

The BOA-register

Annual Report 2014

Better Management of Patients with Osteoarthritis



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Introduction

The BOA Register, the Register for better management of patients with osteoarthritis, will be celebrating its fifth anniversary in 2015 and consequently this is the fifth Annual Report. We can report that while we have helped tens of thousands of patients with osteoarthritis to achieve better quality of life, there is still a substantial need to provide for this group of patients in the healthcare system. In this Annual Report we can also see that development is moving forward on many fronts: a higher proportion of patients are being provided for, more county councils are focusing on improving the treatment of osteoarthritis, a large number of units use the results as part of an improvement programme and the outcome for patients is better. However, there is considerable variation and thus potential for improvement. Our hope is that this Annual Report will help to highlight this need and lead to the requisite action being taken.

The 2014 Annual Report covered 377 units and a total of 39,000 patients. When the Annual Report was prepared (May 2015), 469 units were linked to the BOA Register. The BOA Register mainly evaluates all the patient-reported outcomes following an evidence-based, non-surgical intervention – the Supported Osteoarthritis Self-Management Programme ('SOASP'). The SOASP includes information and individually adapted exercise, which ought to be offered to all patients suffering from osteoarthritis as early as possible in the course of the disease. The SOASP is aimed mainly at the majority of patients with osteoarthritis who never become eligible for arthroplasty although even prior to arthroplasty knowledge is needed about the nature of osteoarthritis and the significance of physical activity. There is considerable variation in the treatment provided throughout the country. The BOA Register highlights this variation, which constitutes a starting point for quality

enhancement with the aim of mitigating the differences. When making comparisons, consideration ought to be given to the differences that exist between county councils in terms of patient numbers and the population base. This report includes comparisons on the county council level. Presentation and comparison of results on the unit level are only available in digital form at www.boaregistret.se. However, to provide the reader with an overview, we have opted to report the patient composition at the clinic, known as the case mix, as a value compass. We have also selected a number of result variables that are presented on the clinic level and which are compared to the national average. This is the only result that is presented on the unit level in this printed version of the report, and it can be found at the end. Only units that have complete data from at least 50 patients covering all the variables in the clinical value compass are reported.

The SOASP is led by a physiotherapist, in many cases in collaboration with an occupational therapist and a patient representative. The aim is to provide patients with knowledge that will allow them to reach their own decisions regarding their health and to support them in the task of changing their lifestyle to promote better health. The BOA Register contains patient-reported outcomes as a basis for quality enhancement in the healthcare system. The physiotherapist reports the treatment the patient has received previously as well as compliance with the intervention. All units can access their results online and compare them with the national average.

This year we have highlighted a number of indicators in the annual report, some produced by the BOA Steering Committee, others by the National Board of Health and Welfare and healthcare regions. An indicator is in simple terms

a measure that highlights the level of quality within an area that could indicate a trend over time. The indicator should facilitate comparisons, follow-up and improvement. BOA presents process indicators and result indicators in the Results chapter. In this year's Annual Report we have also included a section that compares the results for men and women.

The Annual Report presents an overview of the content of the Register. The statistics are descriptive and certain mean values are presented without dispersion and with consideration given to the small volume of material available on the county council and clinic level. The results should therefore be seen as preliminary and should be interpreted with caution. All results are paired data, i.e. only patients with complete data from the first appointment and the follow-up are included in the results. Results are presented

separately for the hip and knee. A division according to the most problematic joint is based on an assessment and examination by the physiotherapist. Many patients report both hip and knee problems. To mitigate the risk that individual values have a material impact on the mean value, only the results for county councils that have complete hip and knee data from at least 50 patients are reported.

We hope that the fifth BOA Annual Report will continue to inspire you to carry out in-depth analyses and enhancement work within the field of osteoarthritis.

Table and figure legends are translated to English, however text inside tables and figures are in Swedish. We apologize for any inconvenience due to this.

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Summary

BOA stands for Better Management of Patients with Osteoarthritis. The BOA Register evaluates patient-reported outcomes following a physiotherapy intervention – the Supported Osteoarthritis Self-Management Programme ('SOASP'). In the SOASP, scientific evidence for information and exercise in conjunction with osteoarthritis of the hip and osteoarthritis of the knee is put into clinical practice. The SOASP is led by a physiotherapist, in many cases in collaboration with an occupational therapist and a patient representative. Through the SOASP, patients acquire knowledge that will allow them to make their own decisions regarding their health as well as support to change their lifestyle and by doing so promote better health.

The BOA Register has been in existence as a National Quality Register since December 2010. The number of patients registered in BOA each year increased by 25% between 2013 and 2014, from 10,554 to 13,252. The 2014 report includes data from 325 units and a total of 39,000 patients. At the time the Annual Report was compiled (May 2015), 469 units were affiliated to the Register.

In 2014, 3.1% of the population over the age of 45, equivalent to approximately 136,000 individuals, sought out-patient care as a result of osteoarthritis of the hip or knee. It is estimated that 405,400 individuals over the age of 45 in Sweden have sought primary care at least once during a five-year period as a result of osteoarthritis of the hip or knee. The number of people in Sweden who live with osteoarthritis is significant in the light of the fact that there are many people who do not seek help and that a large number have not even been diagnosed with osteoarthritis.

Around 4% of all appointments with a doctor in the out-patient system during 2014 were related to a diagnosis of osteoarthritis of the hip or knee. No statistics are available for how many

appointments were made with a physiotherapist in the primary care system. With the present annual capacity of approximately 13,200 patients, the SOASP and the BOA Register reached an estimated 17% of all those who sought out-patient care after been diagnosed with osteoarthritis of the hip or knee during 2014. Patients with osteoarthritis can contact a physiotherapist directly. On average, only 3-4% of the patients in the BOA Register contacted a physiotherapist and the SOASP directly during 2014.

The aim of BOA is mainly that all patients with osteoarthritis should be offered adequate information and exercise according to current treatment guidelines and that only surgical intervention should be considered in those cases non-surgical treatment failed to produce satisfactory results. Patients with osteoarthritis must be dealt with equally and optimally during their initial contact with the healthcare system, regardless of where that contact takes place. The aim is to improve health-related quality of life and the level of physical activity in patients with osteoarthritis, primarily in the hip and knee, and to reduce healthcare consumption and sick leave due to osteoarthritis. Furthermore, BOA aims to improve quality within physiotherapeutic work through systematic evaluation, open comparison and feedback of results. Each unit that reports data to the Register can at any time access their results in real time and compare them with the national average.

In BOA, patient collaboration includes concrete collaboration with the Swedish Rheumatism Association and with representatives for those patients who make up the target group for the Supported Osteoarthritis Self-Management Programme (SOASP). One of the theory sessions in the SOASP is led by a patient with experience of living with osteoarthritis and dealing with the

problems through lifestyle changes. These are known as osteoarthritis communicators and have been trained by the Rheumatism Association to talk pedagogically about how an active lifestyle can impact on health and joint problems and initiate discussion around this subject. The purpose of this collaboration is to present good examples and provide the participants with an opportunity to identify with the osteoarthritis communicators when they state that physical activity actually works. A physiotherapist with experience of the SOASP is involved in training the osteoarthritis communicators and an osteoarthritis communicator is involved in SOASP training for physiotherapists and occupational therapists.

Early intervention in conjunction with osteoarthritis, before the problems become too serious, represents the greatest opportunity to prevent functional disability and deterioration in health. The hope is that the patients will contact a physiotherapist directly with their joint problems. Only a small proportion of patients do so at present although the trend is moving in the right direction. In several places throughout the country the SOASP has become routine in the healthcare system and the orthopaedic surgeon returns patient referrals if the patient has not met a physiotherapist for basic treatment. The SOASP is now included in several care programmes for patients with osteoarthritis of the hip and knee. All county councils/regions have included the SOASP and the BOA Register in the care choice procurement process. The work being done by the BOA Register has also attracted international interest. BOA has sister projects in Denmark and Norway and is part of an international network of countries that are working actively to implement evidence-based guidelines in healthcare.

The results in this report are presented separately for the hip and knee. Patients who have problems in both the hip and knee are categorised according to the joint the physiotherapist

considers to be most problematic. Two-thirds have the most problems in their knees. Around 70% of the patients in the Register are women. Gender differences are only presented in this report on the national level and the patient population could differ significantly between clinics. The BOA Register includes both public and private organisations. These aspects must be taken into account when interpreting the results. This Annual Report ought to be seen primarily as a starting point for improvement work within physiotherapeutic work. From a quality enhancement point of view, we want to urge all units to make active use of their results. This would allow any incorrect input to be identified and the validity of the registered data to be improved even further. There are contact persons in the majority of county councils and regions who can provide support to utilise and develop local experience and knowledge about osteoarthritis and improvement work.

Based on the aims behind BOA and the SOASP, and the guidelines laid down by the National Board of Health and Welfare for osteoarthritis and disease prevention methods, the BOA Steering Committee has proposed a number of indicators and targets that could function as a guide and a source of stimulation for the work that is being done on the county council level and the clinic level. In certain cases, these targets concur with those established by the National Board of Health and Welfare, in other cases they are set based on the best county council/regional results (benchmarking). The targets can help decision-makers, users in the Register and other parties to identify potential areas for improvement in order to achieve the goals that have been established.

BOA targets

- **Improve EQ-5D by 0.10**

Örebro and Gävleborg have the highest proportion of patients with osteoarthritis of the hip who meet this target (32% and 27% respectively). For patients with osteoarthritis of

the knee, Sörmland and Örebro have been most successful, with 30% of the patients achieving the target after one year.

- **Reduce the mean age in the Register (to 58 years)**

No county council/region has met this target. The mean age has increased by 0.3 since 2013 – for patients with osteoarthritis of the hip by 0.4 years and for patients with osteoarthritis of the knee by 0.1 years. The mean age in 2014 was 66 years.

- **Reduce the proportion of patients who have been x-rayed before the SOASP to 50-70%**
Kronoberg, Dalarna and Jämtland have just managed to meet the 70% target for patients with osteoarthritis of the hip. No county council/region has met the target for patients with osteoarthritis of the knee. Värmland has the lowest proportion with 72%.

- **The proportion with insufficient physical activity (<115 activity minutes per week) must be below 20% after one year**

No county council/region met this target for patients with osteoarthritis of the hip. Gotland, Jönköping, Kronoberg and Uppsala met the target for patients with osteoarthritis of the knee.

The Register has identified a number of development indicators with target proposals

- **50-70% of patients who have been diagnosed with osteoarthritis and who seek out-patient care must be taken care of within the SOASP**

In 2014, Jämtland and Västmanland reached 50%.

- **60-80% of all patients who undergo hip or knee arthroplasty should have been taken care of within the SOASP prior to the operation**

Hospitals in Torsby and Linköping met the target for hip arthroplasty in 2014. No data is available for knee arthroplasty.

- **30-50% of patients with symptoms of osteoarthritis should contact a physiotherapist (SOASP) directly**

No county council/region met this target. Örebro and Halland reached the majority of patients with osteoarthritis of the hip (13%). Of the patients with osteoarthritis of the knee, 10% contacted the SOASP directly.

- **80% of patients who are registered for an initial appointment at the SOASP should be followed up after three months**

Västmanland, Kronoberg, Västernorrland and Gotland met this target in 2014.

- **30% of patients in the BOA Register should report a clinically significant reduction in pain after one year**

No county council met this target. Dalarna reported the best results, achieving a clinically significant improvement for 20% of the patients, both those with osteoarthritis of the hip and those with osteoarthritis of the knee.

- **40% of patients should report an improved state of health after one year (reduction of at least 10 on the EQ-VAS scale)**

No county council/region met this target. Skåne succeeded best in terms with regard to osteoarthritis of the hip, where 27% of the patients reported an improved state of health. In Västmanland, Gävleborg, Dalarna and Kronoberg, 30% or more of the patients with osteoarthritis of the knee reported an improved state of health after one year.

- **30% of patients stop taking joint-related medication following completion of the SOASP**

No county council/region met this target. Uppsala and Värmland succeeded best, with just over 20% of the patients with osteoarthritis of the hip no longer taking joint-related medication. In Västernorrland, Jönköping and Gotland, more than 25% of patients with osteoarthritis of the

knee stopped taking joint-related medication after completing the SOASP.

Targets for development indicators are based in many cases on results from the clinics/county councils that achieve the best results each year. The target is thus achievable although at the same time variable.

Regional improvement work aimed at optimising the management of patients with osteoarthritis within the county council/region has been initiated in Västmanland, Västra Götaland, Kalmar, Blekinge and Västernorrland. Jämtland had already shown that such an investment could lead to an improved flow in the healthcare system. Five teams are taking part in the BOA Register improvement project 'Even Better', in collaboration with the Västra Götaland Register Centre. The improvement project commenced in December 2014 and will continue until February 2016.

Up to and including May 2015, the BOA Register received nine applications for research grants. To date, the BOA Register has published one referee-reviewed article in a scientific journal.

The following interesting observations from the fifth BOA Register Annual Report can be highlighted:

- At the first appointment, 80% of patients state that they experience pain each day or are in constant pain. The proportion falls by 17 percentage points for osteoarthritis of the hip and 20 percentage points for osteoarthritis of the knee. The results are the same after one year. This means that more than 600 people with osteoarthritis of the hip and more than 2,000 people with osteoarthritis of the knee have been relieved of their daily pain following completion of the SOASP.
- After three months, 699 patients (4% of all those who have undergone a three-month follow-up) stated that they no longer had any problems. Of those who were free of problems after three months, 37% were still free of problems after one year.
- 20 per cent of those with osteoarthritis of the knee and 15 per cent of those with osteoarthritis of the hip stopped taking joint-related medication following completion of the SOASP. Some 55% of those with osteoarthritis of the knee and 60% of those with osteoarthritis of the hip still take joint-related medication following completion of the SOASP. Just 6% began taking joint-related medication following completion of the SOASP.
- Gotland succeeded best in reducing the proportion who experience pain each day or who are in constant pain. At the same time, they have the greatest proportion of individuals who stop taking joint-related medication.
- The proportion who state that they are afraid that their joint will be harmed by physical activity falls from 17% at the first appointment to 6% after three months. After one year, the proportion is 9%.
- The SOASP helped 800 people with osteoarthritis – 600 patients with osteoarthritis of the knee and 200 patients with osteoarthritis of the hip – to achieve a health-promoting level of physical activity after one year (150 activity minutes per week).
- Some 60% of the patients retained their health-promoting level of physical activity after one year.
- The proportion of persons who were insufficiently active was 27.5% at the first appointment, falling to 20% after three

months. Initiatives to maintain the level of activity are needed – the proportion with an insufficient level of physical activity after one year was 25%.

- The dropout rate in the Register after three months is 25% and varies between 5% for Gotland, which has the highest number submitting complete data after three months, and 51% for Gävleborg, which has the lowest number submitting complete data.
- The 2014 response rate for the one-year follow-up was 84%.
- Six out of ten patients in the SOASP state that they have problems in more than one joint. Of these, two out of ten have bilateral problems and four out of ten have problems in several joint systems – in the hip and knee for example – or in the knee and hand.
- One-third of patients with osteoarthritis of the knee and one-fifth of patients with osteoarthritis of the hip who were registered in the BOA during 2014 have a BMI higher than or equal to 30 kg/m² (categorised as obese).
- In the BOA Register, 43% the patients are under the age of 65, which in 2014 was equivalent to around 5,600 patients. In 2014, almost one in five patients of working age was on sick leave at the time of the first appointment.
- Three out of ten patients in the SOASP in 2014 stated that they had not received any explanation whatsoever for their problems or they were told that they had worn joints. Four out of ten knew that they had osteoarthritis but did not know what osteoarthritis was.
- Women in the BOA Register have problems in their hand and finger joints more often than men.
- Women have a higher prevalence of problems in both the hip and knee or other diseases that affect their ability to walk (Charnley C.)
- A higher proportion of men are afraid that their joint will be harmed by physical activity and a higher proportion state that they would prefer to undergo surgery, both before and after the SOASP.
- The SOASP has a similar effect on pain intensity and level of physical activity for men and women, which should be an indication that the differences that existed initially do not have a tangible effect on the outcome after the SOASP.
- Men drop out of the SOASP to a greater extent, particularly because of surgery or for other reasons.
- The women in the SOASP take in the information and make greater use of it than the men, both after three months and after one year.
- In total, 8% of the patients in the Register have undergone arthroplasty prior to the one-year follow-up.
- A total of 11% drop out of the SOASP for a reason other than arthroplasty.
- Of those who drop out due to arthroplasty, a greater proportion of the patients have most problems in the hip (52% have osteoarthritis of the hip among those who underwent surgery compared to 29% among those who did not undergo surgery).
- Patients with osteoarthritis of the hip do not drop out for reasons other than surgery to a greater extent than those with osteoarthritis of the knee (25% vs 31%).

- Men are slightly overrepresented among those who undergo surgery (33% vs 30%) and among those who drop out for reasons other than surgery (36% vs 30%).
- Those who undergo surgery are slightly older (67.6 years vs 65.4 years) whilst those who drop out for other reasons are slightly younger (64.6 years vs 65.7 years). There was no difference with regard to BMI or the proportion who have hand problems.
- In Västmanland, the total referral flow to the orthopaedic clinic of patients with osteoarthritis of the hip or knee fell by 25% after the SOASP was introduced on a broad front in primary care. The waiting time to see an orthopaedic surgeon has also fallen – from 100 days to <50 days.
- Västmanland has trebled the number of registrations, producing the largest increase in both percentage terms and absolute terms.
- Västmanland, Västra Götaland, Östra Götaland, Stockholm and Skåne together account for 69% of the patients in the BOA Register during 2014 (and 57% of the Swedish population over the age of 45).
- The number of registrations in Västerbotten, Gotland, Blekinge, Gävleborg and Norrbotten has fallen by 10% or more since the previous year.

Thank you

The BOA Register would never have been what it is without the solid work and commitment of a wide number of people. Thank you to all those involved at the Västra Götaland Register Centre, to all those who report data, to managers who encourage registration and the use of registered data in the work that is being done, to decision-makers who use register data for management and control and to everyone who uses the Register in one or more ways to improve the management of patients with osteoarthritis. A special thank you to all patients and physiotherapists who completed questionnaires on several occasions and who by doing so made it possible for us to learn from the work we are doing within the care sector.

Results 2014

Based on the BOA targets and the SOASP as well as the National Board of Health and Welfare guidelines for osteoarthritis and disease prevention methods, the BOA Steering Committee proposed a number of indicators and targets that could function as an operational guide and a source of stimulation on the county council level and the clinic level. In certain cases they correspond to the targets set by the National Board of Health and Welfare whilst in other cases they are based on the best county council results (benchmarking). These targets can help decision-makers, register users and other parties to identify potential areas for improvement in order to achieve the targets that have been set.

In this chapter results are presented based on data from and including the first data entered by the pilot units in 2008 up to and including December 31, 2014, i.e. accumulated data. For certain variables, the results are only presented for the 2014 operating year. All results are paired data. This means that only individuals who completed the SOASP before December 31, 2014, and who have data from all the measurement points, are reported. The results are reported separately for patients who are suffering most with their hip or knee.

The results are based on patient-reported variables and show a change after three and twelve months. County councils or units with fewer than 50 patients with complete (paired) data for the hip and knee are generally not reported separately but contribute to the national average.

Dispersion is not reported and the results ought to be interpreted with a certain degree of caution, as in certain cases the number of patients is still relatively low. When interpreting clinic-based results, account should also be taken of patient demography (see *Case mix*) and how the SOASP is run at the unit (see *Practice*).

The term 'national' as used in the Annual Report refers to mean values from all patients who have been registered. 'National' represents only clinics

that have registered at least one patient prior to the end of 2014 and it cannot be said that it covers the whole country more than what is stated in the *Participation and reporting* chapter. Results on the unit level are presented on the BOA Register website (www.boaregistret.se).

Indicators

An indicator is in simple terms a measurement that highlights the quality within a particular area and which can demonstrate the trend over time. An indicator should have scientific reasonableness, be relevant and also be possible to measure and interpret. It should be possible to register in the information systems data that forms a basis for indicators, such as data records, registers and other data sources. Indicators that are possible to measure and interpret but where the information systems need to be developed or synchronised, are called development indicators.

The aim is that it should be possible for different stakeholders to use the indicators in order to:

- Facilitate follow-up of the development of processes, results and costs in the healthcare system over time – locally, regionally and nationally
- Facilitate comparisons of the processes, results and costs in the healthcare system over time – locally, regionally, nationally and internationally
- Initiate improvements in the quality of the healthcare system on the local, regional and national level
- Increase access to information (open comparisons) about the processes, results and costs in the healthcare system for the different stakeholders

Below is a presentation of the indicators and proposals for targets that have been chosen by the BOA Register. They include both result measurement and process measurement.

Number of patients with osteoarthritis of the hip and knee who were x-rayed before the SOASP

Target: proposal 50-70%

Figure 1. Hip. Proportion of patients who were x-rayed before the SOASP, broken down according to county council, 2013-2014*.

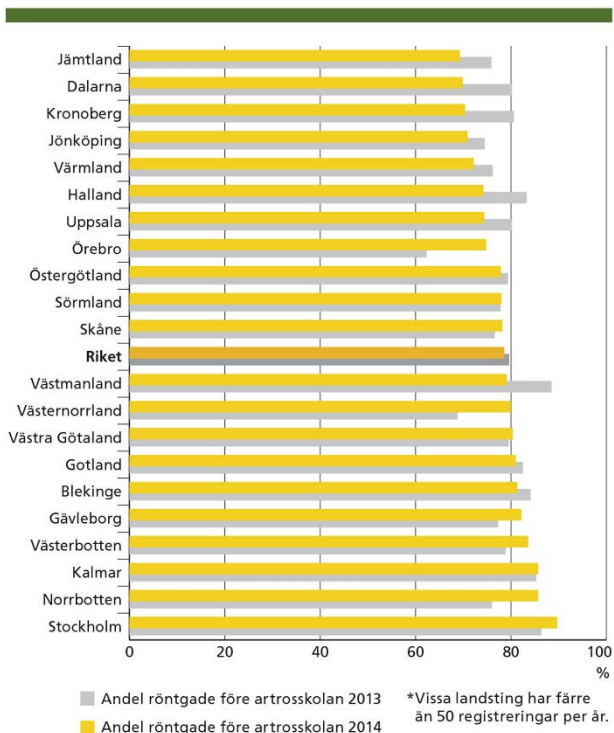
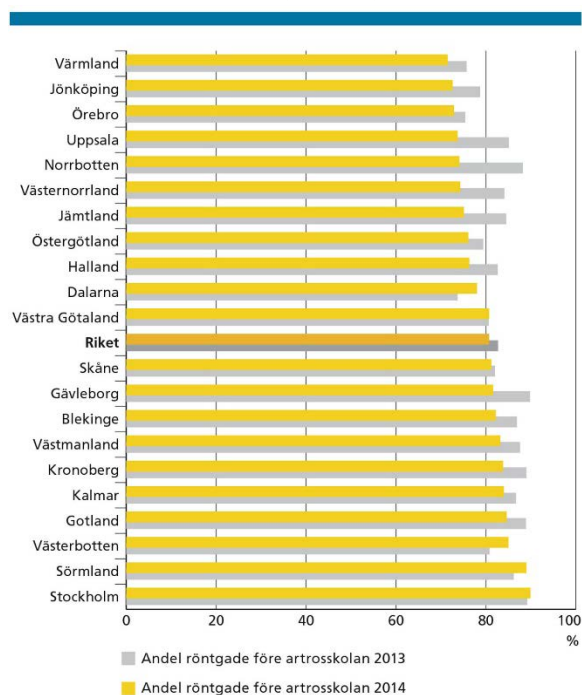


Figure 2. Knee Proportion of patients who were x-rayed before the SOASP, broken down according to county council, 2013-2014.



Mean age for patients in the SOASP

Target: 58 years

Figure 3. Hip. Mean age for patients at the first appointment, 2013-2014

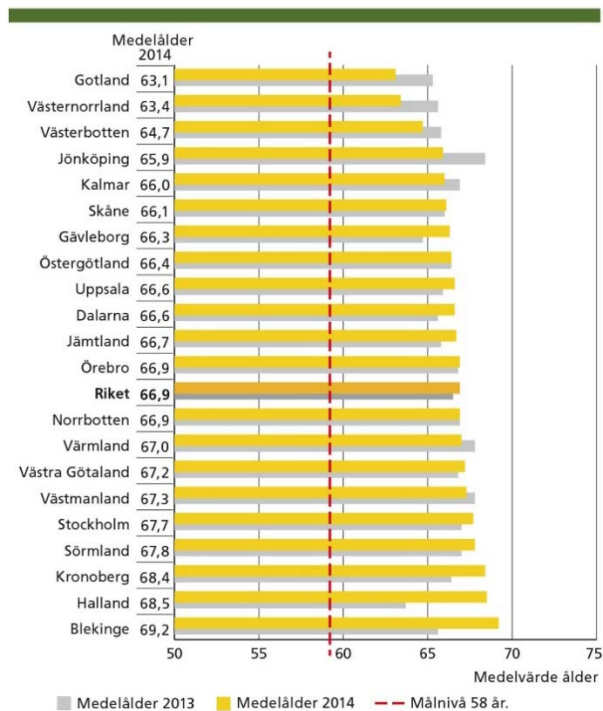
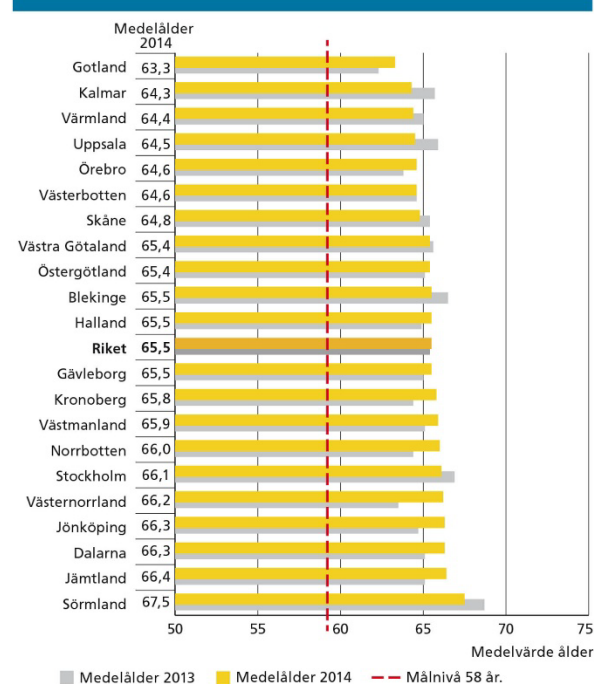


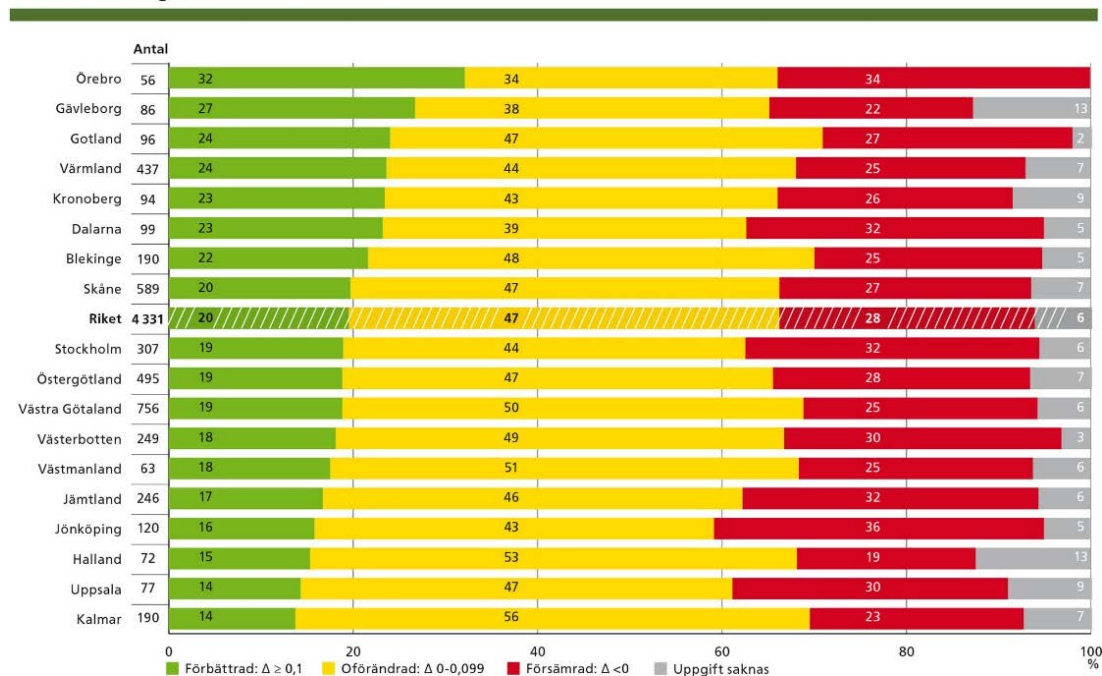
Figure 4. Knee. Mean age for patients at the first appointment, 2013-2014



Health-related quality of life (EQ-5D) following completion of the SOASP

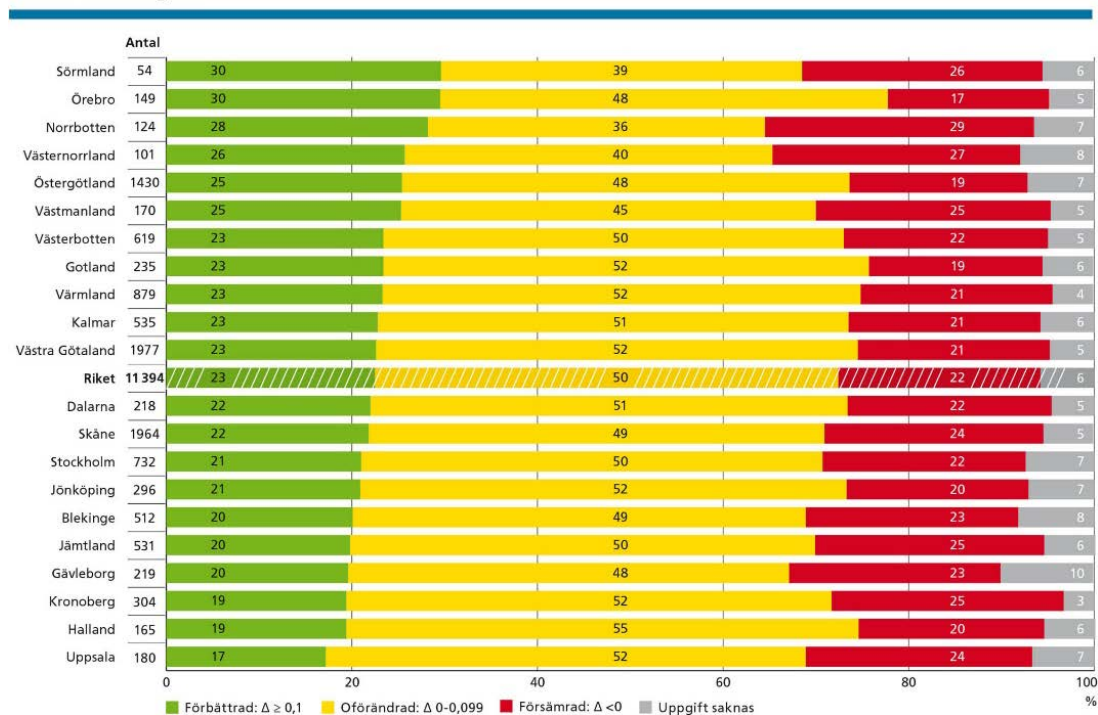
Target: increase of 0.1 after one year

Figure 5. Hip. Number of patients who have achieved the EQ-5D target at 12 months, for patients with a one-year follow-up in 2014 or earlier*.



*County councils with fewer than 50 completed registrations (3 and 12 months) are not reported separately but contribute to the national average.

