

- A – preparing concepts (opracowanie koncepcji i założeń)
B – formulating methods (opracowanie metod)
C – conducting research (przeprowadzenie badań)
D – processing results (opracowanie wyników)
E – interpretation and conclusions (interpretacja i wnioski)
F – editing the final version (redakcja ostatecznej wersji)

The knowledge of patients after total hip arthroplasty regarding postsurgical recommendations and physiotherapy

Wiedza chorych po alopłastyce stawu biodrowego dotycząca zaleceń i fizjoterapii pooperacyjnej

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Abstract

Introduction: Physiotherapy and education are indispensable after total hip arthroplasty. The aim of the study was to assess the patients' level of knowledge about total hip arthroplasty, physiotherapy and everyday functioning after the surgery and to determine factors which affect this knowledge.

Material and methods: The study included 31 patients aged 57.03±14.53 years who underwent total hip arthroplasty. The authors' own questionnaire which verified the patients' knowledge about postsurgical procedures was used as a research tool. The questions were prepared on the basis of information provided to patients by physiotherapists and included, inter alia, photos showing correct and incorrect behaviours of patients after the surgery.

Results: Nearly 30% of the respondents demonstrated a high level of knowledge. The Internet was the most common (43%) source of information regarding the surgery and physiotherapy for patients. As many as 25% of the patients did not search for any information. The results did not correlate with such variables as age, gender, level of education, place of living, BMI or professional activity.

Conclusions: Patients' first contact with physiotherapeutic procedures takes place when they are admitted to a hospital. They rarely take advantage of out-patient presurgical physiotherapy. Patients should be given a wider access to reliable information regarding arthroplasty and physiotherapy. It may be done by preparing proper materials and making them available as well as encouraging patients to use them. It is necessary to convince patients to engage fully in the treatment process and cooperate with the therapeutic team.

Key words:

physiotherapy, total hip arthroplasty, education

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Streszczenie

Wstęp: Fizjoterapia i edukacja są niezbędne w postępowaniu po aloplastyce stawu biodrowego. Celem pracy była ocena poziomu wiedzy pacjentów na temat aloplastyki stawu biodrowego, fizjoterapii i funkcjonowania w życiu codziennym po operacji oraz ustalenie czynników, które wpływają na poziom wiedzy chorych.

Material i metody: Badaniom poddano 31 pacjentów w wieku $57,03 \pm 14,53$ lat po operacji aloplastyki stawu biodrowego. Narzędzie badawcze stanowił autorski kwestionariusz ankiety weryfikujący wiedzę pacjenta dotyczącą postępowania pooperacyjnego. Pytania skonstruowane były na podstawie informacji przekazywanych pacjentom przez fizjoterapeutę i zawierały m.in. zdjęcia obrazujące prawidłowe i nieprawidłowe zachowania pacjenta po zabiegu.

Wyniki: Wysoki poziom wiedzy osiągnęło niespełna 30% badanych osób. Najczęstszym źródłem poszukiwania informacji wśród pacjentów na temat operacji i fizjoterapii okazał się Internet (43%). Aż 25% pacjentów nie poszukiwało żadnych informacji. Wyniki nie były zależne od takich zmiennych jak: wiek, płeć, poziom wykształcenia, miejsce zamieszkania, BMI czy aktywność zawodowa.

Wnioski: Pacjenci z postępowaniem fizjoterapeutycznym spotykają się w momencie przyjęcia na oddział, rzadko korzystają ambulatoryjnej fizjoterapii przedoperacyjnej. Należy umożliwić pacjentom szerszy dostęp do rzetelnych informacji na temat operacji i fizjoterapii. Można to zrobić poprzez przygotowanie odpowiednich materiałów, udostępnianie ich oraz zachęcenie pacjentów do korzystania. Konieczne jest przekonanie pacjentów do pełnego zaangażowania w proces leczniczy i współpracę z zespołem terapeutycznym.

