ORIGINAL RESEARCH

Can Primary Care for Back and/or Neck Pain in the Netherlands Benefit From Stratification for Risk Groups According to the STarT Back Tool Classification?

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Abstract

Objective: To evaluate whether current Dutch primary care clinicians offer tailored treatment to patients with low back pain (LBP) or neck pain (NP) according to their risk stratification, based on the Keele STarT (Subgroup Targeted Treatment) Back-Screening Tool (SBT).

Design: Prospective cohort study with 3-month follow-up.

Setting: Primary care.

Participants: General practitioners (GPs) and physiotherapists included patients (N=284) with nonspecific LBP, NP, or both.

Interventions: Patients completed a baseline questionnaire, including the Dutch SBT, for either LBP or NP. A follow-up measurement was conducted after 3 months to determine recovery (using Global Perceived Effect Scale), pain (using Numeric Pain Rating Scale), and function (using Roland Disability Questionnaire or Neck Disability Index). A questionnaire was sent to the GPs and physiotherapists to evaluate the provided treatment.

Main Outcome Measures: Prevalence of patients' risk profile and clinicians' applied care, and the percentage of patients with persisting disability at follow-up. A distinction was made between patients receiving the recommended treatment and those receiving the nonrecommended treatment.

Results: In total, 12 GPs and 33 physiotherapists included patients. After 3 months, we analyzed 184 patients with LBP and 100 patients with NP. In the LBP group, 52.2% of the patients were at low risk for persisting disability, 38.0% were at medium risk, and 9.8% were at high risk. Overall, 24.5% of the patients with LBP received a low-risk treatment approach, 73.5% a medium-risk, and 2.0% a high-risk treatment approach. The specific agreement between the risk profile and the received treatment for patients with LBP was poor for the low-risk and high-risk patients (21.1% and 10.0%, respectively), and fair for medium-risk patients (51.4%). In the NP group, 58.0% of the patients were at low risk for persisting disability, 37.0% were at medium risk, and 5.0% were at high risk. Only 6.1% of the patients with NP received the low-risk treatment approach. The medium-risk treatment approach was offered the most (90.8%), and the high-risk approach was applied in only 3.1% of the patients. The specific agreement between the risk profile and received treatment for patients with NP was poor for low-risk and medium-risk patients (6.3% and 48.0%, respectively); agreement for high-risk patients could not be calculated.

Conclusions: Current Dutch primary care for patients with nonspecific LBP, NP, or both does not correspond to the recommended stratified-care approach based on the SBT, as most patients receive medium-risk treatment. Most low-risk patients are overtreated, and most high-risk patients are undertreated. Although the stratified-care approach has not yet been validated in Dutch primary care, these results indicate there may be substantial room for improvement.

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Low back pain (LBP) and neck pain (NP) are major public health problems; they are the primary and fourth causes, respectively, of disability worldwide.[1] With regard to health-seeking behavior for LBP and NP, approximately 55% of patients seek health care, and between 12% and 32% visit a general practitioner (GP).[2-4]

Nonspecific LBP and NP are the main focus of most primary care guidelines.[5,6] The guidelines from both the Dutch General Practitioners Society and the Royal Dutch Physiotherapists Society divide patients with nonspecific LBP and NP into roughly 2 subgroups: (1) patients with normal recovery, defined as a decrease in pain and function limitation before consultation; and (2) patients with (suspected) delayed recovery.[5,7,8]

The STarT (Subgroup Targeted Treatment) Back-Screening Tool (SBT) is a tool, developed in England, to allocate primary care patients with LBP to 3 prognostic subgroups: patients at low, medium, or high risk for persisting disability.[9] This allocation aims to ensure that the appropriate stratified care is applied to patients at risk for persistent LBP in order to prevent it.[10] This tool's questions are based on known negative prognostic factors that can be influenced by treatment. Furthermore, the SBT has been found to be a valid and reliable tool for subgrouping patients in the United Kingdom,[9] and it has been translated and validated in several languages, including Dutch,[11] since its initial English publication in 2008.[12-18] The Dutch version of the SBT has been modified to fit patients with NP.[19] The SBT, and corresponding targeted treatment, has yet to be implemented in the Netherlands.

