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## Czas pracy na pielęgniarskich stanowiskach w zakładach opieki długoterminowej

## Working time at nursing workplaces in long-term care facilities

### Streszczenie

**Wstęp.** Z punktu widzenia struktury wykorzystania czasu pracy przez pielęgniarki pracujące w zakładach opieki długoterminowej, znaczącą rolę odgrywają warunki organizacyjno-techniczne wynikające ze specyfiki oddziałów i sposobów zarządzania nimi. Całkowity czas pracy pielęgniarek składa się z pielęgnacji bezpośredniej i pośredniej, działań związanych z koordynowaniem oraz przerw w pracy.

**Cel.** Celem pracy było określenie struktury czasu pracy pielęgniarek w zakładach opieki długoterminowej w opiece nad pacjentami przebywającymi w tego typu zakładach opieki zdrowotnej.

**Materiał i metody.** Badaniami objęto 266 pacjentów zakładów opieki długoterminowej: czterech zakładów opiekuńczo-leczniczych, jednego zakładu pielęgnacyjno-opiekuńczego, jednego oddziału dla przewlekłe chorych. Metodą badawczą było mierzenie czasu pracy, techniką – obserwacja ciągła i migawkowa. Wykorzystano wystandaryzowane narzędzie dla potrzeb obserwacji ciągłej i obserwacji migawkowej.

**Wyniki badań.** Uzyskane wyniki wskazują, że czas pielęgnacji bezpośredniej w badanych zakładach opieki długoterminowej wynosił 43,05% czasu pracy pielęgniarek podczas zmiany roboczej. Minimalny czas pielęgnacji bezpośredniej wynosił 7,14%, natomiast maksymalny – 80,00%. Pozostałą część czasu pracy pielęgniarek opieki długoterminowej, tj. 56,95% stanowi pielęgnacja pośrednia, koordynowanie i bieżące organizowanie pracy oraz czynności pozasłużbowe. Koordynowanie i bieżące organizowanie pracy zajmowało średnio 10,18% czasu pracy, czynności pozasłużbowe zajmują średnio 16,53%.

**Wnioski.** W ogólnej strukturze czasu pracy pielęgniarek w zakładach opiekuńczo-leczniczych, 43,05% to czas poświęcony na realizację zadań z zakresu pielęgnacji bezpośredniej, 56,95% czasu całkowitego zajmują czynności pozapielęgnacyjne. Pielęgniarki w badanych zakładach opieki długoterminowej stosunkowo dużo czasu przeznaczają na zadania administracyjne i czynności niewymagające kwalifikacji pielęgniarskich oraz na przerwy, w tym na czynności osobiste.

**Słowa kluczowe:** opieka długoterminowa, struktura czasu pracy pielęgniarek.

### Summary

**Introduction.** From the aspect of the structure of use of working time by nurses employed in long-term care facilities, organisational and technical conditions resulting from the specificity of wards and methods of staff management, play an important role. The total working time of nurses consists of direct and indirect nursing, activities associated with coordination and breaks at work.

**Objective.** The objective of the study was the determination of the structure of working time of nurses in long-term care facilities in the care of in this type of health care units.

**Material and methods.** The study covered 266 residents of long-term care facilities: four residential care homes, one nursing home, and one chronic care ward. The research method was the measurement of working time; the technique – day-long observation and snapshot observation. A standardised tool was applied for the needs of day-long and snapshot observation.

**Results.** The results obtained indicate that direct nursing care in the examined long-term care facilities was 43.05% of nurses' working time during one work shift. The minimum time of direct nursing care was 7.14%, while the maximum time – 90.0%. The remaining working time of nurse in long-term care, i.e. 56.95% was devoted to indirect nursing care, coordination, current organisation of work, and non-duty activities. Coordination and current organization of work constituted 10.18% of working time, while the non-duty activities – 16.53%, on average.

**Conclusions.** In the general structure of working time of nurses employed in long-term care facilities, 43.03% of time was devoted to the realisation of tasks within the scope of direct nursing, whereas non-nursing activities occupied 56.95% of the total working time.

