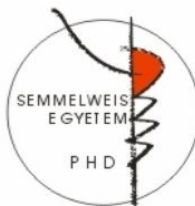


# **SURVEY OF THE PRESSURE ULCER CARE ACCORDING TO THE CRITERIA OF THE QUALITY PATIENT CARE**

**PhD thesis**

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## **Introduction**

Pressure ulcer is a continually increasing problem of the public health. Its occurrence shows a growing tendency, whose reasons can be found among others in the ageing of the population and in the increasing multimorbidity. It means a great challenge for the residents, the health and social supplier systems, and for the financiers, too.

The treatment of wounds that are especially difficult to treat, like that of pressure ulcer, takes a long time, in most cases several months, to be completed. Nursing of patients suffering from pressure ulcer concerns the most diverse areas of health care (basic health care, outpatient service (for instance professional home nursing services), and inpatient service). Because of the expenses of the hospital treatment, it cannot be secured that the healing of bedsore, up to its completion, can be provided within an institutional framework. Most of the discharged patients are sent to an old people's home or to their homes. In this latest case, the professional healing process is continued by the general practitioner or by a professional home nursing service.

The development and treatment of pressure ulcer depend not only on the conscientiousness of the nursing process, but also on the patient's general health condition, the state of the chronic wound and on the capacity management of implements and bandages. Patients suffering from pressure ulcer are closely affected by physical, psychical and social factors, which make it essential that the prevention of pressure ulcer or during its treatment the holistic approach would come across.

Besides the physical, psychical and social factors affecting the patients, the healing process of wounds, the professionalism and attitude of the nursing staff, the responsiveness of quality and organisation of health provision systems and the opportunities offered by the educational and training system that is pushed into the background, the prevention of pressure ulcer and the treatment of the affected patients are also influenced by the continuity. In order to assure this, an organised, disciplined and definite communication system is required that acts on behalf of the patients and provides the quality of treatment.

The treatment of pressure ulcer also depends on the appropriate choice among the available therapies. It is important that nurses who are responsible for further treatment are given precise information regarding the already applied treating methods. In order to be able to treat bedsore in a more efficient and effective way, the primary condition is the accurate patient

shadowing, in the cause of which cooperation among the different stages of public health is required.

Besides the efforts on cost efficiency, successfulness is frequently pushed into the background. It can be often experienced that both the healing process and the exit of pressure ulcer are not convenient and a significant number of patients still dies in spite of the convenient quality of nursing and treatment.

The aim of this research is to shed light on the importance of communication among the nurses working in different stages of public health, with the help of which improvement of professional quality can be achieved in addition to patient centricity, the holistic approach and cost efficiency. This paper is the first step to demonstrate that a contact among the various areas of health provision and hereby the successfulness, efficiency and effectiveness of this way of communication can have influence on the quality of treatment.

## **Aims**

The aims of this paper demonstrating multistage research work are the following:

- to support that pressure ulcer is one of the most important indicators of the quality of health provision,
- to investigate that assuring the objective conditions of nursing and health care in a convenient extent can have a bearing on the course of pressure ulcer,
- to investigate whether nurses judge their knowledge regarding to the prevention and treatment of pressure ulcer correctly, besides taking advantage of the current educational and training opportunities,
- to support that treating pressure ulcer requires a cooperation among the different systems of health care that also bears close relation to the exchange of information among them and to its form,
- to present that communication among the systems of health provision is closely related to the effective cooperation and the flow of information among them.

This thesis wants to establish the basis of further research in the future that is going to investigate the efficiency of communication among the systems of health care and with the help of which communication can be seen as one of the most important indicators of the quality of nursing.

## **Method**

### ***The process of research***

In the *phase of preparation* of this multistage research work, it was required to decide what kind of incidence index number could be used during *the patient shadowing*. This exact step is not part of this thesis; however, this examination can be seen as a major condition of the completion of further research, as it defines the applied method. The results of patient shadowing wanted to support the next phase called *the investigation of communication efficiency*. Discrete variables that participated in treating pressure ulcer, kept contact with each other and in case of which it was necessary to fulfil the study were also determined.

### ***The phase of preparation: A brief description of the investigation of index numbers***

This survey searched for such an incidence index number with the application of which it was possible to measure an annual, valid, reliable and quantitative incidence and frequency and in case of which the influential effects of structure could not get across.