Słowa kluczowe: fizjoterapia, aloplastyka stawu biodrowego, edukacja

Introduction

Hip osteoarthritis has different etiologies, the most common ones being displasia, injuries, inflammations and age-related changes or micro-injuries that cause joint overloads [1]. Degenerative changes inevitably lead to pain, range of motion limitations and worse functioning of a patient. Total hip arthroplasty is a treatment of choice. Arthroplasty is a biomechanical and not a biological procedure due to incompatibility of metal and bone tissue. It may lead to various problems in particular periods of treatment [2]. Therefore, it is very important to minimise factors which hinder the recovery.

The lack of knowledge about how to behave after total hip arthroplasty may pose a risk of various complications such as endoprosthesis dislocation. In order to provide patients with the best possible conditions for fast and safe recovery, a physiotherapist should teach them how to function properly in everyday life prior to the physiotherapeutic procedure. Patients who underwent posterolateral arthroplasty should refrain from such activities as limb adduction, excessive internal and external rotation, or flexion over 90 degrees for 6 weeks after the surgery [3-6]. It is recommended to use

a higher toilet bowl [3]. Supported standing should be implemented as soon as possible, usually within the 1st or 2nd day following the surgery [5,7,8]. While lifting objects from the floor, the centre of gravity should be lowered through triple flexion of a healthy limb and extension of an operated limb [3,5,6]. Before discharging a patient from hospital, medical personnel should provide them with instructions concerning the use of supporting devices, ways of adapting a flat or house and the need for the continuation of a rehabilitation process. Thresholds and carpets should be removed in order to minimise the risk of falling. It is worth equipping bathrooms with rails, non-slip bath mats, special bath seats or steps that would facilitate getting in and out of the bath [3]. For several weeks the patient should not raise the extended lower limb while lying in a supine position. It increases the arm of the force of hip joint muscles, which may lead to implant loosening [9,10]. The patient should continue exercising in home conditions. Regular and active physiotherapy should be integrated with the whole treatment process [11].

The aim of the study was to assess the patients' level of knowledge about total hip arthroplasty, physiotherapy and everyday functioning after the

surgery and to determine factors which affect this knowledge.

Material and methods

The research included 31 patients, i.e. 16 men and 15 women after total hip arthroplasty (mean age 57.03 ± 14.53 years, body mass 82.52 ± 17.48 kg and body height 169.42 ± 9.51 cm). One study participant completed primary education, 6 patients had vocational education, 10 individuals received secondary education, while 14 participants completed higher education. Villages and towns were the places of living of 17 individuals, while 14 participants inhabited big agglomerations. Twelve patients were retired, 2 participants were on disability pension, 4 individuals had sedentary jobs, 5 individuals had sedentary/standing jobs, while 8 persons performed physical work.

The study was conducted after receiving an approval from the head of the hospital ward and from the Senate Scientific Research Ethics Committee of the University of Physical Education in Warsaw no SKE 1-14/2016.

The study inclusion criteria were as follows: written consent of the patient, minimum 18 years of age, 3-7 days after total hip arthroplasty, the patient undergoing physiotherapy.

The exclusion criteria were as follows: no consent of the patient, internal diseases, the feeling

of being unwell after the surgery and postsurgical complications.

The questionnaire prepared by the authors was applied as a research tool. It was divided into two parts and included 29 questions. The first part of the questionnaire consisted of 15 questions regarding such demographic data as age, gender, body height, body mass, level of education, place of living, professional activity and questions concerning the patients' knowledge about total hip arthroplasty and the quality of the cooperation with a physiotherapist. The second part included 14 questions verifying the participants' knowledge about everyday functioning after the surgery. The questions had a form of photos presenting correct and incorrect behaviours in such situations as sitting, lying, walking up and down the stairs, putting on socks or carrying bags with shopping. The participants were informed about the possibility to select more than one answer. In each question, the respondents had to provide the source from which they gained information about an answer (e.g. from a doctor, physiotherapist, brochures, the Internet, their own knowledge, etc.). The main aim of the questionnaire was to verify whether recommendations of medical personnel were understandable for patients and whether they would follow them at home.

Examples of the questions are presented in figures 1 and 2.