Nurses in the examined long-term care facilities devoted a considerable amount of time to administrative tasks and activities not requiring nursing qualifications, as well as breaks and personal activities.

**Key words:** long-term care, structure of nurses' working time.

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## INTRODUCTION

Demographic changes observed in the developed societies, an increasing number of elderly population, including those with various types of dysfunction in the spheres of physical, mental and social functioning, have become a fact. This has resulted in the search for adequate methods for the evaluation of the demand for long-term care and rehabilitation among this group.

Long-term care covers care, nursing, and therapeutic activities provided for a longer period of time for constantly or chronically ill patients or the disabled, including those enfeebled by old age [1]. An improvement of the material standard and change in life style significantly affects life span [2]. A well-functioning system of health care also exerts an effect on the prolonging of life span. On the other hand, however, it brings about the threat of chronic diseases which result in disability and lack of independence, together with the consequence of providing the expansion of care in this population group [3]. These people often need 24-hour inpatient care. At present, in Poland, long-term care is provided within two areas: health care and social care.

New principles of financing health services and the situation on the market created possibilities for the development of various forms of long-term care, such as:

Inpatient long-term care:

- nursing home/residential care home;
- nursing home for children and adolescents/residential home for children and adolescents;
- residential home for patients requiring mechanical ventilation;
- residential home for children requiring mechanical ventilation;
- chronic care ward; not longer than by 31.12.2009 [4].

The primary goal of the activity of long-term care facilities is the provision of high level services and comprehensive care due to a large area of unsatisfied nursing demands among chronically ill and disabled people [5]. The basic staff in long-term care are nurses and caregivers. Their mutual goal is physical and emotional support for the disabled in maintaining control over their lives, in daily life activities and various activities which are indispensable for maintaining health and normal social functioning [6]. The recognition of the actual demand, or close to actual demand for care, allows more precise staff scheduling. In long-term care facilities, irrespective of the number of residents, there should be an adequate number of nurses in order to provide optimum care. In Poland, attempts have been undertaken to introduce employment standards (*according to the Regulation by the Minister of Health and Social Care of 1999*) [7]. Unfortunately, due to difficulties in calculating the time of individual direct and indirect nursing activities, and lack of objectivity during their calculation, the designated goal was not achieved [8].

## OBJECTIVE

The objective of the study was determination of the structure of working time of nurses employed in long-term care facilities in the care of residents of this type of health care units.

## MATERIAL AND METHODS

The study group covered 266 patients who, from November 2007 – September 2008 were residents in 15 wards in six long-term facilities: four residential care homes, one nursing home, and one care ward for chronically ill.

The structure of working time at nursing workplaces was determined based on continuous observation (day-long observation), and snapshot study of working time (Tippett's technique). In order to specify the time of direct and indirect nursing, 38 day-long observations and 921 snapshot observations were carried out.

Day-long observation consists in a detailed registration of activities performed by a staff member on the ward, for whom the structure of working time is being established. In general, the results of day-long observation are approached as an introduction for the needs of determination of an adequate number of snapshot observations.

Snapshot observation is a method the results of which result from the calculation of probability, representativeness and random selection of the moments of observation. This method was developed in the 1930s of the 20<sup>th</sup> century by the English statistician Tippett. It has survived to this day in an unchanged form as a basic method for the determination of the utilisation of working time. According to this method, the number of snapshot observations is determined based on special formulae according to the smallest time fraction designated by the method of day-long observation, and the desired preciseness of studies specified by the adopted value of absolute error. This technique provides a high level of confidence (up to 99.7%) [9].

Prior to conducting the proper studies concerning the determination of the structure of working time of nurses employed in long-term care facilities, the total number of 38 day-long observations were performed, including: 21 in the long-term care ward in residential and nursing homes, where the observations covered 12-hour daytime duties; 7 observations during an 8-hour morning work shift, and 7 observations during afternoon work shift in one of the residential homes, and 3 observations on night duty (from 19.00–07.00), i.e. a total number of 400 hours of observations.