The study was carried out in 2006 in different inpatient departments of a 1500-bedded regional institution. Those departments were chosen as samples in which the occurrence of pressure ulcer was significant on the basis of the reports of the preceding years. In this examination all inpatients suffering from pressure ulcer took part, apart from the seriousness of the development of decubitus and the categorisation of its stages. On the basis of the period the sample included 121 people, and according to the date, it enclosed 21 patients.

Every quarter-year retrospective period prevalence and in predetermined dates point prevalence examinations were carried out in the selected departments. These data were averaged and the incidence index numbers (Pd, Pp) referring to the year of 2006 were determined. On the basis of the data of the period and point prevalence calculated in every three months, dispersion analysis (scatter, SD) was performed in order to investigate the average difference from the mean.

*All in all*, this preceding examination proved that the shadowing of pressure ulcer occurred in the hospital could be achieved by continuous inspection. Period prevalence index numbers calculated on the basis of the above mentioned process were tend to be more precise than the point prevalence indexes.

### ***The examination of patient shadowing***

Sampling: In this study, decubitus inpatients, who were treated in the hospital between 1<sup>st</sup> January and 31<sup>st</sup> December, 2007, took part, apart from the way how pressure ulcer occurred and apart from its stages. In this examination, all patients took part who suffered from bedsore in 2007 and departments reported this to the decubitus team. In relation to this descriptive research, the method of sample footing was applied, in case of which the sample included N=299 patients. During this examination, those patients who had suffered from pressure ulcer before the hospital treatment, formed a distinct group (Group A, n=65); furthermore, patients in case of who pressure ulcer occurred while being treated in hospital were classified in another group (Group B, n=234).

Methods and means of gathering data: This investigation was carried out with the help of the longitudinal prospective method, which was closely followed by the processing of the gathered data. Questionnaire used for patient shadowing was adapted for identifying each patient properly. On the basis of this, it was possible to gather information about the length of each patient's stay in various departments, all changes in the patients' general health conditions, the exact scene of the occurrence of pressure ulcer, its characteristics, and on the basis of these, the criteria of its outcome (its course), as well, the applied preventive methods and therapies.

Statistical analysis: The presentation of the results and of the relation between them was realised with the help of arithmetical statistical methods (Chi distribution (analysed at a significance level of 5%,  $p \leq 0.05$ ), in case of symmetry of the nonmetric (nominal) scale, Cramer's V ( $0 \leq V \leq 1$ ), or in case of its asymmetry, Lambda ( $0 \leq \lambda \leq 1$ )) and SPSS 15.0 Program were employed.

### ***The survey carried out among nurses working in health care***

Sampling: This current investigation was carried out between 2009 and 2011. The discrete majority included nurses working in health care in Hungary in the above mentioned period. Random, non-proportional, stage sampling was used in order to define the exact categories of the majority (general practitioners, inpatient and outpatient departments, home nursing services) that was followed by the selection of items on the basis of random sampling. The correspondence concerning the criteria of taking part in the treatment of pressure ulcer and in connection with the therapy of pressure ulcer, the sample can be stated as representative. The

selection out of the majority was not realised in case of the same stages in two years' time; that was why the sample was investigated in total. In order to achieve the 100% of representativeness, 414 questionnaires filled in by nurses dealing with the treatment of pressure ulcer were taken into consideration during this research.

Methods and means of gathering data: In relation to the stages of health care, the quantitative deducing and descriptive method was applied, which was completed with questionnaires. Before the distribution of questionnaires, 10 and again 10 more nurses (working in the provision provided by general practitioners, home nursing services, outpatient and inpatient departments) were asked to fill it in in order to analyse the interpretability of the questions. A testing of authenticity was also fulfilled with the help of 10 nurses, which was analysed in case of the questions included in each interval scale.

Statistical analysis: In order to be able to characterise the sample, criteria and numerical variables were determined, in case of which metrical and non-metrical scales were used. The effects of non-metrical (categorised) scales were investigated with the help of a one and multiple analysis of variance (ANOVA); furthermore, in order to present the strength of the effects, META tag distribution ( $0 \leq \eta^2 \leq 1$ ), and in case of significant difference, bilateral Z-transform ( $\alpha \leq 5\%$ ). were calculated in order to compare the means. In case of metric interval scales, Chi distribution (analysed at a significance level of 5%,  $p \leq 0.05$ ) was applied to investigate the contact between them, and in case of the quality of the contact, Pearson product-moment correlation coefficient ( $0 \leq R \leq 1$ ) was calculated.

