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# ANALYSIS OF NURSE STAFFING DURING TRANSFORMATION ON EXAMPLE OF POLISH HOSPITALS – IMPORTANCE OF THE RN4CAST RESEARCH PROJECT

## ANALIZA OBSAD PIELĘGNIARSKICH W OKRESIE TRANSFORMACJI NA PRZYKŁADZIE POLSKICH SZPITALI – ZNACZENIE PROJEKTU BADAWCZEGO RN4CAST

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S u m m a r y

For many years, the optimization of the model of employment of nurses in hospitals has been sought for in theory and practice, in order to provide patient safety and quality of care.

The objective of the study was the performance of retrospective analysis of nurse staffing in Polish hospitals on the background of tendencies observed in other countries, and the demonstration of the importance of the studies conducted within the EU project RN4CAST.

To-date, both in Poland and in other countries, various methods have been applied, mainly the statistical method which related the number of nurses to constant values, i.e. the number of population or hospital beds, and the Patient Classification System (PCS), which assumes assignment adjusted to the patient status according to the adopted criteria of care. There are advantages and disadvantages with these methods. Both of them focus on instrumental nursing activities, consider the measurement of nursing time, are labour- and time-consuming, require periodical verification and adjustment to specificity of individual wards where care is provided. The report indicates other important factors which exert a potential effect on nurse staffing in a hospital. These factors cover: technical-organizational conditions, provision of equipment for nursing, outsourcing of auxiliary services, post-graduate education, degree of occupational burnout, number of undesirable events, job satisfaction, amount of payment and educational leave. These factors have been considered in the RN4CAST project, the goal of which is to compare employment in 12 European countries and to search for an optimum model of employment of nurses in hospitals for the subsequent 20 years.

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S t r e s z c z e n i e

Przez wiele lat, w teorii i praktyce, prowadzono badania dotyczące modelu optymalizacji zatrudnienia pielęgniarek, w celu zapewnienia bezpieczeństwa pacjenta i jakości opieki.

Celem pracy było przeprowadzenie retrospektywnej analizy obsad pielęgniarskich w polskich szpitalach na tle tendencji obserwowanych w innych krajach, oraz pokazanie znaczenia badań prowadzonych w ramach projektu UE RN4CAST.

Dotychczas, zarówno w Polsce, jak też w innych krajach, stosowano różne metody, głównie metodę statystyczną, odnoszącą liczbę pielęgniarek do stałych wartości, tzn. liczby populacji lub łóżek szpitalnych, oraz Systemu Klasyfikacji Pacjentów (PCS), który zakłada przydział zadań dostosowany do stanu pacjenta zgodnie z

przyjętymi kryteriami opieki. Metody te mają zarówno wady, jak zalety. Obie koncentrują się na instrumentalnych czynnościach pielęgniarskich, biorą pod uwagę pomiar czasu pielęgnacji, oraz praco- i czasochłonność, wymagają okresowej weryfikacji i dostosowania do specyfiki poszczególnych oddziałów gdzie świadczona jest opieka. Artykuł wskazuje na inne ważne czynniki wywierające potencjalny wpływ na planowanie obsad pielęgniarskich w szpitalu. Czynniki te obejmują warunki techniczno-organizacyjne, zapewnienie sprzętu do pielęgnacji, korzystanie z pomocniczych usług zewnętrznych, nauczanie podyplomowe, stopień wypalenia zawodowego, liczbę niekorzystnych zdarzeń, zadowolenie z pracy, wysokość wynagrodzenia i urlop szkoleniowy. Czynniki te zostały wzięte pod uwagę w projekcie RN4CAST, którego celem jest porównanie zatrudnienia w 12 krajach europejskich i poszukiwanie optymalnego modelu zatrudnienia pielęgniarek w szpitalach przez następne 20 lat.

**Key words:** analysis of nurse staffing, Patient Classification System, model of employment of nurses in hospitals
**Słowa kluczowe:** analiza obsad pielęgniarskich, system klasyfikacji pacjentów, optymalny model zatrudnienia pielęgniarek

INTRODUCTION

The demand for care and health needs as factors determining human resources planning in health care systems

The problem of nurse staffing *to patient demand for care* was recognized after the World War 2.