Recommended care for normal recovery is to reassure the patient and inform him/her of the positive prognosis, and to advise the patient to stay active, which might be supported with the prescription of pain medication. If the pain persists or worsens, the GP can refer the patient to physiotherapy. Where current guidelines recommend a stepped approach for patients with a delayed recovery, the SBT recommends a stratified-care approach; the difference between these 2 approaches relates to the timing of (effective) interventions. Implementing the SBT in the United Kingdom has led to higher quality-adjusted life years for patients and lower health costs, and superior outcomes in the high-risk group using stratified care.[20,21] No studies have been published on stratified care for patients with NP; however, we expect that it will not differ from the approach for LBP. Before recommending implementing the SBT in the Netherlands, we need more insight into the current usual care because implementation of the SBT might be unnecessary if usual care provides comparable or better outcomes. Therefore, the aim of this study was to evaluate current Dutch primary care for spinal pain and whether it corresponds to the advised stratified-care approach based on the SBT.

Methods

Design

The prevalence of risk groups in patients with NP and LBP according to the SBT (Prevalence of RIsk groups in Neck and

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List of abbreviations:

GP	general practitioner
LBP	low back pain
NDI	Neck Disability Index
NP	neck pain
RDQ	Roland Disability Questionnaire
SBT	STarT Back-Screening Tool

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back pain patients study) is a prospective cohort study, which includes patients with LBP or NP of any duration who consulted a GP or physiotherapist. The study was approved by the medical ethics committee of Erasmus University, Rotterdam, the Netherlands (METC-2014-256).

Participants

Care providers

We asked GPs and physiotherapists who work in the primary care sector and had displayed interest in the SBT during pilot projects, to participate in the PRINS study. Information about the study protocol was provided through several meetings, by phone, or by digital/paper documentation, and participating GPs and physiotherapists received the study protocol and a folder with patient information and informed consent forms. Most of these GPs and physiotherapists work in small clinics in the region of Rotterdam (a maximum of 50km).

Patients

The inclusion period for patients was from November 2014 through May 2015, and patients consulting their physiotherapist or GP for LBP or NP during that period were invited to participate. Other inclusion criteria were that patients had to be aged ≥18 years, could speak and read Dutch, and had an e-mail address.

Patients were excluded if, during the consultation, the GP or physiotherapist found "red flags" indicating a possible serious underlying pathologic disorder (eg, infection, fracture, cauda equina, tumor) responsible for the LBP or NP.

Patients were provided with oral and written information about the aim of the study and the procedure of data collection, and each patient signed an informed consent, which was handed back to the physiotherapist or GP who subsequently registered the patient online. The patient immediately received an e-mail with a link to the baseline questionnaire, and if necessary, a reminder to complete the questionnaire was sent after a few days. Patients who did not complete the baseline questionnaire within 7 days were excluded from the cohort.

Treatment

The patients received usual care from their GPs or physiotherapists, who were kept blind to the results of the patients' baseline questionnaire.

Baseline measurements

The baseline questionnaire consisted of questions on demographic data; the SBT (either the back or neck version) and the Numeric Pain Rating Scale[22] to assess pain; the Neck Disability Index (NDI)[23] or the Roland Disability Questionnaire (RDQ)[24,25] to assess disability; the Tampa Scale[26] for Kinesiophobia; and the Pain Catastrophizing Scale[27] and the EQ-5D (European Quality of Life—5 Dimensions)[28] to assess quality of life. The Numeric Pain Rating Scale options range from 0 (no pain) to 10 (worst imaginable pain); the RDQ consists of 24 statements with a "yes" or "no" answer option and a total score ranging from 0 to 24; and the NDI consists of 10 statements with a 6-point scale ranging from 0 (not limited) to 6 (completely limited) and a total score ranging from 0 to 50.