## **Results**

### ***The demonstration of the results of patient shadowing***

The demonstration of the sample was carried out with the help of comprehensive analysis. *Table 1* contains the patients who already suffered from pressure ulcer at their arrival in hospital (Group A), and those, in case of who pressure ulcer occurred during their stay in hospital (Group B), as well as data regarding the total amount of decubitus patients.

In connection with Group B, decubitus occurred in 69,7% of the cases in the acute department on the 6<sup>th</sup> day of their treatment, and in 30,3% of the cases, it happened in the chronic department on the 38<sup>th</sup> day of their treatment. During the provision of incontinence, catheters were used in 47% of the cases, both catheters and incontinence pads were applied in 34% of the patients and in 17% of the cases only incontinence pads were used.

**Table 1: Data of patients suffering from decubitus and of features of pressure ulcer**

	Patients arriving in hospital with decubitus (Group A)	Patients in case of who decubitus occurred in hospital (Group B)	Total amount of the patients suffering from decubitus
	n=65 (21.7%)	n=234 (78.3%)	N=299 (100.0%)
Age (average), year	74	75	74
Sex, % (person)			
<input type="checkbox"/> male	38,5 (25)	38,9 (91)	38,8 (116)
<input type="checkbox"/> female	61,5 (40)	61,1 (143)	61,2 (183)
They came from, % (person)			
<input type="checkbox"/> home	66,1 (43)		78,3 (234)
<input type="checkbox"/> another institution (acute)	18,5 (12)		11,7 (35)
<input type="checkbox"/> another institution (chronic)	6,2 (4)		3,3 (10)
<input type="checkbox"/> old people's home	9,2 (6)		6,7 (20)
The scene of incidence, % (person)			
<input type="checkbox"/> acute department		30,3 (71)	
<input type="checkbox"/> chronic department		69,7 (163)	
Stages (the most serious), % (person)			
I.	12,3 (8)	26,5 (62)	24 (71)
II.	60,0 (39)	62,8 (147)	62 (185)
III.	12,3 (8)	6,8 (16)	8 (24)
IV.	15,4 (10)	3,8 (9)	6 (19)
Localisation, % (person)			
ischium	1,5 (1)	1,3 (3)	1,3 (4)
buttock	0	1,3 (3)	1,0 (3)
sacrum	60,0 (39)	71,4 (167)	68,9 (206)
heel	16,7 (11)	7,7 (18)	9,7 (29)
ankle	4,6 (3)	3,4 (8)	3,7 (11)
tibia	0	0,4 (1)	0,3 (1)
others	0	0,4 (1)	0,3 (1)
ischium+sacrum	6,2 (4)	0	1,3 (4)
buttock+sacrum	3,1 (2)	0	0,7 (2)
buttock+heel	0	0,9 (2)	0,7 (2)
sacrum+heel	3,1 (2)	9,0 (21)	7,7 (23)
sacrum+ankle	0	3,4 (8)	2,7 (8)
heel+ankle	1,5 (1)	0	0,3 (1)
sacrum+heel+others	0	0,9 (2)	0,7 (2)
sacrum+heel+elbow	3,1 (2)	0	0,7 (2)
Course, % (person)			
recovered	6,1 (4)	15,4 (36)	13,4 (40)
improved	16,9 (11)	12,8 (30)	13,7 (41)
unchanged	50,8 (33)	39,7 (93)	42,1 (126)
worsened	26,2 (17)	32,1 (75)	30,8 (92)
Further life of the patient, % (person)			
exit	61,5 (40)	59,4 (139)	59,9 (179)
another institution	13,9 (9)	12,0 (28)	12,4 (37)
patient's home	24,6 (16)	28,6 (67)	27,7 (83)

Decubitus patients were completely restricted to their movement, out of which 59% were disabled and required complete provision; while 41% were limited in their movement and were in need of help. In order to provide the feeling of comfort for patients, nurses decided to apply the so called old-style means in 47% of the investigated cases, often besides the application of preventive means. Static preventive pads and means were used in 22% of the cases and dynamic mattresses and beds were applied in 30% of the patients. Concerning the use of bandage, the application of modern wound healing methods (53%) and the combined use of different types of bandages (31%) must be emphasised besides the traditional methods (16%).

