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Implementation of the Educational Program Among the Patients Treated Surgically Due to the Damage of the Part of the Centural Spine

Realizacja programu edukacyjnego wśród chorych leczonych operacyjnie z powodu schorzeń części szyjnej kręgosłupa

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Abstract

Introduction. Treatment of patients with spine disorders is a subject of interest to many medical disciplines. Most patients complaining of back pain are successfully cured with conservative methods, some require surgical procedures. In the entire therapy process, regardless of the method of treatment, patient education cannot be ignored.

Aim. Evaluation of the implementation of the educational program conducted among patients treated surgically for diseases of the cervical spine.

Material and Methods. The research was conducted among 156 patients on the Neurosurgery and Neurotraumatology Ward of The University Hospital No. 2 in Bydgoszcz, treated surgically for diseases of the cervical spine. The original educational program was carried out during the hospitalization of the patient in the ward. The program evaluations were planned through a preliminary and final verifying survey for each participant of the program. The collected material was subject to statistical analysis.

Results. Women constituted a larger group — 102 respondents (64.6%). The average age of the respondents was — 54.2 years. Before the implementation of the program, 92 people (58.2%) said they had partial knowledge of cervical spine diseases, but 48 respondents (30.4%) said they knew very little and only 6 patients (3.8%) indicated that they knew a lot. After the education, the vast majority of respondents claimed that their knowledge about life with cervical spondylosis disorders had improved significantly — 149 people (94.3%).

Conclusions. The respondents evaluated the program very well; almost all of them acknowledged that their state of knowledge about the life and prevention of spine diseases had definitely improved. There was a significant improvement of the respondents' knowledge on the causes of back pain, mainly in people with primary education. (JNPN 2018;7(3):96–103)

Key Words: education, spine, pain

Streszczenie

Wstęp. Leczenie chorych ze schorzeniami kręgosłupa jest przedmiotem zainteresowania wielu dyscyplin medycznych. Większość chorych skarżących się na ból kręgosłupa udaje się wyleczyć metodami zachowawczymi, część wymaga postępowania operacyjnego. W całym procesie terapii, niezależnie od metody leczenia, nie można pominąć kwestii edukacji pacjenta.

Cel. Ocena realizacji programu edukacyjnego prowadzonego wśród chorych leczonych operacyjnie z powodu schorzeń części szyjnej kręgosłupa.

Materiał i metody. Badania przeprowadzono wśród 156 pacjentów Oddziału Neurochirurgii i Neurotraumatologii Szpitala Uniwersyteckiego nr 2 w Bydgoszczy, leczonych operacyjnie z powodu schorzeń części szyjnej kręgosłupa. Autorski program edukacyjny realizowano w trakcie hospitalizacji pacjenta w oddziale. Ewaluacje programu

zaplanowano poprzez wstępną i końcową ankietę sprawdzającą u każdego uczestnika programu. Zebrany materiał poddano analizie statystycznej.

Wyniki. Kobiety stanowiły licznější grupę — 102 osoby (64,6%). Średnia wieku badanych wyniosła — 54,2 lat. Przed realizacją programu 92 osoby (58,2%), stwierdziły, że mają częściową wiedzę w zakresie chorób części szyjnej kręgosłupa, ale już 48 badanych (30,4%) uznało, że wie bardzo mało, a tylko 6 pacjentów (3,8%) wskazało, że wie bardzo dużo. Po przeprowadzonej edukacji, zdecydowana większość respondentów twierdziła, że ich stan wiedzy na temat życia ze schorzeniami kręgosłupa szyjnego zdecydowanie się poprawił — 149 osób (94,3%).