Fig. 1. Situation no. 4 from the questionnaire. Please mark the correct way of turning/changing direction while walking with crutches.

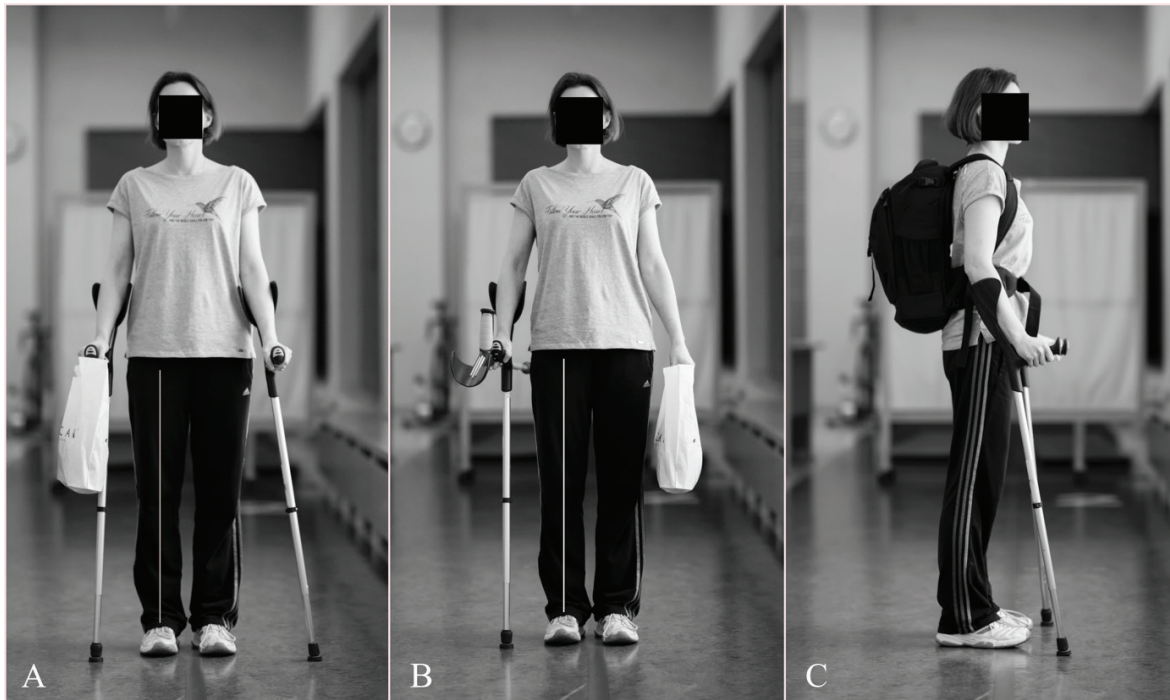


Fig. 2. Situation no. 13 from the questionnaire. Which way of carrying shopping while walking with crutches will be the safest for a patient after total hip arthroplasty?

Statistical analysis was performed with the use of StatSoft Statistica 10.0 software. In order to organise the data and present them graphically, the Microsoft Excel software was applied. Pearson's chi-square test was used in the analysis. The level of significance was set at $p < 0.05$.

Results

A good level of knowledge about the applied surgical treatment was presented by 93.5% of the

patients. Only 3.2% of the respondents did not have any knowledge in this area. The Internet was the main source of knowledge about physiotherapy and everyday functioning after total hip arthroplasty which the patients gained before the surgery ($n=13$, 41.9%) and was followed by such sources as brochures ($n=10$, 32.3%) and friends ($n=6$, 19.4%). Eight respondents (25.8%) did not look for any information. The sources of knowledge of the respondents are presented in table 1.

Tab. 1. Sources of knowledge about physiotherapy and everyday functioning prior to total hip arthroplasty.

Sources of knowledge*	n	%
The patients did not search for information themselves	8	25,8%
The Internet	13	41,9%
Brochures	10	32,3%
Books	1	3,2%
Acquaintances	6	19,4%
Private rehabilitation	4	12,9%
Hospital	0	0,0%
Women's magazines	1	3,2%

n-number of observations; %-percentage; *more than one answer could be selected.