From a statistical point of view, the use of means of comfort shows significant relation to the application of dynamic means ( $p=0,000$ ), however, the index number of the strength of the contact between them is  $V=0,206$  (20,6%). The use of static means is in significant relation to the application of dynamic means and to the degree of patients' motility ( $p=0,000$ ,  $p\leq 0,021$ ). On the basis of the former, the strength of the contact can be seen as strong ( $V=0,601$ ); with one word, it can be affirmed if the application of dynamic means were already been carried out, the choice among the static means would not be necessary to be fulfilled in 60,1% of the cases. In case of the latest, it can be determined that the patients' motility influenced the application of static means ( $V=0,133$ ) in 13,3% of the examined cases.

The result of pressure ulcer shows significant relation to the selected methods of wound therapy ( $p\leq 0,004$ ) and to the patients' motility ( $p=0,000$ ). The strength of the contact between wound healing and its result can be stated according to which variable is seen as dependent: if wound healing is the dependent variable, it is 6,4% ( $\lambda=0,064$ ); if the result is the dependent variable, they have a degree of influential effects of 4% ( $\lambda=0,04$ ) on each other. The patients' motility has an effect in a degree of 10,5% on the result of the treatment ( $\lambda=0,105$ ).

Significant relation could be observed between wound healing and motility ( $p=0,000$ ). Regarding the characteristics of the contact, motility had an effect on the chosen methods of wound healing in a degree of 8,1% ( $\lambda=0,081$ ).

Significant relation could be shown between the course of pressure ulcer and the further lives of patients ( $p=0,000$ ). Concerning the characteristics of the contact, if the factor of patients' further lives is treated as dependent variable, it is 32,5% ( $\lambda=0,325$ ); but if the course of pressure ulcer is seen as dependent variable, the influential effect could reach the amount of 41%.



### ***The demonstration of the results of the research carried out among nurses working in health care***

After investigating the demographic features of nurses working in each analysed department of health care, it can be stated that the average age is between 37 and 45 years. On the basis of the whole sample, the highest professional qualifications (NER)<sup>1</sup> and (degree, BSc) are obtained by more than 60% of the nurses, or to be more precise by 41,8% and 21,7% of the nurses. The average working time of the nurses who filled in the questionnaire was between 17 and 26 years. 254 nurses (61,4%) out of those who filled in the questionnaire said that they had already fulfilled tasks beyond their range during their work.

From the point of view of cooperation with home nursing, nurses placed the healing of wounds that are especially difficult to treat in 9% of the cases on the first, in 10% of the cases on the second, in 15% of the cases on the third, in 12% of the cases on the fourth and in 13% of the cases on the fifth place. 67,3% of the nurses working in special areas of health care was on the opinion that pressure ulcer had already occurred in hospital, and 22,1% of them thought that it happened in an old people's home, while the rest (10,6%) marked the patient's home as the scene of its development.

On the basis of this survey, the majority of nurses (n=391) applied preventive means during the treatment. In all of the investigated areas of health provision, the use of means for comfort was widespread. The application of dynamic means could be mainly observed in case of inpatient departments. In relation to the extensive use of traditional methods of wound healing (55,1%), the use of hygroscopic bandage (55,1%) and of alginate (44,9%) could be examined. The selection among the types of bandage was determined by slightly different factors in case of each department of health care. In case of the provision provided by the general practitioners, inpatient and outpatient departments, the patient's solvency could have a bearing on the use of bandage in a degree of 33,3%, besides the application of the prescribed methods (43,6% and 20,5%). During home nursing, bandages that were prescribed during treatment in the inpatient department were applied (62,1%). In case of inpatient and outpatient departments, the choice among the bandage was influenced by availability of different types (93%, 72,7%), however, in case of outpatient provision, in 22,7% of the cases it was taken into consideration what kind of bandage had been used previously.

Nurses who took part in this research reported to have attended training courses connected with the treatment of pressure ulcer (69,6%). Within frame of the judgement of their own

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<sup>1</sup> NER = National Educational Register referring to OKJ

knowledge related to the prevention, the significance level of training is lower ( $p \leq 0,036$ ) and the significance level of professional qualification is higher ( $p \leq 0,517$ ) than 0,05 that can be seen as acceptable; that is why taking part in training courses that has a bearing on the knowledge in relation to prevention is significant. According to the judgement of own knowledge related to treatment, the significance levels of training and professional qualification are higher ( $p \leq 0,064$  and  $p \leq 0,375$ ) than 0,05 that can be seen as acceptable; that is why their effects on the knowledge connected to treatment cannot be treated as significant.