Wnioski. Badani ocenili program bardzo dobrze; niemal wszyscy uznali, że ich stan wiedzy na temat życia i profilaktyki schorzeń kręgosłupa zdecydowanie się poprawił. Istotnie poprawiła się wiedza badanych na temat przyczyn bólu kręgosłupa, głównie u osób z wykształceniem podstawowym. (PNN 2018;7(3):96–103)

Słowa kluczowe: edukacja, kręgosłup, ból

Introduction

Spinal diseases can occur in the form of numerous disease states located within its structures, but the main problem that causes them is pain. The analysis of epidemiological studies results indicates that between 45–85% of people in the population experience pain in the spine during a certain period of their life; in 35–40% they appear once a month, and in 15–30% every day [1]. It is estimated that pain is the main reason for physical disability in people under 45 [2]. Chronic pain negatively affects the quality of life, which results in lowering the physical, social and mental well-being, but also encourages the use of various ways to cope with pain [3,4].

Treatment of patients with spine disorders is of interest to many medical disciplines, however effective and rational therapy is hampered by such negative factors as: conditioning treatment methods on a specialist's experience of a particular field, multilevel treatment, applying multiple treatments simultaneously or sequentially, and chaos in terminology and diagnostics [5]. Most patients complaining about back pain are successfully cured with conservative methods, some require surgical procedures, although the views on treatment are not uniform [6]. Despite considering surgical treatment as the ultimate solution, for some patients (about 15%) it is the only available and effective method [7].

In the entire therapy process, regardless of the method of treatment, patient education cannot be ignored. In many countries, particularly highly developed ones, extensive measures have been introduced in the field of spinal pain prevention; they can be limited to the following main goals:

- creating a positive attitude and conviction to different methods of creating one's own health, and therefore strengthening the condition of the spine,
- comprehensive broadening of knowledge about the psychophysical conditions of health and disease,

- lifestyle change and shaping of movement behaviors that have a positive effect on the spine,
- developing the habit of systematic exercise and care for one's own posture for the purpose of reducing the incidence of back pain,
- shaping an active attitude to the surrounding reality and eliminating environmental hazards that increase the incidence of spine pain syndrome [8,9].

The aim of the study was to evaluate the implementation of an educational program carried out among patients treated surgically for diseases of the cervical spine.

Material and Methods

The analysis was carried out among 156 patients on the Ward of Neurosurgery and Neurotraumatology with the Subdivision of Therapeutic Improvement of the University Hospital No. 2 in Bydgoszcz, treated surgically for diseases of the cervical spine.

The original educational program was carried out during the hospitalization of the patient in the ward. Each patient qualified for surgery due to cervical spine disorders was shown the assumptions of the program on the day of admission and was asked to agree to participate in it. The program was commenced in 2014, after a year its assumptions were modified and it is currently being carried out in its final form. The presented analysis covers the period of 2015–2017. The patient recruitment scheme is presented in the figure below (Figure).

Women constituted a larger group — 102 people (64.6%). The average age of the respondents was — 54.2 years. The standard deviation accounted for over 17.0% of the average value, which proves the average age diversity. Most respondents had vocational education — 64 people (40.5%) or secondary one — 61 people (38.6%). Most of the respondents lived in the city — 106 people (67.1%). Considering the final diagnosis, there prevailed discopathy — 85 people (53.8%) or discopathy with frontal stabilization — 45 people