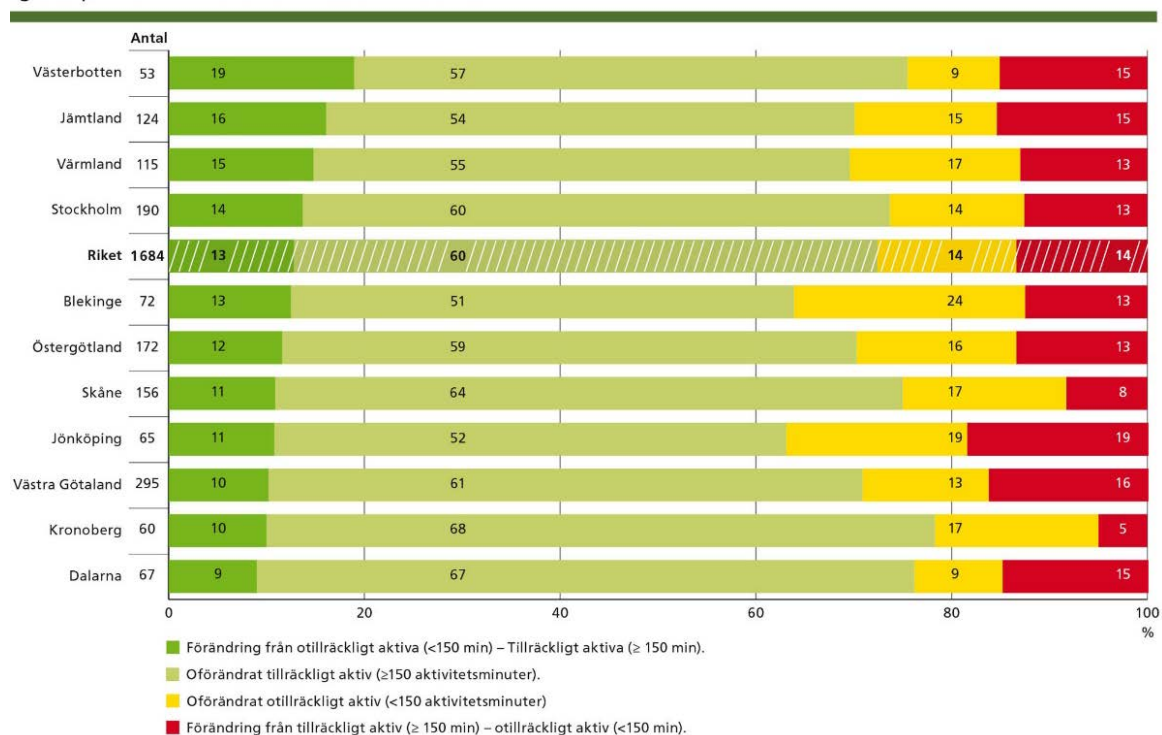
Figure 6. Knee. Number of patients who have achieved EQ-5D target at 12 months, for patients with a one-year follow-up in 2014 or earlier.



Health-promoting physical activity level (>150 activity minutes) following completion of the SOASP

Target: The proportion of insufficiently active should be less than 20% after one year

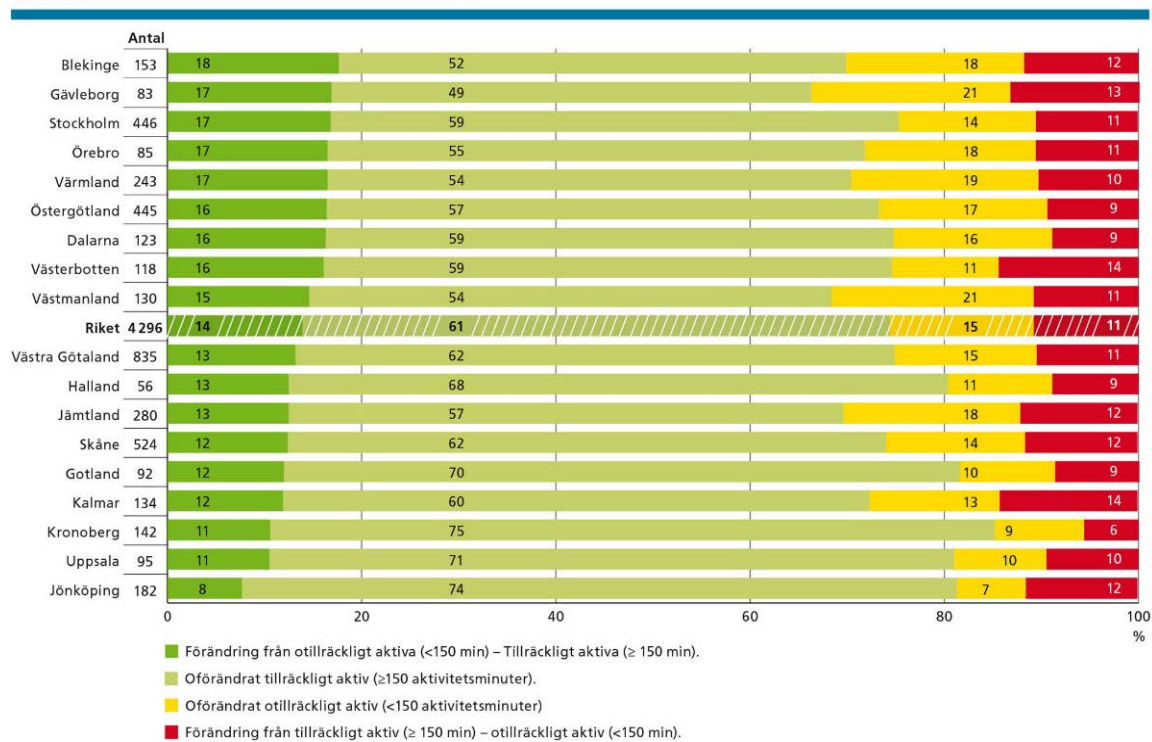
Figure 7. Hip. Proportion of patients with an increased, unchanged or reduced level of activity after 12 months (refers to patients who had their first appointment in 2013)*.



* Change in activity in minutes/week after 12 months compared to the first appointment.

** County councils with complete data for fewer than 50 patients are not reported.

Figure 8. Knee. Proportion of patients with an increased, unchanged or reduced level of activity after 12 months (refers to patients who had their first appointment in 2013)*.



* Change in activity in minutes/week after 12 months compared to the first appointment.

** County councils with complete data for fewer than 50 patients are not reported.

Development indicators

Below are a number of proposals for development indicators. In the majority of cases, targets are based on benchmarking.

Proportion of individuals diagnosed with osteoarthritis who have been taken care of in the SOASP

Target: proposal 50-70%

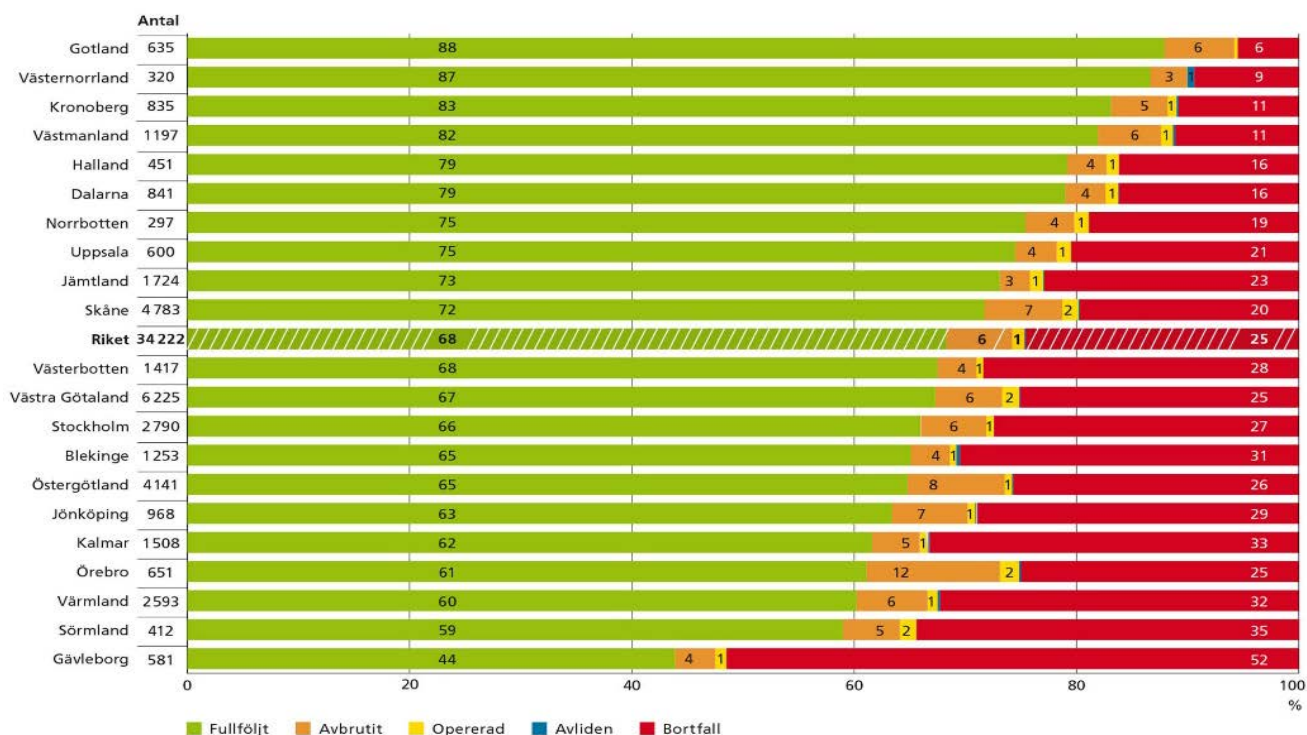
These figures are presented for each county council in Figure 37 (page 41).

Patients who have completed the SOASP (3-month follow-up) as a proportion of all patients who have been registered for an initial appointment.

Target: 80%

Figure 9 shows the proportion of all those who had an initial appointment prior to August 31, 2014 and who were also followed up after three months. A three-month follow-up can take place between three and six months after the initial appointment. Patients who have been noted as having dropped out have stated personally that they did not wish to continue. An operation refers to arthroplasty. Patients who do not have any notes entered in the Register (and who are still alive) within six months of the initial appointment are classified as dropouts and this figure should be as low as possible.

Figure 9. Number of dropouts and patients who have completed or dropped out of the SOASP at three months (applies to patients who had their first appointment during the period 2008 – August 2014).



* The selection of patients who had their first appointment during the period 2008 – August 31, 2014 was made to provide all patients with the opportunity to undergo a three-month follow-up during 2014.

** Completed: Patient questionnaire completed at the first appointment and at three months. At three months, discontinued, operated or deceased refers to a note made within six months of the first appointment.

Proportion of patients with symptoms of osteoarthritis who contact the physiotherapist directly

Target: proposal 30-50%

It is hoped that in time a large proportion of the patients will contact the physiotherapists and the SOASP directly without a prior x-ray examination or contact with the doctor. By doing so, treatment can be initiated more quickly. Figures 10 and 11 show the proportion of patients who go directly to the SOASP without previously seeking medical care for their joint problems.

Figure 10. Hip. Number of patients who did not previously seek medical care for their current problems, 2013 and 2014.

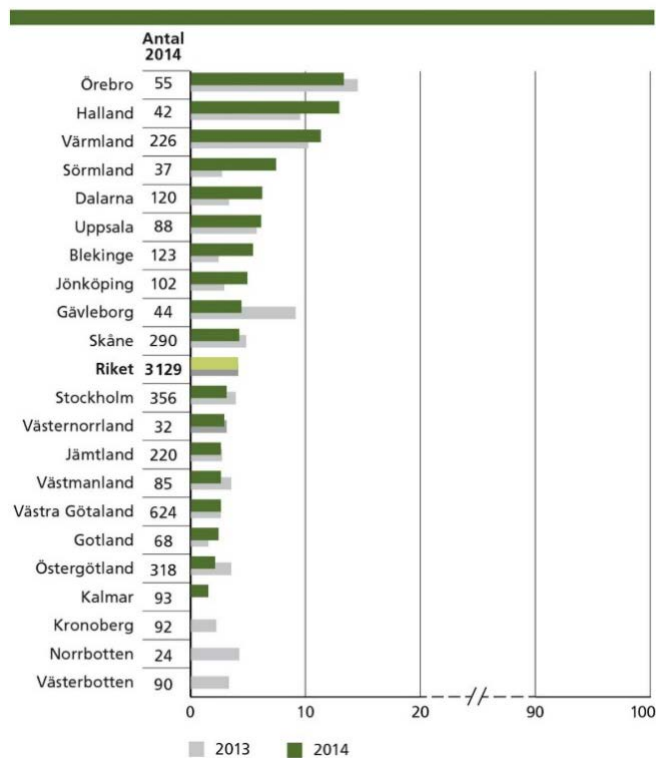
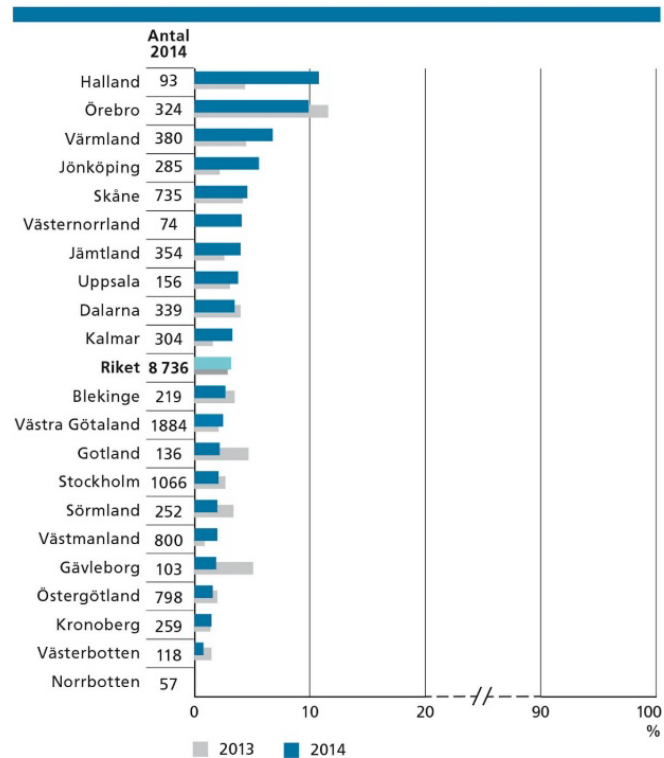


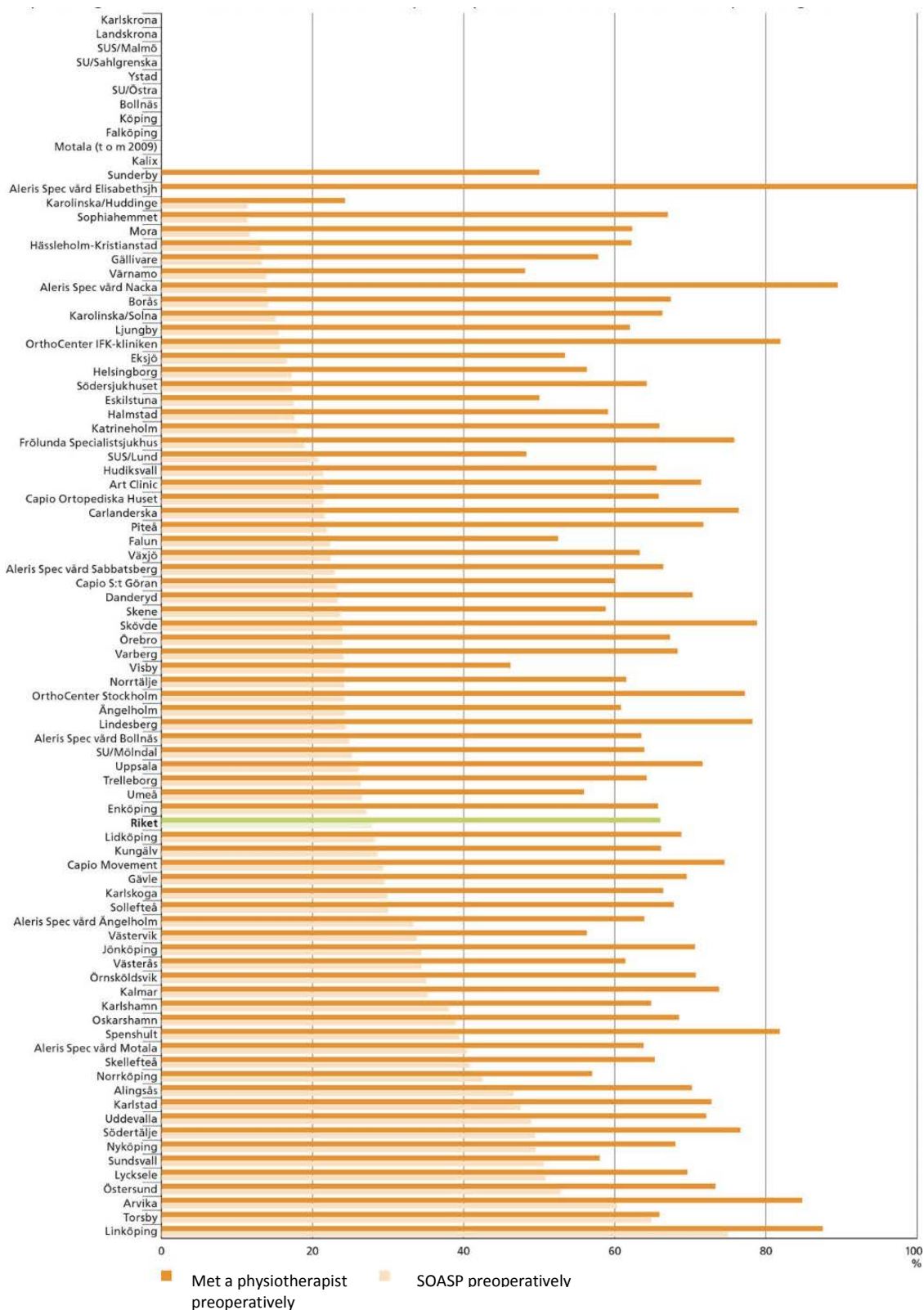
Figure 11. Knee. Number of patients who did not previously seek medical care for current problems, 2013 and 2014



Patients who have been taken care of in the SOASP as a proportion of all the patients who undergo hip or knee arthroplasty

Target: proposal 60-80 per cent

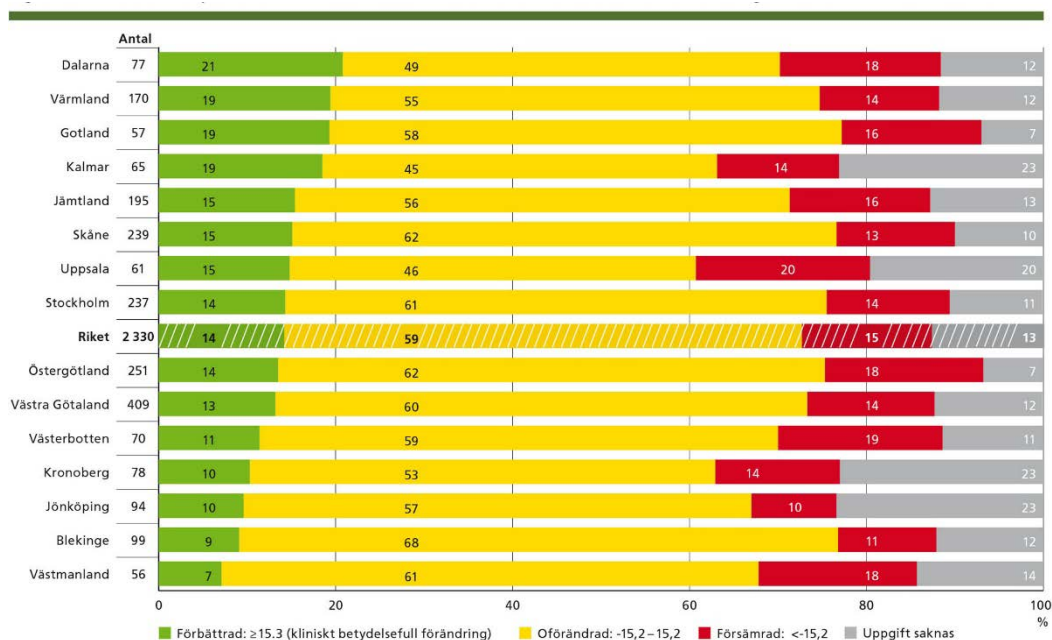
Figure 12. Proportion of patients who underwent hip arthroplasty during 2014 who have stated that they have met a physiotherapist or attended the SOASP for their problems prior to hip arthroplasty. Data taken from the Swedish Hip Arthroplasty Register



Number of patients with reduced pain* following completion of the SOASP

Target: proposal 30% after one year

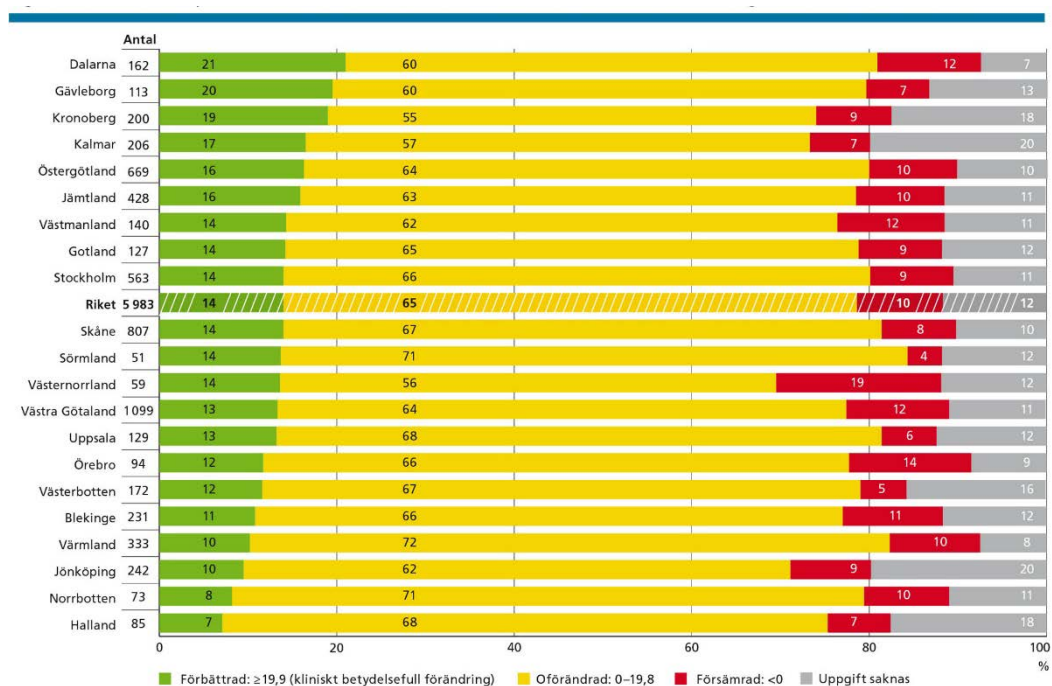
Figure 13. Hip. Number of patients who have increased, unchanged or reduced pain according to VAS after 12 months**.



* Minimally clinically important improvement for VAS for osteoarthritis of the hip 15.3 and for osteoarthritis of the knee 19.9 according to Tubach et al. Ann Rheum Dis 2005 (1).

** County councils with complete data for fewer than 50 patients are not reported.

Figure 14. Knee. Number of patients who have increased, unchanged or reduced pain according to VAS after 12 months.



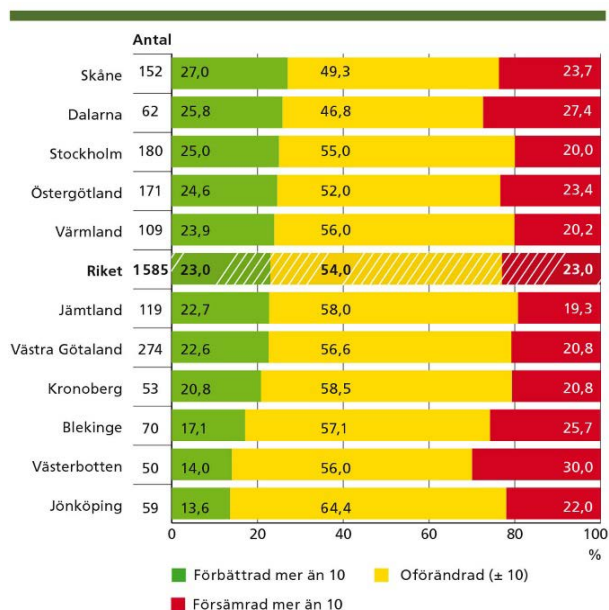
* Minimally clinically important improvement for VAS for osteoarthritis of the hip 15.3 and for osteoarthritis of the knee 19.9 according to Tubach et al. Ann Rheum Dis 2005 (1).

Number of patients with an improved state of health following completion of the SOASP

Target: proposal 40% after one year (the proportion who have improved should be greater than the proportion who have deteriorated)

The target for a change has been set at 10. Those who at the first appointment had a figure over 90 and improved and those who had a figure under 10 and deteriorated are categorised as 'unchanged'.

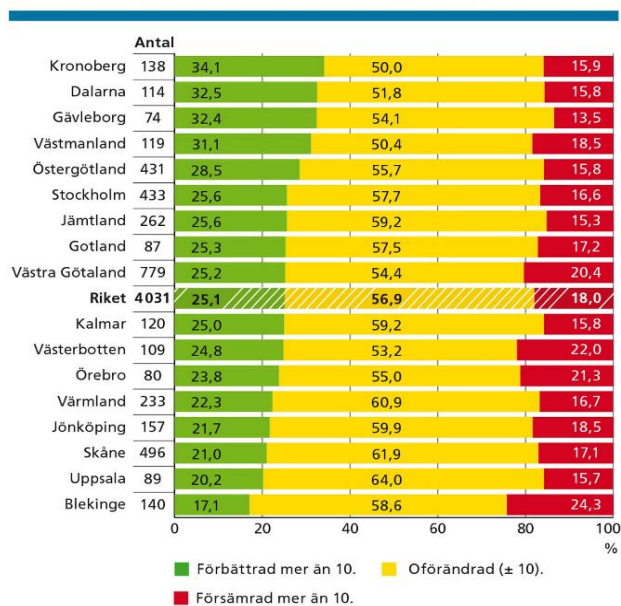
Figure 15. Hip. Proportion of patients with an improved, unchanged or deteriorated state of health** after 12 months.



* County councils with complete data for fewer than 50 patients are not reported.

**EQ-5D-VAS

Figure 16. Knee. Proportion of patients with an improved, unchanged or deteriorated state of health** after 12 months



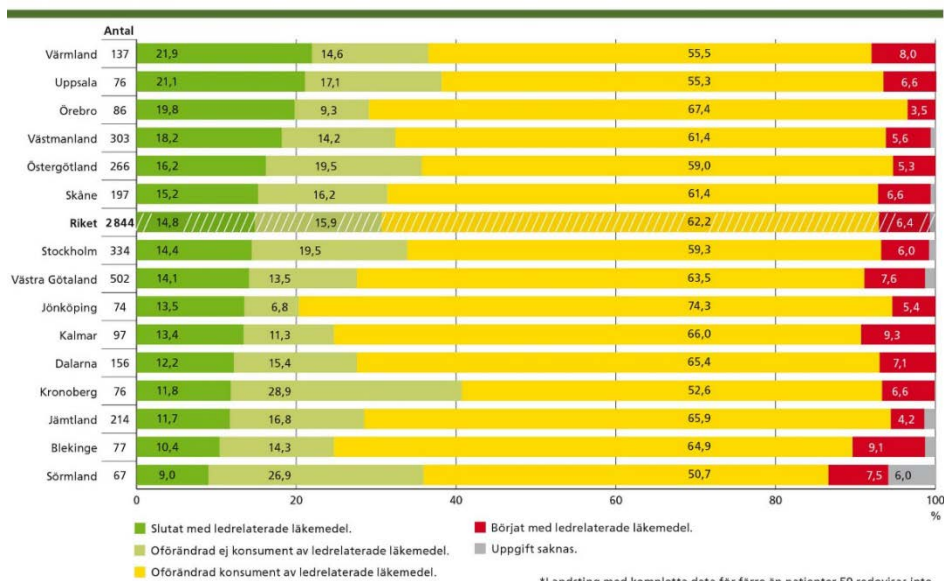
* County councils with complete data for fewer than 50 patients are not reported.

**EQ-5D-VAS

Number of patients who have stopped taking joint-related medication following completion of the SOASP

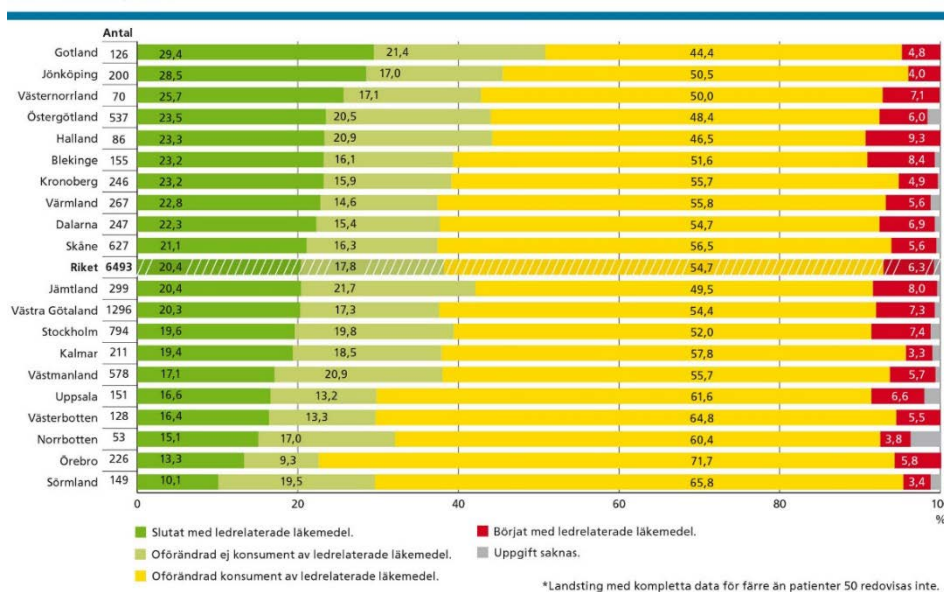
Target: proposal 30%

Figure 17. Hip. Number of patients with changed or unchanged use of joint-related medicine at three months, 2014.



* County councils with complete data for fewer than 50 patients are not reported.

Figure 18. Knee. Number of patients with changed or unchanged use of joint-related medicine at three months, 2014.



* County councils with complete data for fewer than 50 patients are not reported.

Targets

Reason behind chosen indicator targets

According to the guidelines issued by the National Board of Health and Welfare, a diagnosis of osteoarthritis should be made with the aid of medical history and a clinical examination. An x-ray ought to be used in cases of uncertainty or when referral to a specialist is being considered. This procedure can significantly shorten the time between initial symptoms and diagnosis compared to if a diagnosis is made with the aid of an x-ray. It can take 10-15 years between the onset of initial symptoms and osteoarthritis changes becoming visible on an x-ray. During this time many patients will have been referred to various places in the healthcare system without receiving any clear diagnosis or adequate treatment and many are concerned about the cause of their problems. By the time they begin the SOASP, the patients will probably have had problems for many years. The aim of including patients with problems in the hip and knee even before the joint has been x-rayed is part of the process of following up the National Board of Health and Welfare clinical diagnostics recommendation and is a way of reaching patients at an earlier stage in the course of the disease.

Measures taken at an early stage in conjunction with osteoarthritis, before the problems become too serious, have the greatest potential to prevent functional impairment and deterioration in health. We know that many people have problems for many years before they seek medical care. The mean age for hip arthroplasty is approximately 67 years and for knee arthroplasty 68 years. It is reasonable that patients receive adequate care, with information and individually adapted exercise, several years before. By increasing awareness among the general public and care providers that help is available, we hope to be able to reduce the mean age in the Register from the current 66 years to 58 years.