In the part including 14 graphically presented everyday situations, 74.6% of the respondents' answers ($n=324$) were correct, 9.9% of the answers ($n=43$) were incorrect, while both correct and

incorrect answers constituted 15.2% ($n=66$) of all the responses. The list of the participants' responses to the 14 situations as well as sources of their knowledge are presented in table 2.

Tab. 2. Analysis of the answer sheet

Situation	Response						Source of information									
	Correct		Incorrect		Correct and incorrect		Physiotherapist		Doctor		Patient's own response		Brochure		The Internet	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Situation 1	29	93,5	2	6,5	0	0,0	18	58,1	3	9,7	7	22,6	1	3,2	2	6,5
Situation 2	24	77,4	0	0,0	7	22,6	20	64,5	3	9,7	5	16,1	1	3,2	2	6,5
Situation 3	20	64,5	5	16,1	6	19,4	13	41,9	2	6,5	12	38,7	2	6,5	2	6,5
Situation 4	29	93,5	2	6,5	0	0,0	20	64,5	3	9,7	6	19,4	0	0,0	2	6,5
Situation 5	13	41,9	4	12,9	14	45,2	10	32,3	0	0,0	20	64,5	0	0,0	1	3,2
Situation 6	27	87,1	4	12,9	0	0,0	31	100,0	0	0,0	0	0,0	0	0,0	0	0,0
Situation 7	24	77,4	6	19,4	1	3,2	31	100,0	0	0,0	0	0,0	0	0,0	0	0,0
Situation 8	17	54,8	10	32,3	4	12,9	3	9,7	0	0,0	25	80,6	1	3,2	2	6,5
Situation 9	31	100,0	0	0,0	0	0,0	4	12,9	0	0,0	26	83,9	0	0,0	1	3,2
Situation 10	17	54,8	8	25,8	6	19,4	3	9,7	0	0,0	27	87,1	0	0,0	1	3,2
Situation 11	30	96,8	1	3,2	0	0,0	7	22,6	0	0,0	23	74,2	0	0,0	1	3,2
Situation 12	31	100,0	0	0,0	0	0,0	11	35,5	0	0,0	19	61,3	0	0,0	1	3,2
Situation 13	5	16,1	1	3,2	25	80,6	3	9,7	0	0,0	27	87,1	0	0,0	1	3,2
Situation 14	27	87,1	0	0,0	3	9,7	2	6,5	0	0,0	28	90,3	0	0,0	1	3,2
Total	324	74,6	43	9,9	66	15,2	176	40,6	11	2,5	225	51,8	5	1,2	17	3,9

n-number of observations; %-percentage.

The level of knowledge of the respondents was determined as low, average or high on the basis of the number of collected points. A low level of knowledge was manifested by 7 participants (22.6%) who scored 6-9 points in the test. An average level of knowledge was determined in 15 individuals (48.4%) who obtained 10-11 points in the questionnaire. In turn, a high level of knowledge was demonstrated by 9 respondents (29.0%) who scored 12-13 points. In 51.8% (n=225) of the answers, the respondents themselves selected a correct response regarding everyday behaviours, while in 40.6% of the cases (n=176), they indicated a physiotherapist as a source of their knowledge (Fig. 3).

Indicating correct responses related to lifting objects from the floor (situation no 5 – 41.9% of

the responses were correct), washing (situation no 8 – 54.8% of the answers were correct), getting dressed (situation no 10 – 54.7% of the responses were correct) and carrying weights (situation no 13 – 16.1% of the answers were correct) appeared to be most difficult for the study participants. The patients' responses regarding particular everyday situations are presented in figure 4, while the list of sources of information indicated by the respondents in particular situations is included in figure 5.

No statistically significant correlations were revealed between the participants' level of knowledge and their age, gender, BMI, level of education, place of living, type of work or the fact that they had the same surgery in the past ($p>0.05$).