Outcome measure

Three months after inclusion, the patients received a follow-up questionnaire to assess pain (Numeric Pain Rating Scale),

disability (RDQ or NDI), and recovery using the Global Perceived Effect Scale. The answer options on the Global Perceived Effect Scale range from 1 (fully recovered) to 7 (worse than ever).

Persisting LBP disability was defined as an RDQ score ≥ 7, based on the mean of the baseline score as used by Hill et al,[9] while persisting NP disability was defined as an NDI score ≥ 13, based on the median baseline score in this cohort.

Three months after inclusion, the GP was sent a questionnaire to inquire about the number of visits, prescribed medication, referrals to physiotherapists or medical professionals, and requested imaging and blood tests. The physiotherapist received a questionnaire to inquire about treatment data such as the number and period of treatments, and the aim and means of treatment. The investigator sent and received all questionnaires digitally, and they were handled and stored through LimeSurvey 2.05.[a]

Analysis

Treatment categorization

The 2 authors (J.D.B. and J.J.W.S.-G.) used the following criteria to independently categorize the treatments applied by the GPs, physiotherapists, or both (in case of differences between the authors, the categories were determined by consensus):

- *Low-risk approach:* The GP provided information, advice, and some analgesics or 1 or 2 physiotherapist consultations, and the treatment was hands-off and consisted of offering information, advice, and exercises.
- *Medium-risk approach:* In addition to the low-risk approach, the GP referred the patient to a physiotherapist, and the physiotherapist performed an evidence-based intervention.
- *High-risk approach:* In addition to the medium-risk approach, the GP referred the patient to either a physiotherapist specialized in treating patients with a psychosomatic approach, a psychologist, or equivalent, and the physiotherapist assessed biopsychosocial risk factors and used cognitive behavioral principles as interventions.[29]

Statistical analysis

We described the characteristics of the clinicians and patient population using frequencies (means with SDs). Next, we calculated the frequencies of patients per SBT risk profile and the clinicians' treatment approaches. The specific agreement calculates percentages of recommended treatment approaches for each risk profile separately.[30] For example, patients who were "low risk" at baseline and treated as such are calculated as a proportion of patients that were low risk on either of the 2 measurements. We modified the specific agreement to fit a 3×3 table, as illustrated in table 1, because the original method is done in a 2×2 table. We rated a specific agreement <40% as poor, 40% to 59% as fair, 60% to 74% as good, and 75% to 100% as excellent. Lastly, we calculated the percentage of patients with persisting disability per risk profile; this was done for the groups receiving the recommended and nonrecommended treatments.

Results

Study population

The GPs and physiotherapists originally included 370 patients; however, 86 patients failed to fill in the baseline questionnaire and

Table 1   Specific agreement

Baseline (t0)	Risk	Low	Medium	High
	Low	(A)	(B)	(C)
	Medium	(D)	(E)	(F)
	High	(G)	(H)	(I)

NOTE. Low risk, A/(A+[B+C+D+G]/2); medium risk, E/(E+[B+H+D+F]/2); high risk, I/(I+[C+F+G+H]/2).

were excluded. The characteristics of the 284 remaining patients are presented in table 2. The 12 GPs included 103 patients (26 with NP, 77 with LBP), and the 33 physiotherapists included 181 patients (74 with NP, 107 with LBP). The 4 groups (NP/LBP stratified for GP/physiotherapist) are largely comparable in sex, age, fear of movement, pain catastrophizing, and pain intensity, and the percentages of SBT risk profiles of each of the 4 groups are also comparable: the low-risk profile percentage ranges from 50.0% to 60.8%, the medium-risk profile percentage ranges from 35.1% to 42.3%, and the high-risk profile percentage ranges from 4.1% to 11.2%. GPs tend to see a higher proportion of patients with chronic LBP compared with physiotherapists (68.8% vs 48.6%).