The EQ-5D index is used to measure health-related quality of life. It is calculated using five questions and can assume values from 0 to 1, where 0 is a health-related quality of life equal to death and 1 is completely healthy. A change in patient-reported outcomes of 10 percentage points, or in this case 0.10, is generally deemed to be a clinically significant change. According to the Swedish Hip Arthroplasty Register annual report, an operation involving hip arthroplasty improves EQ-5D5 by 0.36. Hip arthroplasty is thus a successful, albeit major, procedure for the patient. Patients who are about to undergo hip arthroplasty have a mean EQ-5D of 0.34. Patients who enter the SOASP have a mean EQ-5D of 0.664 for osteoarthritis of the hip and 0.65 for osteoarthritis of the knee. This means that we reach the patients at an earlier stage in the course of the disease, before their health-related quality of life has deteriorated to the same level as it was prior to arthroplasty, but also that the potential for improvement is narrower. A change must therefore be made in relation to the cost of the procedure. A costly procedure could very well be justified if the patient feels better for a long time afterwards whilst a cheaper alternative could still be cost-effective even if it achieves fewer changes. According to calculations, the SOASP costs approximately SEK 1,000 per patient (based, among other things, on the cost of premises, two days' training for the professionals and supervised exercise for 12 weeks), whilst hip arthroplasty costs approximately SEK 70,000. An improvement in the EQ-5D of 0.10 after one year is a relatively ambitious target but probably not impossible to achieve if each unit strives to improve its results.

One of the aims of the SOASP is an increased level of physical activity. Physical inactivity and an unwarranted fear of damaging the joints through activity and exercise are very common among patients suffering from osteoarthritis, which in turn increases the risk of inactivity-related

diseases. The World Health Organisation, WHO, has proposed that all adults should be physically active, with at least moderate intensity, for at least 150 minutes per week. In the National Board of Health and Welfare guidelines for disease prevention methods, two questions have been used as a starting point in order to calculate the number of minutes of activity. Since September 1, 2012, the BOA Register has included these questions in the patient questionnaire. The Register is aiming for a situation where the proportion of persons who are insufficiently active in physical terms is less than 20% after one year.

Targets through benchmarking

Targets for development indicators will be developed further and in several cases they will be defined by means of benchmarking. This means that the target will be based on the mean values from the clinics/county councils that achieve the best results each year. The target is thus achievable although at the same time variable. Development work to present indicators and targets in this way commenced in 2015.

Medicines

Analgesics are recommended as complementary treatment when information and adapted physical activity are insufficient. Medicines that arrest the most intensive pain could be needed in order to be active and should only be used in exceptional cases and for short periods as the sole form of treatment. Paracetamol is recommended as the medication of first choice. When paracetamol is insufficient, or when there are counter-indications, non-steroid anti-inflammatory analgesics are recommended (NSAID products). Glucosamine is mentioned in the National Board of Health and Welfare guidelines as "not recommended" as there are no carefully prepared, impartial studies that demonstrate a sufficiently good effect. The same applies to hyaluronic acid (cockscomb extract). Cortisone injections could have a good effect, albeit short term. Several homeopathic remedies are advertised which are said to have a good effect but as yet there is very limited research to support these results.

In the BOA Register, the patients themselves state which medicines they take for their hip and knee problems. Three-quarters of the patients in the BOA Register stated at the first appointment to the SOASP in 2014 that they took joint-related medicines (Tables 1 and 2).

Paracetamol and NSAID products are by far the most common and are taken by approximately half of the patients. The proportion of patients who report that they take glucosamine is around 6%, which is comparable to the previous year. Nine per cent state that they do not take any homeopathic remedies. It could be essential to be aware of consumption of homeopathic remedies as some preparations could have a negative impact on the effect of other medicines. Paracetamol, NSAID, glucosamine and homeopathic remedies can be purchased by the patients themselves. Injections into the joints are administered by doctors. Cortisone injections are most common in the knee joint as an injection in the hip joint requires fluoroscopy of the joint to ensure the injection site is correct. Use of cortisone injections varies between county councils (Tables 1 and 2). Hyaluronic acid is used sparingly in line with recommendations by the National Board of Health and Welfare. The *Other* category in Tables 1 and 2 refers, for example, to Tramadol and Lederspan. Each patient can receive more than one medicine. The spread of medicines refers to the spread of the total number of medicines taken by the patients in the Register and does not say anything about how many medicines each individual patient takes.

Table 1. Hip. Proportion of patients who at the first appointment state that they have taken joint-related medicines, presented according to county council, 2014

LANDSTING	Antal	Tagit led-relaterade läkemedel	Paracetamol	NSAID	Glukosamin	Hyaluronsyra	Kortison	Natur-läkemedel	Annat	Uppgift saknas
		%	%	%	%	%	%	%	%	Antal
	93	84,9	63,4	45,2	3,2	–	6,5	3,2	5,4	–
Dalarna	193	81,3	62,5	48,4	4,7	–	1,6	14,6	5,2	1
Gotland	42	73,8	38,1	40,5	7,1	–	–	11,9	2,4	–
Gävleborg	45	72,7	54,5	47,7	6,8	–	2,3	2,3	2,3	1
Halland	31	77,4	54,8	41,9	0,0	–	6,5	9,7	–	–
Jämtland	265	83,3	64,8	50,4	4,2	–	3,4	11,0	6,4	1
Jönköping	99	80,8	64,6	44,4	3,0	–	4,0	10,1	8,1	–
Kalmar	133	79,7	57,9	44,4	0,8	–	2,3	4,5	4,5	–
Kronoberg	80	67,5	51,3	37,5	3,8	2,5	2,5	5,0	6,3	–
Norrbottnen	28	82,1	67,9	42,9	10,7	–	7,1	7,1	17,9	–
Skåne	262	78,5	55,2	41,4	5,0	–	4,6	10,7	6,1	1
Stockholm	426	77,8	48,7	41,4	7,1	0,5	6,1	10,9	7,3	3
Sörmland	123	72,5	61,7	33,3	5,0	–	4,2	10,8	5,8	3
Uppsala	81	80,2	56,8	48,1	6,2	–	2,5	7,4	11,1	–
Värmland	227	78,4	54,2	41,9	3,1	–	5,7	3,1	8,8	–
Västerbotten	55	81,8	69,1	54,5	3,6	–	1,8	9,1	7,3	–
Västernorrland	35	82,9	45,7	65,7	8,6	–	11,4	11,4	8,6	–
Västmanland	431	79,1	57,7	43,5	5,1	–	5,3	8,8	8,6	1
Västra Götaland	838	78,5	55,5	44,7	7,6	–	4,8	10,7	7,9	4
Örebro	137	84,7	65,7	45,3	7,3	–	3,6	5,8	2,2	–
Östergötland	345	75,4	60,9	35,4	2,0	–	1,4	2,9	8,7	–
Riket	3969	78,8	57,3	43,4	5,2	0,1	4,2	8,7	7,2	15

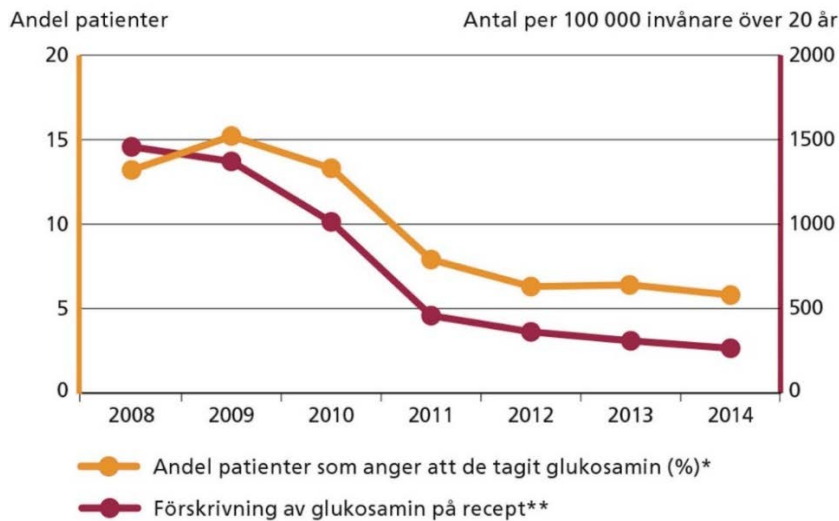
Table 2. Knee. Proportion of patients who at the first appointment state that they have taken joint-related medicines, presented according to county council, 2014

LANDSTING	Antal	Tagit led-relaterade läkemedel	Paracetamol	NSAID	Glukosamin	Hyaluronsyra	Kortison	Natur-läkemedel	Annat	Uppgift saknas
		%	%	%	%	%	%	%	%	Antal
Blekinge	221	74,5	49,5	42,3	3,2	–	8,6	6,4	4,5	1
Dalarna	341	78,6	56,0	48,7	3,5	0,3	5,9	11,7	5,6	–
Gotland	135	73,3	37,0	46,7	5,9	–	5,9	17,0	4,4	–
Gävleborg	102	82,2	53,5	53,5	5,9	–	5,0	3,0	5,9	1
Halland	97	71,1	52,6	38,1	4,1	–	4,1	8,2	3,1	–
Jämtland	349	71,3	48,3	42,2	3,2	0,3	4,0	7,8	4,3	1
Jönköping	278	76,6	53,6	40,6	4,3	0,4	12,6	5,8	3,2	–
Kalmar	308	74,3	54,4	41,4	2,3	–	7,5	5,2	5,2	1
Kronoberg	260	80,8	56,9	41,2	8,5	1,9	6,9	9,2	8,1	–
Norrbottnen	57	73,7	45,6	50,9	7,0	–	8,8	12,3	14,0	–
Skåne	726	76,7	47,0	43,3	6,1	0,3	11,3	9,9	5,7	1
Stockholm	1 065	74,3	45,0	45,6	7,1	0,7	9,8	10,9	6,0	4
Sörmland	249	75,3	54,3	35,6	9,3	1,2	9,7	11,3	3,2	2
Uppsala	151	76,0	62,0	40,0	8,7	0,7	5,3	6,0	6,7	1
Värmland	383	78,2	49,9	50,7	3,9	–	12,1	2,9	5,5	2
Västerbotten	119	83,2	69,7	43,7	5,9	–	7,6	10,9	10,1	–
Västernorrland	74	67,6	39,2	37,8	6,8	–	17,6	8,1	5,4	–
Västmanland	809	73,4	52,9	40,0	6,7	0,1	4,8	9,3	7,3	3
Västra Götaland	1 876	76,3	47,7	46,1	8,3	0,2	9,1	10,8	5,3	11
Örebro	329	80,9	55,2	50,9	4,3	0,3	3,7	5,6	4,6	5
Östergötland	804	71,5	54,4	37,9	3,9	0,6	4,5	5,0	5,5	1
Riket	8 733	75,5	50,5	43,8	6,1	0,4	8,0	8,8	5,6	34

In Figure 19, we can see a good level of agreement between the curves for prescription of glucosamine (number per 100,000 inhabitants

over the age of 20, information from the Prescribed Drug Register) and the proportion of patients who state that they take glucosamine.

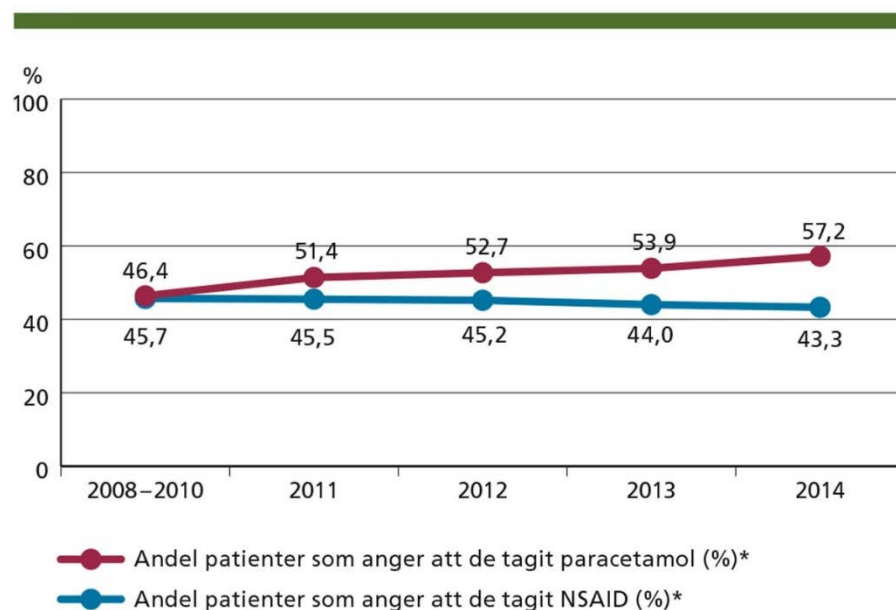
Figure 19. Glucosamine use over time.



Figures 20 and 21 show the proportion of patients in the BOA Register who state that they take NSAID and paracetamol over time. The consumption of NSAID appears to be reasonably constant whilst there appears to be an increase in the consumption of paracetamol over time,

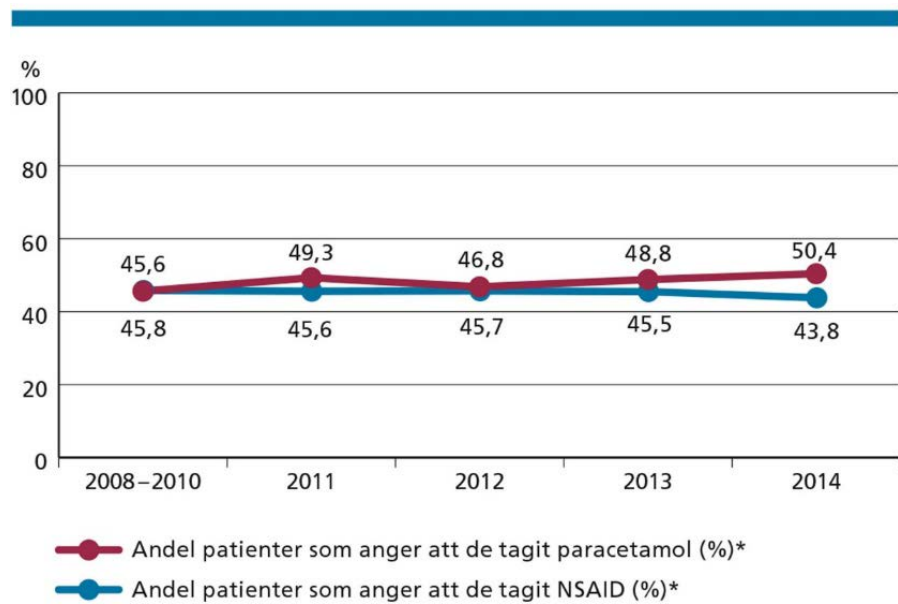
particularly patients with osteoarthritis of the hip. NSAID ought to be used with caution by elderly people due to the risk of side effects. Figures 53 and 54 (page 56) show the proportion of men and women over and below the age of 75 who state that they use an NSAID preparation.

Figure 20. Hip. Paracetamol and NSAID over time.



* Proportion of patients in the BOA Register who at the first appointment state that they have taken paracetamol or NSAID during the most recent three-month period.

Figure 21. Knee. Paracetamol and NSAID over time.



* Proportion of patients who at the first appointment state that they have taken paracetamol or NSAID during the most recent three-month period.

EQ-5D, pain and physical activity

Preliminary calculations made by the BOA Register show that the SOASP has an equally good effect irrespective of age, gender, weight, education or symptoms (these results are not published in the Annual Report).

EQ-5D

EQ-5D is a measure of health-related quality of life. Patients answer five questions about mobility, personal care, usual activities, pain/discomfort and anxiety/depression. There are three alternative answers for each question (no problems, some or moderate problems, extreme problems) and based on the answers an index can be calculated ranging from 0 to 1, where 0 equals 'dead' and '1' equals 'completely healthy'. An EQ-5D index can assume figures that are less than zero, which means that a person estimates their health to be being worse than death. EQ-5D has been used in a large number of studies of different diagnoses and can also be used for health economics calculations.

Our aim in BOA is to reach the patients before their health-related quality of life has been affected to far too great an extent and through the SOASP achieve a change in EQ-5D of 0.1 after one year. At present, we can demonstrate a mean change in EQ-5D after three months of 0.064 for osteoarthritis of the hip and 0.074 for osteoarthritis of the knee.

After one year, the mean change is 0.024 for osteoarthritis of the hip and 0.054 for osteoarthritis of the knee compared to the situation prior to the SOASP. The major challenge is to improve or maintain a change over time. For details of the number of patients who achieve the target for each county council, reference can be made to Figures 5 and 6.

The EQ-5D instrument also includes a 'thermometer', i.e. a permanent VAS scale running from 0 (worst conceivable condition) to 100 (best conceivable condition). The patient is asked to assess his/her current state of health on the scale. The scale was introduced in the BOA Register on September 1, 2012. EQ-5D-VAS is more sensitive to change on the individual level than the EQ-5D index and could therefore be more suitable for clinical use.

County councils/units with fewer than 50 complete registrations (three and 12 months) for EQ-5D for the hip and knee are not reported separately but are included in the national figure.

Table 3. Hip. Health-related quality of life after the SOASP (2008-2014).

LANDSTING*	EQ5D			
	Antal	Första besök	3 mån	12 mån
Blekinge	148	0,65	0,73	0,69
Dalarna	89	0,65	0,71	0,66
Gotland	92	0,68	0,76	0,69
Halland	55	0,67	0,73	0,70
Jämtland	204	0,65	0,69	0,64
Jönköping	94	0,67	0,69	0,63
Kalmar	142	0,67	0,73	0,70
Kronoberg	79	0,63	0,70	0,66
Skåne	497	0,64	0,70	0,67
Stockholm	248	0,64	0,71	0,67
Uppsala	62	0,64	0,69	0,67
Värmland	322	0,63	0,72	0,67
Västerbotten	205	0,64	0,67	0,64
Västmanland	58	0,68	0,70	0,69
Västra Götaland	623	0,65	0,71	0,68
Östergötland	400	0,68	0,72	0,69
Riket	3 494	0,65	0,71	0,67

* County councils with fewer than 50 complete registrations (3 and 12 months) are not reported separately but are included in the national figure.

Table 5. Hip. Current state of health before and after the SOASP on the county council level*.

LANDSTING**	EQ5D-VAS			
	Antal	Första besök	3 mån	12 mån
Blekinge	74	69	71	67
Dalarna	63	66	74	66
Gotland	52	69	77	71
Jämtland	151	66	68	65
Jönköping	57	70	69	70
Kronoberg	50	69	70	68
Skåne	197	68	73	69
Stockholm	180	69	72	70
Värmland	126	65	70	68
Västerbotten	51	67	70	64
Västra Götaland	319	69	71	68
Östergötland	196	67	72	66
Riket	1 762	68	71	68

* Patients included after September 1, 2012 and who have undergone a one-year follow-up during 2014.

** County councils with fewer than 30 complete registrations (3 and 12 months) are not reported separately but are included in the national figure.

Table 4. Knee. Health-related quality of life after the SOASP (2008-2014).

LANDSTING*	EQ5D			
	Antal	Första besök	3 mån	12 mån
Blekinge	366	0,65	0,72	0,70
Dalarna	192	0,68	0,75	0,72
Gotland	220	0,67	0,77	0,73
Gävleborg	114	0,63	0,73	0,69
Halland	136	0,67	0,71	0,72
Jämtland	435	0,65	0,71	0,68
Jönköping	242	0,69	0,74	0,72
Kalmar	406	0,67	0,73	0,71
Kronoberg	270	0,70	0,76	0,72
Norrbottn	104	0,62	0,70	0,67
Skåne	1653	0,65	0,71	0,69
Stockholm	552	0,68	0,73	0,72
Uppsala	147	0,68	0,72	0,71
Värmland	682	0,66	0,74	0,71
Västerbotten	512	0,64	0,73	0,70
Västernorrland	91	0,67	0,75	0,72
Västmanland	157	0,63	0,70	0,66
Västra Götaland	1 687	0,66	0,72	0,71
Örebro	132	0,63	0,73	0,71
Östergötland	1 131	0,64	0,73	0,72
Riket	9 259	0,66	0,73	0,71

* County councils with fewer than 50 complete registrations (3 and 12 months) are not reported separately but are included in the national figure.

Table 6. Knee. Current state of health before and after the SOASP on the county council level*.

LANDSTING**	EQ5D-VAS			
	Antal	Första besök	3 mån	12 mån
Blekinge	163	68	72	68
Dalarna	139	66	75	73
Gotland	112	73	78	75
Gävleborg	64	63	74	69
Halland	64	69	74	73
Jämtland	328	67	72	70
Jönköping	173	71	73	72
Kalmar	142	70	73	73
Kronoberg	142	67	75	72
Norrbottn	60	71	73	70
Skåne	648	69	74	72
Stockholm	407	68	74	72
Uppsala	98	68	73	70
Värmland	247	70	74	72
Västerbotten	127	67	75	70
Västernorrland	50	69	76	70
Västmanland	122	66	70	69
Västra Götaland	860	69	72	70
Örebro	80	69	74	71
Östergötland	507	69	73	73
Riket	4 559	69	73	71

* Patients included after September 1, 2012 and who have undergone a one-year follow-up during 2014.

** County councils with fewer than 30 complete registrations (3 and 12 months) are not reported separately but are included in the national figure.

VAS Pain

Visual analogue scale (VAS) is an instrument that rates pain from 0 (no pain) to 100 (worst possible pain). The reliability of VAS has been discussed in scientific studies. As pain is a subjective experience and different people experience pain in different ways, it is difficult to compare VAS between individuals. VAS should only be used to measure change in pain over time.

One of the major benefits of VAS is that it is simple to use at the clinic. According to a study by Tubach et al., a change in VAS for osteoarthritis of the knee should be at least 19.9 and for osteoarthritis of the hip it should be at least 15.3 for it to be clinically significant for the patient [1]. See Figures 13 and 14 (Page 17) for details of the number of patients who achieve this change. A reduction in VAS over time means an improvement

Table 7. Hip. Pain after the SOASP on the county council level (2008-2014).

LANDSTING*	VAS-smärta			
	Antal	Första besök	3 mån	12 mån
Blekinge	150	49	37	41
Dalarna	90	46	34	38
Gotland	92	48	30	38
Halland	57	42	33	38
Jämtland	215	48	39	42
Jönköping	94	49	42	45
Kalmar	145	49	38	41
Kronoberg	83	46	37	38
Skåne	503	49	40	42
Stockholm	251	46	36	40
Uppsala	65	46	37	42
Värmland	333	51	38	41
Västerbotten	208	48	41	44
Västmanland	58	49	38	43
Västra Götaland	632	47	37	41
Östergötland	416	47	36	40
Riket	3574	48	38	41

* County councils with fewer than 50 complete registrations (3 and 12 months) are not reported separately but are included in the national figure.

Table 8. Knee. Pain after the SOASP on the county council level (2008-2014).

LANDSTING*	VAS-smärta			
	Antal	Första besök	3 mån	12 mån
Blekinge	376	50	38	38
Dalarna	200	47	33	35
Gotland	230	46	27	33
Gävleborg	119	48	35	36
Halland	142	46	36	35
Jämtland	455	49	38	40
Jönköping	251	46	34	36
Kalmar	420	50	36	36
Kronoberg	272	45	33	34
Norrbottnen	109	50	39	42
Skåne	1703	49	37	39
Stockholm	582	47	34	36
Uppsala	156	47	37	37
Värmland	693	49	36	38
Västerbotten	532	48	36	39
Västernorrland	96	45	31	38
Västmanland	154	49	38	41
Västra Götaland	1728	47	35	37
Örebro	128	50	33	34
Östergötland	1183	50	36	35
Riket	9559	48	36	37

* County councils with fewer than 50 complete registrations (3 and 12 months) are not reported separately but are included in the national figure.

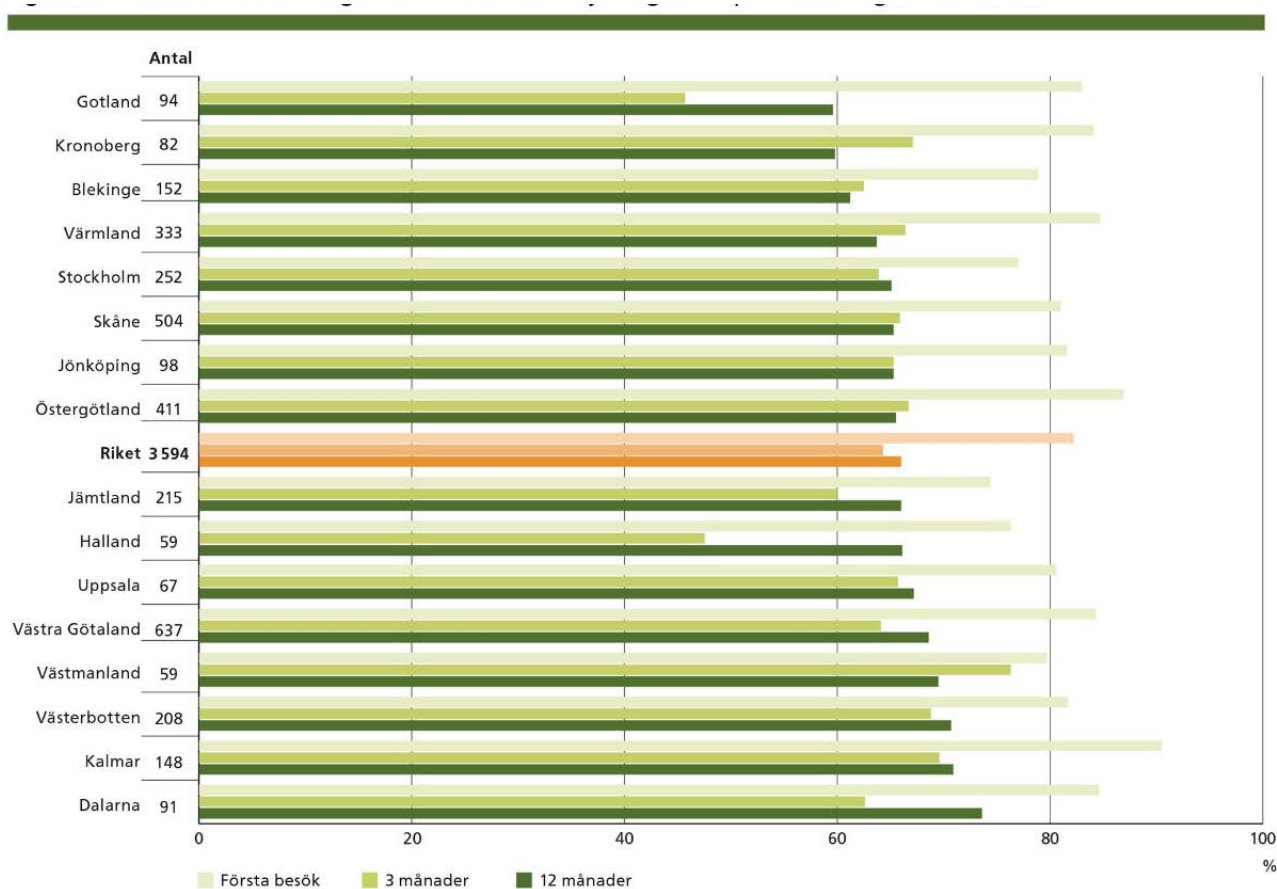
Number with daily pain

Pain in conjunction with osteoarthritis often goes in phases. Periods with greater pain are followed by periods with less pain or no pain at all. These periods can vary in duration, from one or a number of days up to several months or years, and are difficult to predict. The figures below show the proportion of patients who at the first appointment, after three months and after 12 months, stated that they are in pain every day or have constant pain in the hip or knee. Only units/county councils with at least 50 patients who completed the one-year follow-up before December 31, 2014, and have complete data from all three occasions, are reported in Figure 22.

The results are sorted according to the number in pain each day at the one-year follow-up. In the complete register, 82% of the patients with osteoarthritis of the hip stated at the first appointment that they are in pain every day.

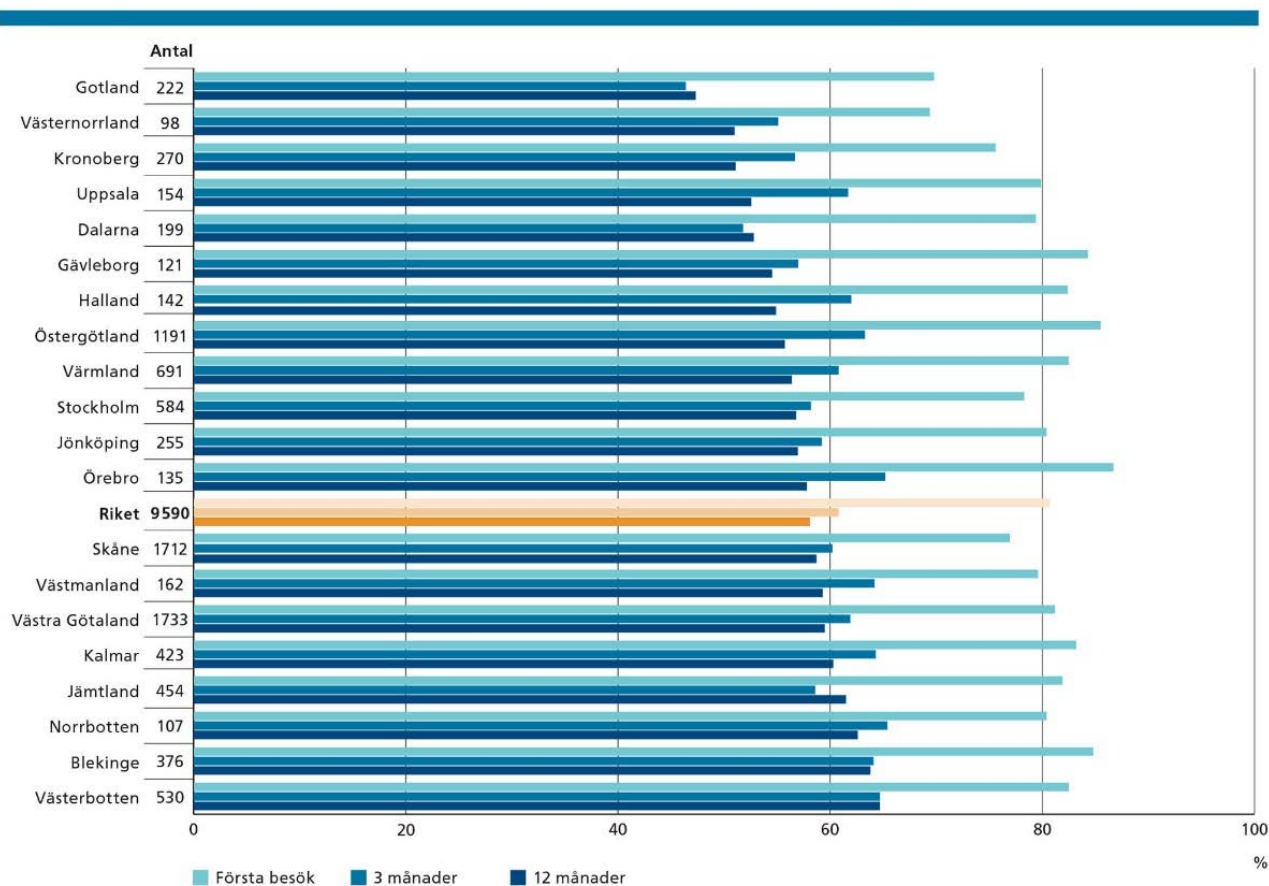
The proportion falls to 64% after three months and still remains on 16% below the opening figure after one year (66%), which is equivalent to a reduction of 600 people with osteoarthritis of the hip. The equivalent figure for osteoarthritis of the knee is 81% at the first appointment, 61% after three months and 58% after one year – a fall of 23 percentage points, which is equivalent to more than 2,000 people with osteoarthritis of the knee.

Figure 22, Hip. Proportion who state that they are in pain each day/constantly, broken down according to county council (2008-2014)



County councils with fewer than 50 complete registrations (3 and 12 months) are not reported separately but are included in the national figure.