Day-long observation was a starting point for the determination of percentage values of individual fractions within the structure of nurses' working time, and therefore delineation of the number of observations by the Tippett's method (*snapshot observation*) at randomly selected moments in long-term care wards. A total number of 921 snapshot observations were made during which 3,430 activities performed by nurses were registered.

A standardised tool was applied in the study for the needs of day-long and snapshot observation.

Statistical analysis was performed with the use of the Excel calculation sheet, Statistica 6.0 package. Descriptive statistics were used (*mean value, median, standard deviation, variability rate, minimum, maximum*) and a test for two structure indicators.

## RESULTS

From the aspect of the structure of utilisation of working time by nurses working in long-term care facilities,

organizational-technical conditions in the ward, as well as the methods of staff management, play a crucial role. The total working time consists of direct and indirect care. Indirect nursing care consists of the preparation for direct nursing care, activities associated with the coordination and current organization of work, non-duty activities and breaks.

Analysis of the results of the studies showed that in the examined long-term care facilities, direct nursing care occupied 43.05% of nurses' working time during a work shift. The minimum value obtained was 7.14%, while the maximum value – 80.00% (SD = 13.64 Me = 42.86). The remaining working time of nurses, i.e. 56.95%, was devoted to indirect nursing care, current coordination of work, and non-duty activities. Indirect nursing care constituted 30.25% of working time, on average, – minimum 6.25% and maximum 66.67% (SD = 11.34, Me = 30.00). Variation, as measured by variability rate, showed a higher value of variation (37.50%) during indirect nursing. Coordination and current organization of work occupied 10.18% of working time on average – in nearly half of the cases not less than 10.00%. In this case, the variation was considerably high – 92.68% (SD = 9.43%), and the duration was 0.00% – 50.00% of the working time. It should be noted that the coordination and current organization of work, to a great extent, may be planned; therefore, its realisation may take place at specified moments in advance. This results in the maximization or minimization of the contribution of this fraction of activities to the activities in general (Table 1). The last fraction – non-duty activities – occupied 16.53% of nurses' working time, on average; minimum 3.57%, and maximum as much as 50% of working time (SD = 8.36; Me = 14.29). From the aspect of organization of working time, the possibilities to minimise this fraction should be considered.

In the case of daytime duties the time of direct care was 45.04% (SD = 14.90; Me = 46.15), and indirect care – 27.95% (SD = 12.03; Me = 26.92) of working time. The distribution of non-duty activities was similar to the general distribution. The scattering of results around the mean value of the duration of both types of nursing was slightly smaller, compared to the general approach (Table 2).

Slightly different values were obtained for night duties where direct nursing constituted 37.92% (SD = 7.53, Me = 37.50), and indirect nursing – 36.17% (SD = 6.17, Me = 33.33) of nurses' working time. The minimum time devoted to each type of nursing was 20%, which makes a considerable difference compared to daytime duties. Here, considerable disproportion is noteworthy in the scattering of the results concerning both types of nursing, and expressed by a variability coefficient with respect to daytime duties where these values were nearly twice that high. For direct nursing care, variability during night duties remained on the level of 7.535, while for indirect nursing care – 6.17%. A clear decrease was also observed in the maximum time devoted to the coordination and current organization of work – up to 25%, with a simultaneous increase in scattering of this fraction of up to 101.42%. Some increase was also noted in the medium fraction of time devoted to non-duty activities – up to 18.35% (SD = 6.95, Me = 16.67) (Table 3).

From the aspect of care, the percentage contribution of the time of direct and indirect care in nursing activities is important. Thus, direct care was 58.37% of the time devoted by nurses to patient care during a work shift. The minimum value obtained was 20.00% of the nursing time, whereas the maximum value – 90.00% (SD = 15.04, Me = 58.33). The remaining time, i.e. 41.36% was occupied by indirect nursing. For this form of occupational activity the minimum value was 10.00%, while the maximum value – 80.00% (SD = 15.04, Me = 41.67%) of nursing time. Variability