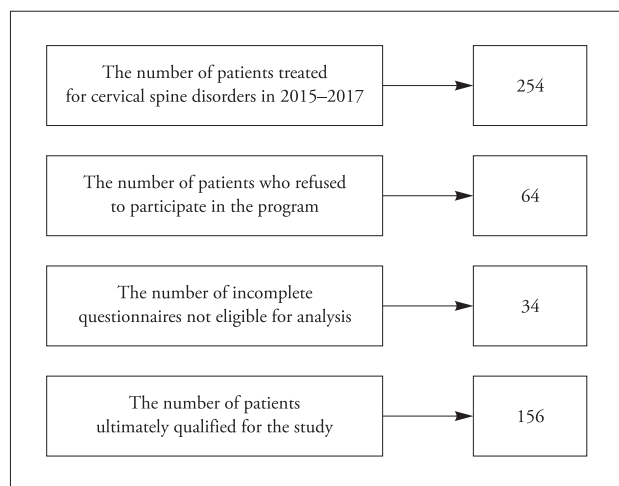


Figure. Scheme of selecting people for research

Table 1. Characteristics of the study group

Variable	N	%
Gender		
Woman	102	64.6
Man	56	35.4
Age group		
Up to 45 years	31	19.6
46–55 years	49	31.0
56–60 years	44	27.8
Over 60 years	34	21.5
Level of education		
Primary	12	7.6
Vocational	64	40.5
Secondary	61	38.6
Higher	21	13.3
Place of residence		
City	106	67.1
Village	52	32.9
Final diagnosis		
Discopathy	85	53.8
Discopathy with frontal stabilization	45	28.5
Discopathy with intervertebral stabilization	2	1.3
Myelopathy	2	1.3
Stenosis	17	10.8
Spondylosis	7	4.4
Level operated on		
C3–C4	7	4.4
C4–C5	30	19.0
C5–C6	94	59.5
C6–C7	25	15.8
Shoulders	2	1.3

(28.5%); the fewest respondents were operated on due to myelopathy, 2 people (1.3% each). The highest number of respondents underwent a surgery at the C5–C6 level — 94 people (59.5%) or C4–C5 — 30 people (19.0%). Detailed data characterizing the group are presented in Table 1.

The main assumptions of the program included the following issues:

1. Assessment of patient’s state of knowledge for the needs of education — determined on the basis of filling in a written questionnaire by the patient before the surgery (evaluation 1).
2. Determining the purpose of education.
3. Selection of teaching methods and means.
4. Identification of resources.
5. Program implementation plan:
 - a. before the surgery:
 - providing information on the causes and the nature of cervical spine disorders,
 - preparation of the patient for cooperation in the nursing process during hospitalization;
 - b. after the surgery
 - preparing the patient for self-care,
 - shaping the correct posture and movement behavior.
6. Planning the evaluation, preliminary (evaluation 1. — see point 1) and final (evaluation 2.) a survey for each participant of the program.

The educational program was carried out by nurses and physiotherapists of the neurosurgery ward. Consent for its implementation was obtained from the Director of the Hospital (37/2014) and the Bioethics Committee of Collegium Medicum in Bydgoszcz, UMK in Toruń (289/2014).

The results of the aforementioned questionnaires as well as sociodemographic and clinical data of those surveyed, obtained from medical records (medical history), were subject to statistical analysis. In the descriptive analysis, tables were used, in which the number and percentage of answers to individual questions were presented. The relationship between the two variables was calculated using the Spearman R correlation coefficient. In the study there was also used the non-parametric Kruskal–Wallis rank test, applied to compare many independent samples (groups). Also used the Mann–Whitney U test and the Wilcoxon matched-pairs test. The null hypothesis (H0) was assumed that there is no difference in the examined groups. The significance level $p \leq 0.05$ was also assumed as statistically significant level.

All calculations and figures were prepared with the use of Statistica 10.0 and Microsoft Excel spreadsheet, using the standard functions of this program.

Results

When assessing their level of knowledge about cervical spine disorders, the respondents answered the question: How do you assess your level of knowledge about cervical spine disorders and prevention of back pain? And so, 92 people (58.2%) said they were partially aware of the subject, but as many as 48 respondents (30.4%) said they knew very little, and only 6 people (3.8%) indicated that they knew a lot. After the education process completion, the vast majority of respondents claimed that their knowledge about life with cervical spondylosis disorders had improved significantly — 149 people (94.3%). Then, there was an attempt to determine what factors had an impact on that (Table 2).

Due to the level of significance ($p > 0.05$), there was no statistically significant difference observed between the gender groups concerning the results of the self-assessment of the level of knowledge and the impact of the conducted education on the knowledge possessed.