Figure 23, Knee. Proportion who state that they are in pain each day/constantly, broken according to county council (2008-2014)



County councils with fewer than 50 complete registrations (3 and 12 months) are not reported separately but are included in the national figure.

Insufficient physical activity

Measuring physical activity is difficult. There is no validated and reliable questionnaire that can be used for patients with osteoarthritis. In the BOA, we measure the number of minutes of activity using the two questions proposed by the National Board of Health and Welfare regarding physical activity, taken from the disease prevention guidelines (2011). The World Health Organisation, WHO, recommends that all adults should accumulate 150 minutes of activity per week, regardless of age and disease. Minutes of activity are a combination of the number of minutes a person is physically active (at least 10 minutes on each occasion) and the number of minutes of exercise that is at least moderate in intensity. Physical activity is defined as all forms of body movement that increase the pulse rate. Exercise is physical activity that takes place with a specific purpose, such as improving joint flexibility, strength or stamina. The exercise should be carried out with at least moderate intensity, i.e. you become slightly out of breath or sweat.

When summing up the number of minutes of activity, each minute of exercise is worth two minutes of activity, twice as much as one minute of physical activity (minutes of activity = minutes of physical activity + 2 x (minutes of exercise)).

The SOASP aims to motivate patients to undertake regular physical activity on a level that is sufficient to maintain a good level of health. BOA has established a target whereby 80% of the patients should achieve 150 minutes of activity per week after one year. Another way of expressing this is that the proportion of insufficiently physical active persons should be less than 20%. Below is a presentation of the proportion of insufficiently physical active people at the first appointment and after three months and 12 months. The aim for each unit is to reduce the proportion of insufficiently physically active persons by 10 percentage points after one year compared with the first appointment.

Table 9. Proportion of patients with insufficient physical activity (less than 150 minutes of accumulated activity per week) September 2012-2014

Landsting*	Andel otillräckligt aktiva, Höft			Andel otillräckligt aktiva, Knä		
	Första besök	3 mån	12 mån	Första besök	3 mån	12 mån
Blekinge	39,7	36,2	37,9	36,7	24,2	31,7
Dalarna	17,7	12,9	22,6	31,3	16,1	24,1
Gotland				21,7	12,0	18,5
Gävleborg				38,9	16,7	31,5
Jämtland	32,7	26,2	29,9	29,7	21,2	29,2
Jönköping	28,3	20,8	34,0	14,8	16,7	16,7
Kalmar				25,0	19,8	26,7
Kronoberg				19,7	18,0	13,9
Skåne	27,7	14,9	24,8	26,1	20,7	24,4
Stockholm	27,5	22,5	25,6	29,7	20,0	24,4
Uppsala				18,8	14,1	18,8
Värmland	33,0	28,4	29,5	37,2	18,6	30,3
Västerbotten				25,7	13,3	21,9
Västmanland				35,2	20,8	30,4
Västra Götaland	22,4	14,9	25,9	26,4	22,2	23,8
Örebro				32,9	20,3	27,8
Östergötland	26,6	21,6	25,9	33,7	17,9	25,4
Riket	26,6	19,8	26,0	28,1	19,4	24,6

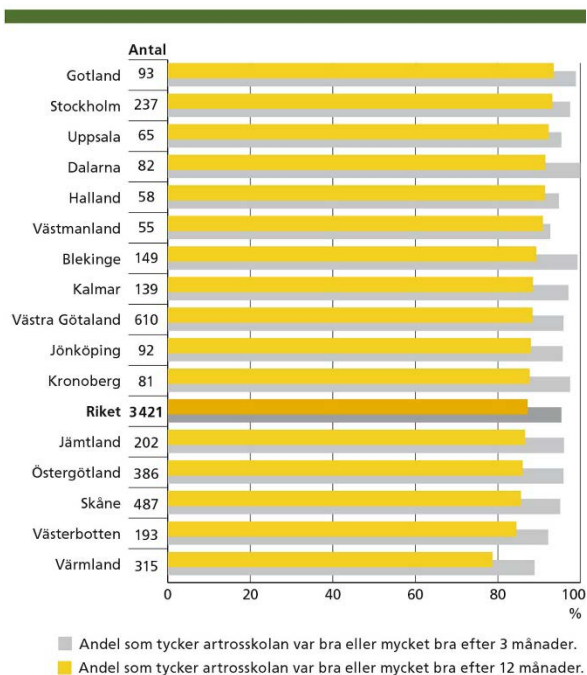
* County councils with fewer than 50 registrations (three and 12 months) are not reported separately but are included in the national figure.

What the patients think

Proportion who think the SOASP was good or very good

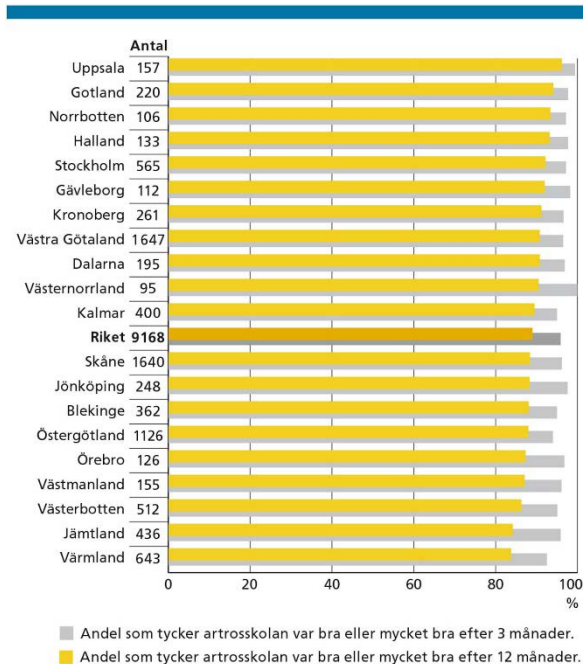
After 3 months, 95% of the patients state that they thought the SOASP was good or very good. The corresponding figure after one year was 88%.

Figure 24. Hip. Number of patients who thought the SOASP was good or very good, broken down according to county council (2008-2014).*



* County councils with fewer than 50 complete registrations (three and 12 months) are not reported separately but are included in the national figure.

Figure 25. Knee. Number of patients who thought the SOASP was good or very good, broken down according to county council (2008-2014)*

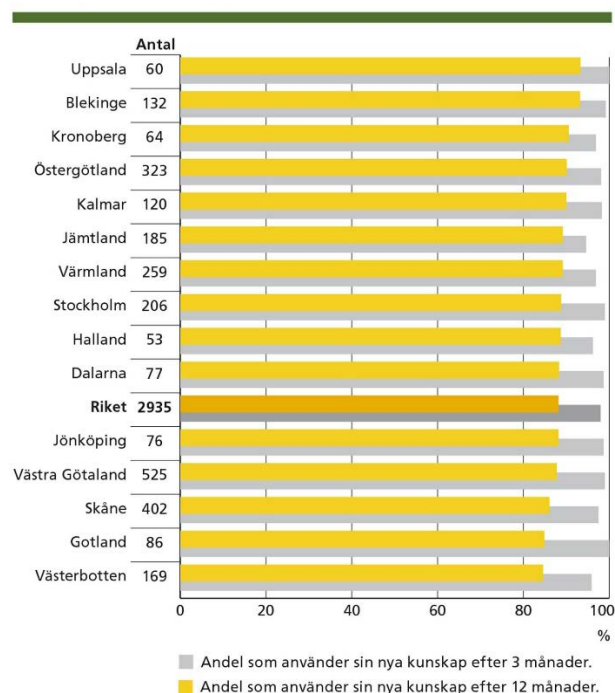


* County councils with fewer than 50 complete registrations (3 and 12 months) are not reported separately but are included in the national figure.

Number who use the knowledge gained from the SOASP in their daily lives

One way of measuring the benefit of the SOASP is to ask the patients how often they make use of what they have learnt in the SOASP in their daily lives. After three months, two out of three state

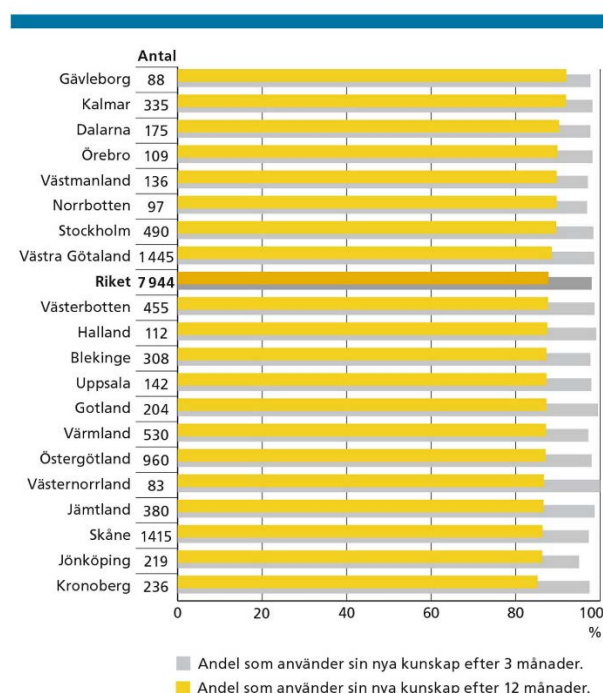
Figure 26. Hip. Number of patients who state that they make use of what they have learnt in the SOASP at least once a week, broken down according to county council (2008-2014).*



* County councils with fewer than 50 complete registrations (three and 12 months) are not reported separately but are included in the national figure.

that they make use of what they have learnt in the SOASP each day or several times each day, and 91% state that they use what they have learnt at least once a week. After one year, 87% state that they still make use of what they have learnt at least once a week (Figures 26, 27).

Figure 27. Knee. Number of patients who state that they make use of what they have learnt in the SOASP at least once a week, broken down according to county council (2008-2014)*.



* County councils with fewer than 50 complete registrations (three and 12 months) are not reported separately but are included in the national figure.

Compliance

Patients' participation in the SOASP

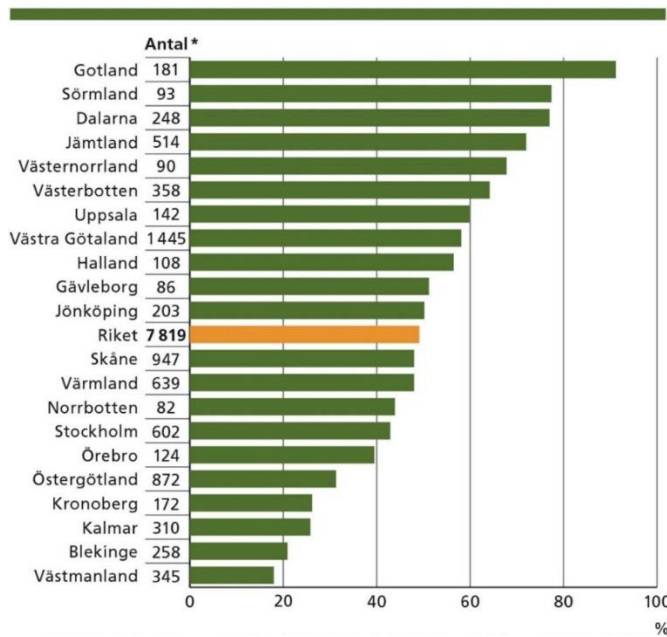
The minimum level of intervention in the SOASP (See figure *Arrangement of the SOASP*) comprises information about osteoarthritis and available treatments. Information is provided by physiotherapists and in certain cases by occupational therapists who have attended a two-day training programme in osteoarthritis and the SOASP. Information about lifestyle changes, such as losing weight or beginning to exercise, could be perceived as insurmountable and difficult to take in for anyone who has pain in their joints and who finds it difficult to move without pain. The same message from someone in a similar situation and with whom you can identify could be easier to accept. In the SOASP, we cooperate with osteoarthritis communicators, i.e. patients with osteoarthritis who themselves have tried following the recommendations and who have felt that a change in lifestyle and level of activity can make a difference. The osteoarthritis communicators are trained by the Swedish Rheumatism Association in order to be able to share in a pedagogical way their experiences of non-surgical treatment and how it is possible to live a good life despite osteoarthritis.

The National Board of Health and Welfare recommends in its national guidelines for

musculoskeletal diseases that patients with osteoarthritis of the hip and osteoarthritis of the knee should be offered supervised exercise over a long period. Those who agree to take part in the SOASP are in the majority cases offered an individually adapted and tested exercise programme and the opportunity to exercise according to this programme under the supervision and monitoring of a physiotherapist for six weeks or more. Group exercise takes place together with other people suffering from osteoarthritis who have their own programmes. The patient chooses which parts of the SOASP he/she wishes to take part in. If the patient makes an active choice to accept an exercise programme and take part in the group exercise, then he/she has also moved from being a passive recipient to being an active and motivated participant.

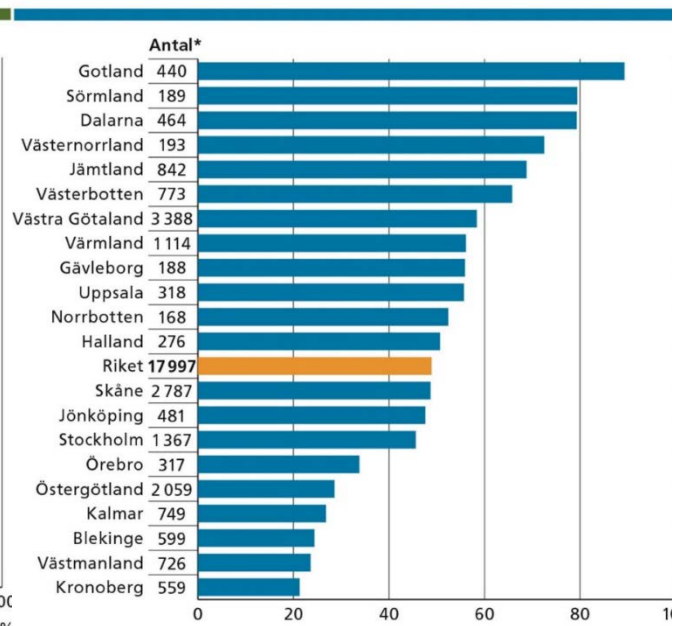
The figures below show the proportion of patients with osteoarthritis of the hip and osteoarthritis of the knee who choose to take part in different parts of the SOASP. There are major variations with regard to participation. There could be several reasons for this. Neither the underlying reasons nor the consequences of these differences can be seen directly in the results and these are instead the subject of local analyses.

Figure 28. Hip. Number of patients who have taken part in a session with an osteoarthritis communicator on the county council level (2008-2014).



* Refers to the number of patients per county council who have attended the theory part of the SOASP. The number is calculated using this figure.

Figure 29. Knee. Number of patients who have taken part in a session with an osteoarthritis communicator on the county council level (2008-2014).



* Refers to the number of patients per county council who have attended the theory part of the SOASP. The number is calculated using this figure.

Figure 30. Hip. Number of patients who have taken part in individual exercise sessions, broken down according to county council (2008-2014).

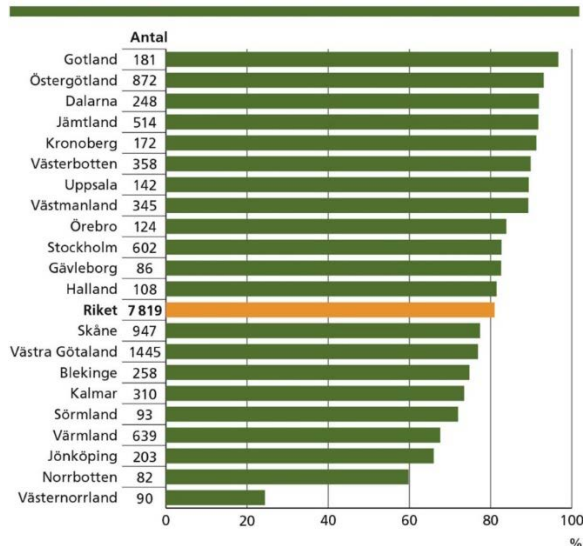


Figure 31. Knee. Number of patients who have taken part in individual exercise sessions, broken down according to county council (2008-2014).

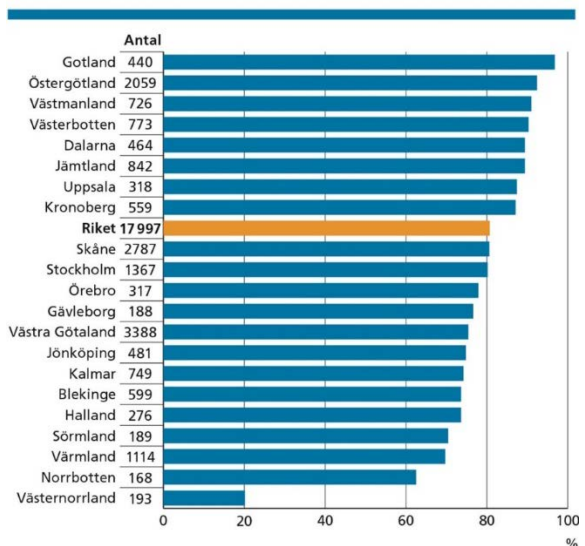
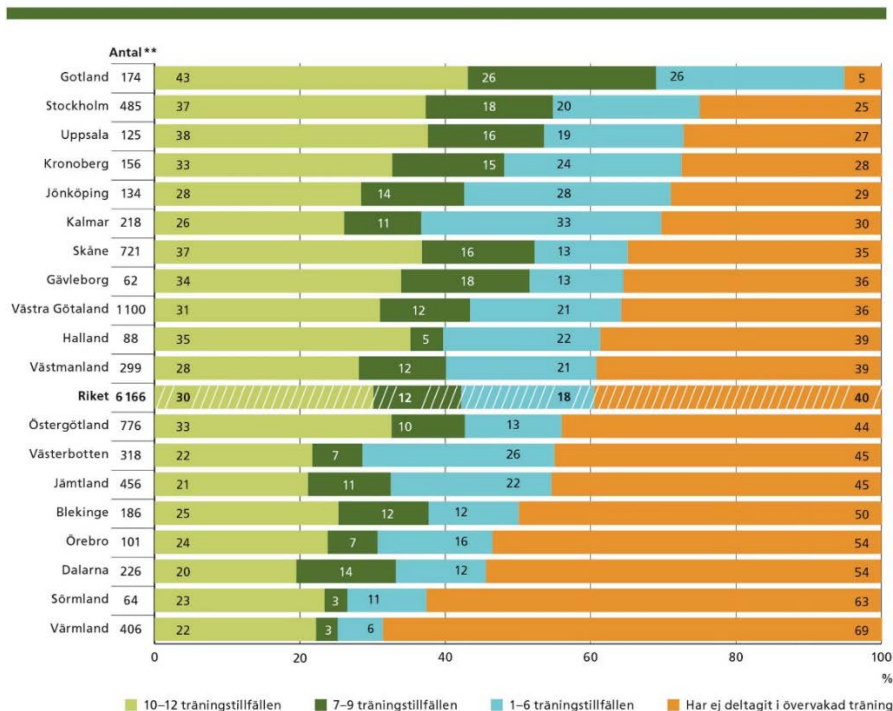


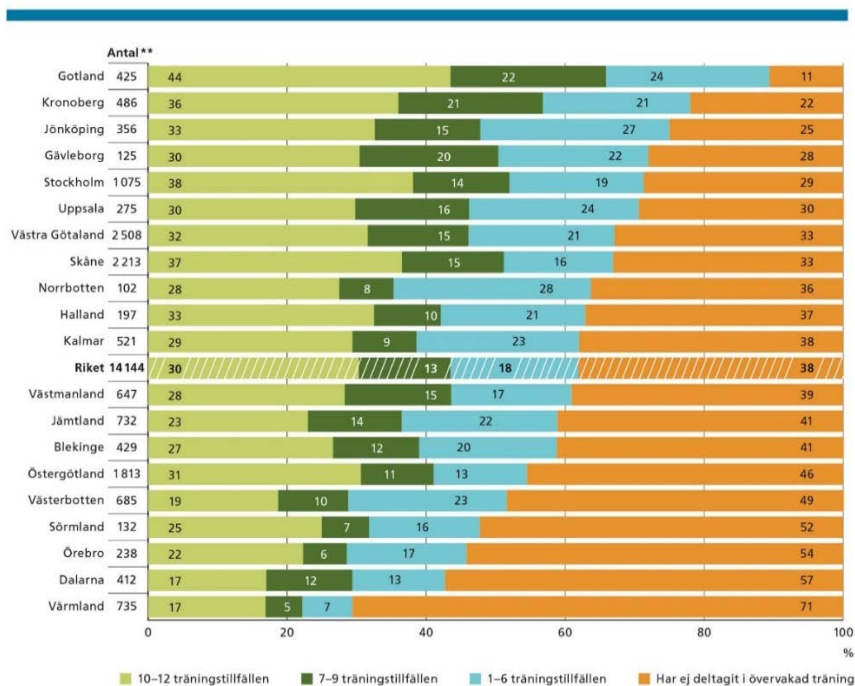
Figure 32. Hip. Number of patients who have taken part in monitored exercise out of those who have attended an individual exercise session, broken down according to county council (2008-2014).*



* County councils with fewer than 50 complete registrations are not reported separately but are included in the national figure.

** The number refers to the number of patients per county council who have attended an individual exercise session per unit. The proportion is calculated using this figure.

Figure 33. Knee. Proportion of patients who have taken part in supervised exercise out of those who have attended an individual exercise session, broken down according to county council (2008-2014).*



* County councils with fewer than 50 complete registrations are not reported separately but are included in the national figure.

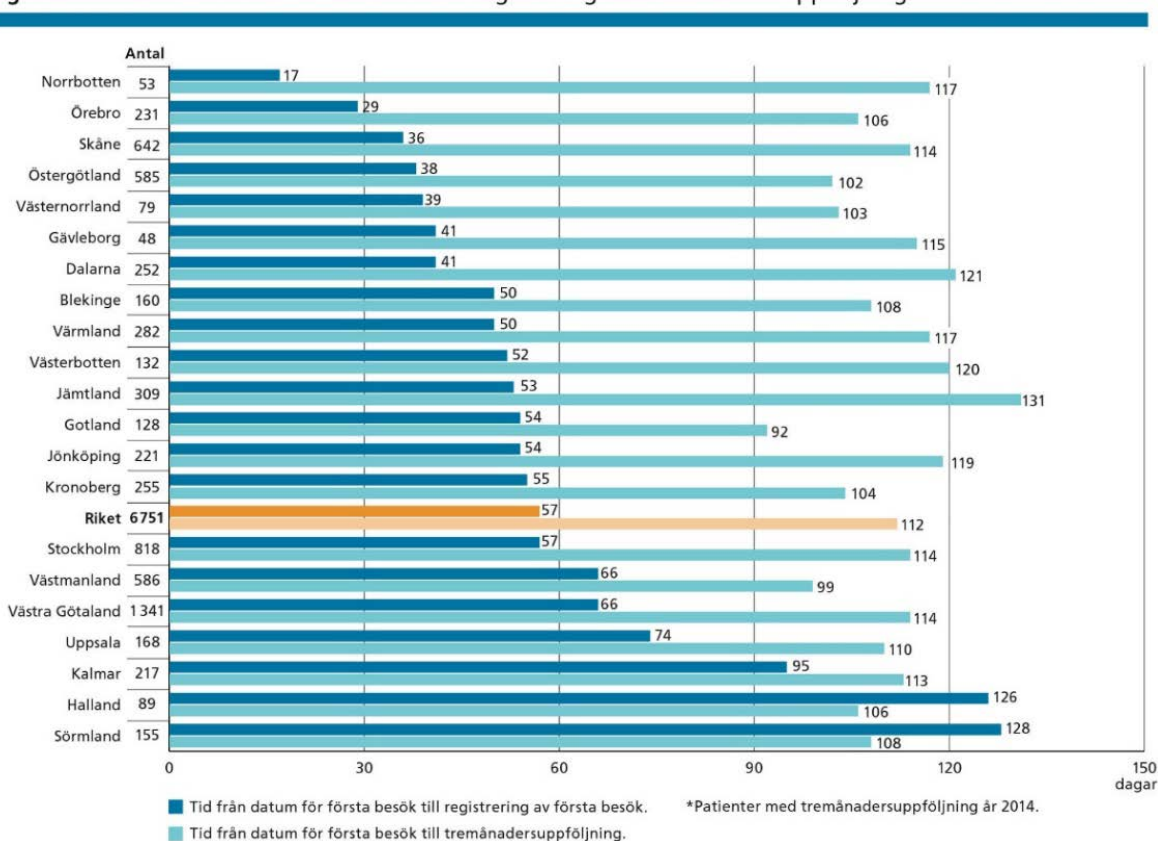
** The number refers to the number of patients per county council per unit who have attended an individual exercise session. The proportion is calculated using this figure.

Lead times

It is known that routines and results are linked. The period of time from the first appointment to registration of a questionnaire and the time for a follow-up after three months are two lead times that can be measured in the BOA Register. This can be seen in the figures below. A questionnaire that is left unregistered risks being lost and information that needs to be supplemented or clarified will be difficult to gather if there is a long period of time between completion of the questionnaire and registration.

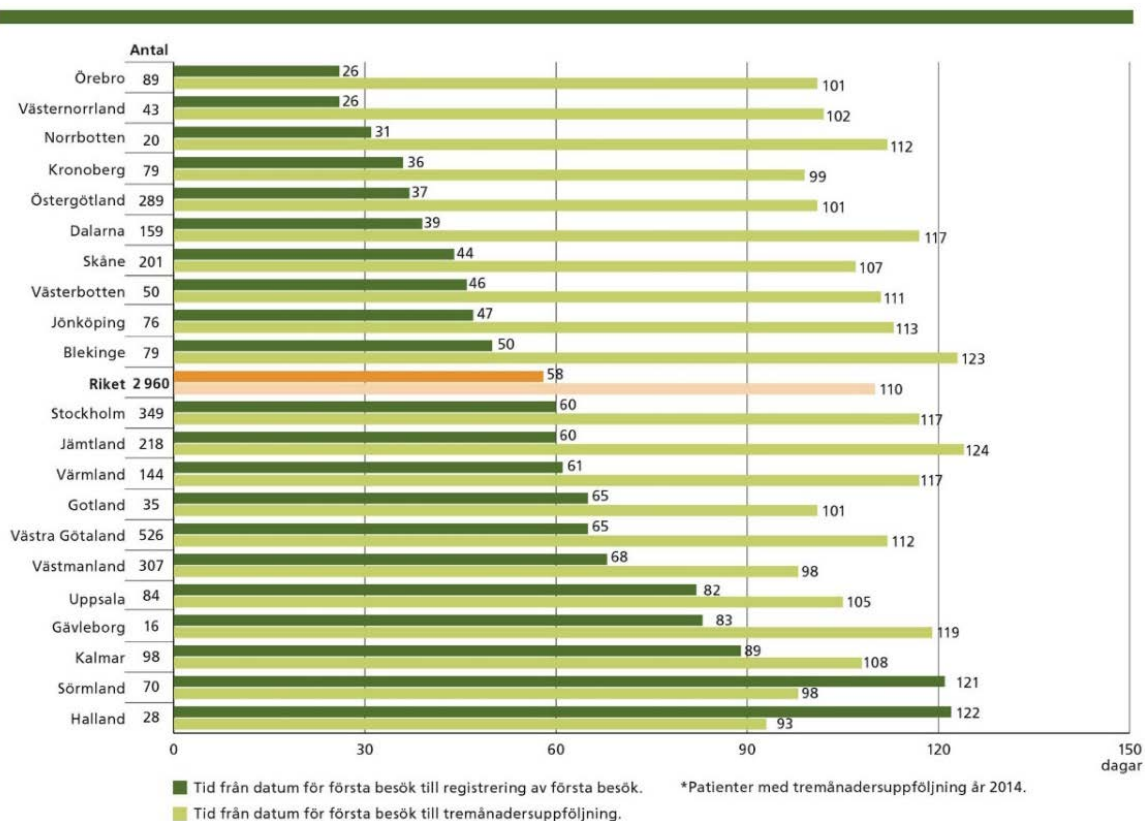
A follow-up appointment can take place up to six months after the first appointment. We recommend that a follow-up takes place three months after the first appointment or following completion of the exercise period. We can see in the BOA Register that on average 25% of the patients drop out for a reason not linked to surgery or that the patient has discontinued his/her involvement (See Figure 9).

Figure 34. Knee. Time from the first appointment to the first registration and three-month follow-up.*



* Patients with a three-month follow-up in 2014

Figure 35. Hip. Time from the first appointment to the first registration and three-month follow-up.*



Practice

The way in which the SOASP is run at each clinic is what we term practice. It is BOA policy that the person who runs the SOASP should have attended SOASP training and those who register should have attended registration training equivalent to the training offered by BOA. The primary aim is to work in the best interests of the patient and in order to know what the best interests of the patients are we need to make an evaluation of the factors that contributes to the patient's best interests. Each unit that offers structured information to the patient equivalent to the SOASP and evaluates and registers its results in the BOA Register, satisfies what we term minimal intervention. Advice about exercise and activity can be organised in a way that is best from an operational point of view. The exercise programme is run in a way each clinic considers appropriate on condition that the choice of plan is the same for all patients at the clinic and that everyone who was involved in the SOASP at a unit uses the same plan. Exercise is an optional element for the patients. The patient's choice of exercise (monitored or home-based exercise) is registered.

Not all clinics have access to appropriate premises and exercise equipment and are thus not in a position to offer exercise. Others have opted to focus purely on the information and could thus have a larger throughflow of patients. Functioning collaboration with the local Rheumatism Association has not been established at all clinics and it could therefore be difficult to offer collaboration with an osteoarthritis communicator. Some clinics cooperate with other professional categories, such as occupational therapists or dieticians, in matters relating to the SOASP. Further factors that could vary between clinics include patient throughflow, the number of speakers involved, the time per session, the number of sessions and the number of patients per SOASP.

Practice should be reported to the Register once a year or when a change takes place. This is done via the BOA Register website. In December or January, each clinic must report to the Register how the SOASP was run during the past year. Table 30 (Page 134) shows how the SOASP was run at the different clinics during 2014. Only units that had entered practice as instructed, i.e. during December 2014 or January 2015, are presented in the table.

The BOA Register has initiated a research project to evaluate the arrangement (practice) of the SOASP that offers the best results with regard to, for example, EQ-5D, pain, level of physical activity and how often patients make use of what they have learnt. A large volume of preliminary, unadjusted results show no great difference in the patient-reported outcome between different Programme arrangements. As the groups or clinics have not been randomised, there could be differences in patient demography or socioeconomic differences that influence both the choice of practice and which patients come to the clinic, which means that the analyses need to be refined. Furthermore, it is difficult to link data for one unit directly to the patient data as the unit reports on the arrangement generally during the year whilst the patients could receive care with individual variations depending on prerequisites and targets. In addition, a large number of units have not reported their practice, which means that the number of patients that form the basis for the calculation is limited.

Reference

1. Tubach, F et al. Evaluation of clinically relevant changes in patient reported outcomes in knee and hip osteoarthritis: the minimal clinically important improvement. *Ann Rheu Dis*, 2005. 64(1): pages 29-33.

Participation and reporting

In order to be able to assess the generalisability and credibility of the results from a quality register, one ought to know how well the Register covers the population in question. Data in the Register should also be reported carefully. The level of coverage in the BOA Register could be described in a number of ways depending on whether the BOA Register is regarded as an intervention register or a diagnosis register: 1) How many units that run the SOASP also register? (coverage); 2) What proportion of the patients who attend the SOASP are also registered? (completeness); 3) How many of those diagnosed with osteoarthritis of the hip and osteoarthritis of the knee are registered? In BOA, the aim is for all patients who attend the SOASP to be registered although we also endeavour to ensure that all patients with osteoarthritis of the hip and osteoarthritis of the knee are offered the SOASP as early as possible.