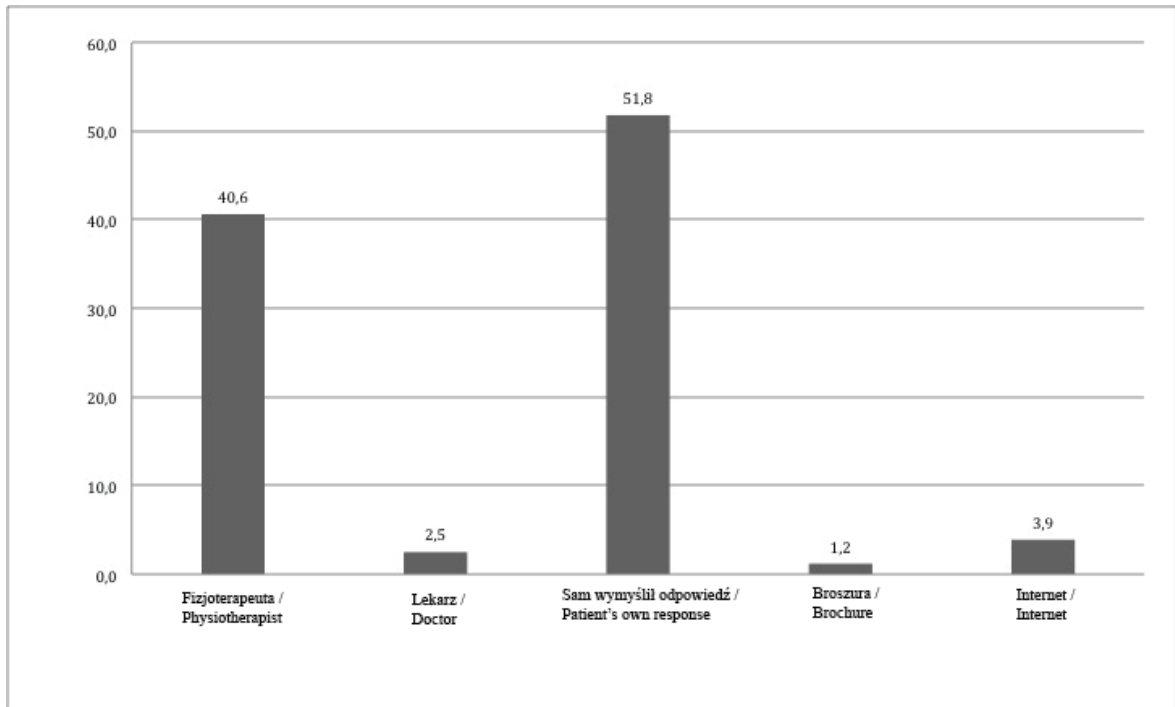


Fig. 3. Sources of information used by the participants during the knowledge test [%]. Source: the authors' own work

