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Direct Access to Physical Therapy for Patients With Low Back Pain in the Netherlands: Prevalence and Predictors

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Background. In the Netherlands, direct access to physical therapy was introduced in 2006. Although many patients with back pain visit physical therapists through direct access, the frequency and characteristics of episodes of care are unknown.

Objective. The purposes of this study were: (1) to investigate the prevalence of direct access to physical therapy for patients with low back pain in the Netherlands from 2006 to 2009, (2) to examine associations between mode of access (direct versus referral) and patient characteristics, and (3) to describe the severity of the back complaints at the beginning and end of treatment for direct access and referral-based physical therapy.

Design. A cross-sectional study was conducted using registration data of physical therapists obtained from a longitudinal study.

Method. Data were used from the National Information Service for Allied Health Care, a registration network of Dutch physical therapists. Mode of access (direct or referral) was registered for each episode of physical therapy care due to back pain from 2006 to 2009. Logistic regression analysis was used to explore associations between mode of access and patient/clinical characteristics.

Results. The percentage of episodes of care for which patients with back pain directly accessed a physical therapist increased from 28.9% in 2006 to 52.1% in 2009. Characteristics associated with direct access were: middle or higher education level (odds ratio [OR]=1.3 and 2.0, respectively), previous physical therapy care (OR=1.7), recurrent back pain (OR=1.7), duration of back pain <7 days (OR=4.2), and age >55 years (OR=0.6).

Limitations. The study could not compare outcomes of physical therapy care by mode of access because this information was not registered from the beginning of data collection and, therefore, was missing for too many cases.

Conclusions. Direct access was used for an increasing percentage of episodes of physical therapy care in the years 2006 to 2009. Patient/clinical characteristics associated with the mode of access were education level, recurrent back pain, previous physical therapy sessions, and age.

In 2006, a new health care system was introduced in the Netherlands. The aims of this reform were to control the need for cost containment, to reduce waiting lists, and to give patients more freedom of choice.^{1,2} Since 2006, all citizens have been able to choose their own health insurance company, although basic medical insurance is obligatory for the entire Dutch population, and formal referral by the general practitioner (GP) or other medical doctor is no longer required to visit a physical therapist. Advocates of direct access emphasize the freedom of choice for patients, faster access to therapy, and lower health care costs.³ Opponents of direct access are concerned that physical therapists might miss serious pathology, which could lead to higher health care costs.³ In 2006, Leemrijse et al⁴ investigated the number of patients using direct access and their characteristics. They reported that the number of patients treated by physical therapists had not increased during the year after the introduction of direct access compared with the year before introduction. In the year after introduction, 28% of all patients directly accessed a physical therapist. Higher-educated patients aged <59 years used direct access more often, and patients who reported having back or neck pain were more likely to use direct access for physical therapy than patients with other symptoms.⁴ Patients with back pain are not only more likely to use direct access, but in the Netherlands, back pain is also the most commonly reported symptom by patients visiting a physical therapist.⁵ Because this patient group is large, it is important for policy makers in the Netherlands, GPs, and physical therapists to know which proportion of patients with back pain uses direct access for physical therapy, any changes in proportion over the years, and the characteristics of these patients. Information about the frequency of direct access use and the influence of the patient and clinical characteristics also is important for policy makers to consider in order to estimate future needs regarding direct access. Therefore, the aims of this study were: (1) to investigate the prevalence of direct access to physical therapy for patients with low back pain in the Netherlands from 2006 to 2009, (2) to examine associations between mode of access (direct versus referral) and patient characteristics, and (3) to describe the severity of the back pain at the beginning and end of treatment for direct access and referral-based physical therapy.

METHOD

Data Source

The data used in this study originated from the National Information Service for Allied Health Care (LiPZ).

LiPZ is a Dutch registration network of randomly selected physical therapists working in private practice or physical therapists in all outpatient settings in the Netherlands. This database is funded by the Dutch government.

The database holds longitudinal data collected on patients, referrals, diagnoses, treatment, and evaluation in physical therapy care since 2001. Data were collected in a representative network of about 100 physical therapists working in 40 practices. Data on more than 10,000 patients were collected annually. At the start of LiPZ in 2001, a random sample, stratified for practice size and region, was drawn from the Dutch register of physical therapists (including 16,000 therapists in 4,700 private practices). Specialized physical therapists with a homogeneous patient population (>50% of the treatment episodes belonging to 1 patient category), such as pediatric physical therapists, were not included. The pool of participating practices fluctuates from year to year. In the period 2001 to 2009, 156 physical therapists from 59 practices participated. Dropouts mostly occurred due to changing administration software, quitting practice, or changes in available time. When dropouts occurred, new physical therapists were recruited from new samples and through notes on the websites of the software suppliers.