**TABLE 1. Use of working time at nursing workplaces in long-term care facilities (% of working time).**

No.	Working time fraction	Mean	Median	Standard deviation	Variability coefficients	Min.	Max.
1	Direct nursing care	43.05	42.86	13.64	31.70%	7.14	80.00
2	Indirect nursing care	30.25	30.00	11.34	37.50%	6.25	66.67
3	Coordination and current organization of work	10.18	10.00	9.43	92.68%	0.00	50.00
4	Non-duty activities	16.53	14.29	8.36	50.58%	3.57	50.00

**TABLE 2. Use of working time by nurses employed in long-term care facilities during daytime duties (% of working time).**

No.	Working time fraction	Mean	Median	Standard deviation	Variability coefficient	Min.	Max.
1	Direct nursing care	45.04	46.15	14.90	33.08%	7.14	80.00
2	Indirect nursing care	27.95	26.92	12.03	43.05%	6.25	66.67
3	Coordination and current organization of work	11.19	10.00	9.84	87.96%	0.00	50.00
4	Non-duty activities	15.82	14.29	8.74	55.24%	3.57	50.00

**TABLE 3. Use of working time by nurses employed in long-term facilities during night duties (% of working time).**

No.	Working time fraction	Mean	Median	Standard deviation	Variability coefficient	Min.	Max.
1	Direct nursing care	37.92	37.50	7.53	19.87%	20.00	60.00
2	Indirect nursing care	36.17	33.33	6.17	17.05%	20.00	50.00
3	Coordination and current organization of work	7.56	8.33	7.67	101.42%	0.00	25.00
4	Non-duty activities	18.35	16.67	6.95	37.86%	7.69	37.50

measured by the variability coefficient showed a higher scattering value during indirect nursing. Thus, the mean time devoted to direct nursing was significantly higher than the time devoted to indirect nursing, which was confirmed by the result of the test for significance for mean values, where  $t = 23.86$  significant on the level  $p < 0.0000$ .

For daytime duties, the time of direct nursing was 61.21% (SD = 16.37, Me = 62.50), and for indirect nursing – 38.79% (SD = 16.37, Me = 37.50) of the working time. The differences in the distribution of both types of nursing were clearly higher than in general.

Different values were obtained for night duties where direct nursing was 51.04% (SD = 6.63, Me = 50.00), and indirect nursing – 48.96% (SD = 6.63, Me = 50.00) of nurses' working time. Here, almost the same and simultaneously low levels of distribution of both types of nursing expressed by variability coefficient are noteworthy. Direct nursing variability remained on the level of 12.98%, whereas for indirect nursing the variability was 13.53%. Moreover, despite a statistically significant difference, the mean time values for both types of nursing were the closest ( $t = 23.86$  significant on the level  $p < 0.0000$ ).

For the needs of the analysis of the structure of working time at nursing workplaces in long-term care facilities the activities performed by nurses were divided into four fractions: direct nursing care, indirect nursing care, activities associated with coordination and current organization of work, provision of the ward and non-duty activities. These fractions were additionally divided into several sub-fractions. In direct nursing care, the following sub-fractions were distinguished: making a diagnosis and treatment, activities associated with nutrition and excretion, activities related to locomotion and change of patients' body position, activities associated with maintaining patient's personal hygiene and hygiene of the surrounding. In the indirect nursing care, the sub-fractions were as follows: documentation, communication with the staff, and preparation for all nursing activities. Within the activities connected with coordination and current organization of work, sub-fractions were distinguished, such as: provision of the ward, office and order activities, provision of information in a team, as well as cleaning and tidying.

Analysis of the data obtained shows that nearly one third of the activities qualified into direct nursing care performed in residents of long-term care facilities, are associated with making a diagnosis and treatment (32%). A group of activities extremely important in the therapeutic process – those connected with nutrition and excretion – constituted 27% of the direct nursing, while personal hygiene and hygiene of the surrounding – 20%. In the structure of direct nursing time, 12% was devoted to communication with patients and their families. Activities related with locomotion and change of patient's body position occupied 9% of direct nursing care time. Apart from physical exercises and assisting in rehabilitation, this included prevention of secondary disorders, such as bedsores in the case of bedridden patient.