The studies undertaken by Young and Wolf, which are considered as the first attempt to solve the above-mentioned problem, started with the assumption that the *demand for health care* was the major important factor determining the number of nursing staff [1, 2]. The main question was t: *How many nurses per 24 hours/month/year should be planned for the actual patient demand for care* [1, 2, 3, 4, 5, 6].

*Health needs* were understood as objective states, which may be satisfied through different actions undertaken in the fields of promotion, prevention, diagnostics, therapy, nursing care, and rehabilitation. According to this concept, *health needs* were described not only as a defined condition, but also as the field of activity which should be undertaken by health care professionals.

The approach of defining health needs in the context of required resources was based on the assumption that when planning any medical actions, managers should take into account limited human, material and financial resources. These limitations forced the decision makers responsible for medical care to make choices. The presented concept of health needs is different from the term *demand for health care*. The demand for health care was an indicator of services needed in a given planning period of time, provided that the health conditions would not change rapidly. According to Włodarczyk, the demand for health care is always underestimated in relation to the needs [7, p.135].

The selection of adequate staffing methods was a significant determinant guaranteeing the proper use of the staff, as well as care consistent with patients' demand for care. In Poland, in the eighties until the end of the nineties of the 20th century, different ratios were used to determine nursing staffing such s the number of professionals to constant values, e.g. the number of inhabitants per one physician, nurse or midwife, [8, 9], the number of beds in wards, with relation to the number of staff [8]. This type of planning could have been useful in comparative analyses of individual countries or their regions, or as an indicative for newly-established hospitals; however, it did not work for already functioning facilities since it did not take into account the bed utilization rate, or the changing status of hospitalized patients. In 1999, during the period of transition, it was replaced by a new legal regulation in which a model of nurse staffing based on patient demand for care was proposed [9].

METHODS OF PATIENT CLASSIFICATION
IN PLANNING NURSE STAFFING

A method of staffing, different from that based on static indicators, was the proposal to refer the number of staff to the patient demand for care. This new method proposed a flexible way of staffing with respect to the changing health status of patients. This approach was known as the Patient Classification System (PCS), according to which patients were assigned adequate categories of care based on the assessment of their demand or care. The PCS method was based on the assumption that according to the adopted care criteria, patients were assigned adequate categories in accordance with the assessment of their demand for care. According to the PCS method, patients were qualified into adequate categories

according to the adopted care criteria. The demand for care was defined by the duration of the provision of care provided and expressed in minutes for each category within a specified time interval, e.g. 24 hours. The time of care required within a given category should be consistent with the standards of care adopted in an individual country/hospital [1, 2, 3, 4, 10, 11, 12]. The common characteristics of the PCS methods were: criteria, and the ratio of direct to indirect nursing time.

Care criteria allowed the qualification of patients into adequate categories of care, resulting from the specificity of their clinical status, resulting from their specific clinical status, type of required diagnostic-therapeutic procedure, degree of dependence on the environment, emotional status, perception and communication capabilities. Categories of care concerned time necessary to provide direct care to an individual patient: diagnostics, treatment, nursing care, rehabilitation, education, and social support, i.e. direct nursing time devoted to the nursing activities.

The methodology for determining direct nursing care time standards caused the biggest controversy when planning nurse staffing in hospitals in Poland. In fact, in Poland, only one third of nurse hospital shift time was dedicated to direct care. The remaining time was spent on indirect nursing care [13].

Indirect nursing care time, covered the preparation activities indispensable for the provision of direct care, activities necessary to prepare the direct nursing care interventions, as well as activities related to workplace management, office and administrative functions, periods of time with no direct occupational activity and breaks. Most of this time was determined by the organisational structure of the hospital and the ward, i.e. presence of technical supports, outsourcing, and other additional auxiliary services within the hospital structure.

NURSE STAFFING IN THE POLISH HEALTH CARE SYSTEM

During the period of transformation in Poland, adequate methods of nurse staffing were sought for, because the methods in which the number of nursing workplaces was referred to the number of hospital beds did not satisfy either the managers or the employees, and did not provide safety and the desired quality of patient care.