Annual checks were made for representation by size and region. When necessary, attempts were made to recruit physical therapists in specific regions and with specific characteristics in order to maintain representation.

Data were extracted monthly from the electronic medical records used in the physical therapist practices in order to record their patients, treatments, and reimbursement. Extracted data included data needed for reimbursement (eg, dates of treatments) and supplementary information (eg, treatment goals). All treatment visits of all treated patients were extracted. These data were entered in our research database after a standardized quality control check for missing or inconsistent data. For this purpose, software had been written by the administrator of the database.

In case of missing or inconsistent data, feedback was given to the practice concerned. Physical therapists were asked to complement the missing data if applicable and if possible.

In the subsequent monthly data supply, the complemented data were supposed to be delivered. More detailed information about LiPZ and detailed information about representation are available elsewhere.^{4,6}

Sample

The study sample consisted of all episodes of care for patients with back pain who visited a physical therapist (all physical therapists who participated in the LiPZ network) in the period 2006 to 2009. This period was chosen because direct access to the physical therapist became available in 2006 and relevant data were available until 2009. The health issues of all patients were classified in LiPZ according to the International Classification of Primary Care (ICPC) codes.^{7,8} The following codes were used to select patients with back pain: back symptoms and reports (L02), reports of low back pain without radiation of pain (L03), fracture of the spine (L76.06), osteoarthritis of the spine (L84), acquired deformities of the spine (L85), and lumbar disk lesion or radiation of pain (L86). The ICPC codes of most referred episodes were provided by the referrer. The ICPC codes of the direct access episodes were provided by the research assistants, based on the patient's description of the main health problem, which is registered by the physical therapist.

A patient could have visited the physical therapist for several episodes of care in the period 2006 to 2009. Because the mode of access might differ between different

episodes of care due to back pain reports for the same patient, each episode of care was registered separately.

An *episode of care* was defined as care by a physical therapist due to back pain, from the first consultation with the therapist to the end of treatment or absence of pain.

Measurements

The following data were collected for each episode of care due to back pain in the period 2006 to 2009: mode of access (direct access or referral), age, sex, education level, degree of urbanization of patients' residence, diagnosis (based on the ICPC code), recurrence of back pain, duration of back pain at start of treatment, severity of back pain at the beginning of treatment, severity of back pain at the end of treatment, and previous physical therapy sessions. The age categories (ie, 1–17, 18–34, 35–54, 55–74, and ≥ 75 years) were based on age boundaries that are commonly used in the literature (18 years old is an age boundary in the Netherlands): children, young adults, middle-aged adults, older adults, and elderly, respectively. The duration of the health problem was based on acute or subacute back pain (<3 months), chronic back pain (≥ 3 months), and back pain lasting > 1 year.

Direct access occurs when the patient visits the physical therapist without a referral from a medical doctor. A *referral* occurs when the patient is referred by a medical doctor (eg, GP, orthopedic surgeon, neurologist). Education level was divided into lower education (primary school, lower vocational education, or lower secondary education), middle education (intermediate vocational education or intermediate/higher secondary education), and higher education (higher vocational education and university).

Urbanization was divided into 5 categories (very strongly urbanized, strong, moderate, little, and not urbanized), which was a measure of the concentration of human activities according to classification of the Dutch Central Bureau of Statistics, based on the average area density.

Patients were divided into the urbanization categories based on their postal code. Severity of back pain was measured at the beginning and end of treatment on an 11-point numerical rating scale (NRS), where 0 represents “no pain” and 10 represents “the worst pain ever.”⁹ “Previous physical therapy” means that the patients had received earlier physical therapy for a symptom (back pain or other symptom) in the 2 years preceding the present therapy. All variables were self-reported by the patients except for mode of access, diagnosis, and urbanization.

Data Analysis

Descriptive statistics were used to calculate which percentage of episodes of care due to back pain direct access or referral was used from 2006 to 2009. Multivariate logistic regression analysis (method enter) was used to identify the associations between mode of access and patient and clinical characteristics. Mode of access was the dependent variable.