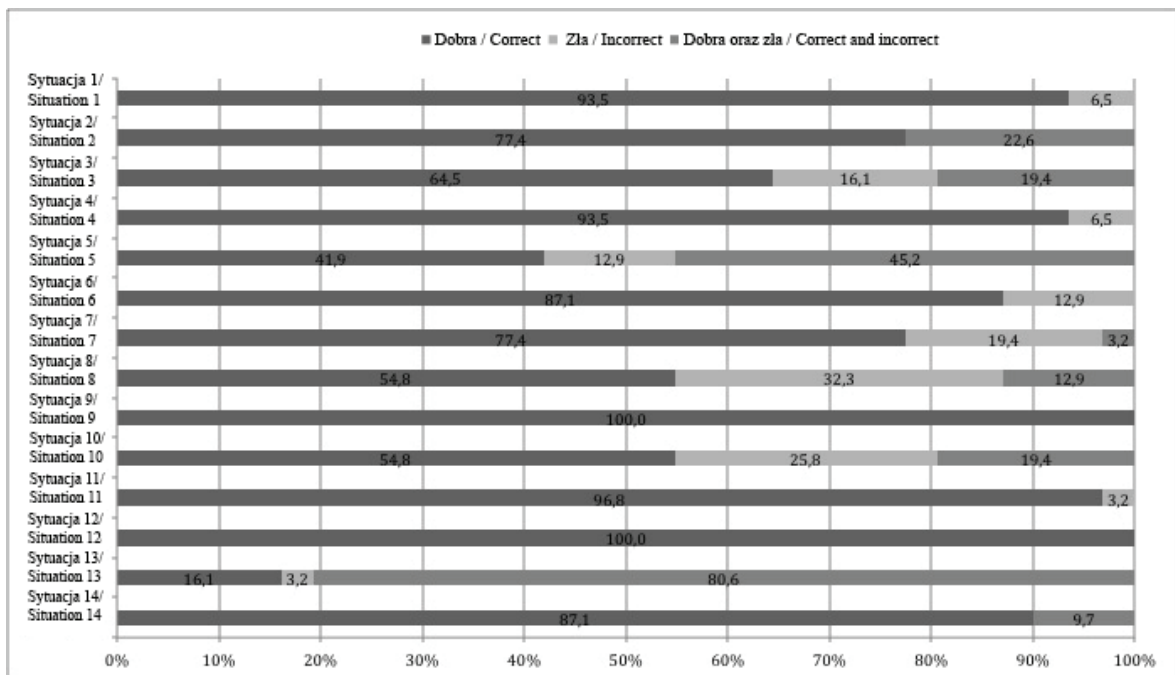


Fig. 4. Percentage data regarding correct, incorrect as well as both correct and incorrect answers related to particular behaviours during everyday activities.

Source: the authors' own work

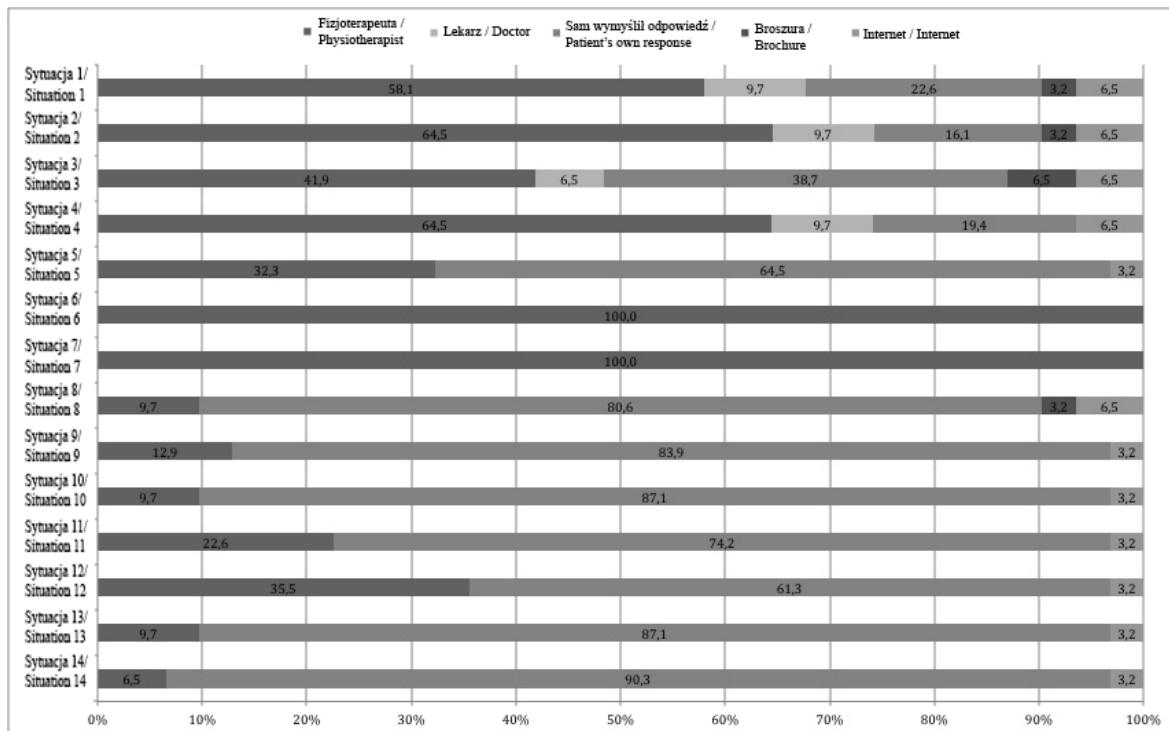


Fig. 5. Sources of information regarding patterns of behaviour in particular situations.
Source: the authors' own work.