Due to the above-mentioned situation, both the officials from the Ministry of Health and Social Welfare and researchers interested in nursing care management undertook an attempt to develop a different methodology for planning nursing care, based on "Health practice research and formalized managerial methods" by Grundy and Reinke [14]. In order to evaluate patient demand for nursing care, the authors applied methods for direct and indirect working time measurement (time-sampling methods of continuous and snap-shot observation).

In Poland, the PCS planning method for nurse staffing was incorporated into the curriculum of Nursing Sciences, at the Medical College in Lublin, by Lenartowicz at the beginning of the 1980s [15]. Lenartowicz quoted nursing time standards in three categories (Wolf and Young, ref), A fourth category – intensive care - was her own proposal. In addition, the researcher emphasized the need for verification of criteria and categories of care, as well as standards for direct and indirect care time in Polish hospital settings. Lenartowicz analysed records from 1,500 nurses employed in 112 various wards in hospitals of three different levels of reference [13]. The study showed that the patterns of effective working time utilization were incorrect, since the activities performed directly on behalf of a patient (direct nursing care) occupied only 25.7% of the work shift, while the remaining amount of working time was devoted to non-nursing activities (indirect care), including breaks and office activities [13].

In the 1990s of the 20th century, Ksykiewicz-Dorota undertook studies on the verification of PCS methods in Poland. The study covered 258 nurses employed in 27 military hospitals [16]. The objective of the above-mentioned study was the determination of nurse staffing standards in conservative treatment and surgical wards according to patient demand for care. Working time was measured using continuous observation, and snap-shot observation using Tippett's technique [17] according to which, in each ward in the study, several hundred observations were made at randomly selected moments. The determination of the structure of working time helped to firstly, specify what activities are performed by nurses, and secondly, to determine non-nursing time typical of Polish hospitals. In order to determine the structure of working time, following Wolf and Young [1, 2], the division of the activities performed by nurses into two categories was adopted: direct and indirect nursing. Seven elements of direct nursing care were considered: physical activity, hygiene, nutrition, assistance with

excretion, measurement of life functions, treatment, and education with psychological support. The main criteria were supplemented with detailed criteria in individual categories of care [16].

Patients were classified according to the accuracy of selecting care criteria during different periods of hospitalisation, and represented the full range of diagnoses and various age groups (excluding children). The majority of patients were subjected to qualification several times during consecutive days of hospitalization. At the stage of verification of the criteria of nursing care, the study also covered 30 charge nurses and 33 head nurses who were asked to assess selected general and specific criteria. Concerning some care criteria (with the exception of life function measurement and treatment), the method of competent judges was applied in which 25 patients were also asked to present their opinions [18].

The third stage of the study was verification of the standards of direct nursing care time in individual categories of care. This constituted the most difficult problem because the selection of a proper methodological procedure required not only an evaluation of the actual state of nursing care in Poland, and the referring of the direct nursing time to the standards of care, but also the observation of the principles of standardization of working time. Ultimately, none of the methods for the standardization of work described in literature was used in the study [19]. The subjective character of the estimation method was an obstacle to its application. The application of this method would not provide an answer to the question whether the time devoted by nurses to the patient is really equivalent to the time of actual demand for care. The analytical method was not applied because its selection would be preconditioned by the good quality of organization of care in the hospital wards, nurses performing work according to the standards of care, and obtaining an 'excellent' accreditation status. At the time of study (1993-1996) there were no standards for nursing care, no accreditation process, and the organisational status in nursing care was not good.

The above-mentioned premises inclined the author to apply Nadler's method of the IDEALS concept [20]. This concept is used in technical and economic studies, but less frequently in health care [17, 20]. The application of Nadler's concept consisted in the selection of a model ward as a basis for education in the nursing profession. The subsequent step was the

recognition of patients' needs, formulation of the nursing diagnosis and planning of patient care by an expert (MRN with specialization). The method of work was the nursing process [21, 22], and the nursing time was determined by the method of time scheduling [17, pp 79-83].