Participating in training courses – as it has been already stated above – exerts influence on the level of own knowledge related to prevention; that is why it was investigated how it could be influenced. With the help of bilateral Z transform ( $Z = -3,04$ ) it was stated that those nurses who had not taken part in any training achieved higher average than those who had. Participation in training could be related to the judgement of own knowledge regarding the treatment ( $Z = 3,42$ ). Those nurses who had already participated in training courses judged their knowledge in connection with prevention and treatment at a much lower level.

In relation to provision provided by general practitioners, the judgement of prevention and own knowledge regarding the treatment showed significant and medium strong relation between the judgement of own knowledge and of knowledge of other general practitioners ( $p \leq 0,046$ ,  $R = 0,321$  and  $p \leq 0,004$ ,  $R = 0,448$ ); moreover, between the judgement of own knowledge and of home nursing ( $p \leq 0,025$ ,  $R = 0,414$  and  $p \leq 0,009$ ,  $R = 0,477$ ). In case of home nursing, regarding prevention and treatment, significant and medium relation could be observed between the judgement of own knowledge and of other home nursing services ( $p \leq 0,007$ ,  $R = 0,491$  and  $p \leq 0,029$ ,  $R = 0,406$ ). In case of provision provided by hospital departments, the judgement of own knowledge connected with prevention and treatment and fulfilled among nurses working in a hospital showed medium strong, significant difference from the judgement of knowledge of other nurses working in other hospitals ( $p \leq 0,000$ ,  $R = 0,528$  and  $p \leq 0,000$ ,  $R = 0,531$ ).

The provision provided by general practitioners gained information about the fact of development of pressure ulcer in 86,1% of the cases from patients or relatives, in 66,7% of the cases from the final hospital bulletin. In 75,9% of the cases the general practitioner, in 62,1% of the cases patients or relatives transmitted information to the home nursing service. In case of the outpatient provision, the main information sources were patients and/or relatives (77,3%) and the final hospital bulletin (77,3%), besides the category of others (59,1%). Concerning the category of others that occurred in all areas, the majority of nurses who filled

in the questionnaire emphasised their own observations. Inpatient departments receive information related to the treatment of pressure ulcer from different sources and this showed similar proportions as the above mentioned; in 59,8% of the cases patients or relatives, in 44,9% of the cases other sources (e.g. own observations), in 34,6% of the cases the final hospital bulletin, in 31,5% of all cases the so called “final nursing bulletins” sent by other hospitals or in 28,3% of the cases those sent by other departments were marked as information sources.

After investigating the influential effects of criteria of nursing documents, it could be reported in relation to the judgement of exchange of information that in case of the provision provided by general practitioners, the effect of the category of others ( $F=0,028$ ), in case of home nursing, the effect of the category of “written form” and the effect of the category of others ( $F=0,033$  and  $F=0,026$ ), in view of the nurses’ own exchange of information, the nursing process and the traceability of the patients’ nursing needs ( $F=0,020$  and  $F=0,010$ ) showed significant differences.

In case of examining the judgement of cooperation among the stages of health care, 59 people judged it as bad and 23 people judged it as excellent. No significant difference ( $0,253 \leq F \leq 0,874$ ) could be found between the judgement of professional qualifications and of cooperation. The judgement of cooperation was significant and medium strong relation was observed regarding the various stages of health care ( $p=0,000$ ,  $0,280 \leq R \leq 0,710$ ).

In view of the judgement of the exchange of information, normal distribution could be seen from the middle in a negative direction (leaning to the right) in the areas of home nursing and provision provided by general practitioners. If all of the answers are observed, the majority marked the “oral exchange of information after the request” (139 people and 129 people), however, more nurses reported that in their opinions, no exchange of information existed among the stages of health care (91 people and 97 people). The judgement of the exchange of information directed to another stage of health care showed significant, medium strong relation in regarding to every area of health provision ( $p=0,000$ ,  $0,261 \leq R \leq 0,634$ ). The judgement of nurses’ own exchange of information could not be brought into connection with the judgement of the exchange of information directed to other stages of health care. That is why it could be seen as a subjective factor. But at the same time weak significant difference could be observed between the judgement of nurses’ own exchange of information and the judgement of cooperation among the hospital departments ( $p \leq 0,016$ ,  $R \leq 0,124$ ). While searching for the relation among the areas of health care, significant difference could be found

between the judgement of cooperation and of exchange of information ( $0,000 \leq p \leq 0,005$ ). In case of the strength of relation the following values were calculated:  $0,140 \leq R \leq 0,562$ . The self-esteem of the nurses showed significant, medium strong characteristics ( $p \leq 0,000$ ,  $R \leq 0,492$ ) in view of the exchange of exchange of information.