The patient characteristics (age, sex, education level, and degree of urbanization) and clinical characteristics (duration of health problem before start of treatment, recurrence of back pain, and previous therapy) were the independent variables (categorical or dichotomous). For some patients, data were missing for urbanization, duration of health problem, recurrence of back pain, earlier therapy sessions, and

education level. Because there were high percentages of missing values in the variables “earlier therapy” (12.1%) and “education level” (23.5%) and to check whether the missing data biased the results, we performed a multiple regression analysis including dummy groups “unknown earlier therapy” and “unknown education level.” The associations were presented as odds ratios (OR) with 95% confidence intervals (95% CI). The associations between mode of access and patient and clinical characteristics were adjusted for year of therapy, and adjusted odds ratio (aOR) also was presented. Physical therapists did not always register all variables of the episode, which led to missing values. The variables “severity of back pain at the beginning of treatment” and “severity of back pain at the end of treatment” were not included in the multivariate logistic regression analyses because these variables were not registered from the beginning of data collection in 2006; therefore, information was missing in many cases (>75%).

[TABLE 1.]

Bivariate logistic regression analysis was performed to explore the association between severity of the back pain and mode of access. Covariations between the independent variables and the year of therapy were measured using a covariance matrix to check for correlation between the variables. Data were analyzed with IBM SPSS Statistics for Windows, version 20.0 (IBM Corp, Armonk, New York).

Role of the Funding Source

Data from this study were acquired with funding from the Dutch Ministry of Health.

RESULTS

Characteristics of the Episodes of Care

Characteristics of the episodes of physical therapy care (grouped by mode of access) for patients with back pain are presented in Table 1.

In total, 10,887 patients visited a physical therapist between 2006 and 2009, for 12,931 episodes of care. Of these episodes of care, the mode of access was known for 12,018 episodes; 42.1% of the referred episodes of care were episodes of male patients compared with 46.9% of the directly accessed episodes of care; and 56.6% of the referred episodes of care and 57.6% of the direct accessed episodes of care were from patients who had back pain for 1 week to 3 months before starting treatment. The most frequently used ICPC code was “L03, low back complaints without radiation of the pain”: this code applied to 44.1% of the referred and 54.8% of the direct accessed episodes of care.

Direct Access or Referral

The Figure shows the distribution of episodes of care from the patients with back pain for which direct access or referral was used from 2006 to 2009. In total, 7,077 (59%) episodes of care were registered via referral from a medical doctor and 4,941 (41%) episodes of care via direct access. The percentage of episodes of care due to

back pain for which direct access was used increased from 28.9% (973 episodes) in 2006 to 52.1% (1,544 episodes) in 2009.

[FIGURE 1]

Associations Between Patient or Clinical Characteristics and Mode of Access

Because no strong correlations were found among the variables ($<.44$), all 7 independent variables were included in the multiple logistic regression analysis. The analysis was performed with the 2 dummy groups: “unknown earlier therapy” and “unknown education level” (Tab. 2). Mode of access was associated with male sex (OR=1.1, 95% CI=1.0–1.2), age (OR=0.6, 95% CI=0.5–0.8, for age category 55–74 years and OR=0.4, 95% CI=0.3–0.6 for age category ≥ 75 years, compared with age category 1–17 years), education level (OR=1.3, 95% CI=1.2–1.4, for middle education level and OR=2.0, 95% CI=1.8–2.3, for higher education level), duration of the back pain (OR=4.2, 95% CI=3.6–4.9, for a duration of 7 days and OR=1.7, 95% CI=1.5–1.9, for a duration of 1 week to 3 months, compared with a duration of > 1 year), recurrent back pain (OR=1.7, 95% CI=1.6–1.9), and previous physical therapy (OR=1.7, 95% CI=1.5–1.9). When adjusted for year of therapy, the associations remained the same (Tab. 2).

[TABLE 2]

Information on the severity of back pain was missing for many episodes of care ($>75\%$); therefore, explorative analyses were done to determine the associations between mode of access and severity of the back pain. Data on severity of back pain at the beginning of treatment were available for 2,211 episodes of physical therapy care ($\bar{x}=7.0$, SD=1.5, for episodes of care via referral; $\bar{x}=6.6$, SD=1.7, for episodes of care via direct access) (OR=0.9, 95% CI=0.8–0.9). These findings indicated that patients with more severe back pain at the beginning of treatment were less likely to use direct access. Data on severity of back pain at the end of treatment were available for 700 episodes of care ($\bar{x}=3.0$, SD=2.3, for episodes of care via referral; $\bar{x}=2.5$, SD=2.3, for episodes of care via direct access) (OR: 0.9; 95% CI: 0.8–1.0).