Follow-up

The follow-up questionnaire for GPs and physiotherapists had a nonresponse rate of 3.9% (n=11), and the follow-up questionnaire for patients had a failure to follow-up rate of 14.4% (n=41). Thirteen patients were seen by both a GP and a physiotherapist; in this analysis, these patients are analyzed in both groups. Figure 1 (patient flow) displays all patients analyzed despite patients' failure to follow-up.

Because of the clinicians' nonresponse, the specific agreement analysis was performed on 273 patients (175 with LBP, 98 with NP), and because of the patients' nonresponse, the persisting disability analysis was performed on 243 patients (150 with LBP, 93 with NP). Because of both the clinicians' and patients' nonresponse, the treatment analysis was performed on 234 patients (142 with LBP, 92 with NP).

Treatments

The 2 authors (J.D.B. and J.J.W.S.-G.) independently categorized the treatments that the physiotherapists applied, and in 90.5% of the cases, agreed on their categorization. The categorization of the treatments of the GPs was performed in SPSS version 24.[b] The authors decided that treatments offered by GPs whereby they performed manipulations themselves would be categorized as medium risk (comparable to referring the patient to a physiotherapist, irrespective of the number of manipulations).

Lower back pain

In the specific agreement analysis, most of the patients with LBP were at low risk for persisting disability (n=95; 54.3%). Thirteen (13.7%) of these patients received the SBT-recommended low-risk treatment approach, which resulted in a specific agreement of 22.4% (table 3). According to the SBT, all other patients (n=82) were overtreated. Receiving the treatment approach for medium or high risk did not result in a lower percentage of persisting disability (table 4).

We found that of the 64 patients (36.8%) who were considered to be at medium risk, 55 (85.9%) received treatment corresponding to this risk profile (specific agreement, 51.4%), 7 patients received a low-risk treatment (undertreated), and 2 patients received a

Table 2 Baseline characteristics

	Total		GP		PT	
Characteristics	Neck (n=100)	Back (n=184)	Neck (n=26)	Back (n=77)	Neck (n=74)	Back (n=107)
Women	65 (65.0)	103 (56.0)	17 (65.4)	42 (54.5)	48 (64.9)	61 (57.0)
Age (y)	45.6±14.3	44.7±14.6	45.4±12.5	40.7±14.7	45.7±14.9	47.5±13.9
SBT* risk profile						
Low	58 (58.0)	96 (52.2)	13 (50.0)	42 (54.5)	45 (60.8)	54 (50.5)
Medium	37 (37.0)	70 (38.0)	11 (42.3)	29 (37.7)	26 (35.1)	41 (38.3)
High	5 (5.0)	18 (9.8)	2 (7.7)	6 (7.8)	3 (4.1)	12 (11.2)
Episode duration						
<1mo	27 (27.0)	53 (28.8)	7 (26.9)	15 (19.5)	20 (27.0)	38 (35.5)
1—3mo	18 (18.0)	26 (14.1)	5 (19.2)	9 (11.7)	13 (17.6)	17 (15.9)
>3mo	55 (55.0)	105 (57.1)	14 (53.8)	53 (68.8)	41 (55.4)	52 (48.6)
Pain intensity†	5.5±1.9	5.9±1.8	5.4±1.9	5.7±1.9	5.6±1.9	6.0±1.8
Disability (NDI)‡	14.1±6.8		14.2±8.8		14.1±6.1	
Disability (RDQ)§		9.5±5.9		8.9±5.7		10.0±6.1
Fear (TSK)‖	32.2±5.9	34.8±7.1	33.8±5.6	35.2±6.3	31.7±5.9	34.4±7.6
Catastrophizing (PCS)¶	12.7±10.0	13.8±10.3	16.5±12.4	14.6±11.2	11.4±8.7	13.1±9.6
Referral					17 (23.6)	23 (23.2)

NOTE. Values are n (%) or mean ± SD.
Abbreviations: PCS, Pain Catastrophizing Scale; PT, physiotherapist; TSK, Tampa Scale for Kinesiophobia.
* SBT total score range: 0—9.
† Pain intensity is measured on a Numeric Pain Rating Scale (range, 0—10).
‡ NDI: total score range, 0—50.
§ RDQ: total score range, 0—24.
‖ TSK: total score range, 17—63.
¶ PCS: total score range, 0—65.

high-risk treatment (overtreated). Both over- and undertreated patients had a higher percentage of persisting disability compared with the group that was treated in accordance with its risk profile.