Nurses who took part in this research judged the exchange of information among the different stages of health care as “acceptable” or as even much worse than this. The judgement of cooperation showed significant, weak relation to the judgement of the efficiency of communication ( $0,012 \leq p \leq 0,036$ ,  $0,107 \leq R \leq 0,127$ ). The judgement of exchange of information showed significant, but weak difference ( $p \leq 0,029$ ,  $R \leq 0,111$ ) from the judgement of the efficiency of communication only in case of the hospital provision. The significant characteristics of the cooperation and the exchange of information also showed similar significance in view of the judgement of efficiency of communication concerning all three areas of provision.

## Conclusion

1. With the help of the patient shadowing it is supported that pressure ulcer can be understood as an important indicator of the quality of nursing and that of provision, as well.
2. The national health care system follows the international standards in view of the factors influencing the disease process, of the incidence of pressure ulcer and of the provision and shadowing of pressure ulcer.
3. In the institutions applied descriptions of action provide direction for nurses in case of planning and execution of the process of prevention and nursing. However, in order to be able to prevent and treat pressure ulcer efficiently, it must be stated that a national, unified, evidence-based recommendation does not exist. Therefore
  - The use of means of comfort can be seen as standardised; however, the choice between static and dynamical means happens in an intuitive way, which makes it necessary to define the application of such means on the basis of the guidelines of the protocol.
  - Regarding wound treatment, national consensual materials can be found that are well-known by the health provision systems; however, the choice among the types of bandage is carried out in an ad hoc way. The reasons of this cannot be found in

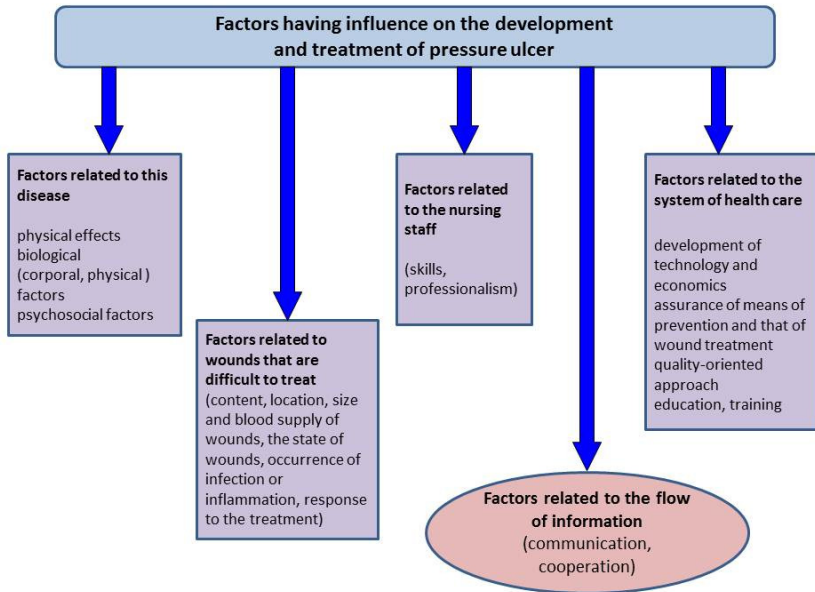
nursing, but in other conditions, whose further research is strongly recommended for organisers and financiers of health provision.