The age of the respondents did not remain in a statistically significant correlation with the results of the issues ($p > 0.05$). The level of respondents' education remained in a statistically significant, low correlation with the results of the issue ($p < 0.05$). The highest level of knowledge was assessed by respondents with higher education: I know a lot — 2 people (9.5%), I am partly familiar with the issue — 14 people (66.7%), followed by those with secondary education: I know a lot — 3 persons (4.9%), I am partly familiar with the issue — 40 respondents (65.6%).

Due to the level of significance ($p > 0.05$), there was no statistically significant difference observed between urban and rural residents, concerning the results of the self-assessment of the level of knowledge and the impact of the conducted education on the knowledge possessed. This dependence was also observed in relation to the operated level.

Further, as part of the assessment of knowledge on pro-health behaviors favouring positive health behaviors in the aspect of prevention of spine diseases, the respondents were asked (before and after the program) about the causes of these ailments and the assessment of the impact of physical activity on the formation and prevention of back pain (Table 3).

Respondents, when answering the question about the causes of cervical spondylosis, ticked a few statements. The majority of respondents indicated a sedentary lifestyle — 43 people, which accounted for 24.2% of all selected responses. Next, they provided “other” reasons, without specifying those causes (37 people, 20.8%) as well as stress and mechanical injuries (27 people, 15.2%). The lowest number of respondents indicated overweight/underweight — 18 persons (10.1%). After the education process, the majority of respondents indicated a sedentary lifestyle — 48 people, which accounted for 24.0% of all ticked statements. Further on, the participants of the program identified mechanical injuries as a reason for spinal problems — 41 people (20.5%), “other” causes — 39 respondents (19.5%) and stress — 33 people (16.5%). The lowest number of respondents indicated overweight / underweight — 16 people (8.0%) (Table 3).

Table 2. The influence of sociodemographic and clinical factors on the self-assessment of knowledge before (assessment 1) and after education process (assessment 2)

Variable	Sum of ranks			
	Woman	Man	Z	p
Gender*				
Assessment 1	8089.0	4472.0	-0.071	0.943
Assessment 2	8201.5	4359.5	0.334	0.738
Place of residence*	City	Village	Z	p
Assessment 1	8570.0	3991.0	0.527	0.598
Assessment 2	8424.0	4137.0	-0.009	0.993
Level of education**	N	R	–	p
Assessment 1	158	-0.228	–	0.004
Assessment 2	158	-0.106	–	0.187
Age**	N	R	–	p
Assessment 1	158	0.025	–	0.751
Assessment 2	158	-0.039	–	0.625
The level operated on***	df	H	–	p
Assessment 1	(3, N=156)	0.613	–	0.894
Assessment 2	(3, N=156)	0.920	–	0.821

*Mann–Whitney U test, **Spearman's rank correlation coefficient, ***Kruskal–Wallis test

Table 3. Causes of spine diseases and the impact of physical activity on the formation and prevention of back pain in respondents' opinion

Issue	Answer	Assessment 1		Assessment 2		P
		N	%	N	%	
Causes of spine diseases	Lack of movement	26	14.6	23	11.5	0.101
	Overweight/underweight	18	10.1	16	8.0	
	Sedentary lifestyle	43	24.2	48	24.0	
	Stress	27	15.2	33	16.5	
	Mechanical injuries	27	15.2	41	20.5	
	Other	37	20.8	39	19.5	
	Overall	178	100.0	200	100.0	
The impact of physical activity in the prevention of back pain	Yes	95	60.1	135	85.4	0.001
	I do not know	40	25.3	13	8.2	
	No	23	14.6	10	6.3	
	Overall	158	100.0	158	100.0	

Table 4. Selected variables and causes of spinal problems in respondents' opinion