The results presented by Ksykiewicz-Dorota in 1990s were similar to those published by Lenartowicz in the 1980s. The nurses devoted approximately 30% of time to direct nursing care [13, 16]. Analysis of the activities performed by nurses showed that regardless of the type and specificity of hospital or ward, nurses focused on technical activities [16]. These were primarily tasks ordered by physicians, resulting from cooperation in diagnosing, treatment, and nursing care interventions, such as: assistance with biological and hygienic needs, provision of physical safety of patients. Non-instrumental activities within the scope of mental support, education and information, were performed on about 30% of the desired level [16].

Studies concerning nurse staffing in Poland conducted during the period 1993-2010 mainly focused on the analysis of so called "hard" data, covering: structure of nursing time, duration of performing nursing interventions, and analysis of the nurses' discretionary time. These studies were performed not only in the surgical and internal medicine wards of military hospitals but also in obstetric-neonatal units, birth centres, intensive care units, long-term care wards, and psychiatric units subjected to the Ministry of Health [23, 24, 25, 26, 27, 28]. This tendency corresponded with the previously mentioned regulation by the Ministry of Health and Social Welfare of 1999 [9], which obliged hospital managers to create standards for nurse staffing. However, hospital managements were not sufficiently prepared for restrictive regulations regarding working time standards. This obligation was relegated on nurses, who determined standards for themselves. As a result, working time standards were subjective and differed between wards of a similar profile which functioned in hospitals with the same reference levels. In turn, different standards made it impossible to compare these standards between hospitals with a similar scope of functioning. Moreover, these variations made any comparisons between hospitals impossible.

The weakness of the Regulation of 1999 [9] is that it did not define the legal consequences resulting from its non-compliance by managers of health care facilities with the standards for nursing staff

employment calculated by own teams. Moreover, the regulation concerned only nurses and midwives, while patient care is undertaken by multidisciplinary teams.

Undoubtedly, nurse staffing is determined by other factors, e.g. working conditions, provision of equipment for nursing care, presence or absence of nursing assistants, postgraduate trainings for nurses, degree of professional burnout, the number of adverse events, job satisfaction, possibility of undertaking a more satisfactory job, and levels of payment.

On the other hand, the patient demand for care in a hospital is determined by the following factors: type and stage of advancement of a disease, patient's status and his/her capability to self-care, level of satisfaction with nursing care, medical care, conditions of hospitalization, patient's preparation for independence after discharge from the ward, including patient information and education.

The RN4CAST research project aims at filling the gap between instrumental methods and other conditionings affecting the effectiveness of work. The starting point for the presented project is the assumption that the functioning models of nurse staffing in individual countries do not consider a number of significant elements, which exert an effect of the effectiveness of work and, in consequence, are neither satisfactory for hospital managers, nor from the aspect of the safety of patients and nurses themselves.

The issues regarding evaluation of the performed activities and effective working time utilized by nurses have been incorporated in the RN4CAST research project, currently run in the EC within the 7th Framework Programme (http://www.rn4cast.eu/). These issues concern, among others, the activities actually performed during the working shift, as well as those activities not undertaken. The project was conducted by the method of diagnostic survey with a questionnaire technique. Assessment of the phenomenon comprises four different perspectives: investigation of nurses' opinion concerning their work, including their satisfaction and needs, investigation of patient opinions, analysis of the organizational structure of a hospital and analysis of the results/outcomes of treatment. In Poland, 30 hospitals have been enrolled, with consideration of the representation of individual regions, population size and type of hospital. To-date, 2,605 nurses and 4,136 patients were examined. The participation of these hospitals in the study with such a large number of nurses and patients fulfils the criteria of being representative of the whole country, and a sufficient representation of Poland among other European partners. Results of the pilot RN4CAST research in Poland, which showed factors correlated with nurse occupational burnout, and consequently, with decreased occupational efficiency, and exerted an effect on hospital evaluation by patients, were presented at the 13th Biennial Congress of the European Society for Health and Medical Sociology (ESHMS), on 26-28 August 2010, in Ghent, Belgium [29, 30].

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