- Furthermore, it is also essential to define the concrete methods of healing wounds in the protocol with reference to the determining parameters of pressure ulcer.
4. We can also state that shortcomings are still experienced in case of the national systems of health care with regards to the prevention and provision of pressure ulcer.
  5. Patients suffering from pressure ulcer can occur or occur in any stages of health care and according to this, its nursing requires cooperation and professional communication among every stage of the health provision system.
  6. The role of therapies provided by inpatient departments and home nursing services is seen as essential regarding the provision of pressure ulcer. The importance of the former is that it is the main scene where pressure ulcer mostly occurred, while the latest deals with the patients' further nursing. As on the basis of the current regulations of the law the provision provided by general practitioners is the one that can prescribe home nursing recommended by the (inpatient and outpatient) departments of a hospital; that is why the responsibility of this area for transmitting information is especially stressed.
  7. The continuity of the patients' treatment is not secured and its reasons can be found in the indefinability of the authority, the differentiation of the institutions of health care and in the relating regulations of the current law on data protection.
  8. Systems of health provision prefer home nursing services in foreign countries. Home nursing plays the key role in the therapy of patients suffering from pressure ulcer, too; that is why it is important that the ways of communication are going to be improved.
  9. The importance and adequacy of professional training courses that are treated as conditions in case of the structure of the quality of health provision were also emphasised. At the same time the fulfilment of their quantitative features was not investigated in this case. The qualifications of nurses working in health care in Hungary are convenient that can be understood as human reserves and that can partially compensate the lack of structural (objective and personal) background. The discovery of reserves hidden in the human resource can support the utilisation of the available conditions.
  10. Continuous training and the achievement of higher qualifications improve the nurses' knowledge, their professional self-esteem and the efficiency of communication, but which do not lead directly to the adequacy of the cooperation and flow of information.

Factors in the background that have influence on the above mentioned are needed further investigation.

11. Among some areas of health provision the penetrability is disorganised and deficient, and happens mainly in informal way and in speech. But this is not suitable to give precise feedback on a patient's state of health. Communication among the nurses working in different areas of health provision is simple and incidental, no regulating standards can be observed.
12. It could be also proved that cooperation among the different stages of health provision whose conditions, such as the patient-centred documentation of the shadowing of the process of nursing can be treated as an significant tool of the exchange of information has an extremely important role in case of holistic therapy of patients suffering from wounds that are difficult to treat (like pressure ulcer). In detail, documentation has an essential role in case of the cooperation among the different stages of health provision and of the flow of information that has an effect on the efficiency of communication.
13. The judgement of the efficiency of communication can be influenced by the cooperation of the stages of health provision and by the degree of flow of information.
14. Such areas were examined in case of which the further perfection of evidence was necessary, because the stress was put on the improvement of the process, besides the dimensions of the quality of structure and results. It was also proved that in case of qualified nursing communication among the stages of health provision could be seen as an indicator of the process.

*In conclusion* it can be stated that the development and process of pressure ulcer are related to the factors concerning the flow of information, besides the factors that have already been mentioned in the introductory part of this thesis. (*Figure 1*)



**Figure 1: Factors influencing the development and healing of pressure ulcer (on the basis of Vowden et al. (2008), but created on my own)**

Regarding the institutional characteristics of the health care, during the diagnosis, therapy and nursing of a disease of an individual, more stages of health provision keep contact with each other. The relation among these departments, the characteristics, forms and professionalism of the therapy have a bearing on the patient's opinion related to health care and on the efficiency of the treatment, healing and nursing. The members of the team of suppliers have an essential role in the treatment of bedsore and in the prevention of the worsening of state. Their cooperation and the development of the relation among them are the key figures in case of the efficient and effective health provision.

Criteria that could be related to the prevention and treatment of pressure ulcer were also stated and should be taken into account concerning the communication. On the basis of the categorisation made by Kővágó (2009), it can also be stated that the roles of participants in the communication, the means of the process and other factors can be seen as essential and on the basis of which the disorders of the flow of information can be ceased (Table 2).

**Table 2: The participants and characteristics of communication during the prevention and therapy of pressure ulcer (on the basis of Kővágó (2009), created on my own)**

Items of communication		Prevention and treatment of pressure ulcer	Characteristics
participants of communication	sender	the official representative of the institution that sends the patient	<ul style="list-style-type: none"> <li>• professionalism</li> <li>• reliability</li> <li>• sympathy</li> </ul>
	receiver	the official representative of the institution that continues the therapy of the patient	<ul style="list-style-type: none"> <li>• professionalism</li> <li>• attitude</li> </ul>
	human environment	---	
tools of the process	coding/ decoding	the Hungarian language, the medical technical language	<ul style="list-style-type: none"> <li>• the use of unified terms, phrases</li> <li>• on the basis of guidelines</li> </ul>
	message	referring to: <ul style="list-style-type: none"> <li>• the situation</li> <li>• the previous ways of treatment</li> <li>• further treatment</li> </ul>	<ul style="list-style-type: none"> <li>• patient-centred</li> <li>• connected to reality</li> <li>• explicit</li> <li>• clear authority</li> </ul>
	channel	printed documentation	<ul style="list-style-type: none"> <li>• known by everyone</li> <li>• defined criteria in case of application</li> <li>• edited in a logical way</li> </ul>
other factors	response (feedback)	in case of control, reacting and giving feedback	<ul style="list-style-type: none"> <li>• show the direction of the process</li> <li>• show the efficiency of the process</li> </ul>
	noise	distortion of information obstacles	areas providing further treatment should understand the process of therapy correctly
	environment (objective)	effects of outer factors (patients, relatives)	<ul style="list-style-type: none"> <li>• transfer of information: institution that sends a patient should provide a defined type of documentation</li> <li>• this documentation should be given to the department that is responsible for the further treatment of the patient</li> </ul>