Variable	N	T	Z	p
Gender				
Woman	76	1096.000	1.900	0.057
Man	48	566.500	0.221	0.825
Age				
Up to 45 years	21	108.500	0.243	0.808
46–55 years	41	412.000	0.240	0.811
56–60 years	34	210.500	1.487	0.137
Over 60 years	28	147.000	1.275	0.202
Education				
Primary	9	2.500	2.369	0.018
Vocational	49	459.000	1.527	0.127
Secondary	49	571.000	0.413	0.680
Higher	17	61.500	0.710	0.478
Place of residence				
City	81	1323.500	1.587	0.113
Village	43	423.000	0.604	0.546
Level operated on				
C3-C4	7	12.000	0.338	0.735
C4-C5	23	133.500	0.137	0.891
C5-C6	75	1071.000	1.869	0.062
C6-C7	18	73.000	0.544	0.586
Final diagnosis				
Discopathy	69	924.500	1.692	0.091
Stenosis	15	44.500	0.880	0.379
Spondylosis	5	5.000	0.674	0.500
Myelopathy	1	–	–	–
Discopathy with frontal stabilization	33	235.000	0.813	0.416
Discopathy with intervertebral stabilization	1	–	–	–

The appropriate form of physical activity prevents cervical spondylosis pain according to the opinion of 95 respondents (60.1%) — this was observed before the beginning of the program, after its completion the majority also ticked this answer, however, to a greater extent — 135 respondents (85.4%) (Table 3).

In the next stage of the research procedure, the obtained results concerning the causes of spinal problems and the assessment of the impact of physical activity on the formation and prevention of back pain were correlated with selected sociodemographic and clinical variables (Table 4 and 5).

As the Wilcoxon pair order test showed, there was a statistically significant difference in the results between the pre- and post-education period in the causes of spinal problems, only in the case of primary education — for 9 people (table 4). In turn, when analyzing the impact of physical activity, the same Wilcoxon pair order test showed statistically significant differences in the majority of analyzed variables; no dependence was recorded only in the group with primary and higher education, in patients with level C3-C4 operated on and in all positions of the final diagnosis, with the exception of discopathy (Table 5).

Table 5. Selected variables and the impact of physical activity on spinal problems in respondents' opinion

Variable	N	T	Z	p
Gender				
Woman	33	85.500	3.484	0.000
Man	26	53.000	3.111	0.002
Age				
Up to 45 years	13	16.500	2.027	0.043
46–55 years	15	14.000	2.613	0.009
56–60 years	14	9.000	2.731	0.006
Over 60 years	17	32.500	2.083	0.037
Education				
Primary	4	3.000	0.730	0.465
Vocational	35	125.500	3.104	0.002
Secondary	18	6.500	3.440	0.001
Higher	2	0.000	1.342	0.180
Place of residence				
City	38	78.000	4.242	0.000
Village	21	55.000	2.103	0.035
Level operated on				
C3-C4	1	–	–	–
C4-C5	9	3.500	2.251	0.024
C5-C6	39	151.000	3.335	0.001
C6-C7	9	3.500	2.251	0.024
Final diagnosis				
Discopathy	31	66.000	3.567	0.000
Stenosis	5	2.500	1.348	0.178
Spondylosis	4	0.000	1.826	0.068
Myelopathy	2	0.000	1.342	0.180
Discopathy with frontal stabilization	16	34.000	1.758	0.079
Discopathy with intervertebral stabilization	1	–	–	–

Discussion

Educating the patient was defined as a process enabling individuals to make conscious decisions regarding their personal health behaviors [10]; The American Joint Committee on Health Education and Promotion Terminology draws attention to the acquisition by individuals, groups of people and specific communities of information and skills enabling them to decide on health-related activities of an appropriate quality [11]. The same organization emphasises the importance of health educators, whom it defines as “professionally prepared, performing a number of rules persons, expertly trained to use appropriate educational strategies and methods for developing procedures, interventions and shaping the policy and systems that

promote health of individuals, groups of people and specific communities” [11]. The role of the health educator is therefore complex and should exceed a simple transfer of knowledge about health and disease and take into account a wide range of activities using a variety of methods and techniques aimed at improving health status, developed on the basis of theoretical and practical achievements of specialists in numerous areas addressing health education issues [12]. The nurse is one of the health care workers, who is obliged to spread prevention and health promotion, including health education.