Geographical coverage

Since 2012, all county councils/regions have at least one unit that reports to the Register. Both the number of patients who attend the SOASP and the number of units that report to the Register have increased significantly each year since the beginning in 2008 (Figure 36). The number of units logging onto the Register increased by 19% during 2014, from 316 to 377. Of these, 325 units reported at least one patient to the BOA Register during 2014. Several units have been logged on for six months or more without registering a patient (Table 10). These units have been designated by the Register as passive. A number of units have ceased reporting to the Register (Table 11). As of the date of the compilation of this Annual Report (May 2015), the number of units that are affiliated to the Register was 469 (see Table 29 Units affiliated to the BOA Register). At the end of 2015, the BOA Register had provided SOASP training and registration

training to approximately 2,500 physiotherapists and occupational therapists.



See map at www.boaregistret.se for contact details of units that run the SOASP.

Number of SOASPs (coverage) and the number of patients who were registered (completeness)

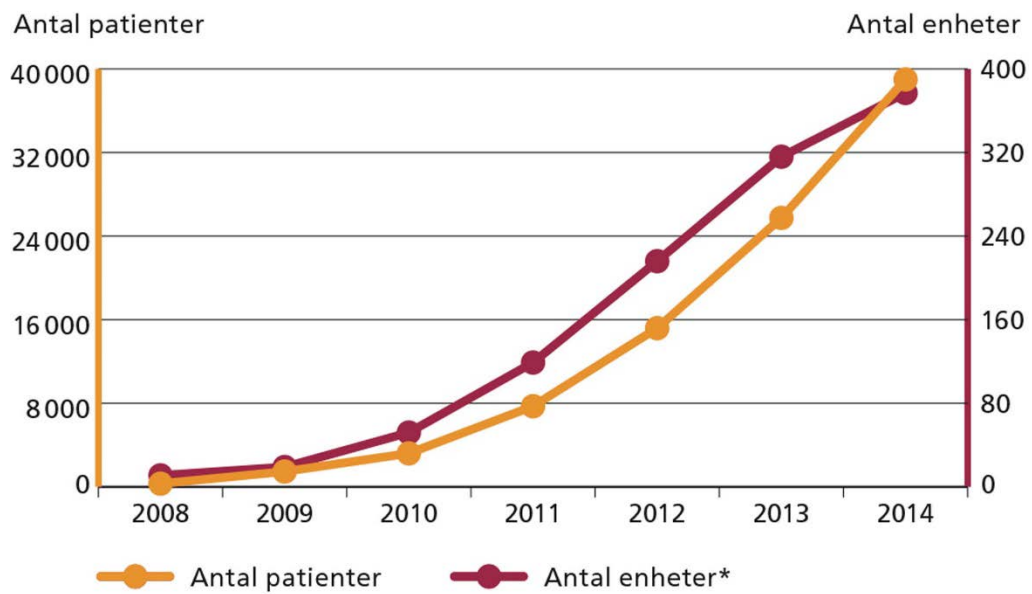
The BOA Register registers patients who have attended the SOASP. To achieve good coverage, it is required that all units that run the SOASP report all the patients who attended the SOASP to the Register. There is, however, no system for

checking where the SOASPs are run and it is difficult to estimate how many SOASPs are being run without the results being registered. During 2014, the BOA Register was one of 10 registers that had received grants from the Swedish Association of Local Authorities and Regions to work on improving coverage. The project leader, Rita Sjöström, Jämtland, has worked on making an inventory and mapping the use of the BOA Register, particularly by the contact persons in the county councils/regions. The aim of this work has been that units that have an SOASP should register and to motivate those who register to use the Register data in their work as part of the improvement process and to assure the figures. In Västerbotten, where the county council reported a 37% drop in registrations compared to 2013. In total, there are nine county councils that have reported a decrease in registrations compared to 2013, where apart from Västerbotten, the Gotland, Blekinge, Gävleborg and Norrbotten regions have also fallen by 10% or more. As a rule, appointments with a physiotherapist in primary care are not registered in the Patient Register or in care databases. It is therefore not possible to compare BOA's figures with official statistics. Many medical record systems do not have 'SOASP' as a search word, which makes it difficult to make a match with how many patients have been recorded as participants in an SOASP. The proportion of patients registered as attending an SOASP will never be 100%. Individuals with other diseases or diagnoses that are more symptomatic than osteoarthritis could be considered to benefit from the SOASP, but do not satisfy the inclusion criteria for registration in BOA. The reason why

they are not included in the Register is that questions regarding health-related quality of life and pain in the patient questionnaire were probably answered based on how many other diseases have an impact rather than the impact of problems related to osteoarthritis. Patients who have only osteoarthritis of the hand or osteoarthritis of other joints, without any problems in the hip or knee, could take part in the SOASP but are not registered.

Collection of data by the regional contact persons in January 2014 showed that there were 220 units that were running SOASPs and 156 units (65%) reported to the BOA Register. In December 2014, there were 270 units running SOASPs and according to the Register, 216 units had registered (80%) in the BOA Register (Table 12). It is also difficult to estimate the proportion of all patients who attend the SOASP who are registered (completeness). The number of patients who are registered in BOA each year increased by 25% between 2013 and 2014, from 10,554 to 13,252 (Table 15, page 42). The highest percentage increase in the number of registered patients compared to the previous year can be seen in Västmanland, Sörmland and Örebro, each of which has at least doubled the number of registrations. Västmanland also has the largest increase in absolute figures, which makes Västmanland this year's 'rocket' in statistical terms. The fall of the year can be seen

Figure 36. Accumulated number of unique patients and units.



* Number of units that report to the Register

Table 10. Units that have been logged on for at least six months and up to and including March 25, 2015 had not registered a patient.

LANDSTING	Enhet
Stockholm	Fysiocenter Odenplan, Stockholm
	Rehab City Kungsholmen, Stockholm
	Rehab City Östermalm, Stockholm
	Stockholm Norr Sjukgymnastik, Åkersberga
	Stockholms Sjukhem
	Södermalm Rehab Södra, Stockholm
Uppsala	Familjeläkarna Bålsta
	Flogsta vårdcentral, Uppsala
	Gottsunda vårdcentral, Uppsala
	Svartbäckens vårdcentral, Uppsala
	Ture Ålander läkarpraktik, Uppsala
Sörmland	Vårdcentralen City, Eskilstuna
	Vårdcentralen Oxelösund
Östergötland	Fysiomas Rehab & Sjukgymnastik, Norrköping
	HIO Fysioterapi, Motala
	Rörelse och Hälsa – Kisa, Åtvidaberg, Österbymo
Jönköping	Apladalens VC, Värnamo
Skåne	Brahehälsan Eslöv
	Capio Citykliniken, Helsingborg
	City Rehab, Lund
	Gerdahallens sjukgymnastik, Lund
	Novakliniken Ystad
	Vårdcentralen Löddeköpinge
	Vårdcentralen Vä, Kristianstad
Halland	Capio Citykliniken, Halmstad
Västra Götaland	Flex Sjukgymnastik & Rehab AB, Uddevalla
	Närhälsan Sandared rehamottagning
	Närhälsan Tranemo rehamottagning
	Stay active Trollhättan
	Älvängen Fysioterapi
Örebro	Baggängens vårdcentral, Karlskoga
Västmanland	Slottspraktiken Stefan Nääf AB, Köping
Dalarna	Vårdcentral Vansbro
	Vårdcentralen Läkarhuset, Borlänge
Västerbotten	Nordmalings Hälsocentral
	Rehab Center AB, Umeå
	Umeå Fysiocenter AB
Norrbotten	Adviva Hälsocentral, Gällivare
	Kalix vårdcentral
	Vårdcentralen Åkerbäret – Hermelinen, Boden

Table 11. Units that have reported previously but which did not register a patient during 2014.

LANDSTING	Enhet
Stockholm	AktivaRe – Primärvårdsrehab Österåker, SLSSO
	Aleris Rehab Liljeholmen, Stockholm
	Aleris Rehab Tullinge
	Mörby Primärvårdsrehab, Danderyd
	Sollentuna Rehabgrupp
	Tallhöjden Rehab, Södertälje
Östergötland	Må Bra Rehab AB, Motala
Jönköping	Familjeläkarna i Forserum
	Hälsans Vårdcentrum – Bra liv, Jönköping
	Nässjö vårdcentral
	Råslätts Vårdcentral – Bra liv, Jönköping
Blekinge	Kallinge Vårdcentral
	Ronneby Vårdcentral
Skåne	Berga läkarhus, Helsingborg
	Brahehälsan Löberöd
	Nöbbelöv Vårdcentral
	Rehab o Friskvårdshuset, Staffanstorp
	Rååpunkten Sjukgymnastik, Helsingborg
	Söderåsens Vårdcentral
	VC Tåbelund, Eslöv
Vårdcentralen Åstorp	
	Vårdcentralen Örkeljunga
Västra Götaland	Orust Rehab och friskvårdscenter, Henån
Dalarna	Älvdalen VC
Gävleborg	Edsbyn och Alfta Hälsocentral
	Hudiksvalls hälsocentral
	Hälsocentralen Delsbo
Jämtland	City Sjukgymnastik, Östersund
	Fjällhälsan Hede/Vemdalen
	Krokom Hälsocentral
	Torvalla hälsocentral, Östersund
Västerbotten	Backens Hälsocentral, Umeå
	Mariehems Hälsocentral, Umeå
	Umeå Smärtmottagning
	Vindelns hälsocentral
	Vännäs Hälsocentral
Norrbotten	Norrfjärdens Vårdcentral

Table 12. Number and proportion of units that run the SOASP and which registered in the BOA Register in 2014.

LANDSTING	Januari 2014		December 2014	
	Enheter som bedriver artrosskola*	Andel som registrerar i BOA*	Enheter som bedriver artrosskola*	Andel som registrerar i BOA**
	Antal	%	Antal	%
Blekinge	uppgift saknas	uppgift saknas	uppgift saknas	uppgift saknas
Dalarna	21	24	21	48
Gotland	1	100	1	100
Gävleborg	8	25	8	100***
Halland	12	50	11	64
Jämtland	21	90	21	86
Jönköping	6	50	7	100***
Kalmar	10	100	10	100***
Kronoberg	16	94	17	100
Norrbottn	uppgift saknas	uppgift saknas	uppgift saknas	uppgift saknas
Skåne	uppgift saknas	uppgift saknas	uppgift saknas	uppgift saknas
Stockholm	uppgift saknas	uppgift saknas	uppgift saknas	uppgift saknas
Sörmland	2	0	15	87
Uppsala	uppgift saknas	uppgift saknas	12	100
Värmland	19	95	19	100
Västerbotten	17	24	26	31
Västernorrland	12	25	12	33
Västmanland	35	100	35	60
Västra Götaland	25	84	31	94**
Örebro	9	100	16	88
Östergötland	6	83	8	88
Totalt	220	65	270	80

* Based on statistics from a contact person.

** Based on figures taken from the BOA Register about the number of units.

*** More units are included in the Register than what are stated by a contact person – rounded down to 100%.

Refers only to area 1.

It is difficult to estimate the proportion of patients in the SOASP that have other symptoms or diseases that exclude them from registration. A reasonable assumption could be that on average 5-10% of the participants should not be registered. We have asked the contact persons who work for BOA on the county council level to gather information from as many units as possible about how many patients have attended the SOASP and how many have been registered. We received information from 15 county councils (Table 13). As details about the number of participants in the SOASPs are missing for several units within a certain county councils, we cannot use the information in the Register regarding the number of registered people to calculate the

coverage. A mean value calculated using the estimates made by the units shows that 69% of the patients who attended the SOASP during 2014 had also been registered at the units that provided information.

In order to rely on the results in the Register, good quality data is also required. The response rate in the BOA Register is high. Each individual question in the patient questionnaire and the physiotherapist's questionnaire at the first appointment and at the three-month follow-up has a response rate of at least 97%. After one year, the questionnaire is sent by post to the patient, followed by a reminder to those who fail

to answer. The response rate at the one-year follow-up in 2014 was 84%.

Number of care seekers with osteoarthritis of the hip and osteoarthritis of the knee

The BOA Register is not a diagnosis register but as the National Board of Health and Welfare treatment guidelines state that all patients with osteoarthritis of the hip or knee must be offered information and supervised exercise as an initial measure, the SOASP should gradually strive to reach out to all patients. There is a considerable accumulated need among individuals in the population who have lived for a long time with their disease without receiving adequate treatment.

As reliable figures about the number of individuals with osteoarthritis of the hip or knee are lacking (diagnosis codes M16 and M17) in out-patient care on the national level, we have asked a selected number of county councils/regions to produce information about the number of patients with the diagnosis codes M16/M17 from the regional care databases. Some with osteoarthritis apply several times a year whilst others apply sporadically or not at all. In order to pick up on as many individuals with osteoarthritis of the hip and knee as possible, we asked for information about the number of unique individuals who at some point had sought out-patient care over a five-year period (2010-2014). As osteoarthritis is often not diagnosed until changes become visible on the x-ray, we have also requested separate statistics for the number of individuals who apply due to pain in their joints (diagnosis code M25.5).

With the aid of statistics from care databases in Stockholm, Västra Götaland, Östergötland, the Skåne Region and Jämtland/Härjedalen (Table 14), we have estimated the number of care applicants with osteoarthritis throughout the country in the over-45 age group. According to Statistics Sweden, there were 4,346,942 people in Sweden

who were over the age of 45 years as of December 31, 2013. Stockholm, Östergötland, Västra Götaland, Skåne and Jämtland/Härjedalen together accounted for 56% of the number of inhabitants in this age group. If we assume that the breakdown of the number of individuals with the diagnosis osteoarthritis of the hip and knee who are seeking out-patient care is approximately the same as the population as a whole, we can assume that the total number of individuals who are seeking out-patient care in these four county councils/regions (227,020) represent approximately 56% of the osteoarthritis population in Sweden. Our simple estimates would then put the total 'osteoarthritis population' seeking out-patient care in Sweden at least once during a five-year period at around 405,392 persons ($405,392 \times 0.56 = 227,020$) or approximately 9% of the population over the age of 45. This would appear reasonable in the light of the statistics from the different county council/regions. If we assume that the appointments are spread evenly over time, this means that 81,078 people, or 1.9% of the population over the age of 45, seek out-patient care each year due to osteoarthritis of the hip or knee. Compared to the estimates made in the Register from previous years, this is a slight increase from 1.5%. The statistics regarding the number of appointments during 2014 also indicate that the proportion of people seeking out-patient care for the diagnosis osteoarthritis of the hip or knee increases from year to year, then the proportion for 2014 was 3.1% of the population over the age of 45 (Table 14).

According to www.vantetider.se and the information we received from care databases, 4% of all appointments with a doctor in the out-patient care sector during 2014 were related to the diagnosis osteoarthritis of the hip or knee. There are no statistics available for how many appointments were made with a physiotherapist in primary care.

Coverage per county council – proportion of the population over the age of 45 who seek care for osteoarthritis and are registered in BOA

Based on estimates from care databases in 2011, 2012 and 2013, we have calculated that 1.5% of the population over the age of 45 seek help from a doctor in primary care each year with osteoarthritis of the hip or knee as a first diagnosis. The estimates for 2014 show that the proportion has risen to 1.9%. The figure is probably an underestimation as joint problems without x-ray changes are in many cases not diagnosed as osteoarthritis. Patients also seek help from other professional categories, such as physiotherapists, who are the first instances in primary care and who diagnose osteoarthritis of the hip or knee. These patients are not included.

We gathered population statistics from Statistics Sweden for the over-45 age group as of December 31, 2014, broken down according to county council. We then calculated the number of individuals that would be equivalent to 2% of the population over the age of 45 for each county council. This would constitute the estimated number who sought primary care in 2014 with osteoarthritis of the hip or knee as a first diagnosis. For other years we have used 1.5% of the population as the estimated number. Coverage per county council was then calculated by dividing the number registered in the BOA Register per county council by the estimated number in each county council each year who sought medical help in the primary care sector (Figure 37).

The aim is that everyone who seeks primary care with osteoarthritis of the hip and/or knee should be offered the SOASP if they have not already attended. BOA has included 39,000 patients during the five operating years the Register has been in existence (2010-2014), equivalent to 9.6% of the 'osteoarthritis population' (see preceding paragraph). With the current annual capacity of

approximately 13,200 patients, we reached an estimated 17% of all those with the diagnosis osteoarthritis of the hip and/or knee who sought out-patient care during 2014.

Validation of data

The results can never be better than the quality of the data collected. With several levels in the data collection, the risk of incorrect registration increases. The BOA Register endeavours to minimise sources of error and has created routines to provide users with an opportunity to check and correct their data. By also encouraging the participating units to use their input data, the probability is increased that any incorrect input is discovered and rectified. In this way, the quality of the data in the Register is improved continuously.

The majority of the data in the BOA Register is based on patient-reported outcomes. The patient completes the questionnaire at the physiotherapist's clinic at the first appointment and at the three-month follow-up appointment. The answers are entered into the Register by the physiotherapist or in some cases by a member of the administrative staff. After one year, a questionnaire is sent to the patient by post together with a reply-paid envelope. The physiotherapist answers questions about any previous examinations and treatment and about compliance with the intervention.

Data quality

There are certain limits for register input. It is not possible to enter values that fall outside these limits. In other cases, data quality control can be carried out using descriptive reports. Nowadays, a smaller number of questions need to be answered for the questionnaire to be saved, such as the date of the appointment and which joint and which side are most problematic. Each unit can retrieve its own report online in real time. Processing data increases the probability that incorrect values are identified.

Routine control of data quality is carried out in the BOA Register twice a year. Any incorrect input, extreme values or questions that lack values are sent by e-mail to each unit before the summer break and the Christmas break as the level of activity at the physiotherapy clinic is generally lower at those times, thus providing an opportunity to check and correct data.

Prior to producing the 2014 Annual Report, a series of further input data controls were carried out to ensure data quality. 'Impossible' dates

(such as the date of the appointment being ahead in time) duplicates and missing values were identified and examined in more detail. For different reasons not all data could be corrected and in the end there were three individuals who had extreme dates or where a date was missing. For 638 individuals the patient questionnaire from the first appointment was missing and 211 registrations had duplicates. Eight patients had 'unknown' for the most problematic joint. This was removed from the dataset before the Annual Report was prepared.

Table 13. Number OF SOASPs and the number of patients registered per county council, 2014.

LANDSTING	Genomförda artros-skolor totalt i landstinget*	Enheter som rapporterar till BOA	Patienter i artrosskola	Uppskattad andel patienter som registreras av det totala antalet som går artrosskola***
	Antal	Antal	Antal	%
Blekinge	24**	4	335 ^b	91
Dalarna	23**	10	228	92
Gotland	20	1	198	100
Gävleborg	uppgift saknas	10	uppgift saknas	
Halland	33**	7	334 ^c	14
Jämtland	80	18	695	89
Jönköping	27**	14	212	43
Kalmar	92	11	1093 ^d	46
Kronoberg	37	17	395	86
Norrbottn	uppgift saknas	5	uppgift saknas	
Skåne	148**	33	1297 ^a	80
Stockholm	uppgift saknas	36	uppgift saknas	
Sörmland	64**	13	428	84
Uppsala	75	12	611	45
Värmland	114	19	928	60
Västerbotten	uppgift saknas	8	uppgift saknas	
Västernorrland	uppgift saknas	4	uppgift saknas	
Västmanland	uppgift saknas	21	uppgift saknas	
Västra Götaland (omr 1)	80**	61	781	80
Örebro	61**	14	335	71
Östergötland	171	7	1988	61

* Uncertain how many units are running the SOASP.

** No information from certain units.

*** Information based on the unit's own estimate.

^a 135 patients with osteoarthritis of the hand only or with language difficulties (not registered).

^b 13 patients with osteoarthritis of the hand only or with language difficulties (not registered).

^c 54 patients with osteoarthritis of the hand only or with language difficulties (not registered).

^d 74 patients with osteoarthritis of the hand only or with language difficulties (not registered).

Table 14. Number of unique individuals who sought primary care at least once during the period 2010-2014 and in 2014

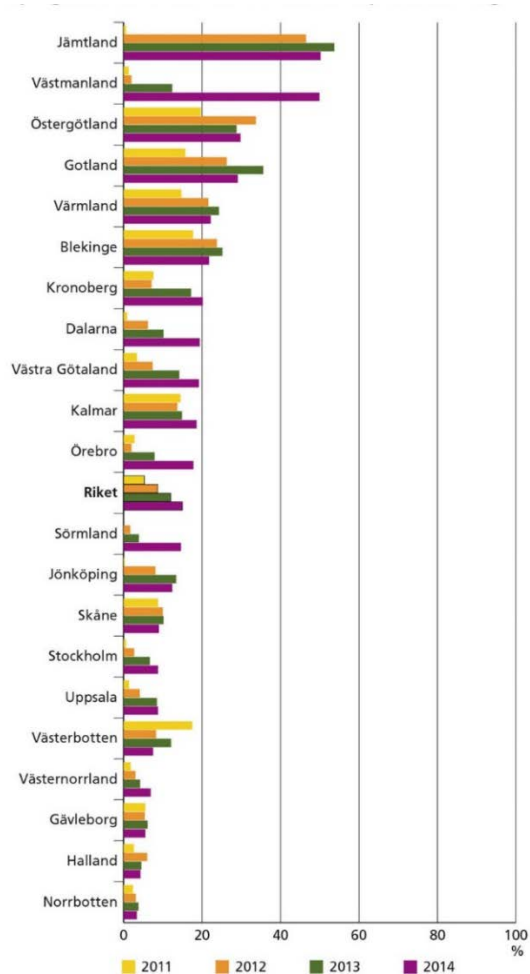
LANDSTING	Diagnos artros					Diagnos ledvärk				
	2010–2014*		2014*			2010–2014*		2014*		
	Antal unika individer med huvuddiagnos Artros höft eller knä (M16/M17) i värddatabas 2010–2014*	Andel av befolkning över 45 år (%)**	Antal unika individer med huvuddiagnos artros höft eller knä (M16/M17) i värddatabas 2014*	Andel av befolkning över 45 år (%)**	Andel av alla läkarbesök (%)***	Antal unika individer med huvuddiagnos Ledvärk (M25.5) i värddatabas 2010–2014*	Andel av befolkning över 45 år (%)**	Antal unika individer med huvuddiagnos Ledvärk (M25.5) i värddatabas 2014 (%)*	Andel av befolkning över 45 år (%)**	Andel av alla läkarbesök (%)***
Östergötland	22 047	11,1	8 098	4,1	5,3	44 342	22,4	10 908	5,5	7,1
Västra Götaland	55 139	7,7	18 476	2,6	3,0	123 217	17,1	55 050	7,7	9,0
Skåne	53 988	9,6	21 820	3,9	5,4	83 652	14,8	25 208	4,5	6,2
Stockholm	90 227	10,3	26 148	3,0	4,2	–	–	–	–	–
Jämtland/Härjedalen	5 619	9,0	1 562	2,5	2,1	11 845	19,0	2 759	4,4	3,6

* Information was provided by a regional care database and refers to appointments within the out-patient care sector

** Refers to the number of people aged 45 and older as of December 31, 2014. Source: Statistics Sweden

*** In public primary care 2014, according to www.vantetider.se

Figure 37. Number who were taken care of in the SOASP as a percentage of the estimated number of people in the population over the age of 45 years who sought care due to osteoarthritis of the hip or knee, broken down according to county council.



Descriptive data

In this chapter we describe the patients in the Register, taking into account a series of factors such as age, BMI, civil status and proportion of smokers, but also how long they had their problems before they came to the SOASP and the examinations and treatments they had undergone previously.

Number of patients

First appointment

The number of individuals in the Register is updated and validated continuously. Questionnaires can be registered afterwards, incorrect or missing data can be corrected and patients can discontinue their participation. These factors affect the number of individuals in the Register, both at the unit level and as a whole. The number can vary from year to year.

This Annual Report is based on data from a total of 39,000 patients who had at least one appointment with a physiotherapist before December 31, 2014. Of these, 13,256 (34%) had been registered for an appointment during 2014 (Table 15). Of this number, 31% were assessed by the physiotherapist as having most problems in their hip and 69% were assessed as having most problems in their knee. In the Annual Report they were subsequently designated as osteoarthritis of the hip and osteoarthritis of the knee and in the majority of cases the results are reported separately for the hip and knee.

Three-month follow-up

After three months, patients who attended the SOASP are offered a follow-up appointment with a physiotherapist. This should take place regardless of whether the patient chose to take part in the exercise part or not. In this Annual Report we include information from 25,485 patients (65%) who had undergone a three-month follow-up. Patients who were included after

October 1 did not have time to undergo their three-month follow-up during 2014.

One-year follow-up

A one-year follow-up is sent out from the Register to all patients who have been registered for a first appointment, who are still alive and who have not dropped out. The follow-up takes place 12-14 months after the first appointment. A reminder is sent out if an answer is not received within one month. During 2014, 9,355 questionnaires were sent out for a one-year follow-up. The response rate after a reminder was 84%. The Register includes data from 15,565 patients after one year.

Multi-year follow-up

Each year, a two-year follow-up is sent by post to 100 patients randomly selected from those who had responded to the one-year follow-up the previous year. These 100 selected patients then undergo an annual follow-up as long as they are alive. The number of patients with a two-year follow-up accumulates each year. To date, the Register has a follow-up of 244 patients after two years, 162 after three years, 88 after four years and 34 after five years. These results are not presented in this Annual Report.

Dropouts

Patients who had hip or knee arthroplasty before they responded to the one-year follow-up are marked in the BOA Register as having dropped out. The number of patients registered as having undergone hip or knee arthroplasty before the one-year follow-up is 3,066, which is equivalent to 8% of the total number in the Register. Hip problems are more common in the group who had undergone surgery compared to the others (52% vs 29%), and there is a slightly higher proportion of men among those who had undergone surgery compared to the group who had not undergone surgery (33% vs 30%) and the patients who had undergone surgery appear to be

slightly older than the group who had not undergone surgery (67.6 years vs 65.4 years) (Table 16, Table 17).

Table 15. Number of people registered for the first SOASP appointment per county council

LANDSTING	Antal 2008–2010	Antal 2011	Antal 2012	Antal 2013	Antal 2014	Antal Totalt
Stockholm	15	101	460	1 176	1 565	3 317
Uppsala	0	41	117	252	263	673
Sörmland	0	0	46	103	394	543
Östergötland	111	774	1 329	1 156	1 204	4 574
Jönköping	0	10	258	427	402	1 097
Kronoberg	1	133	122	303	356	915
Kalmar	196	347	332	355	457	1 687
Region Gotland	30	93	158	219	179	679
Blekinge	37	268	354	381	331	1 371
Skåne	850	974	1 111	1 160	1 035	5 130
Halland	0	74	173	135	131	513
Västra Götaland	993	481	1 054	2 049	2 804	7 381
Värmland	549	402	599	673	622	2 845
Örebro	0	73	54	212	489	828
Västmanland	0	31	49	313	1 249	1 642
Dalarna	0	24	176	296	552	1 048
Gävleborg	19	155	149	171	154	648
Västernorrland	0	44	73	105	168	390
Jämtland	0	8	583	684	633	1 908
Västerbotten	391	419	197	290	182	1 479
Norrbottnen	16	59	77	94	86	332
Riket	3 208	4 511	7 471	10 554	13 256	39 000

Even patients who drop out for a reason other than arthroplasty should be marked in the Register. In total, 4,387 patients (11%) discontinued the SOASP at the end of 2014 for a reason other than an operation. Even among those who dropped out of the SOASP there is a higher proportion of men compared to the group who did not drop out (36% vs 30%). As opposed to those who undergo surgery, the group that drop out are slightly younger than those who did do

not drop out (64.6 years vs 65.7 years) (Table 18, Table 19).

Dropouts in the BOA Register could also be explained by the fact that for some reason the patients did not receive a return appointment with the physiotherapist, that the follow-up form was not entered, or that the patient had died. The distribution of dropouts for each county council can be seen under Results (Figure 9).

Table 16. Descriptive characteristics of those who had undergone surgery and those who had not undergone surgery.

	Män	Kvinnor	Mest besvärande led		Besvär från hand/fingerleder
			Höft	Knä	
Antal opererade (%)	1 019 (33,2)	2 047 (66,8)	1 605 (52,3)	1 461 (47,7)	764 (24,9)
Antal ej opererade (%)	10 799 (30,1)	25 135 (69,9)	10 419 (29,0)	25 501 (71,0)	1 0276 (28,6)

Table 17. Descriptive characteristics of those who underwent surgery and those who had not undergone surgery

	Ålder	BMI
	Medelvärde (SD)	Medelvärde (SD)
Opererade	67,6 (8,4)	27,8 (4,5)
Ej opererade	65,4 (9,6)	28,0 (4,8)

Table 18. Descriptive characteristics of dropouts and non-dropouts.

	Mest besvärande led				Besvär från hand/fingerleder
	Män	Kvinnor	Höft	Knä	
Antal avbrutit (%)	1 565 (35,7)	2 822 (64,3)	1 284 (29,3)	3 102 (70,7)	1 216 (27,7)
Antal ej avbrutit (%)	10 253 (29,6)	24 360 (70,4)	10 740 (31,0)	23 860 (69,0)	9 824 (28,4)

Table 19. Descriptive characteristics of dropouts and non-dropouts.

	Ålder	BMI
	Medelvärde (SD)	Medelvärde (SD)
Avbrutit	64,6 (10,9)	28,3 (5,0)
Ej avbrutit	65,7 (9,4)	28,0 (4,7)

Clinical characteristics of patients in the BOA Register

Patient's assessed joint problems

The BOA Register registers patients with problems in the hip or knee joint. Many patients have problems in both the hip and the knee. In this report we do not distinguish between patients with problems in several joints from those with individual joint problems. The division into osteoarthritis of the hip and osteoarthritis of the knee is based on the assessment of the physiotherapist at the first appointment and in the majority of cases it concurs with what the patient feels. Overall, only 667 patients (2%) reported that they had greatest problems in a joint different from what had been ascertained in conjunction with the physiotherapist's examination and assessment.

Many patients with osteoarthritis of the hip and osteoarthritis of the knee also had problems in their hands that had an impact on daily life. At the SOASP, patients with osteoarthritis of the hand only are also welcome although only those who have problems with the hip or knee in addition to their hand problems are currently registered. Development is in progress to eventually be able to register those who only have hand problems. Osteoarthritis of the hip or knee in combination with osteoarthritis of the finger joints could be an indication of more generalised osteoarthritis that affects several joints in the body (three or more joint systems). In the BOA Register, we see that just over one in five patients also report that they have problems in their hand or finger joints (Figure 38 and Figure 39). A research project that

compared pain, health-related quality of life and the effect of the SOASP for patients with and without hand problems, shows although that patients with hand problems have greater problems initially, they report an improvement in absolute terms similar to those who do not have hand problems (see Research chapter).

Since September 2012, patients (apart from those with the most problematic joints) can also state whether they have problems in one or both hips, in the knees and/or in the hands. Six out of 10 patients state that they have problems in more than one joint. Forty per cent have problems in several joint systems, e.g. the hip and knee or knee and hand. Of all the conceivable

combinations of hip, knee and hand problems, the most common is that patients in the BOA Register only have problems in one knee (29%), followed by the combination hip and knee (19%) (Figure 40).

After three months, 699 patients (4% of all those who underwent a three-month follow-up) stated that they no longer had any problems. Of those who were free of problems after three months, 37% were still problem-free after one year.

Figure 38. Hip. Number of patients with problems in the hand at the first appointment, 2013-2014*.