Discussion

The aim of the study was to assess the patients' level of knowledge about total hip arthroplasty, physiotherapy and everyday functioning after the surgery and to determine factors which affect this knowledge. On the basis of the questionnaire data, it was concluded that 29 out of 31 patients demonstrated general knowledge concerning the procedure of total hip arthroplasty. As their main source of knowledge about total hip arthroplasty, physiotherapy and everyday functioning (prior to being admitted to hospital), the respondents mainly indicated the Internet (41.9%), followed by information brochures available in hospital (30%). However, 25% of the patients did not look for any information. The questions verifying the knowledge of patients about proper and safe behaviours in everyday life revealed that a high level of knowledge was demonstrated by only 29% of the respondents. In nearly 52% of the situations, the respondents selected a proper response themselves, while in approximately 42% of the situations, they indicated a physiotherapist at the hospital ward as the main source of their knowledge.

A proper preparation of patients to functioning with a hip prosthesis may prevent them from endoprosthesis dislocation, hospitalisation and another surgery. Educating patients and controlling their knowledge are particularly important. According to Gaździk et al, endoprosthesis should enable the patient to function without any problems for 10-15 years [12]. After this period, the risk of the loosening of the cemented acetabular cup increases. In their research, Dorman and Synder presented cases of patients whose time of using endoprosthesis was even longer and reached as many as 17 years. Applying a proper programme of rehabilitation and preventive care should lengthen this period [13].

According to Tilbury et al., patients require better education regarding the surgery, physiotherapy and situations which they may expect after the surgery. Patients who have insufficient knowledge concerning the surgery may have too high expectations based on their belief that an endoprosthesis may fully replace their own joint [14]. Our research revealed that patients demonstrated a certain level of knowledge on total hip arthroplasty but this knowledge was not complete and regarded basic information only. The respondents often asked questions when they

would be able to recover their function from before the surgery. Younger patients wanted to come back to sport which they had practised prior to the surgery. The lack of knowledge about situations which may occur after the arthroplasty may result in unconscious exposure of the endoprosthesis to high loads through activities they cannot perform. As a consequence, it may lead to premature wear and tear of the endoprosthesis, loosening of its elements or its dislocation [14].

While assessing the level of knowledge about total hip arthroplasty in 32 patients, Piekoszewska and Kwiatkowski revealed that, similar to our study, only 25% of the patients demonstrated a high level of knowledge. However, there occurred differences between the studies regarding the percentage of patients with a low level of knowledge. In the research by Piekoszewska and Kwiatkowski, as many as 75% of the study participants manifested a low level of knowledge. These authors indicated that it is doctors and physiotherapists who are responsible for an insufficient level of knowledge among patients as they do not provide them with enough information concerning the forthcoming surgery and they do not prepare them to everyday life after the surgery [15]. In our study, only 23% of the patients demonstrated a low level of knowledge, while a vast majority (48.4%) remembered a sufficient amount of information provided by a physiotherapist (i.e. had an average level of knowledge). Unfortunately, nearly 23% of the patients did not remember information provided at the hospital ward and obtained low results in the questionnaire. It may point to their lack of engagement in the rehabilitation process and the lack of cooperation between a therapeutic team and a patient. In the questions related to situations which may occur after leaving the hospital, the patients more often indicated that they made up their answer themselves; however, the answer was usually wrong. Correct answers were selected when the respondents referred to the information provided by a therapist.