In the analyzed group there were mainly patients with diagnosed discopathy (degenerative disc disease), which is the most frequent disease in an aging society [13]. Radiographic examinations indicate at least one degenerative change in the cervical spine on X-ray scans at the age of 65 in almost 95% of men and 70% of women [14]. The average age of the respondents was 54 years and is comparable with the results obtained by other authors [15], and also corresponds to the pathophysiology of cervical spine degeneration [16].

As regards the gender, 102 women (64.6%) and 56 men (35.4%) were examined. Some studies have reported that degeneration of the disk depends on the level of estrogen, which may partially explain the prevalence of women [17].

Pain in the spine, including the cervical part, is a common source of disability [18], hence there are numerous therapeutic interventions undertaken the effects of which may be limited and short-term [19]. The literature emphasizes that it is impossible to achieve a success in the treatment of back pain without properly conducted patient education [9,10]. Education is becoming a routine practice in the treatment of cervical spine pain, despite the lack of numerous scientific evidence confirming this recommendation [10,20]; although in the studies by Meeus M. et al. [21] it was found that education proved to be better than other interventions undertaken to reduce pain and disability. It is difficult here to standardize the forms of assessment, as patient education, most often provided through brochures, books, video films, the internet or lectures

with health care workers, diverse in its content, contains a wide range of activities aimed at providing patients with a strategy of independent behavior and dealing with pain [10,22], and above all, preventing the situation in which pain or disability appears and increases.

Nurses when implementing health education focus mainly on shaping individual health behaviors of a healthy person, endangered with a disease or of a sick person; therefore the goals and content of health education are focused on health, risk factors or the disease [23,24]. This was the case in these studies, although it should be noted that physiotherapists were also actively involved in the implementation of this program. The respondents themselves evaluated the program very well, almost everyone has acknowledged that their knowledge about living with cervical spondylosis has improved significantly; here education was the decisive factor — those with higher education before the start of the program had this knowledge significantly greater.

The literature indicates that some spinal disorders may be associated with health behaviors such as smoking [25,26], high body mass index [27,28] and insufficient physical activity [29,30]. 24% of the respondents indicated the sedentary lifestyle as the cause of the spine pain, however, after the education, 85% of the respondents knew that the appropriate form of physical activity prevented cervical spine pain. The respondents also pointed to the stress factor, which is consistent with the literature, because in relation to people with spinal disc disease it is stated that emotional problems occur here much more often than in healthy people [31]. The least frequently indicated cause in the own research was overweight.

Activities related to health education, or carrying out health promotion and undertaking preventive actions are one of the best ways to improve the level of public health and optimize spending on health care [32]. Conducting education of patients with spine disorders should be considered as a therapy supporting commonly used conservative treatment [10], but it should also be a basic task in the perioperative period.

Conclusions

1. The implemented educational program was attended by 75% of surgically treated patients, suggesting a substantial demand for such an activity.
2. The respondents evaluated the program as very good; almost all of them acknowledged that their state of knowledge about the life and prevention of spine diseases had been significantly improved.

3. Respondents' knowledge on the causes of back pain significantly improved, mainly in people with primary education. A positive influence of physical activity on the spinal ailments was noticed by the majority of the respondents, significant differences in the results were obtained in the majority of the analyzed variables.

Implications for Nursing Practice

The educational function is one of the roles that a nurse has to fulfill in every area of their activity. In the case of people treated neurosurgically due to spine diseases, it is worth noting that the greater knowledge of patients on the disease before surgery affects the reduction of pre-operative anxiety [33], and thus the entire therapy process. The implementation of vocational education in everyday nursing practice does not require a medical order, it is our basic duty.

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