In the group of patients who were considered to be at high risk for persisting disability (n=16; 9.2%), only 1 patient (6.3%) received the high-risk treatment approach (specific agreement,
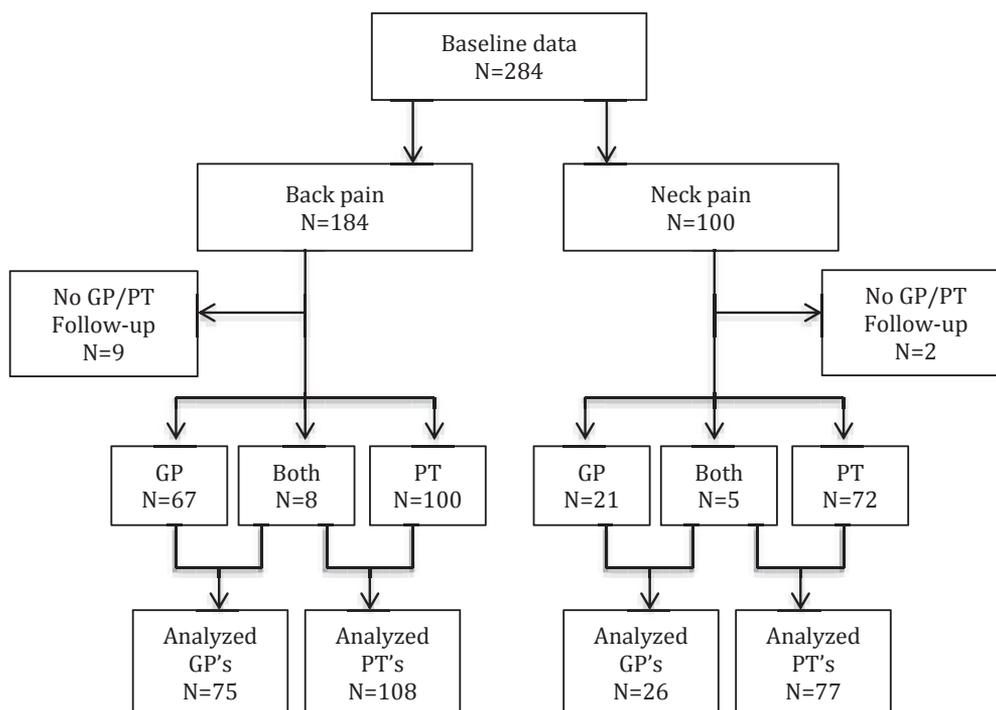
Fig 1 Patient flow.

10.0%). According to the SBT, all other patients (n=15) were undertreated. We found that these undertreated patients had an average of 6.5 physical therapy sessions, and the patients treated as high risk received 8.5 physical therapy sessions on average.

Neck pain

In the specific agreement analysis, 57 (58.2%) of the 98 patients with NP were considered to be at low risk for persisting disability. Two (3.5%) of these patients received the corresponding low-risk treatment approach (specific agreement, 6.3%); other patients were considered to be overtreated (see table 3) and had a higher percentage of persisting disability at 3 months (table 5).

We found that while 36 patients (36.7%) were considered to be at medium risk for persisting disability, only 30 patients (83.3%) received care that corresponded to their medium-risk profile (specific agreement, 48.0%); the remaining 6 patients were equally divided between receiving the low- and high-risk treatment approach.

Of the 98 patients with NP, the smallest group contains the patients considered to be at high risk for persisting disability (n=5; 5.1%). None of these patients received the high-risk treatment approach, making it impossible to calculate the specific agreement. On average, these patients underwent 7.2 physical therapy sessions, while patients treated as high risk in this study received 8.8 sessions on average.