Brunnekreef and Schreurs provided 102 patients with information regarding surgery procedures and rehabilitation available on the websites of orthopaedic hospitals. Over 70% of the patients perceived this information as very important, useful and improving their knowledge. Information provided by hospitals is reliable and meets the patients' expectations. Thus, it would be worth

using the potential of the Internet to transfer the knowledge to patients [16]. Our study also indicated the need to inform the patients about the forthcoming surgery or what they may expect after arthroplasty (information to be given prior to the surgery) as well as about the rules of safe everyday behaviours (knowledge to be passed after the surgery). It seems essential that a doctor or a physiotherapist should inform the patient about reliable sources available on the Internet. Moreover, during a visit, a doctor or a physiotherapist may give the patient brochures informing about the forthcoming surgery so that the patients can verify their expectations and compare them with reality. Pallazo et al. revealed that patients had high expectations regarding their return to well-being and to normal functioning after total hip arthroplasty. Patients who do not have enough knowledge have high expectations concerning their functioning, often ignore physiotherapists' recommendations and do not engage in the rehabilitation process [17]. Tilbury et al. revealed that there was a considerable percentage of patients after total hip arthroplasty having unfulfilled expectations [14]. Judge et al. concluded that presurgical expectations are related to patients' age and level of education [18]. However, our study did not confirm this correlation.

Similar to our research, Piekoszewska and Kwiatkowski did not reveal statistically significant differences in the patients' level of knowledge depending on age, gender, BMI, level of education, place of living, type of work and, what is interesting, having the same surgery in the past [15]. Stark et al. revealed similar results except for the differences in the number of points gathered depending on the patients' level of education. Over half of the respondents with higher education significantly more often complained about their level of knowledge [19].

In their research, Okoro et al. asked 106 physiotherapists from the UK what rehabilitation programme they implemented in the case of patients after total hip arthroplasty. Nearly 33% of the respondents declared that they met their patients at an educational seminar regarding the forthcoming surgery. Approximately 39% of the physiotherapists provided their patients with instructions in the form of a brochure. Only 7% passed this information verbally. Nearly 25% of the respondents advised their patients to continue the rehabilitation process after being released from hospital. The study by Okoro

et al. revealed that the majority of physiotherapists focused on various forms of exercises after the surgery and did not recognise the need for a more complex approach that also involved informing and educating patients about limitations following the surgery, modifications to be implemented in the surroundings as well as safe behaviours during everyday activities after arthroplasty. The authors concluded that endoprosthesis dislocation was caused by lower strength of muscles surrounding the hip joint and not by the lack of patients' education [20].

Sigurdardottir et al. concluded that implementing an educational programme informing about the issues regarding the surgery is an indispensable solution both for patients and for their families. The programme would introduce issues concerning the surgery itself as well as its further consequences in various spheres of a patient's private and social life [21]. In their research, Demir and Erdil proved that if the patients are provided with a proper level of knowledge, advice and education related to correct behaviours, their level of knowledge increases. They become more independent as everyday activities are no longer challenging. They also experience fewer problems in everyday life [22]. Moreover, it would be worth referring patients to physiotherapy prior to the arthroplasty so that their musculoskeletal system gets ready for the forthcoming surgery and their knowledge about the surgery and safe behaviours in everyday life is improved.

Study strengths. It is one of the first studies in the Polish literature in which the knowledge of

patients after total hip arthroplasty is examined and postsurgical recommendations are analysed in detail.

Study limitations. It seems a good solution to ask patients to fill in the questionnaire on the day they are admitted to hospital and on the day of their release in order to compare the level of knowledge about the surgery and physiotherapy. Further research should be conducted on a bigger number of patients so as to analyse the presented parameters in greater detail.

Conclusions

1. The patients' first contact with physiotherapeutic procedures occurs when they are admitted to a hospital ward. Outpatient presurgical physiotherapy is an uncommon situation.
2. The patients demonstrate general knowledge about total hip arthroplasty. They often do not know what difficulties they will encounter directly after the surgery.
3. A wider access to reliable information about the surgery and physiotherapy should be provided to patients. It may be done through preparing proper materials, making them available and encouraging patients to use them.
4. It is necessary to convince patients to engage fully in the treatment process and to cooperate with the therapeutic team.

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