DISCUSSION

This study (1) examined the prevalence of direct access to physical therapy for patients with low back pain in the Netherlands from 2006 to 2009, (2) examined associations between mode of access (direct versus referral) and patient characteristics, and (3) described the severity of the back pain at the beginning and end of treatment for direct access and referral-based physical therapy. The percentage of episodes of care due to back pain for which patients directly accessed the physical therapist increased substantially— from 28.9% in 2006 to 52.1% in 2009. The patient and clinical characteristics associated with direct access were male sex, middle and higher education levels, previous physical therapy, recurrent back pain, duration of back pain, and age.

Leemrijse et al⁴ performed a similar analysis with all patients (irrespective of their symptoms) who visited a physical therapist during 2006.

They also compared patients who used direct access for their episode of care with patients who were referred. Their results were comparable to those of our study. Leemrijse et al⁴ concluded that patients with episodes of back pain were more likely to use direct access than patients with other symptoms. Our results indicate that the percentage of episodes of care for which direct access is used for visiting a physical therapist had increased over the years. This finding could be due to the increasing acquaintance with direct access or because patients who directly accessed the physical therapist are more likely to use that mode again. Other studies comparing the characteristics of referred and direct access patients in other countries reported results similar to those of our study.¹⁰⁻¹³ The association between short duration of the pain and direct access might be related to the amount of time involved in visiting a GP or other medical doctor and being referred for therapy, implying that the back pain may have been present for some time when these patients visit their physical therapist for their episode of care. Patients with recurrent pain and those with previous experience with physical therapy are probably more aware of the possibilities and, therefore, more likely to directly access physical therapy for their episode of care. The prevalence of back pain and other musculoskeletal disorders increases with age,¹⁴ and older patients have more comorbidity for which they visit their GP^{15,16} and probably find it easier to ask for a referral for physical therapy for their back pain.

A limitation of the study was that it was not possible to investigate whether there was an association between mode of access and treatment characteristics. Earlier studies on direct access showed that patients who used direct access received fewer treatment sessions.^{4,12,13}

Unfortunately, we had insufficient information on the number of treatment sessions to confirm or refute the earlier findings. Information on the severity of the back pain was missing for many episodes (75%); therefore, we performed only explorative analyses, which showed small associations between mode of access and severity of the back pain. Future research will examine the impact of direct access compared with referral on severity of the pain.

Another limitation was a lack of information on the diagnosis of the back pain. Some information on the diagnosis could be obtained from the ICPC code; however, in this study, the ICPC code of most referred patients was provided by the referrer, and the ICPC codes of the direct access patients were provided by the researcher. Because of this methodological difference, the associations between ICPC code and mode of access were not analyzed. The lower percentage of specific causes of back pain (ICPC codes L76.06: fracture of the spine, L84: osteoarthritis of the spine, and L85: acquired deformities of the spine) in the direct access groups could indicate a negative association with direct access, or it could be due to the different methods used to assign an ICPC code.

In summary, in the present study, direct access for physical therapy episodes of care due to back pain increased from 28.9% in 2006 to 52.1% in 2009. There was an association between mode of access and several patient and clinical characteristics. Physical therapists should be aware that the number of episodes of care due to back pain via direct access substantially increased over the years. Policy makers should be aware of the increased percentage of episodes of care for which direct access was

used. Further research should evaluate whether treatment management and outcomes also are influenced by the mode of access.

Dr Scheele, Dr Rigter, Dr Bierman-Zeinstra, Dr Koes, and Dr Luijsterburg provided concept/idea/research design. Dr Scheele, Dr Vijfvinkel, Dr Rigter, Dr Bierman-Zeinstra, Dr Koes, and Dr Luijsterburg provided writing.

Dr Swinkels provided data collection and fund procurement. Dr Scheele, Dr Vijfvinkel, Dr Rigter, Dr Bierman-Zeinstra, and Dr Luijsterburg provided data analysis. Dr Swinkels, Dr Bierman-Zeinstra, Dr Koes, and Dr Luijsterburg provided project management.

Dr Luijsterburg provided facilities/equipment.

Dr Swinkels, Dr Koes, and Dr Luijsterburg provided consultation (including review of manuscript before submission).