Research dealing with the relation between the quality of communication and the development of pressure ulcer cannot be found. Further suggestions are summarised in the following:

- the creation of professional guidelines concerning the prevention and treatment of pressure ulcer that is adapted to this country
- the revision of the shadowing and documentation of the secure sick-reports. The creation, unification, introduction and application of the required documentation and the controlling of its use.
- In order to be able to carry it out, the revision of regulations regarding the protection of data is necessary, followed by the creation of an on-line data base connecting the different stages of health provision and of the “relating report of the course”, as well as the foundation of its objective conditions. With the help of these, on-line dual directed communication will be secured and with the application of which the flow of information is also assured. The foundation of the conditions of this database (e.g. the invention of compatible hardware, the careful improvement of software, or the organisation of training



courses) requires much more time. But so far, the application of well-edited, paper-based documentation (e.g. unified final medical and nursing bulletins, reports of exit, etc.) should be made obligatory in relation to all of the stages of health provision.

- In order to achieve this, unified language use, knowledge and training of those nurses working in less preferred areas of health provision and the widening of their knowledge are required.
- It is also essential to define the standards of communication among the stages of health care and to improve the indicators in relation to the efficiency of communication.
- The continual training courses could provide help in the cooperation of the different areas of health provision, besides the widening and actualisation of the knowledge of nurses.
- Because of the complexity of the healing of wounds that are difficult to treat, needs regarding the centralisation of tasks related to the therapy have aroused – on the basis of international examples (O’Hare 2008), the establishment of “wound healing centres” and the definition of the sphere of activity as the “nurse specialist in wound care” should be fulfilled.
- In order to achieve this, the revision of the educational system is needed; moreover in case of nurses, it is necessary to secure the determination of such a sphere of activity that pays attention to the requirements of the already existing competence-based training courses.

With the help of all of the above mentioned conditions, the treatment of patients suffering from chronic wounds would be more expedient and verifiable that could have an effect on costs efficiency and effectiveness. This research supposes that besides the lack of conditions in case of infrastructural and objective tools, as well as that of lack of personal conditions, the standardisation of communication would not pose further financial problems, but at the same time it could lead to the improvement of the effectiveness of the therapy. This research aimed to shed light on the other reserves that could be found in health care.

## Summary

In spite of the already existing standardised, structural conditions of the prevention and treatment of pressure ulcer and of the regulations of the process, therapies show unfavourable results. With the help of presenting the descriptive bibliography in details, those influential factors on the development were also demonstrated, which went against the own experiences. This paper aimed to find out the reason of this contradiction. Factors influencing the outcomes of pressure ulcer were examined. It was also supposed that the qualifications of nurses working in the investigated areas of health care could have a bearing on their knowledge related to the prevention, treatment and to the judgement of the cooperation among the different stages of health provision. It was believed that the judgement of applied nursing documentation could be related to the judgement of the exchange of information among the areas of health care that with the judgement of cooperation effected the judgement of the efficiency of communication.

In frame of this multiple stage research, the applicability of incidence numbers of pressure ulcer were investigated, then the relation to the influential factors on development of decubitus was also examined with the help of the survey carried out among the patients suffering from pressure ulcer. This research found out significant relation between the outcome of pressure ulcer and the motility of patients; moreover between the selected methods of wound healing as well as between the motility and the application of preventive means and means for comfort, including the connection between the use of static means and the methods of wound healing. On the basis of the research fulfilled among the nurses the participation in training courses and their knowledge regarding prevention did not show significant difference. It was stated that both cooperation among the stages of health provision and the exchange of information could improve the efficiency of communication.

A new influential factor, more precisely the exchange of information, was also defined in relation to the development and treatment of pressure ulcer. Suggestions were put into words concerning the revision of the structural and disciplining processes of health care and the determination of basic criteria of communication in view of which the flow of information could become uninterrupted and health provision would concentrate on the holistic approach in case of treating patients.

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