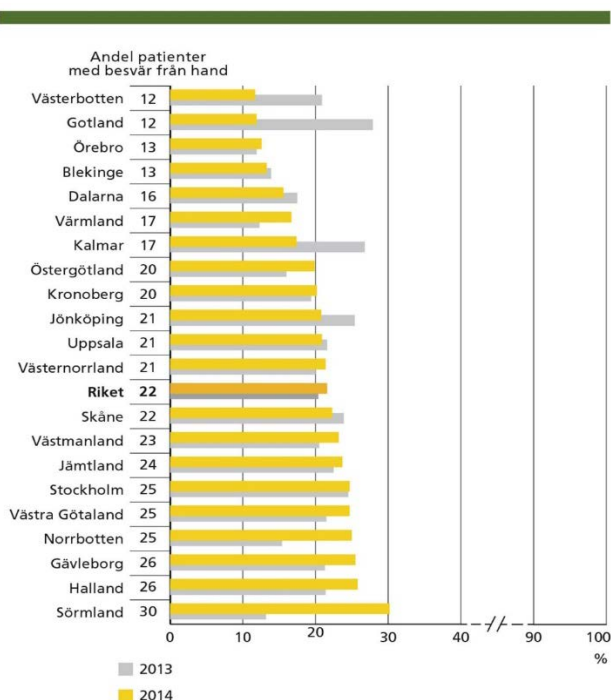
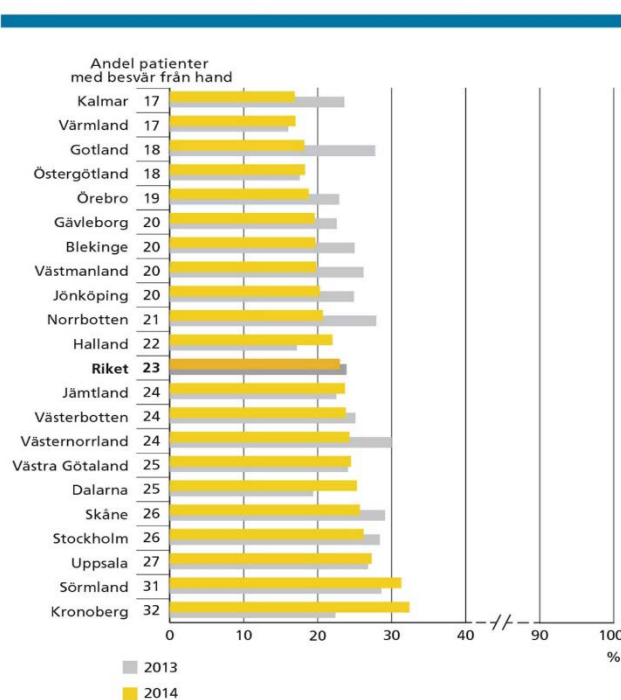
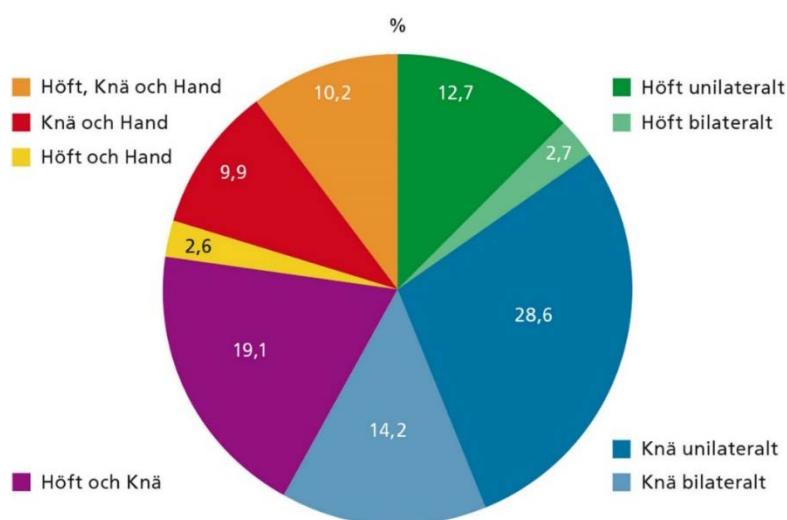


Figure 39. Knee. Number of patients with problems in the hand at the first appointment, 2013-2014.



* Certain county councils have fewer than 50 registrations per year.

Figure 40. Number of patients with problems in one or more joints, September 2012-2014.



Charnley classification

A Charnley classification is a simple way of measuring comorbidity. Charnley class A means unilateral problems, class B means bilateral problems and class C means problems in both the hip and knee or another disease that affects the ability to walk. In principle, a Charnley class is determined based on two questions: "Do you have problems in the other hip/knee?" and "Do you find it difficult to walk for any other reason?" This is of course a very general measure of comorbidity as there could be several diagnoses or problems that do not affect the ability to walk.

However, it could be said that class C patients consider themselves to be less mobile than class A and class B patients. Figures 41 and 42 show the division of Charnley classes in the BOA Register for those patients who were included during 2014. One-third of the patients have problems in one joint only, whilst 58% of those who have osteoarthritis of the hip and 44% of those who have osteoarthritis of the knee cite reasons for their difficulty walking other than osteoarthritis of the joint in question. The SOASP has probably the best effect on those in Charnley class A.

Figure 41. Hip. Number and proportion of Charnley class A, B and C, 2014.

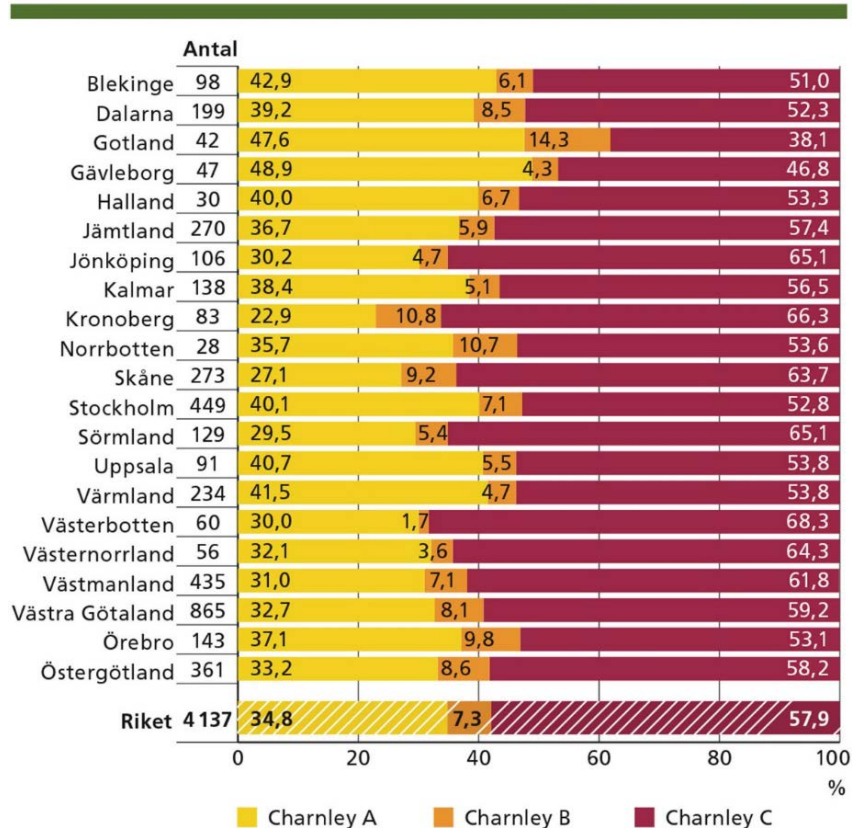
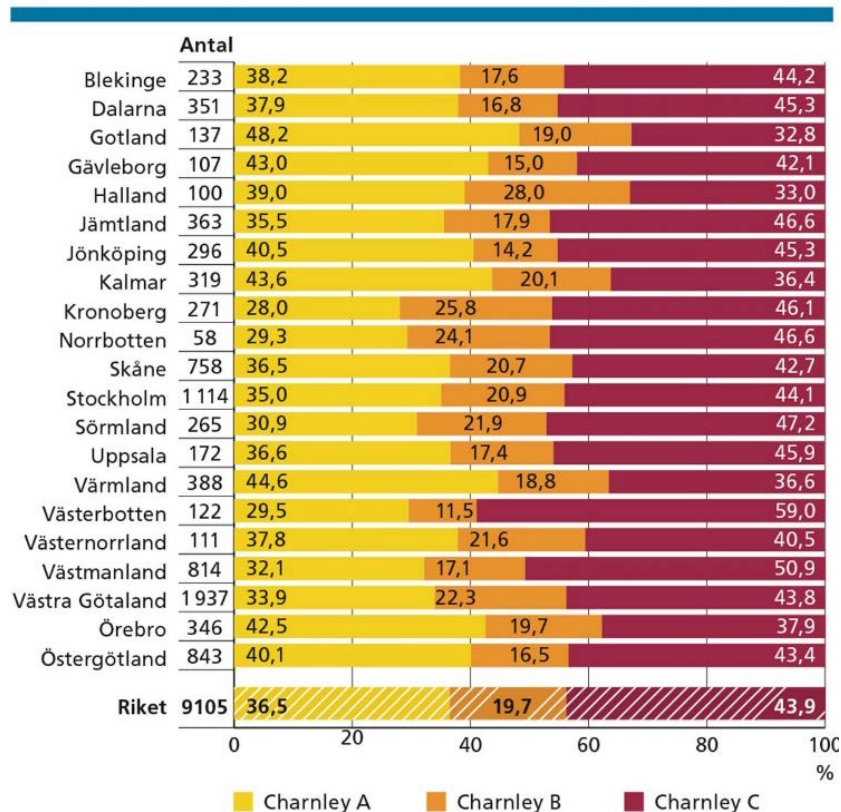


Figure 42. Knee. Number and proportion of Charnley class A, B and C, 2014.



Age

The first symptoms of osteoarthritis can often be noticed around the age of 40 or even earlier, even if it is common that both those who are affected and the healthcare system look for explanations other than osteoarthritis. Research has shown, however, that persistent joint pain without any other explanation is in the majority of cases the first sign of osteoarthritis. The prevalence of osteoarthritis increases with age as a person who develops osteoarthritis has the disease for the rest of their life, even if the symptoms vary over time. The mean age in the total population in the

BOA Register is 65.6 years. The youngest individual is 18 and the oldest is 97. The age distribution throughout the Register can be seen in Figure 43. The largest proportion of patients (40%) in the BOA Register are in the 65-74 age group, and 57% of the patients in the Register are over the age of 65 (Table 20).

One of the aims of BOA is to reach patients earlier in the course of the disease and thus reduce the mean age for patients who are included in the BOA Register. As yet, we have not seen any sign of this (Figure 44).

Table 20. Age distribution in the BOA Register.

Ålder	Antal	Andel %
≤44	827	2
45-54	4251	11
55-64	11 302	29
65-74	15 726	40
75-84	6 392	16
≥85	502	1
Totalt (medel (SD))	39 000 (65,6 (9,6))	100

Figure 43. Age distribution in the BOA Register, 2008-2014.

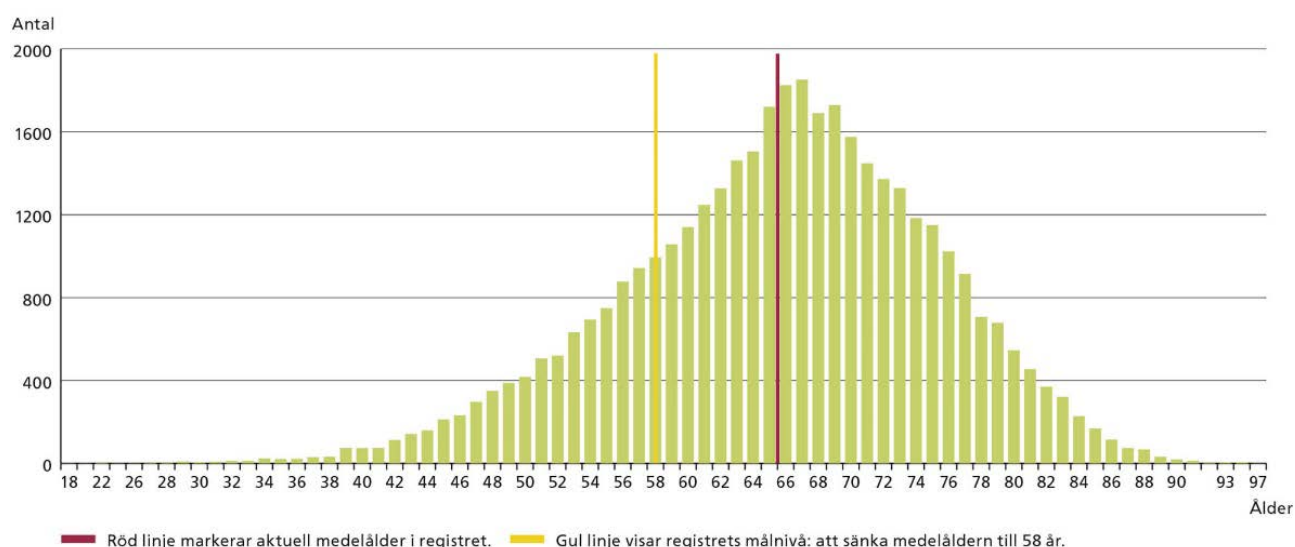
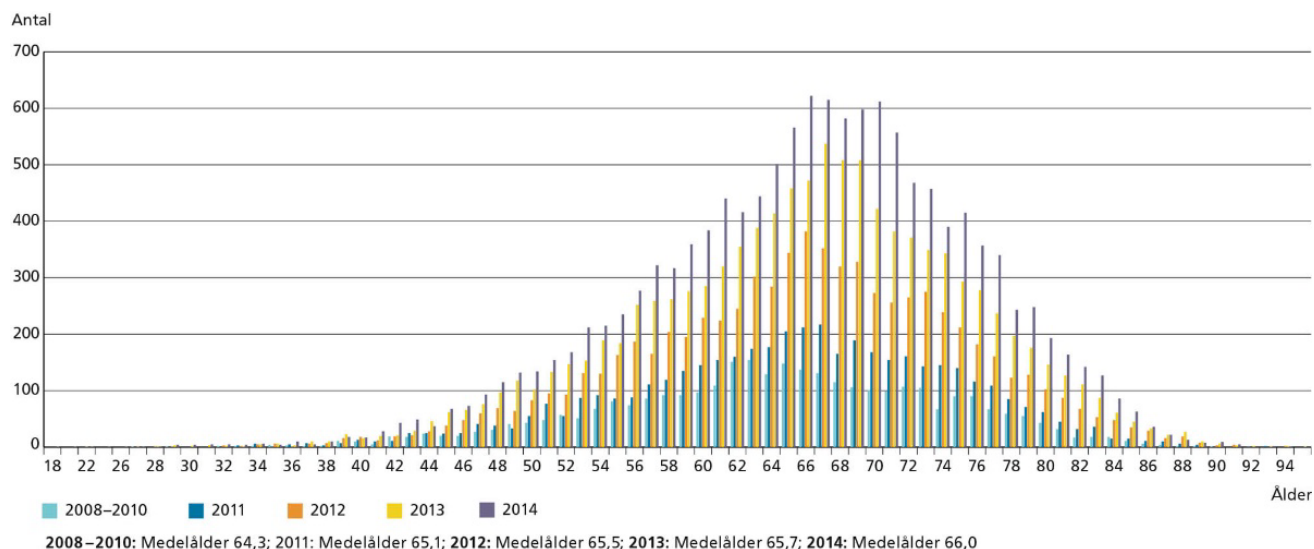


Figure 44. Age distribution in the BOA Register per operating year, from 2008-2010 to 2014.



Gender

Studies of the prevalence of osteoarthritis in the population show that there are slightly more men than women in the under-45 age group who have osteoarthritis. This can be explained by the fact that men more often play contact sports, such as football and handball, and as a result incur joint injuries that could produce early symptom-generating osteoarthritis. Approximately half of all those who have suffered, for example, damage to the meniscus, develop osteoarthritis 10-15 years later. A meniscus injury at the age of 20 can thus lead to osteoarthritis at the age of 35. At higher ages, it is more common to see osteoarthritis among women and overall the prevalence of osteoarthritis is more common in women. In the BOA Register, 70% of the patients are women. This concurs well with the gender division described in studies. In the *Gender perspective* chapter in the BOA Annual report (page 54), descriptive data and results are presented, divided between men and women.

BMI

Being overweight is a known risk factor for the development of osteoarthritis, particularly in the

knee joint but also for osteoarthritis of the finger joints. As regards the link between being overweight and radiological osteoarthritis of the hip, the evidence is not equally clear even if being overweight is strongly linked to increased hip problems (symptom-generating osteoarthritis of the hip) and the risk of having to undergo arthroplasty. Body mass index (BMI) is often used to classify body weight in relation to body size. BMI is calculated by dividing the body weight in kilos by the square of the body height expressed in metres. According to the World Health Organisation, WHO, the limit for normal weight is 25 kg/m². Overweight is a BMI of between 25.0 and 29.99, and those with a BMI of 30 or more are categorised as obese. BMI is a general measurement and for people with large amounts of muscle it could produce misleading results. In the BOA Register we study the mean values for groups of individuals. By doing so, individual values are less significant. To acquire reliable values, the height and weight should be measured using a height meter and scales. In the BOA Register, BMI is in the majority cases based on the patient's self-reported information and should therefore be interpreted with some degree of

caution. In certain cases, the total number of patients is relatively few, which means that individual values assume greater significance. Patients state their weight at the beginning of the SOASP and since January 2015 at the one-year follow-up. Weight reduction is included as an essential part of the basic treatment of osteoarthritis. Weight reduction and an increase in physical activity mean changes in lifestyle for the majority of patients with osteoarthritis. The expertise of physiotherapists is mainly within the area of physical activity and adapted exercise and consequently the focus of the SOASP is on increasing the physical level of activity rather than

reducing body weight. Patients with osteoarthritis of the hip had a BMI of 27.0 (SD 4.4) kg/m² compared to 28.5 (SD 4.8) kg/m² for those with osteoarthritis of the knee, as shown in Figures 45 and 46. Just over one in three patients with osteoarthritis of the hip were of normal weight and one in four of those with osteoarthritis of the knee. One-third of patients with osteoarthritis of the knee were obese compared to one-fifth of patients with osteoarthritis of the hip.

Figure 45. Hip. Distribution of BMI kg/m², 2014.

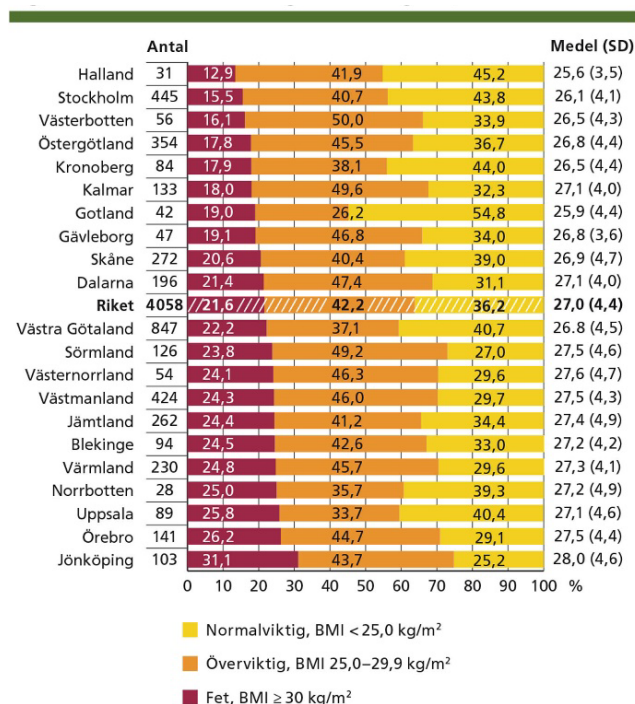
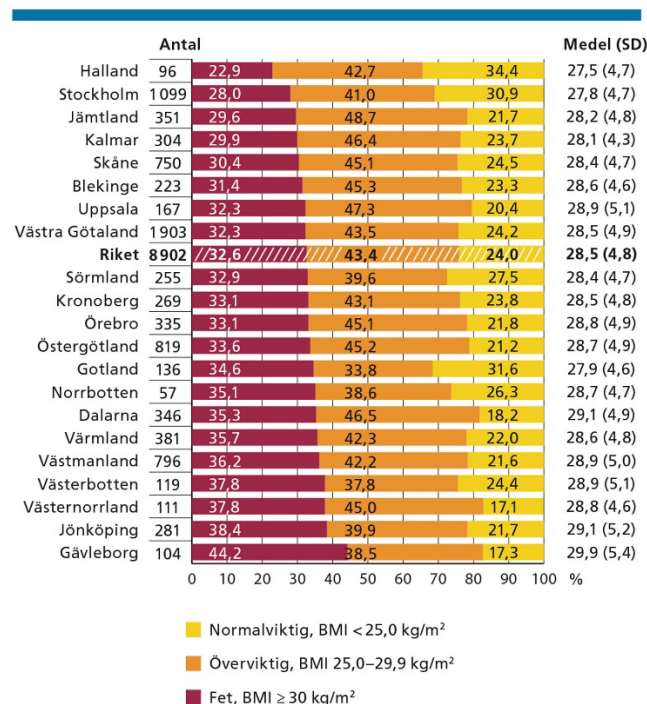


Figure 46. Knee. Distribution of BMI kg/m², 2014.



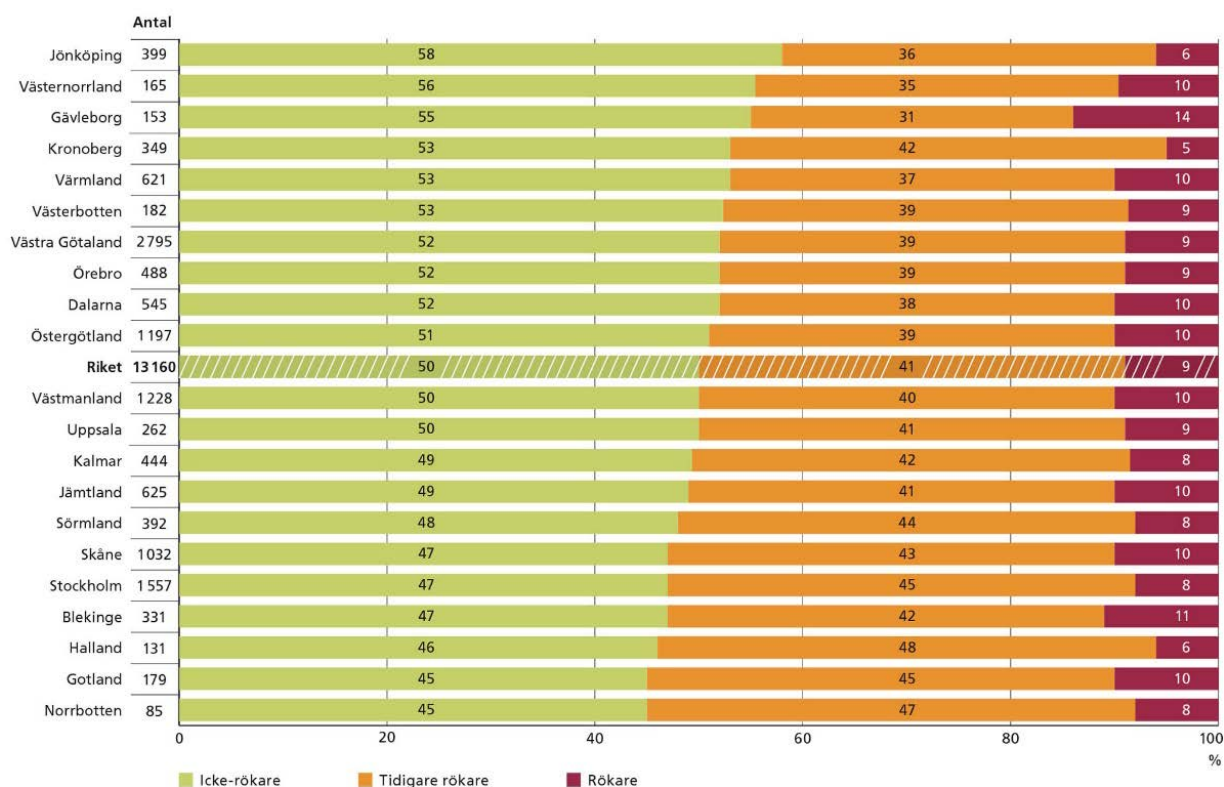
Proportion of smokers

Smoking carries many known health risks and cessation of smoking is in many quarters a prerequisite for surgery as smoking results in poorer wound healing. Questions regarding smoking habits and an offer of advisory discussions for smokers have also been included in the National Board of Health and Welfare guidelines for disease-prevention methods. Since September 2012, the BOA Register includes a question about smoking habits. The link between

osteoarthritis and smoking is not entirely clear and the results are contradictory. By gathering information about smoking habits in the BOA Register, we will in time be able to study the effect of smoking on perceived pain, health-related quality of life and the results of the SOASP.

Figure 47 shows the number of smokers among patients during the first visit to the SOASP, broken down according to county council for 2014.

Figure 47. Smoking habits in conjunction with the first SOASP appointment, 2014.



Civil status and sick leave

Language difficulties are not an obstacle to acquiring information in the SOASP although in that case individual instruction is more appropriate. People who have difficulty reading and understanding Swedish could find it difficult to complete the questionnaire, which is not yet available in other languages. Currently, a prerequisite for registering in the BOA Register is that the patient has a good understanding of Swedish, which means that in the Register we do not have a large proportion of people born abroad. With effect from 2015, however, it is possible to register if the patient has completed the form with the aid of an interpreter. Osteoarthritis affects a large proportion of the population of working age. In the BOA Register, 43% of the patients are under the age of 65. Sick leave, sickness benefit and loss of production account for a large proportion of the societal costs resulting from osteoarthritis. In the BOA Register, 13% of those who are included with osteoarthritis of the knee in 2014 stated that they were on sick leave, as did 8% of those with osteoarthritis of the hip. Simply being on sick leave without taking any other measures has none or a very limited effect

in conjunction with osteoarthritis of the hip and osteoarthritis of the knee. One of the aims of BOA is to make use of knowledge and individually adapted exercise to reduce sick leave due to osteoarthritis of the hip and osteoarthritis of the knee.

People with osteoarthritis who have physically arduous work should probably consider the possibility of less strenuous duties. Long-term sedentary habits also have a negative impact on osteoarthritis. A job with varied duties or the opportunity to move around could in many cases be regarded as an activity that could contribute to reducing problems resulting from osteoarthritis, as is the case with physical activity. Work also contributes to focusing on factors outside one's own body, which could contribute to diverting the person's attention away from their pain.

Tables 21 and 22 show civil status and the proportion of patients who are on sick leave and who attended a three-month follow-up in 2014. For details of the proportion of patients who attended the first appointment and who were also followed up after three months, reference can be made to the Results chapter, (Figure 9).

Table 21. Hip. Characteristics of patients who have attended a follow-up at a physiotherapist three months after the SOASP, 2014.

	Antal patienter*	Civilstatus				Född i Sverige		Sjukskriven**		Sjukskriven** >3 månader	
		Sammanboende		Ensamboende		Antal	%	Antal	%	Antal	%
		Antal*	%	Antal*	%						
Blekinge	79	56	72,7	21	27,3	75	94,9	6	8,0	0	0,0
Dalarna	154	118	76,6	36	23,4	143	93,5	12	8,1	3	2,0
Gotland	36	27	75,0	9	25,0	36	100,0	4	11,4	1	2,9
Gävleborg	16	13	81,3	3	18,8	15	93,8	3	18,8	2	12,5
Halland	27	22	81,5	5	18,5	26	96,3	1	3,7	0	0,0
Jämtland	216	147	68,1	69	31,9	211	97,7	16	7,5	9	4,2
Jönköping	71	53	74,6	18	25,4	69	97,2	5	7,2	1	1,4
Kalmar	98	72	73,5	26	26,5	93	94,9	6	6,5	1	1,1
Kronoberg	77	62	80,5	15	19,5	73	94,8	6	7,8	2	2,6
Norrbottn	20	14	70,0	6	30,0	20	100,0	2	10,5	0	0,0
Skåne	189	138	73,4	50	26,6	174	92,6	10	5,5	5	2,7
Stockholm	338	221	66,0	114	34,0	297	88,1	14	4,3	9	2,8
Sörmland	64	51	81,0	12	19,0	55	85,9	3	4,8	1	1,6
Uppsala	75	59	78,7	16	21,3	71	94,7	6	8,1	3	4,1
Värmland	135	99	73,3	36	26,7	124	91,9	16	12,9	5	4,0
Västerbotten	47	34	73,9	12	26,1	45	97,8	5	11,1	1	2,2
Västernorrland	38	23	60,5	15	39,5	37	97,4	2	5,3	1	2,6
Västmanland	298	223	74,8	75	25,2	259	87,5	37	13,2	17	6,1
Västra Götaland	499	354	71,1	144	28,9	466	93,4	45	9,4	15	3,2
Örebro	84	63	75,0	21	25,0	75	89,3	4	4,9	1	1,2
Östergötland	283	212	75,7	68	24,3	268	95,0	23	8,8	13	5,0
Riket	2844	2061	72,8	771	27,2	2632	92,8	226	8,3	90	3,3

Table 22. Knee. Characteristics of patients who have attended a follow-up at a physiotherapist three months after the SOASP, 2014.

	Antal patienter*	Civilstatus				Född i Sverige		Sjukskriven**		Sjukskriven** > 3 månader	
		Sammanboende		Ensamboende		Antal	%	Antal	%	Antal	%
		Antal*	%	Antal*	%						
Blekinge	154	125	81,2	29	18,8	149	96,8	25	16,9	5	3,4
Dalarna	251	178	70,9	73	29,1	238	94,8	31	12,8	5	2,1
Gotland	129	108	83,7	21	16,3	120	93,0	17	13,2	3	2,3
Gävleborg	48	35	72,9	13	27,1	46	97,9	8	17,4	2	4,3
Halland	85	66	77,6	19	22,4	79	92,9	9	11,0	0	0,0
Jämtland	301	203	67,7	97	32,3	293	98,0	34	11,6	13	4,5
Jönköping	196	146	74,9	49	25,1	182	93,3	22	11,5	7	3,7
Kalmar	213	167	78,8	45	21,2	203	95,8	24	11,5	3	1,4
Kronoberg	252	187	74,2	65	25,8	225	89,3	32	12,7	10	4,0
Norrbottnen	53	36	67,9	17	32,1	50	94,3	11	22,9	4	8,3
Skåne	602	414	69,0	186	31,0	523	87,0	78	13,2	29	4,9
Stockholm	797	532	67,3	259	32,7	678	85,7	63	8,4	22	2,9
Sörmland	141	108	76,6	33	23,4	126	89,4	15	10,9	5	3,6
Uppsala	150	105	70,9	43	29,1	141	94,6	26	17,4	10	6,7
Värmland	267	201	75,3	66	24,7	251	94,0	28	10,8	5	1,9
Västerbotten	129	95	73,6	34	26,4	126	97,7	12	9,5	3	2,4
Västernorrland	73	56	76,7	17	23,3	70	95,9	12	17,1	3	4,4
Västmanland	579	430	74,3	149	25,7	495	85,8	77	13,9	25	4,5
Västra Götaland	1 279	910	71,2	368	28,8	1149	89,9	181	14,4	55	4,4
Örebro	225	180	80,4	44	19,6	212	95,1	34	15,7	5	2,3
Östergötland	580	444	77,2	131	22,8	546	94,8	67	12,3	15	2,8
Riket	6 504	4 726	72,9	1 758	27,1	5 902	91,1	806	12,8	229	3,6

Previous measures

Explanations given by patients for their problems

Sometimes the patient is told that osteoarthritis is 'wear and tear' in the joints. This choice of words to describe the condition is unfortunate as it turns one thoughts to worn out joints and that one should not "wear them out" further through activity. In reality, research shows that the cartilage benefits from dynamic loading in conjunction with walking, cycling and exercise. The risk of osteoarthritis and ill-health is greater among those who are not active than among those who are active. We want osteoarthritis to

be called osteoarthritis of the same way that diabetes is used as a standard term instead of 'sugar disease'. It is important that those who are affected know what osteoarthritis means, i.e. that 1) osteoarthritis is a disease that affects the whole joint – not just the cartilage; 2) there is an imbalance between build-up and breakdown in the joint, where the degrading factors are too great; 3) there is a great deal a person can do on their own to influence symptoms and function.

Many people have found out that they have osteoarthritis but do not know what osteoarthritis means or what they should do about it (Figures 48 and 49).

Figure 48. Hip. How the problems have been described before the SOASP, broken down according to county council, 2014.