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TABLES AND FIGURE

Table 1.
Characteristics of Episodes of Physical Therapy Care, Grouped by Mode of Access, for Patients With Back Pain From 2006 to 2009

Variable	2006	2007	2008	2009	2006–2009 ^a	
	Direct Access (N=973) n (%)	Direct Access (N=1,128) n (%)	Direct Access (N=1,296) n (%)	Direct Access (N=1,544) n (%)	Referral (N=7,077) n (%)	Direct Access (N=4,941) n (%)
Sex: male	426 (44)	518 (46)	607 (47)	768 (50)	2,976 (42)	2,319 (47)
Age (y), $\bar{X} \pm SD$	47.3 \pm 16.4	46.8 \pm 16.3	47.0 \pm 16.4	47.0 \pm 16.1	50.3 \pm 17.9	47.0 \pm 16.3
Age category (y)						
1–17	19 (2)	30 (3)	33 (3)	37 (2)	187 (3)	119 (2)
18–34	197 (20)	229 (20)	265 (20)	309 (20)	1,197 (17)	1,000 (20)
35–54	437 (45)	517 (46)	603 (46)	736 (48)	2,873 (41)	2,293 (46)
55–74	259 (27)	294 (26)	315 (24)	385 (25)	2,056 (29)	1,253 (25)
75+	61 (6)	57 (5)	80 (6)	77 (5)	764 (11)	275 (6)
Education level						
Lower	271 (28)	339 (30)	369 (28)	410 (27)	2,445 (35)	1,389 (28)
Middle	351 (36)	351 (31)	351 (27)	448 (29)	1,919 (27)	1,501 (30)
Higher	227 (23)	278 (25)	270 (21)	305 (20)	862 (12)	1,080 (22)
Urbanization						
Very strong	125 (13)	187 (17)	195 (15)	218 (14)	1,191 (17)	725 (15)
Strong	300 (31)	291 (26)	415 (32)	454 (29)	2,030 (29)	1,460 (30)
Moderate	178 (18)	229 (20)	250 (19)	259 (17)	1,143 (16)	916 (19)
Little	154 (16)	181 (16)	171 (13)	209 (14)	1,226 (17)	715 (14)
Not	213 (22)	238 (21)	263 (20)	399 (26)	1,471 (21)	1,113 (23)
Duration of health problem before start of treatment						
<7 d	204 (21)	245 (22)	281 (22)	365 (24)	605 (9)	1,095 (22)
1 wk–3 mo	555 (57)	661 (59)	775 (60)	856 (55)	4,005 (57)	2,847 (58)
3–12 mo	73 (8)	94 (8)	103 (8)	127 (8)	1,134 (16)	397 (8)
>1 y	128 (13)	120 (11)	127 (10)	180 (12)	1,205 (17)	555 (11)
Recurrence of back pain						
Yes	555 (57)	604 (54)	664 (51)	775 (50)	2,951 (42)	2,598 (53)
Previous physical therapy						
Yes	568 (58)	599 (53)	660 (51)	826 (53)	2,945 (42)	2,653 (54)
L02: back symptoms and pain	316 (32)	384 (34)	450 (35)	497 (32)	1,848 (26)	1,647 (33)
L03: low back symptoms without radiation of the pain	508 (52)	617 (55)	706 (54)	875 (57)	3,125 (44)	2,706 (55)
L76.06: fracture of the spine	1 (0)	2 (0)	1 (0)	2 (0)	73 (1)	6 (0)
L84: osteoarthritis of the spine	25 (3)	13 (1)	21 (2)	29 (2)	361 (5)	88 (2)
L85: acquired deformities of the spine	14 (1)	16 (1)	9 (0)	6 (0)	88 (1)	45 (1)
L86: low back pain with radiation	109 (11)	96 (9)	109 (8)	135 (9)	1,582 (22)	449 (9)

^a Missing data: 0.2% for urbanization, 1.5% for duration of health problem, 3.1% for recurrence of back pain, 12.1% for previous physical therapy, and 23.5% for education level.

Figure. Percentage of episodes of physical therapy care (N=12,018) for which patients with back pain used direct access or were referred (2006–2009).

