamezne države kot med različnimi državami. Študija RN4CAST prikazuje vpliv problemov zaposlenih v zdravstveni negi na doživljanje pacientov, izide zdravljenja in stopnjo umrljivosti kot tudi na stopnjo izgorelosti medicinskih sester in namero iskanja nove zaposlitve.

Vpliv študije na oblikovanje zdravstvene politike

RN4CAST prispeva k oblikovanju evropske zdravstvene politike. Vpeta je v evropske projekte, kot sta na primer Skupni ukrepi za načrtovanje in napovedovanje človeških virov v zdravstvu (2013–2016) (Joint Action of Health Workforce Planning and Forecasting) (<http://www.euhwforce.eu>) in evropska študija o »učinkovitem zaposlovanju in zadržanju zaposlenih na področju zdravstvene oskrbe« (2014–2015) (http://ec.europa.eu/health/workforce/policy/recruitment/index_en.htm). Raziskava, ki je bila objavljena v reviji *The Lancet* šele februarja 2014, ni imela vpliva na posodobitev Direktive 2013/55/EU Evropskega parlamenta in sveta, ki je bila objavljena decembra 2013. Ugotovitve, da je umrljivost pacientov neposredno povezana z izobrazbo medicinskih sester, kot jih navaja prispevek v reviji *The Lancet*, bodo nedvomno vplivale na odločitve evropskih držav glede nujnosti visokošolsko izobraženih medicinskih sester. Podatki o večplastnosti posledic obremenitev medicinskih sester v evropskih bolnišnicah opozarjajo, da se kljub gospodarski krizi in varčevalnim ukrepom število medicinskih sester ne sme zmanjševati. V Združenem kraljestvu je Nacionalni inštitut za zdravje in odličnost obravnave / National Institute for Health and Care Excellence (NICE) (<http://www.nice.org.uk/guidance/sg1>) julija 2014 podal priporočila o številu odraslih pacientov v bolnišnicah, ki naj bi jih medicinska sestra dnevno obravnavala.

Zaradi številčnosti in primerljivosti podatkov med evropskimi državami so se nekatere med njimi odločile ponoviti študijo RN4CAST v svojih deželah. Taka študija je bila leta 2013 izvedena na Portugalskem, za leto 2015 pa so bile načrtovane na Cipru, v Italiji, ZDA in Nemčiji.

Zaključek

Že davno tega je Norma Lang zapisala: »Če nečesa ne moremo poimenovati, tega ne moremo nadzorovati, izvajati, poučevati, plačati in vključiti v politiko javnosti« (Clark & Lang, 1992). Glavna dodana vrednost študije je ta, da pomaga medicinskim sestram, menedžerjem in oblikovalcem zdravstvene politike razumeti in pojasniti, kako zdravstvena nega vpliva na zdravstveno oskrbo pacientov.

Note/Opomba

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Članek je nastal ob obisku profesorja Walterja

Sermeusa v Sloveniji, ki se je odzval povabilu Društva medicinskih sester, babic in zdravstvenih tehnikov Ljubljana na 16. simpozij z mednarodno udeležbo *Razvojne usmeritve zdravstvene in babiške nege*, 27. 11. 2015.

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