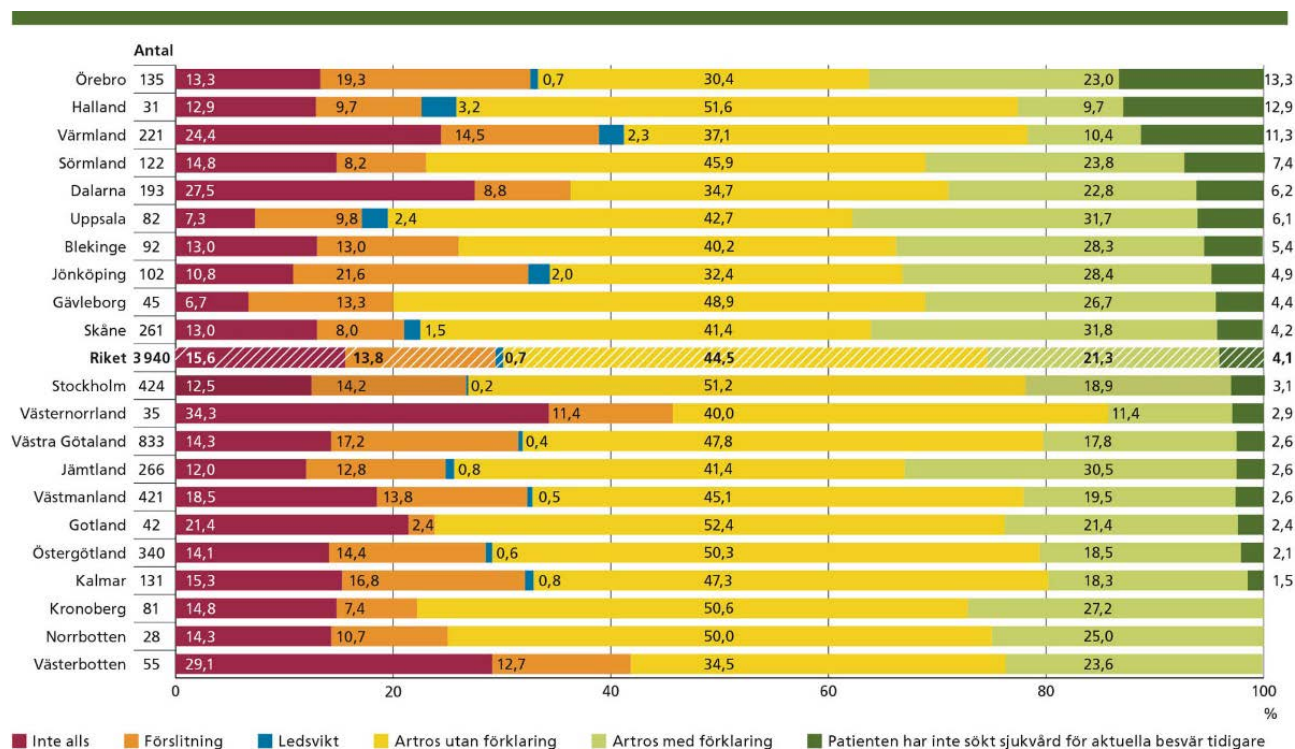
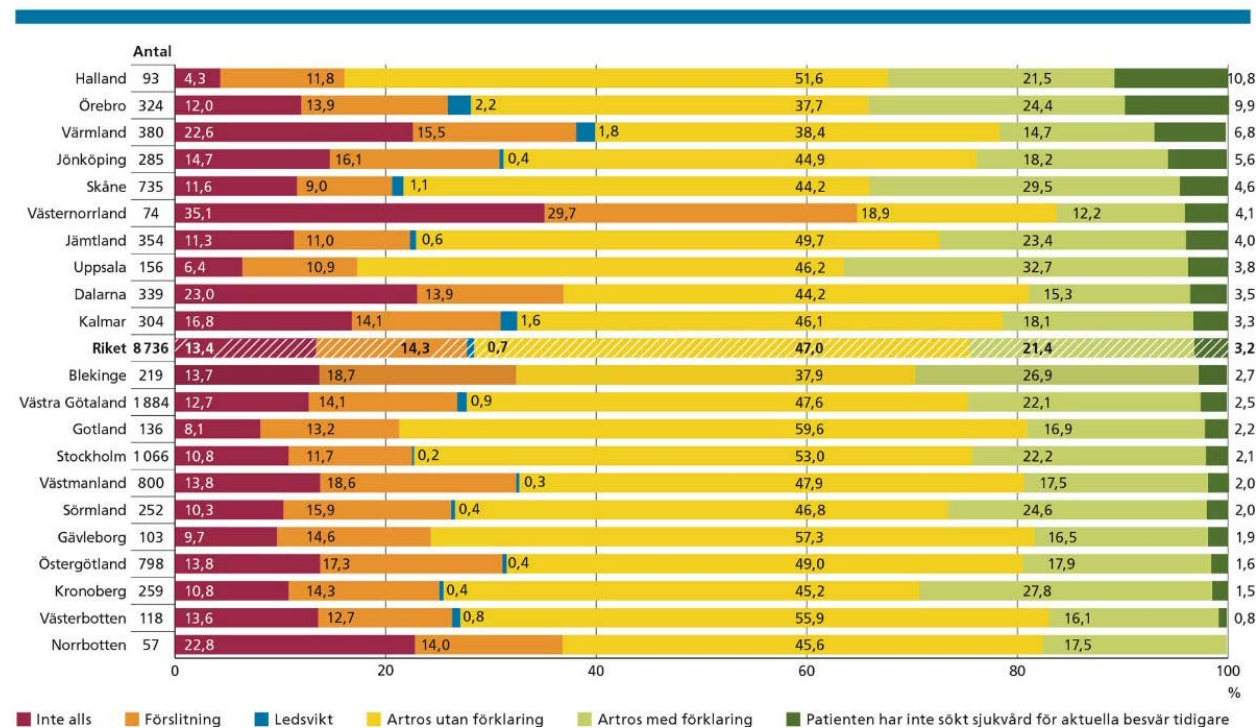


Figure 49. Knee. How the problems have been described before the SOASP, broken down according to county council, 2014.



Gender perspective in BOA

There are more women than men who are affected by osteoarthritis. In the BOA Register, a higher proportion of women suffer from problems in several joint systems but achieve the same level of improvement in pain as the men. A larger proportion of the men are afraid to remain mobile and drop out of the SOASP.

The proportion women in the BOA Register is 70 per cent

Studies of the prevalence of osteoarthritis in the population show that there are slightly more men than women who have osteoarthritis in the under-45 age group, whilst in higher age groups osteoarthritis is more common among women. In the BOA Register, 70% are women. The variation in the number of women in the SOASP and the Register between county councils is small, which could be an indication that the population is representative.

Figure 50. Hip. Proportion of women at the first appointment to 2013-2014*

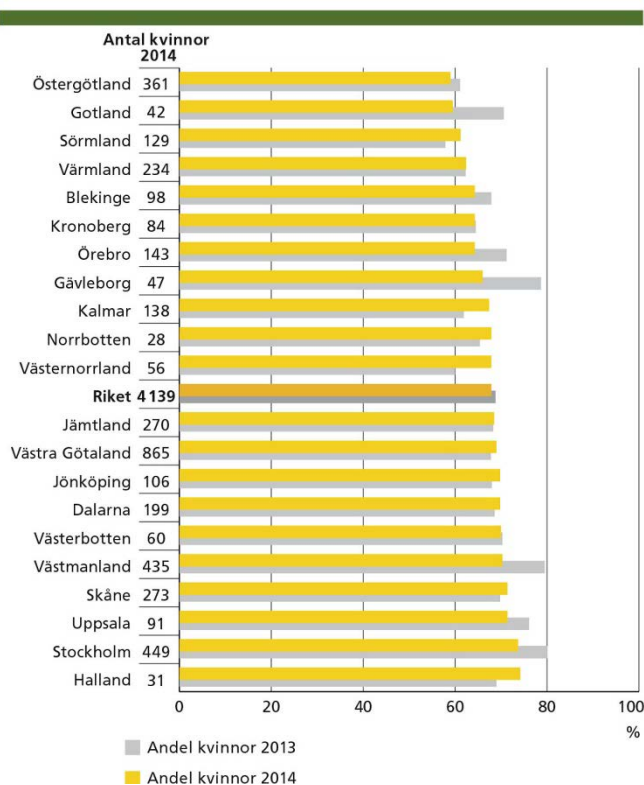
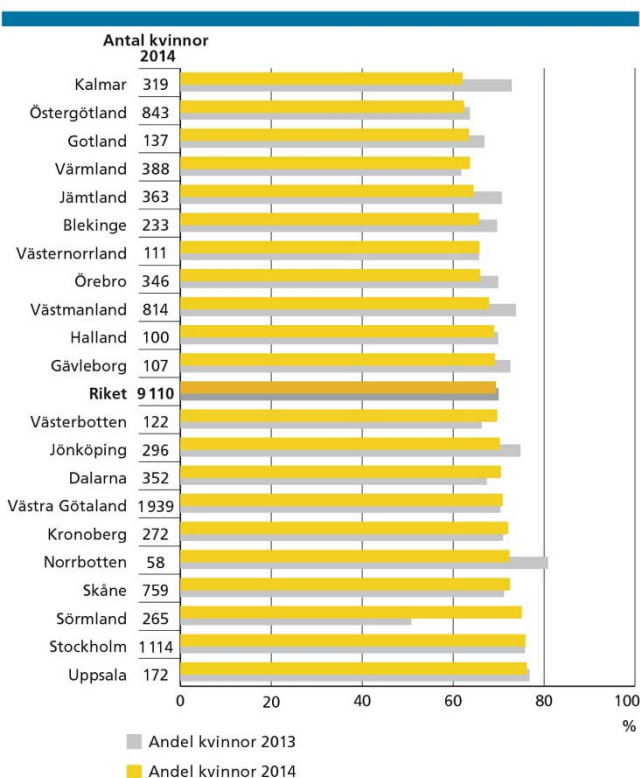


Figure 51. Knee. Proportion of women at the first appointment 2013-2014



* Certain county councils have fewer than 50 registrations per year

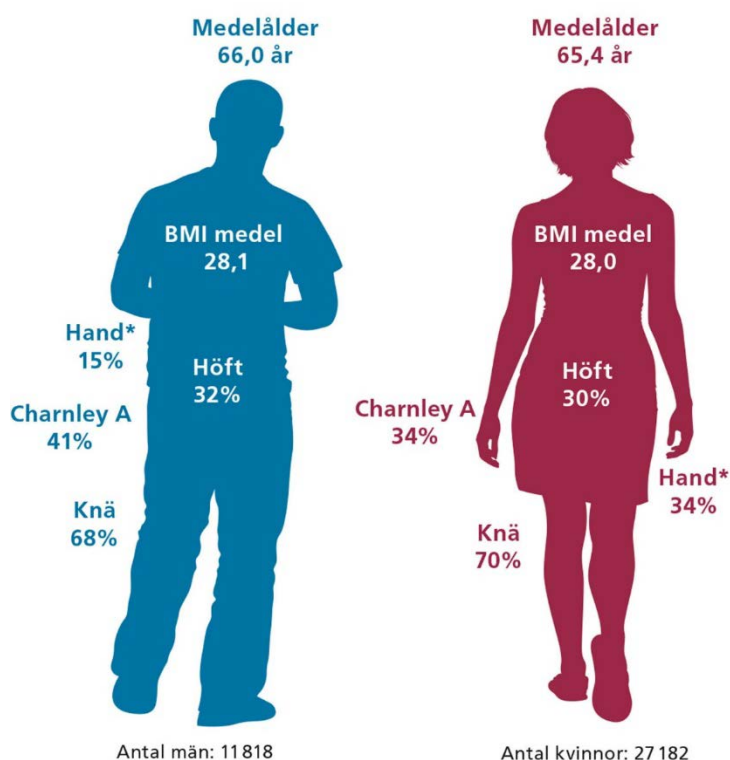
*Certain county councils have fewer than 50 registrations per year.

Women in the BOA Register have a higher prevalence of problems in several joints

The women in the BOA Register more often have problems in their hands more often than men. The women also have problems in both the hip and knee more often or other diseases that affect their ability to walk (Charnley C). Overall, this

could be an indication that women to a greater extent have generalised osteoarthritis, i.e. osteoarthritis that affects several joint systems, which possibly means that women have poorer prerequisites for achieving a successful result after the SOASP.

Figure 52. Age, BMI, number with most problems in the hip or knee, hand problems and unilateral problems for men and women



* Proportion of those with hip or knee problems could also report problems in the hand/finger joints.

Table 23. Age, BMI and Charnley class for men and women at the first appointment, 2014

	Män		Kvinnor	
	Höft	Knä	Höft	Knä
Antal	1 329	2 789	2 810	6 321
Medelålder	67,1	66,3	66,8	65,2
Genomsnittlig BMI	27,5	28,4	26,8	28,6
Andel Charnley A (%)	39,2	40,9	32,7	34,5
Andel Charnley B (%)	8,5	23,2	6,7	18,1
Andel Charnley C (%)	52,2	35,8	60,5	47,4

Women take NSAID more often for their joint problems

NSAID should be used with caution by elderly persons due to the risk of side-effects. One of the quality indicators for the National Board of Health and Welfare Open Comparisons of the quality and efficiency of the health service is 'Number of people with osteoarthritis \geq 75 years who are prescribed NSAID treatment'. The National Board of Health and Welfare writes in its report *Indicators for good pharmaceutical therapy among the elderly*: "Cox inhibitors (NSAID) (M01A, excluding M01AX05): Used sometimes by the elderly in conjunction with a pain condition where the product does not have any clear benefits over paracetamol (e.g. osteoarthritis). When using these products to treat the elderly, there is an increased risk of intestinal wounds and bleeding, fluid retention, cardiac incompetence and reduced renal function. Apart from the fact that Cox inhibitors can make heart failure worse, they can through the interaction of medicines reduce the effect of both diuretics (loop diuretics and in certain cases thiazides) as well as ACE inhibitors. Furthermore, new studies show that at least certain Cox inhibitors (including the non-selective) can also increase the risk of myocardial infarction and stroke. It should be noted that certain Cox

inhibitors can be purchased over the counter and can therefore be acquired without a prescription from a doctor and thus without information."

As NSAID can be purchased from a newspaper kiosk or a grocery store, it is difficult to control the use of NSAID with the aid of the pharmaceutical register, which only includes medicines that are prescribed by a doctor. Nor is it certain that the patient will remember to tell the doctor about the use of NSAID and surveys show that patients feel that the health service seldom asks what medicines the patient is taking. There are no certain sources for gathering information and consequently the indication is difficult to interpret. It is therefore not possible either to state an appropriate target for the indicator. Somewhat vaguely, the National Board of Health Welfare states that "the proportion ought to be lower than among persons under the age of 75 ". The BOA Register contains self-reported information that shows that the proportion over the age of 75 who state that they take NSAID is lower than the proportion under the age of 75. The proportion of women who take NSAID is slightly higher, both in the under-75 group and in the over-75 group compared to the proportion of men. The reason for this difference is not known.

Figure 53. Hip. Number of men and women over and below the age of 75 who have taken NSAID

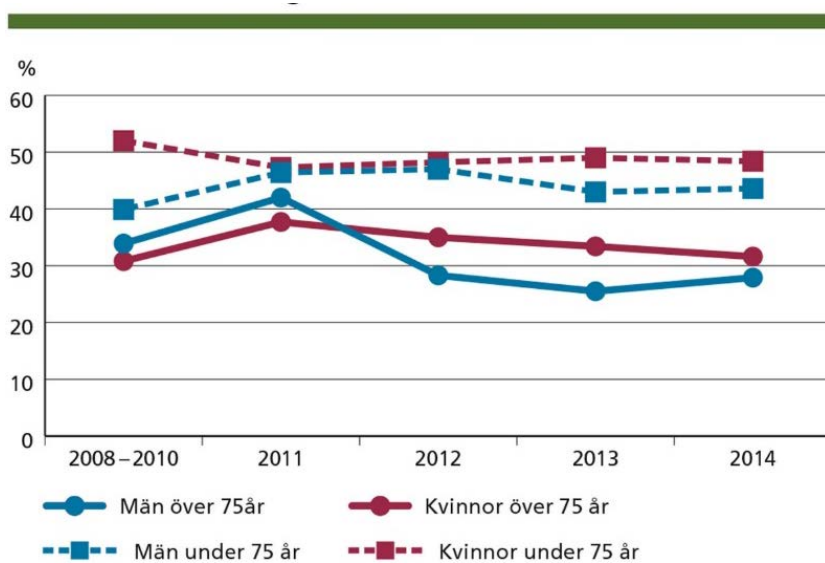
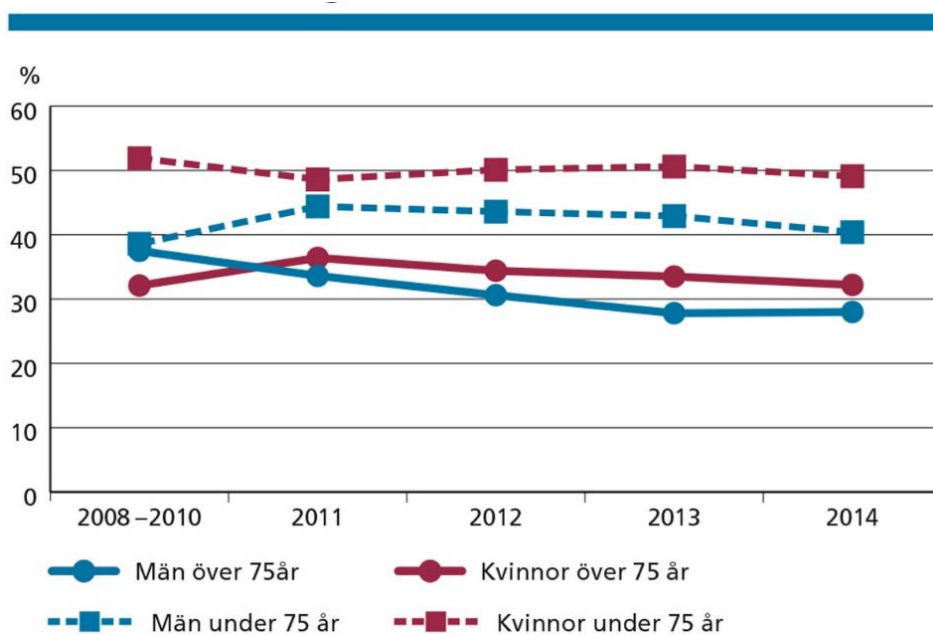


Figure 54. Knee. Number of men and women over and below the age of 75 years who have taken NSAID



Civil status and sick leave for men and women who have attended a three-month follow-up.

Table 24. Hip. Characteristics of patients who have attended an individual follow-up appointment after three months, 2014.

	Antal besök*	Civilstatus				Född i Sverige		Sjukskriven**		Sjukskriven** > 3 mån	
		Sammanboende		Ensamboende		Antal	%	Antal	%	Antal	%
		Antal*	%	Antal*	%						
Man	867	700	81,2	162	18,8	801	92,7	69	8,3	24	2,9
Kvinna	1977	1361	69,1	609	30,9	1831	92,8	157	8,3	66	3,5
Totalt	2844	2061	72,8	771	27,2	2632	92,8	226	8,3	90	3,3

* Missing data means that the number can differ between the variables.

** Sick leave due to hip or knee problems.

Table 25. Knee. Characteristics of patients who have attended an individual follow-up appointment after three months, 2014.

	Antal besök*	Civilstatus				Född i Sverige		Sjukskriven**		Sjukskriven** > 3 mån	
		Sammanboende		Ensamboende		Antal	%	Antal	%	Antal	%
		Antal*	%	Antal*	%						
Man	1892	1540	81,8	343	18,2	1755	93,2	217	11,8	45	2,4
Kvinna	4612	3186	69,2	1415	30,8	4147	90,2	589	13,2	184	4,1
Totalt	6504	4726	72,9	1758	27,1	5902	91,1	806	12,8	229	3,6

* Missing data means that the number can differ between the variables.

** Sick leave due to hip or knee problems.

Similar improvement in pain following the SOASP for men and women although a larger proportion of men are afraid of being mobile and want surgery, which is also the outcome

The SOASP has a similar effect on pain intensity for men and women. However, a larger proportion of men are afraid that the joint will be damaged by physical activity, they want surgery both before and after the SOASP, and they also drop out of the SOASP as a result of surgery. A

slightly higher proportion of the men also drop out of the SOASP for reasons other than surgery. The proportion of insufficiently physically active persons is greater among men, both before and after the SOASP, although the proportion who increase their level of activity after three months is roughly the same as for women. There is a higher proportion of women who make use of what they have learnt in the SOASP at least once a week.

Table 26. Comparison between men and women at the first appointment, three months and 12 months

	Höft						Knä					
	Män			Kvinnor			Män			Kvinnor		
	Första besök	3 mån	12 mån	Första besök	3 mån	12 mån	Första besök	3 mån	12 mån	Första besök	3 mån	12 mån
Smärt-VAS	47,0	37,0	40,8	48,4	37,8	41,1	46,7	34,7	37,2	48,7	36,0	37,2
EQ5D	0,66	0,72	0,68	0,65	0,71	0,67	0,67	0,74	0,72	0,65	0,72	0,70
Andel med rörelserädsla (%)	20,6	6,9	11,4	11,1	3,2	5,4	22,3	7,8	13,2	15,3	4,7	7,0
Andel som använder artros-informationen varje vecka (%)		96,8	84,8		98,1	90,8		96,8	84,2		98,1	90,4
Andel som avbrutit (%)		9,2	19,2		6,6	13,5		10,1	17,9		6,9	13,2
Andel opererade (%)		11,8	32,3		8,9	24,4		11,3	22,7		7,6	17,2
Andel som vill opereras (%)	25,9	17,4	28,9	15,2	11,4	21,8	26,6	14,5	23,0	15,9	9,4	14,7
Andel otillräckligt fysiskt aktiva (%)	25,7	21,1	28,1	23,7	17,0	23,9	27,4	20,0	26,1	25,3	19,1	23,9

Improvement work in BOA

An increasing number of clinic managers are discovering the benefit of the National Quality Register in their own areas. In the BOA Register it is possible to follow the effect of a physiotherapeutic intervention, the SOASP, and also learn more about resource utilisation and quality in healthcare. The results from BOA can be used to improve the whole care chain for patients with osteoarthritis of the hip and osteoarthritis of the knee.

Using register data for the benefit of patients and operations

The use of the National Quality Register on the operational level is still relatively new for physiotherapists. There is a need for increased knowledge about the potential of a quality register in healthcare and knowledge about improvement, both on the basic training level and also for physiotherapists working clinically. For a register to be of benefit to the patients at an individual clinic, it is required that 1) the

physiotherapists have time allocated for registration work; and 2) that they have time to extract and study their own results and give thought to possible areas for improvement. A further factor that would probably contribute strongly to use of the data is if the data is requested by a clinic manager or the equivalent. Discussing the results at workplace meetings is also a stimulating way of using data to improve the efficiency of routines and minimise time-consuming elements at the operational level. Through BOA we are able to disseminate practical knowledge about improvements. We arrange one-day training programmes, both as commissioned training and under our own auspices, in order to increase the number of units that report to the BOA Register and to increase knowledge of how it is possible to extract and use one's own results on the operational level. The fact that the units use their results means that possible incorrect input is easier to discover, thus improving the input and quality of the data.

Work on implementing a working approach according to BOA for patients with osteoarthritis in the Västra Götaland Region

Care Choice Rehab was introduced in the Västra Götaland Region on September 1, 2014 and 84 rehab units were in operation as at March 31, 2015.

The Requirement and Quality Handbook, point 2.3, states:

The rehab units must follow the recommendations of the BOA Register regarding better management of patients with osteoarthritis, i.e. offer the SOASP, register in the National Quality Register, BOA, and use the quality register to follow up internal operations and ongoing improvement work.

The aim of registration in the Requirement and Quality Handbook is that the rehab units should offer the SOASP and register in the BOA National Quality Register, is that patients with osteoarthritis receive the same evidence-based care. This requirement has meant that this standardised patient exercise/SOASP will soon be available in all municipal areas in Västra Götaland.

After a couple of months, all rehab units in the Västra Götaland Region receive an initial discussion visit by a medical auditor from the Care Choice Unit. By that time, a follow-up has been conducted of the progress made by the units in starting up the SOASP. All rehab units are running the SOASP, or are planning to attend a training course in the concept in order to be to offer the SOASP and register in the National Quality Register.

The Västra Götaland Region has quality and follow-up indicators and two of these (ID number 27 and ID number 28) follow-up compliance with the BOA concept and registration in the BOA Register. Read more about the indicators under *Vård och Hälsa/För vårdgivare/VG primärvård*

(Care and health/For care providers/VG Primary Care) at www.vgregion.se (In Swedish only). A target-related payment is linked to registration in the BOA Register. Collaboration between a Care Choice Rehab medical audit, the BOA Register and the Västra Götaland Register Centre offers the opportunity to monitor the quality and results at each rehab unit.

For further information, please contact medical audit, Care Choice Rehab; vardval.rehab@vgregion.se.

Care of people with osteoarthritis in the county of Kalmar

The purpose of the project is to improve the care of people with osteoarthritis in the county of Kalmar by more people of working age who seek medical care for problems related to osteoarthritis of the knee, hip and hand taking part in the SOASP according to the BOA concept and registering in the BOA Register.

During the project period, April 2014 – April 2015, staff at the health centres in the county were informed about osteoarthritis and SOASPs and how they could refer patients to the SOASP/physiotherapist. The occupational therapists and physiotherapists in the county, both those employed by the county council and those in private practice, have been given the opportunity to attend a training programme to run an SOASP. A new clinic model has been tested at a district rehabilitation unit in the county in the form of an out-patient clinic for patients with osteoarthritis. The aim behind this type of clinic is to improve the patient flow and to establish a more structured approach for the patient group in question.

The results show that 51% of those who are registered in the BOA Register are aged 16-67 years. The number of new registrations in all age

groups has increased by 40% compared to the corresponding period the previous year, from 176 registered participants to 247. The mean age has fallen from 65.8 years in 2013 to 65.1 years. At the one-year follow-up, 93% of the participants stated that they make use of what they have learnt in the SOASP at least once a week. The number of participants who have been x-rayed before the SOASP has fallen by seven percentage points, from 89% to 82%. In a comparison between the measured periods in the project, there is an indication that full-time sick leave has increased whilst part-time sick leave has fallen.

To determine how many participants in the county's SOASPs only have problems in their hands, a routine has been created to calculate the number.

Through correct treatment and information earlier on in the course of the disease, patients suffering from osteoarthritis can themselves decide on an appropriate strategy in their daily lives with regard, for example, to the amount of exercise and the arrangement of daily activities that benefits their pathological picture and which ultimately also affects the number who are on sick leave. Once the majority of staff concerned at the county council and in private practice have been informed about the above, it is our hope that more patients will take part in the SOASPs or, if necessary, receive information individually.

Helen Lilja

Contact person for BOA in the County of Kalmar

A care process review led to more SOASPs in Västmanland

Starting in 2014, an SOSAP according to BOA was introduced on a broad front in Västmanland. The introduction took place as part of an overview of the entire care process for patients suffering from osteoarthritis of the hip or knee. The starting point for this work was not to introduce the SOASP according to BOA. The process review was

conducted due to the fact that there were indications from a number of quarters that osteoarthritis care was not functioning optimally. The Orthopaedic Clinic felt that many of the people who were referred were not suitable for surgery and they had not received adequate care up to the point at which the referral was made. Consequently, it was felt that they needed to start an SOASP under their own auspices. The outcome was successful for those patients who attended the SOASP. The vast majority were satisfied with the SOASP and subsequently chose not to meet an orthopaedic surgeon. When we investigated more closely how the care provider felt that osteoarthritis care functioned or did not function, the following problems emerged:

- Lack of clear guidelines
- Long waiting times at the orthopaedic department
- An SOASP on the wrong care level
- Poor communication between primary care/specialist care
- Uneven level of care quality depending on the care provider

We decided to introduce an SOASP on the primary care level, draw up clinical/diagnostic guidelines for deciding who should be referred to the SOASP, prepare a care programme for osteoarthritis of the hip or knee (primary care) and update a cooperation agreement between primary care and the orthopaedic clinic. The challenge in this work was mainly to successfully introduce the SOASP on a broad front at the primary care level. The prerequisites with regard to the number of physiotherapists in primary care in Västmanland is that there must be approximately 20 at public sector health centres, approximately 18 at smaller hospitals in Köping and Sala, approximately 25 in care agreements and a further 40 or so with what

is termed 'establishment' (private sector). Care Choice Västmanland reached a decision to commence procurement of an SOASP with the purpose of picking up physiotherapists in private practice to run a certain number of SOASPs each year. An agreement was also signed with the public care sector. The agreements include how many SOASPs each unit undertakes to run, registration in the BOA Register and the financial prerequisites for the running of each SOASP.

Apart from introduction of the SOASP, a care programme has been prepared, cooperation agreements have been updated and diagnostic/clinical guidelines have been drawn up to determine who should be referred to the SOASP. This has been disseminated well among the operating units, regardless of the way they operate, as there has been a good level of participation by doctors and physiotherapists in various working groups.

This has resulted in SOASPs being run in all towns in Västmanland. We have the capacity to receive 1,500 people per year in SOASPs in the primary care sector. Of the referrals received by the Orthopaedic Clinic, around 90% attended an SOASP before a referral was issued. The total inflow of referrals to the Orthopaedic Clinic for people with osteoarthritis of the hip or knee has fallen by 25% in just one year. The waiting time from referral to meeting an orthopaedic surgeon has fallen from 100 days to < 50 days.

Patrik Andersson

Contact person for BOA in Västmanland

BOA at Blekinge County Council; register data as a basis for improvement work

The national quality registers generate a large volume of medical data. Many people register but there is a lack of time and sometimes knowledge to analyse and interpret the data. Since autumn 2014, we at Blekinge County Council have worked

on a project that we have chosen to call the County Council Analysis Group. In this project we have gathered operational, register, data, statistics and improvement experts to work together to develop a structure that allows better utilisation of the registered data. When we see what the data show we can in the next phase initiate improvement work that develops healthcare provision.

Two units have worked with data from the BOA Register. The Linden Rehab Unit and the Karlskrona Rehab Centre have both taken part with their improvement teams. The work commenced with an exchange of experience between the teams. They then worked on mapping the patient's past and they have also learnt how to move forward and handle data from the Register. Register data has been collected since 2010.

These data files were then processed in a presentation module prepared in the Qlikview program. Register data are presented in various graphs and tables and it is possible to select the data that is of interest. Together with statisticians and register/improvement experts, the teams reflected on the unit's data and received help and support to analyse and interpret the results. We found a partial loss within individual variables and of three-month follow-ups, which affects the quality of the data and could result in a risk of error in the analysis.

With this insight, the initial improvement work was directed at enhancing the quality of the data. The teams have investigated the reasons for the low level of compliance. This has, among other things, resulted in improved routines, continuous follow-ups at workplace meetings and improvements in the appointment system. Both teams have increased the coverage and reduced the dropout rate. The coverage is now 80%. Working with data in this way has given the operating units a more in-depth understanding of

how to use register data to follow the effects of the treatment on the patients.

The collaboration and dialogues that have taken place within the group have resulted in greater interest and insight into the value of using quality registers as well as the importance of good data quality. The results in BOA became more understandable when they were broken down to the unit level and a graphic image was presented. This has also generated involvement, enthusiasm

and curiosity regarding improvement work based on the Register data.

The teams can now clearly see other areas that they need to work on in order to improve the care of patients suffering from osteoarthritis. The next step will be to disseminate the work that has been done within the group to other units who are working with SOASPs and the BOA quality register within Blekinge County Council.

Kristina Borén, Project Leader



Blekinge County Council analysis group: from the left, front row: Kristina Borén (Project leader), Susanne Albrecht (RC South), Inga-Lill Sjöbäck (Medical secretary, Linden), Tobias Arveteg (Administrator, KRC). **From the left, back row:** Patrik Lind (Physiotherapist, KRC), Lena Petersson (Occupational therapist, KRC), Sylvia Andersson (Physiotherapist, Linden), Mona Trulsson (Physiotherapist, KRC), Amanda Karlsson (Physiotherapist, Linden), Tadeusz Szablewski (Operations analyst, Department of Knowledge Development).