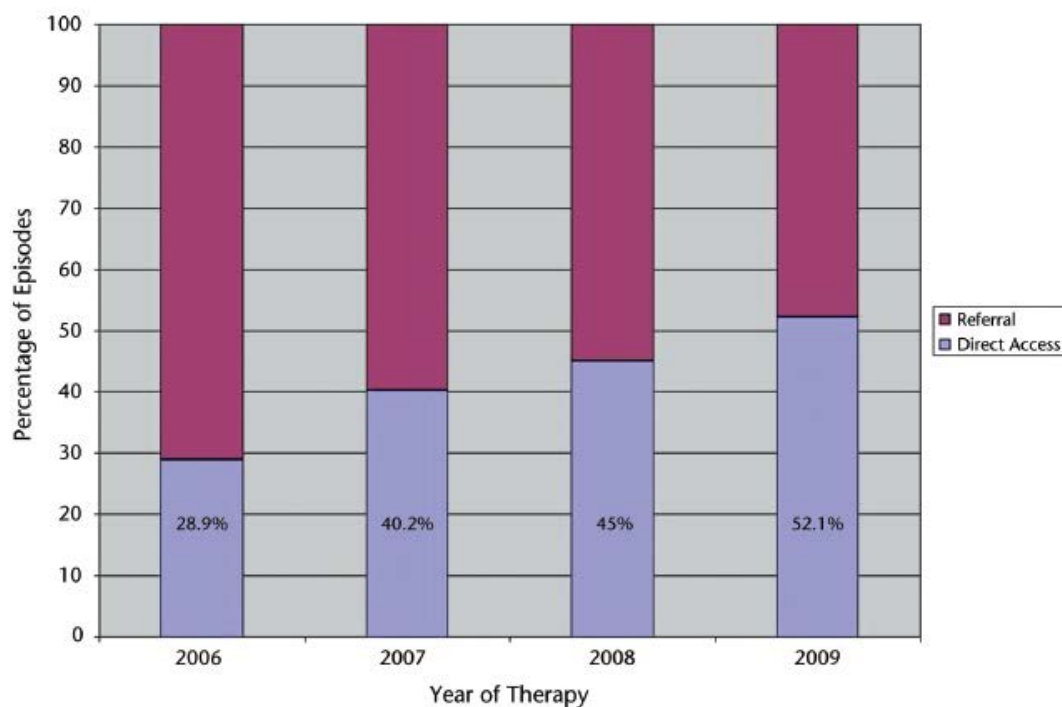


Table 2.

Overview of the Associations of Patient and Clinical Characteristics With Mode of Access (Referral Versus Direct Assess) for Episodes of Physical Therapy Care

Variable	Physical Therapy (N=12,018 Episodes) ^a		aOR (95% CI) ^{a,b}
	OR (95% CI)	P	
Sex			
Male	1.1 (1.0–1.2)	.03	1.1 (1.0–1.2)
Age (y)			
1–17	Reference category		Reference category
18–34	0.9 (0.7–1.2)	.45	0.9 (0.7–1.2)
35–54	0.8 (0.6–1.0)	.06	0.8 (0.6–1.0)
55–74	0.6 (0.5–0.8)	<.01	0.7 (0.5–0.9)
75+	0.4 (0.3–0.6)	<.01	0.5 (0.3–0.6)
Education level			
Lower	Reference category		Reference category
Middle	1.3 (1.2–1.4)	<.01	1.3 (1.2–1.4)
Higher	2.0 (1.8–2.3)	<.01	2.0 (1.8–2.3)
Urbanization			
Very strong	Reference category		Reference category
Strong	1.2 (1.1–1.4)	<.01	1.2 (1.1–1.4)
Moderate	1.5 (1.3–1.7)	<.01	1.5 (1.3–1.8)
Little	1.0 (0.9–1.2)	1.00	1.0 (0.9–1.3)
Not	1.2 (1.1–1.4)	<.01	1.1 (1.0–1.3)
Duration of health problem before start of treatment			
<7 d	4.2 (3.6–4.9)	<.01	4.1 (3.5–4.7)
1 wk–3 mo	1.7 (1.5–1.9)	<.01	1.7 (1.5–1.9)
3–12 mo	0.8 (0.7–1.0)	.03	0.8 (0.7–1.0)
>1 y	Reference category		Reference category
Recurrence of back pain			
Yes	1.7 (1.6–1.9)	<.01	1.7 (1.6–1.9)
Previous physical therapy			
Yes	1.7 (1.5–1.9)	<.01	1.7 (1.5–1.9)

^a Analysis with dummy groups “unknown earlier therapy” and “unknown education level”; the analysis included more than 11,543 episodes.

^b aOR=adjusted odds ratio, adjusted for year of therapy.