Physiotherapy treatments

In the specific agreement analysis, we found that 86.2% of the patients with LBP and 90.8% of the patients with NP received a medium-risk treatment approach, which suggests a 1-size-fits-all approach in current usual care. Only 7 patients (3.0%) received a high-risk approach, over half of the patients were overtreated (47.9% for LBP, 59.8% for NP), and between 32.6% (NP) and 38.7% (LBP) received the targeted treatment. The patients with LBP and NP who were given the correct treatment had almost the same percentage of persisting disability in 3 months (32.7% for LBP, 34.5% for NP).

GP referrals

GPs referred 10 patients (9.9%) for imaging: 7 to rule out serious pathology and 3 at the request of the patient. Three other patients were referred to a neurologist or an orthopedic surgeon because of

persisting complaints; 1 of these referrals was at the request of the patient. In 27 cases, GPs prescribed analgesic drugs; for 15 patients (55.5%) this was time contingent (compared with pain contingent). Furthermore, we found an (almost) absence of a psychosocial approach or related referrals by GPs (eg, the high-risk approach).

Discussion

Main findings

GPs and physiotherapists treat the majority of their patients as medium-risk patients even though this majority is actually at low risk for persisting complaints. No large differences are found between patients with NP and those with LBP. The minority of

Table 3 Specific agreement analysis between baseline risk profile and treatment as provided

Baseline	Treatment Profile			
	Low	Medium	High	Specific Agreement (%)
LBP (n=175)				
Low risk	13	81	1	22.4
Medium risk	7	55	2	51.4
High risk	1	14	1	10.0
NP (n=98)				
Low risk	2	55	0	6.3
Medium risk	3	30	3	48.0
High risk	1	4	0	NA

NOTE. Values are n or as otherwise indicated. Analysis based on patients' baseline data and clinicians' treatment data. Specific agreement is interpreted as the proportion of patients who had that specific risk profile on either baseline or in the treatment profile.
Abbreviation: NA, not applicable.

Table 4 Treatment analysis for LBP

Baseline	Treatment	n (%)	Persisting Disability, n (%)
LBP (n=142)			
Low risk	Low	9 (12.0)	2 (22.2)
	Medium	65 (86.7)	13 (20.0)
	High	1 (1.3)	1 (100.0)
Medium risk	Low	6 (11.3)	3 (50.0)
	Medium	45 (84.9)	15 (33.3)
	High	2 (3.8)	2 (100.0)
High risk	Low	0 (0.0)	0 (NA)
	Medium	13 (92.9)	7 (53.8)
	High	1 (7.1)	1 (100.0)
Undertreated		19 (13.4)	10 (52.6)
Rightfully treated		55 (38.7)	18 (32.7)
Overtreated		68 (47.9)	16 (23.5)

NOTE. Analysis based on patients' baseline data and follow-up data, and clinicians' treatment data. "Persisting disability" is the amount and percentage of patients with persisting disability in the corresponding treatment group.
Abbreviation: NA, not applicable.

Table 5 Treatment analysis for NP

Baseline	Treatment	n (%)	Persisting Disability, n (%)
NP (n=92)			
Low risk	Low	2 (3.7)	0 (0.0)
	Medium	52 (96.3)	7 (13.5)
	High	0 (0.0)	9 (NA)
Medium risk	Low	3 (8.8)	0 (0.0)
	Medium	28 (82.4)	10 (35.7)
	High	3 (8.8)	3 (100.0)
High risk	Low	1 (25.0)	1 (100.0)
	Medium	3 (75.0)	2 (66.7)
	High	0 (0.0)	0 (NA)
Undertreated		7 (7.6)	3 (42.9)
Rightfully treated		30 (32.6)	10 (33.3)
Overtreated		55 (59.8)	19 (34.5)

NOTE. Analysis based on patients' baseline data and follow-up data, and clinicians' treatment data. "Persisting disability" is the amount and percentage of patients with persisting disability in the corresponding treatment group.
Abbreviation: NA, not applicable.

patients (36.7%) received care that corresponds to the recommended care according to the SBT approach; 52.2% of the patients were considered overtreated, and 11.0% were undertreated.