Three sub-fractions were distinguished within indirect nursing. The most time-consuming of these was documentation which occupied 43% of indirect care time. The second group of activities covered the preparation for all nursing activities – 42%. Communication with the staff took 15% of direct nursing time. To a great extent, a proper organiza-

tional climate, as well as cooperation skills conditioned by understanding and univocal communication, decide about the successful operation of a team.

The activities classified into the last category are of a more technical character and result not so much from the type of institution, but rather from its functioning as an enterprise. As much as 48% of time is devoted to the provision of the ward. This is a considerable percentage in this fraction. The time occupied by providing information within a team (31%) also constitutes a significant part of time designed for coordination and current organization of work. Office work and cleaning, which do not require nursing qualifications, occupy 11% and 10%, respectively.

## DISCUSSION

The presented article shows the problem concerning the utilisation of working time at nursing workplaces in long-term care. The results of the study indicated low utilisation of the direct care time within the total working time of nurses employed in the long-term care facilities in the study. For all the facilities examined this time was 43.05%.

It is not possible to compare the results obtained with the results of other studies conducted in Polish health care system, because to-date no such studies have been carried out concerning the utilisation of working time of the nursing staff in long-term care.

The first studies pertaining to the utilisation of working time by nurses in Polish hospitals were carried out by Lenartowicz [11] in the 80s of the last century. She showed a low percentage of utilisation of working time by the nursing staff, as only about 25% of this time was devoted to nursing activities and activities resulting from doctor's orders, while 75% was occupied by auxiliary activities associated with the functioning of the ward and breaks at work.

Ksykiewicz-Dorota et al. in their studies of the structure of working time of nurses and midwives in hospitals showed that the direct nursing time constitutes approximately 20-30% of working time of nurses [10]. The results of own studies confirm the opinion of these authors that firstly, it is necessary to make efforts to shorten non-nursing time to an indispensable minimum, for example, by better organization of the structure of auxiliary activities (internal transport, provision of the results of examinations, equipment, linen and other materials), and prolongation of the time devoted to direct patient care [10].

Analysis of the research material concerning the structure of nurses' working time conducted by Wysokiński indicated that direct nursing ( $T_{dn}$ ) at the examined Intensive Care Units (ICU) was 34.68% of nurses' working time during a work shift. The remaining working time of charge nurses, i.e. 65.32%, was occupied by indirect nursing [12].

In own studies, the greatest amount of time within direct activities performed by nurses was devoted to activities associated with diagnosis and treatment (32%), the group of activities connected with nutrition and excretion constituted 27% of direct nursing, whereas personal hygiene and hygiene of the surrounding occupied 20% of this time. In the structure of direct nursing care time 12% was devoted to communication with patients and their families. Activities connected with locomotion and change of patient's position occupied 9% of the direct care time.

Indirect nursing care activities connected with documentation constituted a high percentage of indirect care time – 43%. The second group of activities covered the preparation for all nursing activities – 42%, while communication with the staff occupied 15% of the direct care time.

Among the activities within the field: coordination and current organization of work on the ward, as much as 48% of time was devoted to the provision of the ward, 31% – to providing information within the team, while office activities and those not requiring nursing qualifications took 11% and 10%, respectively.

The studies by Cudak showed that the nurses most often devoted 4.1% of their time to hygienic activities, and 12.4% of time to the activities associated with the rehabilitation of a patient. The nurses devoted 4% of their time to patients' families, and 4.2% to administrative tasks [13].

Based on data analysis it may be presumed that the nurses devoted an excessive amount of time to non-duty activities. While introducing changes in the structure of utilisation of nurses' working time in long-term care facilities, efforts should be undertaken to decrease the time designed for breaks in favour of the time devoted to direct nursing care. This would allow the fulfilment of all occupational functions according to the specificity of the unit and patient demand.

## CONCLUSIONS

1. In the general structure of working time of nurses employed in residential care facilities the time devoted to the fulfilment of the tasks within the scope of direct nursing care is 43.05%, whereas non-nursing activities occupy 56.95% of the total time.
2. Nurses in the long-term care facilities examined devoted a relatively large amount of time to administrative tasks and activities not requiring nursing qualifications, as well as breaks and personal activities.

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