Interpretation

The SBT approach advises 1 consultation with information or education for low-risk patients. We considered an intervention to match the low-risk profile if the GP or physiotherapist gave information or education in either 1 or 2 consultations. The GP also had the option to offer additional analgesics to the patient within the low-risk treatment approach. The United Kingdom health care system recommended an average of 4 interventions. In our cohort (LBP and NP combined), we found an average of 6.8 physical therapy sessions and 8.7 sessions in the patients with a high-risk profile. Furthermore, we found an (almost) absence of a psychosocial approach or related referrals (eg, the high-risk approach). This study clearly demonstrates that clinicians tend to treat most of their patients as medium-risk patients; they do not stratify and treat patients based on the perceived risk of persistent complaints, and over half of the patients are overtreated. In low-risk patients with LBP, we see that most of the patients recover, irrespective of a low- or medium-risk intervention. We expect the same for NP; however, because of the small proportion of patients receiving a low-risk approach, we could not evaluate this. Also, no conclusions can be drawn from the high-risk population because of the small sample size.

One Irish study[21] conducted a nonrandomized clinical trial in 332 patients with LBP who were included in a historical cohort. This group received a generic 12-week group education or exercise program, comparable to the medium-risk approach, while an intervention group of 251 patients with LBP received a stratified-care approach. Stratified care demonstrated a superior effect on the high-risk group; however, the study did not analyze the usual care, as was done in this study.

In the original SBT study,[20] stratified care was the intervention that was compared with a usual-care approach, and the authors found that the intervention group displayed a higher mean change in disability compared with the control group. However, no information about the specific contents of usual care was provided. No other studies have been found that analyze unprotocolled usual care in contrast to the SBT approach.

Other remarkable findings are that the GPs referred 10 patients for imaging even though they were labeled as nonspecific LBP or NP, meaning there were no signs or signals indicating serious pathology. The GP guidelines advise against diagnostic imaging in these instances,[7,31] since imagery may lead to higher health care costs because of additional tests and treatment, but may not improve clinical outcomes and may even lower the quality of life.[32,33] While analgesics were prescribed to 44.5% of the patients on a pain-contingent basis, the GP guidelines advise doing so on a time-contingent basis.[30]

Study strengths and limitations

This is the first study that compares current usual care with the recommended stratified SBT approach in the Netherlands, and provides insight into the question regarding whether specific implementation of stratified care is required or whether usual care already properly categorizes patients.

Our results have limited generalizability for the group of high-risk patients because this group was quite small. At the moment, the SBT approach is only available for patients with LBP, and so

far, no study has been conducted on an SBT approach for patients with NP; however, the conditions are rather comparable. Our categorization of usual care was based on the information that physiotherapists provided. They wrote their (primary) treatment goals, and means to achieve their goals, and we may have missed certain psychosocial factors that were addressed but not reported in the patient files.

In the United Kingdom, the SBT has the potential to predict persisting disability in clinical practice. We found differences between usual care and the recommended stratified care, since most patients received the therapy recommended for medium-risk patients. Educating clinicians on the SBT approach, especially for the low- and high-risk groups, is necessary for this approach to be effective in reducing pain, increasing function, and decreasing sick leave in the Netherlands. However, before making efforts to change the working method, it is essential to determine what causes clinicians to treat patients as they do. A qualitative study should be undertaken to gain insight.

Conclusions

Current Dutch usual care does not correspond to the recommended stratified-care approach based on the SBT for patients with nonspecific LBP or NP. Clinicians tend to treat most of their patients as medium-risk patients even though most of them were found to be low-risk patients.

Suppliers

a. LimeSurvey 2.05; LimeSurvey GmbH
b. SPSS Version 24; IBM Corp.

Keywords

General practitioners; Low back pain; Neck pain; Physical therapists; Rehabilitation

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