Implementation project Västernorrland County Council 2014

The County Council in Västernorrland has for a long time been something of an unknown area on

the BOA map. Many of the patients who have sought medical care for their hip and/or knee problems had not been able to see a physiotherapist. In spring 2011, the health centre

in Matfors began using the BOA concept. Some years later, SOASPs were also started according to BOA at the Sidsjö Health Centre in Sundsvall and at the Ankaret Health Centre in Örnsköldsvik but then things came to a halt.

A major factor behind why the spread of the SOASP according to BOA has not made a breakthrough in Västernorrland is the difficulty finding the correct information channel. The idea of introducing BOA as a joint means of managing patients suffering from osteoarthritis has come from the operational level and not from management, which unfortunately could have contributed to the proposal being low down on the priority list. In 2014, a change came about and in the autumn a BOA SOASP and register studies course was arranged and 21 units took part. Occupational therapists from two units also attended. In December 2014, 16 units stated that they intended to start an SOASP according to the BOA concept. The five units that will not run an SOASP cited lack of staff, resistance from management and the desire to continue using another model as the reasons.

A great deal of work remains, particularly with regard to dissemination of information and supporting the operating areas that have recently started. A proposal to introduce BOA into the primary care rulebook is currently being examined.

*Kerstin Frænell, Registered Physiotherapist
Contact person for BOA in Västernorrland*

Ongoing improvement work

The **Mobility and Health Unit in Linköping** took part in the BOA Register improvement project in 2013-2014. The aim initially was to improve the level of activity among the patients but when they began studying the figures they realised the importance of ensuring that the figures were actually entered into the Register. With a high

number of missing registrations after three months, it was difficult to measure and interpret the change over time. They thus took a step back in order to review the routines for the collection and registration of data. As part of this process, further goals were established, i.e. that 95% of all patients who complete the SOASP should complete the form in full, and that 95% of the forms that were completed in full should be registered by a physiotherapist. It was decided to follow the manuals in the Register and extract statistics on a monthly basis to monitor the registration process and by doing so evaluate results on the activity level.

As regards the primary goal behind improvement work, 83% of the units' SOASP patients were sufficiently active physically after three months during the period January 1, 2014 – December 31, 2014 (compared to 84% for the period April 1, 2013 – September 30, 2013). The proportion of forms entered into the system at the three-month follow-up increased from 58% in 2013 to 79% in 2014. There has thus been a rise in the number of completed and entered forms, which means that the figures are more accurate and provide a more correct picture. This requires a great deal of work and reminders in order to manage the improvements that have been introduced. At the same time, there is generally a great deal going on at the operating units and changes are taking place at an ever-increasing rate, resulting in considerable competition for time.

Through the improvement work, the unit has acquired greater knowledge of the quality register and it currently uses input data to a greater extent although it lacks direct feedback where input fed into the Register can be monitored on a continuous basis more easily and where it could be a more effective source of support in the day-to-day work.

The local rehab clinic in Trollhättan also took part in the improvement project in 2013-2014. The aim

of the unit was to reach patients earlier in the course of the disease. A short-term aim was to disseminate information about the SOASP among care providers and by doing so emphasise the importance of care provision at an early stage. A further aspect of this work was to examine the availability of the SOASP to patients who are still working. This resulted in a brief yet informative and professionally illustrated brochure about the SOASP aimed at the general public, as well as a poster with brief information about the SOASP that would be available at the rehab clinic, health centres and the orthopaedic clinic. There was also written information aimed at care staff to clarify what should be borne in mind when referring patients to the SOASP. The unit has continued to produce information about the SOASP in various contexts. Verbal information about the SOASP has been provided on site at all health centres (apart from one, which declined). The unit has also contributed to an article about the SOASP in the local newspaper TTELA in March 2014, and it will present the results of this work at a professional development meeting at each workplace. Views on the content and availability are now being gathered from participants in the SOASP. The improvement work has taken something of a back seat for part of the year as a result of the introduction of Care Choice Rehab in the Västra Götaland Region. The effect – reaching patients at an early stage in the course of the disease – will probably be seen in the BOA statistics in a year or two. The unit has very satisfied patients – 99%. The patient brochure that has been produced has contributed to more patients having realistic

expectations of the SOASP and thus being more prepared for the intervention.

Newly started improvement work

After a successful, albeit short, improvement project in 2013-2014, we were inspired to invite further units to take part in a new and slightly longer improvement project. In collaboration with the Västra Götaland Register Centre, we commenced the "Even Better" project. Seven units were interested from the outset although after the first six months, two units dropped out of the project, which will run between December 2014 and February 2016 and will comprise five learning seminars interspersed with work at home. Telephone coordination meetings are planned between the learning seminars.

Each unit maps the current situation and identifies potential areas for improvement using the BOA targets as a starting point. Each unit is unique and arranges its improvement work on a completely individual basis. The learning seminars are based on PDSA ("the improvement wheel") and include theory as well as time for the teams to carry out their own work. The learning seminars offer considerable opportunity for inspiration, a common exchange of experience between the participating teams and support in the planning and implementation of the improvement project.

In autumn 2015, we will commence work on stimulating and inspiring units in the Västra Götaland Region to use their data in local improvement work.

Patient interaction

The patients' thoughts and experience are valued highly in every aspect of the work being conducted by BOA, ranging from the design and content of the SOASP and the intervention itself, to a Steering Committee, research group and professional training. Collaboration between the profession and the patient organisation (Swedish Rheumatism Association) is beneficial to all parties.

Collaboration between the Swedish Rheumatism Association and BOA offers unique patient involvement on several levels. This takes place on the national level within in the BOA Steering Committee (represents both the Rheumatism Association and the patient perspective) and within a research group. It also takes place on the county level where BOA's contact persons cooperate with the Rheumatism Association district representatives for patient training and on the local level where the local physiotherapist has contact with osteoarthritis communicators in the Rheumatism Association who take part in the SOASP. Patient involvement can also be seen in the training of physiotherapists/occupational therapists and BOA is also involved in the Rheumatism Association's training of communicators. The significance of cooperation is emphasised in the training programmes, together with information related to how cooperation takes place in purely practical terms.

In the actual intervention, the SOASP, the Rheumatism Association's specially trained communicators cooperate with the physiotherapist/occupational therapist. The osteoarthritis communicator is a patient who has personal experience of living with osteoarthritis and the benefit of physical activity. The communicator is involved in an exercise session and then leads a discussion on how to live a good life, providing hints and advice about how to deal

with day-to-day life despite difficulties. The communicator should quite simply be a good role model for how to move on. By involving a patient (the communicator) with personal experience of living with osteoarthritis, a further approach can be created to put across the message that it is not dangerous to exercise when you are in pain and that exercise is a good form of treatment that works.

The aim of this collaboration is, among other things, to work through the communicators to raise the level of compliance with the treatment over time among the participants in the SOASP by raising the level of motivation and emphasising personal responsibility for one's own health. Another purpose is to work via the local Rheumatism Association to offer those participants who do not feel at home in the gym and who cannot or do not want to exercise at home, the opportunity to maintain continuity in the exercise regime following the end of the SOASP.

In 2014, almost 1,200 SOASPs were run through collaboration between the Patient Association and the primary care system. With the increase in the number of SOASPs there is also an increase in the demand for communicators. During 2014, around 75 new communicators were trained through the Rheumatism Association and today there are around 200 active communicators throughout the country in all 24 Rheumatism Association districts. Certain county councils still have few trained communicators (such as Gotland, Kronoberg, Jönköping and Blekinge). Often communicators from neighbouring county councils can cross the border to help out. A better solution in the long term could be to recruit good role models from the SOASPs and allow them to attend the communicator training programme run

under the auspices of the Rheumatism Association.

Working as an osteoarthritis communicator

One of communicators became involved by accident. Roger attended the SOASP and the plan was for an osteoarthritis communicator to take part. Unfortunately, no communicator was available. Roger, who had experience of living with osteoarthritis in his knees for over 20 years, and who enjoyed 'chatting', offered to talk about his experiences. It should be mentioned that he had also worked previously as a lecturer and educator. Following the session, Roger was asked if he wanted to take part at other locations. He has now received coaching via the Rheumatism Association in how to help others as a communicator and he has travelled around Western Sweden for a couple of years. Roger talks about experience, motivation, positive thinking and the vitally important social aspect; aspects that are not touched on in depth during the healthcare lessons in the SOASP. He has several good pieces of advice to share and discuss, such as 'everything is possible'. Negative thinking is disastrous and giving up is not an option. If you exercise for a few minutes immediately in the morning, you are already part of the way through your daily exercise session by the time you eat breakfast. You avoid having to go to bed or waking up with regrets about not doing something you really know you ought to have done. It is a question of finding the motivation. What is it that drives you? For Roger, who is an out and out competitor and former sportsman, it was crucial to exercise together with others. Seeing a woman, 20 years older but with similar problems, use the step-up board successfully when he couldn't do so, forced him to say to the physiotherapist "arrange it so that I can do that otherwise I'll leave". Through individually adapted exercise, he could after six weeks feel like a winner as he had also managed the step-up board without any problems. His competitive instinct gave him the motivation.

"If you don't have 15 minutes for exercise during the day then you have probably other problems," said Roger. "It's all about finding a smart way of fitting it into your daily life. If you use the commercial breaks on television to do part of your osteoarthritis exercise and break your state of inactivity you can do your entire daily exercise programme during the course of just one film. There are so many ways to exercise. He emphasises the importance of the arrangement and the SOASP – first learning what osteoarthritis is, then receiving advice from someone who has personal experience before moving on to your own exercise programme. Exercise in groups creates a sense of belonging and often leads to a great deal of pleasant banter along the way as the participants in the SOASP have already got to know each other to some extent during the theory session. Roger also points out that the SOASP is a good source of help for many people although it is not always the definitive solution. Even if the exercise programme doesn't work fully, it is not in vain. The SOASP and the exercise make you better equipped to meet and deal with a potential operation.

Roger also talks about the importance of liking the whole of yourself, even the parts of your body that are not as you would wish or do not work as you would like them to. Enjoy those days you feel good – don't destroy them. Analyse the reason why you feel worse on certain days in order to identify and break the habits and routines that can cause you to feel worse. You can also do a great deal yourself to create more days that you can enjoy. Use your friends for support and understanding but do not forget them when life is going smoothly. Make sure you have them there when you need them most. Remember also to be there for them. Listening can give a great deal in return. "There's a reason why we have a mouth and two ears."

Each communicator has a story with a common denominator

A patient with osteoarthritis of the knee does not necessarily experience problems in the same way as another person who also has osteoarthritis of the knee and certainly not the same as a person who has osteoarthritis of the hand. Even those communicators use their personal experiences as a starting point. They all have osteoarthritis in different joints. Some have undergone arthroplasty whilst some also have other diseases. What everyone has in common is the experience that life functions better if you are active. Ritva, who during the past year has been out working as an osteoarthritis communicator each week, has generalised osteoarthritis. Her story contains many elements that are common to other communicators. She realised that she needed more specific exercise in order to deal with her joint problems better than she had been doing. She received help from one of the physiotherapists. She goes to the physiotherapist when the problems are at their worst in order to receive hints and advice about how she can adapt her exercise. Up to now she has managed her joints well with the aid of exercise. The only joint

that required surgery, after 20 years with the disease, was at the base of her thumb. It was operated on when she could no longer change the gears on her bike. Now she is so strong that she no longer needs to feel afraid to try some form of exercise. In the morning she is alert and can manage more and she therefore chooses to exercise at that time. If she has decided to exercise then she exercises, regardless of how it felt previously. She instead adapts the exercise to the way she feels on the day. It doesn't matter if she can't do everything every time. She emphasises that exercise should be fun. There are many variants and each individual needs to think about how they want to continue with the exercises when they no longer go to the physiotherapist. The most important thing is to have the courage to take the first step, to actually get started with your own activity. Finding a person to exercise with makes it more difficult to drop out. Exercise must in some way be a natural part of day-to-day life. Ritva also speaks warmly about being active outdoors. Being outdoors you have many influences and it is easy to forget you are exercising and that you are in pain. After just a few hundred metres it often feels better.

Research

The BOA Register follows the routines for providing data for research that have been proposed by the National Quality Register administration office. Following a confidentiality assessment, the ethically approved research database on the server at Gothenburg University will be assigned a high encryption level and can only be accessed using what is known as two-factor authentication, which is allocated to the researchers in question. Information, including a popular science summary, about research projects that use the data in the BOA Register acquired from several principals, is published at www.boaregistret.se once a research contract has been drafted and signed.

Current projects

BOA has received nine applications for data provision for research purposes. Below is a brief summary of a selection of current research projects in BOA.

Belief in one's ability affects how much you increase your physical activity after the SOASP

Åsa Degerstedt

Osteoarthritis can cause pain and stiffness that could lead to a person not moving around and thus lead to a general deterioration in health. The pain can be alleviated by physical activity and one of the aims of the SOASP is to provide knowledge about self-efficacy and encourage regular physical activity and exercise. Previous studies have shown that the chances of successfully increasing your physical level of activity appear to be greater if you have faith in your own ability to influence the problems generated by your disease and that you feel reassured that you can deal with day-to-day life despite possible discomfort.

Data were studied from a total of 11,907 individuals who took part in the SOASP with the

overall aim of assessing the impact that belief in one's own ability when beginning the SOASP has on changing the level of physical activity at three and 12 months after the SOASP. The participants stated how many days during a typical week they were physically active for a total of at least 30 minutes and on a level that made them hot and short of breath. They also stated how certain they were that they could have an impact on their pain, tiredness, depression and other problems caused by osteoarthritis.

Belief in one's ability to counteract tiredness, depression and other symptoms that arise as a result of osteoarthritis prior to the SOASP revealed a link to how much a person increased their level of activity after the SOASP. Belief in one's ability to cope with pain prior to the SOASP did not reveal any link to how much they succeeded in increasing their level of physical activity.

Reflections regarding the Arthritis Self-Efficacy Scale-Swe of persons with osteoarthritis of the hip and/or knee– a Think-Aloud Study based on ten in-depth interviews

Sofie Bergman

Belief in one's own ability, self-efficacy (SE), to influence pain and other symptoms in persons with osteoarthritis is being evaluated in the BOA Register using two subscales (11 questions) from the Arthritis Self-Efficacy Scale-Swe (ASES-S). When conducting a quality examination of the validity and reliability of ASES-S, only a small number of people with osteoarthritis were tested. Clinical experience has shown that the questions in ASES-S are difficult for people with osteoarthritis of the hip and/or knee to answer. With the purpose of examining reflections by people with osteoarthritis of the hip and/or knee in relation to completion of ASES-S, a qualitative

study involving ten in-depth interviews was conducted using the Think-Aloud method. The patients were recruited from a physiotherapy clinic in Stockholm using a strategic selection procedure. The material was analysed using content analysis. This resulted in three themes with categories: The first theme 'ASES-S validity' described reflections that could affect ASES-S validity negatively and/or positively. The second theme 'Consequences of completion of the form for the person completing the form' described positive and negative thoughts linked to the communicators' self-image/symptoms. The third theme 'The general validity of the evaluation instrument' described reflections regarding factors that could influence validity when completing the evaluation instrument generally. The conclusion was that ASES-S proved to have shortcomings in terms of validity for people with osteoarthritis of the hip and/or knee. In addition, the questions in ASES-S affected the individual's belief in their own knowledge regarding the management of osteoarthritis-related problems. Self-efficacy is a potent concept although ASES-S has shortcomings in terms of validity for the subscales 'Pain' and 'Other symptoms in persons with osteoarthritis of the hip and/or knee'.

Effect of the SOASP on the level of physical activity in patients with osteoarthritis of the knee or hip

Anna Ernstgård

Globally, osteoarthritis is one of the leading causes of inactivity. Inactivity is negative both for the patient's pathological picture and from a health point of view. To maintain good health, the World Health Organisation recommends physical activity of at least moderate intensity for 150 minutes per week or for 30 minutes on the majority of days in the week.

In a study using data from the BOA Register, an examination was made of how the SOASP affects the proportion of patients with osteoarthritis who achieved the recommended level of physical

activity after three and 12 months respectively. As part of the study, an analysis was also made of how the level of physical activity is affected by overweight, obesity, gender, age, osteoarthritis in several joints (hip and knee joints) or comorbidity (the incidence of other diseases that affect the ability to walk). Health-promoting physical activity was defined in the study as physical activity of at least moderate intensity for 30 minutes per day for four or more days per week, or at least 150 minutes per week. The level of physical activity was assessed at the first appointment with the physiotherapist and during two follow-ups – after three months and after 12 months.

After three months, the SOASP resulted in an increase in the proportion of patients who achieved the recommended level of physical activity from 77% to 82%. The improvement was lost after 12 months. Not achieving the recommended level of physical activity was associated with overweight, obesity, male gender, osteoarthritis in several joints and the incidence of comorbidity. The SOASP is an important tool for the purpose of increasing the degree of physical activity in this group of patients. To bring about permanent changes in activity level, more follow-up sessions following conclusion of the SOASP could be a solution. Patients who are overweight or obese, or who have several affected joints or comorbidity, could require extra support in order to maintain the recommended level of physical activity.

Information and physical exercise for persons with osteoarthritis of the hip or knee – a clinical study

Mia Johansson

During the period 2008-2011, a Programme was run at the Orthopaedic Clinic at the Norrland University Hospital in Umeå, for a total of 244 individuals with osteoarthritis of the hip or knee who were referred to the orthopaedic surgeon by doctors in the primary care sector. The aim of this

study was to evaluate the SOASP using a questionnaire that measures each individual's self-perception of problems related to their knee or hip using joint-specific instruments: Knee injury and Osteoarthritis Outcome Score (KOOS) and Hip disability and Osteoarthritis Outcome Score (HOOS). They measure pain, symptoms, activity in daily life, sport and leisure function and quality of life, and are available at www.koos.nu.

Each participant was asked to complete KOOS or HOOS at the first appointment with the physiotherapist before the SOASP and during a follow-up appointment after three months. The results show that those with osteoarthritis of the knee improved significantly on all the subscales in KOOS, whilst patients with osteoarthritis of the hip improved with regard to pain and symptoms but not in other respects. Of those patients who were referred to the Orthopaedic Clinic and who were offered the SOASP, it appeared that women aged 65 and under with osteoarthritis of the knee derive greatest benefit from the SOASP. Joint-related quality of life was the subscale that improved most.

The study shows that the SOASP has a positive effect for people with osteoarthritis of the hip or knee who were referred to an orthopaedic clinic. The results concur with earlier research on the subject and confirm the insight that information and exercise in a structured form ought to be offered to all persons with symptoms of osteoarthritis.

The effect of involvement of the osteoarthritis communicator in the SOASP

My Stålberg

The purpose was to investigate the effect of the involvement of the osteoarthritis communicator in the SOASP on self-assessed pain, quality of life, fear that the joint will be damaged by physical activity, application of knowledge from the SOASP and level of physical activity.

A total of 6,487 patients in the Register were followed up after three months and twelve months prior to the end of 2013 and were thus included in this study. The patients were divided into two groups – those who had attended a talk given by an osteoarthritis communicator and those who had not attended a talk given by an osteoarthritis communicator. The groups were comparable at baseline in terms of age, gender and number of months with problems in the joint in question, and also with regard to the joint that was affected, the hip or knee, and with regard to VAS pain, EQ-5D and the number of minutes of activity per week. In total, 54.4% of the patients attended a talk given by an osteoarthritis communicator.

The results after three months and 12 months were compared for the two groups and revealed no difference for the variables that were studied in conjunction with an unadjusted comparison. It is possible that the communicator affects different individuals to a varying degree and that a 30-90 minute discussion with an osteoarthritis communicator is not sufficient to pick up on a change at group level. To deepen the understanding of the significance of the involvement of the osteoarthritis communicator for different individuals, use can be made of a qualitative study.

Self-assessed pain and health-related quality of life among participants in the SOASP with osteoarthritis of the hand and those without osteoarthritis of the hand

Lice-lotte Johansson

The BOA Register reveals that one-third of the participants had problems in their hands – 37% of the women and 17% of the men. A comparison of individuals with and without hand problems, broken down according to gender and age, revealed that women with hand problems had the highest level of pain and the lowest level of quality of life at the first appointment, whilst men without hand problems emerged with the highest

score on both subscales. All participants felt they had reduced pain according to VAS after the SOASP. The biggest decrease was for women under the age 65 without hand problems, whilst men over the age of 65 with hand problems revealed the lowest degree of change.

All participants estimated an increase in health-related quality of life according to EQ-5D at the three-month follow-up. The absolute change at group level was of the same magnitude for both those with and without hand problems. The biggest improvement was seen among those under the age of 65 without hand problems, whilst the smallest difference was noted for men over the age of 65 with hand problems.

A comparison of patients with osteoarthritis who choose to exercise and those who do not choose to exercise following completion of the theory section in the SOASP – a register study

Anna-Marika Eggertsson

Of those patients who were registered in the BOA Register, 15-20% chose not to attend the

individual exercise session. This study has investigated whether these patients differ from those who choose to take part in the exercise session in terms of age, gender, body mass index (BMI), civil status, level of education, problems in the hip or knee, pain, fear of movement, difficulty walking, previous physical level of activity, belief in their own ability and satisfaction with the SOASP.

The results show that patients who have a greater belief in their ability to influence their pain and their symptoms tended to a greater extent to choose participation in the exercise session. No significant differences could be seen between the group that chose to take part in the exercise session compared to the group that chose to refrain in terms of the other variables at the first appointment. The patients who had chosen to take part in the exercise session were assessed by the SOASP to be "very good" to a greater extent.

New projects in BOA

Further development of evaluation instruments in the BOA Register

In total, studies of the Arthritis Self-Efficacy Scale led to a new study where the aim was to make use of statistical methods (item-response analysis) to clarify which of the 11 questions are information-bearing, and therefore essential, and which do not add further information to the calculation of the subscales in ASES-S. The aim is to reduce the number of questions without losing information. In the same way, there are ten alternative answers currently included in each question (in the form of a Likert scale) which are to be analysed and processed in order to reduce the number of alternative answers. This reworked form will possibly contain questions that are

formulated slightly differently and will subsequently be tested for validity and reliability in accordance with routines applied in conjunction with the development of new questionnaires. The aim is to replace the existing questions with the reworked questions and to use the results of the item-response analysis to 'recalculate' the data that has already been gathered in the BOA Register.

Publications in scientific journals

Thorstensson C. A. et al., Better Management of Patients with Osteoarthritis: Development and Nationwide Implementation of an Evidence-Based Supported Osteoarthritis Self-Management Programme. *Musculoskeletal Care*, 2014.

Discussion

The SOASP works

The SOASP leads to reduced pain, better health-related quality of life, reduced consumption of joint-related medicine and an increased level of physical activity. An unpublished survey conducted to determine which patients derive the best effect from the SOASP, showed that the SOASP appears to work equally well irrespective of age, gender, BMI, which joint is most problematic, the severity of the problems or the level of activity. The SOASP does not function equally well for all patients with osteoarthritis although the descriptive factors mentioned above do not affect the proportion of patients who have improved or what the average level of improvement might be. It is of course positive as we have good grounds for recommending evidence-based treatment in the form of the SOASP to everyone with clinically diagnosed osteoarthritis of the hip or knee. We have also made an attempt to determine which SOASP arrangement produces the best results. This is also an area where we cannot make a general estimation to ascertain if there are any clear tendencies towards a particular arrangement producing better results than another arrangement. These first analyses are unadjusted, which could conceal links caused by other variables. Further analyses will be refined and adjusted for factors that could be envisaged to impact on the outcome, such as socioeconomic factors. We also intend to study how patient compliance with the SOASP content could possibly affect the outcome.

News in this year's Annual Report Indicators

In this Annual Report we have for the first time presented a number of indicators that in time could be used to compare a trend over time and in improvement work, such as the proportion of patients who experience a sufficiently large

decrease in pain after the SOASP for it to be clinically significant, or the proportion who actually increase their physical level of activity from insufficient to sufficient in order to avoid ill-health. Comparing the proportion who respond to treatment, so-called responders, produces a result that is not directly affected by individual values in the same way as a mean value. A disadvantage of reporting the proportion of patients with a change that is higher than a certain value is what is termed the ceiling and floor effect. This means that those who already have values close to the maximum or minimum cannot change to the extent required to be categorised as changed. These patients will be in the unchanged group. To address this, we have for certain indicators chosen to report "unchanged good" and "unchanged bad". The BOA Register has already chosen targets that can be used to measure the effect on the result and process. To achieve an improvement in the EQ-5D by 0.1 after 12 months, 80% of the patients must achieve 150 activity minutes after 12 months, the mean age at the first appointment must be reduced to 58 years and the proportion of those x-rayed prior to the SOASP must fall. The National Board of Health and Welfare has proposed that the target for the proportion of those x-rayed prior to the SOASP should be in the range 50-70%. These targets have been set relatively high and change is 'sluggish', i.e. it could take time before the change and improvement work produces an effect and the targets are achieved. Several of the indicators are difficult to influence through the work done directly in the SOASP, such as mean age or the proportion who are x-rayed. The new proposed development indicators are in some cases related more to the clinical work at the unit. We will stepwise test and evaluate the validity of the indicators in order to in time be able to deliver some of them, such as *Healthcare in figures* (read more about *Healthcare in figures* at

www.kvalitetsregister.se). To encourage greater use of the results from the Register, work is in progress on improving the output data functions and making them more user-friendly. Our aim is that there should be indicators aimed at decision-makers and operational managers as well as users, patients and the general public, thus stimulating development and improvement.

Medicines

Physical activity has an equally good effect as medicine pain in conjunction with osteoarthritis. A change in the patient-reported use of joint-related medicine could be a way of measuring the effect of the SOASP although it is easier to measure the proportion who state that they have stopped taking medicine. Some people would need to begin with pain relievers for a period and use pain relief in order to commence physical activity. However, many patients with osteoarthritis are afraid of the side effects and do not take medicine even if they are in pain. They could need to learn when and how they should use pain-relieving medication in order to live a good, active life. In the BOA Register we do not ask how often or how much medicine is taken. Nor do we ask whether the medicine has been prescribed by a doctor or purchased over the counter. These are factors that need to be analysed in greater detail together with the medicines patients have stopped taking or begun taking before any conclusions can be drawn about what is a good result. County council areas where a large proportion have stopped taking medication rather than started could be said to be a good trend. Some 55% of those with osteoarthritis of the knee still take joint-related medicine after the SOASP whilst 20% have stopped. For osteoarthritis of the hip, 60% still take joint-related medicine after the SOASP and 15% have stopped. Only 6% began taking joint-related medicine after the SOASP.

Gender perspective

This year we have opted to compile and compare

descriptive data and results for men and women in separate sections with the aim of highlighting differences and similarities. We can see that women in the BOA Register suffer more often from problems in the hand and finger joints than men. The women also have problems more often in both the hip and knee or other diseases that affect their ability to walk (Charnley C.). In total, this supports the assumption that women to a greater extent have generalised osteoarthritis, i.e. osteoarthritis that affects three or more joint systems, which possibly puts women in a less favourable position to achieve a successful result following the SOASP. However, the SOASP does have an equal effect on pain intensity and level of activity for men and women, which supports the assertion that the differences that existed initially do not have any significant effect on the outcome of the SOASP. The differences between the genders prior to the SOASP could also support the assertion that women wait longer before seeking help or that it takes longer before they receive adequate help. A higher proportion of men are afraid that their joint will be damaged by physical activity and a higher proportion state that they would prefer to undergo surgery both before and after the SOASP. Men also drop out of the SOASP to a greater extent, primarily as a result of an operation but also for other reasons. The women in the SOASP take the information on board and use what they have learnt to a greater extent than the men, both after three months and after one year. The gender differences that can be seen at the first appointment could also be a result of conscious or unconscious differences in the way staff in the healthcare system treat patients of the same or opposite gender. There is a series of studies that show that the healthcare system is not gender neutral. Among other things, differences have been highlighted between male and female doctors with regard to discussion times, patient focus and the prescribing of medicine. It is mainly women who work in the SOASP and the physiotherapists in the primary care sector are also mainly women. The vast

majority of orthopaedic surgeons are men. Two out of three patients with osteoarthritis (in the BOA Register) are woman. If and how this gender division affects compliance and attitude to treatment among men and women needs to be highlighted in greater detail and depth.

Increasing number of patients with osteoarthritis receive evidence-based treatment

Our estimates show that more than 80,000 people, representing 1.9% of the population over the age of 45, seek out-patient care each year, citing the diagnosis osteoarthritis of the hip or knee as the reason. This is a slight increase compared to the estimates in the Register from previous years when the figure was 1.5%. Despite the fact that this involves people with pain in their joints, it is still pleasing that more people are actually seeking care. The proportion increased mainly during 2014, when 3.2% of the population over the age of 45 went to a doctor in the primary care sector as a result of osteoarthritis. On the other hand, there is a large number of unrecorded cases of people who never sought help for their problems in the belief that no treatment is available. Calculations from the Skåne Region show that 25% of the population over the age of 40 have been diagnosed with osteoarthritis of a joint and it is estimated that there are many times more individuals who have not sought help for their problems and have thus not been diagnosed.

Correct information – not only given to the recipient but also be perceived as being correct by the recipient

Over the years, osteoarthritis has become a more accepted concept and a decreasing number describe osteoarthritis as 'wear and tear', which is gratifying. However, one in three patients still state that they have not received any information whatsoever about what may have caused the problems or they have been told that they have

'worn joints'. It is possible that healthcare staff and doctors have informed the patient correctly. What the healthcare system could also need to do is ensure that the information is received and understood correctly. Of those who commenced the SOASP in 2014, many state that they have been told that they have osteoarthritis but they are not certain exactly what osteoarthritis is. It ought to be stated that osteoarthritis is an increasingly common disease in the population as a whole, that the prognosis is good and that it can be prevented and treated. The best treatments are in the majority of cases those that the patients themselves can learn to perform, such as the SOASP.

Optimisation of resources in the healthcare system

Physiotherapists are a relatively unutilised resource in the healthcare system in many quarters. Physiotherapists can make the diagnosis osteoarthritis according to the clinical criteria prescribed by the National Board of Health and Welfare and initiate adequate evidence-based treatment early on in the course of the disease and by doing so relieve the pressure on doctors in the primary care sector as well as orthopaedic clinics. Many patients with joint problems still go to a doctor. In 2014, an average of 3-4% of the patients in the BOA Register went to a physiotherapist or the SOASP directly. The trend has been slightly positive compared to the previous year. There appears to be major variations between county councils, thus indicating potential for improvement. In Örebro, Värmland and Halland, around one in 10 patients go to the SOASP directly without seeking care previously. Even if this is the best result to date, the proportion could increase significantly. Referring patients correctly in the care system requires both information campaigns aimed at the general public as well as knowledge among care staff and adequate triage procedures. Several county councils/regions, including Västra Götaland, Värmland and Västmanland have

introduced care programmes for osteoarthritis where information and individually adapted training, such as in the SOASP are an essential part. Patients should also have met a physiotherapist before they were referred to the orthopaedic clinic. With the aid of data from the Swedish Hip Arthroplasty Register, we can see that there are major variations within the country and also between hospitals within the same county council/region. The proportion of patients who state that they attended an SOASP before the hip arthroplasty varies from 0% to 75%. On average, two out of three patients have met a physiotherapist because of their problems before they undergo arthroplasty surgery and one in five patients has taken part in an SOASP. It is remarkable that one-third state that they have never met a physiotherapist before the operation, bearing in mind that surveys conducted in areas such as Umeå and Västmanland show that many patients are helped to such an extent by information and individually adapted exercise that they decline or postpone the operation. Linköping, Arvika and Torsby have the highest proportion of patients who have taken part in an SOASP preoperatively. In Värmland, SOASPs for patients with osteoarthritis of the hip have been relatively widespread since the 1990s.

Overall, pressure on the physiotherapy clinics is increasing and they could require further resources to manage a large group of patients. The National Board of Health and Welfare guidelines from 2012 state that more resources within rehabilitation will be required in order to implement national guidelines for osteoarthritis, where the focus is largely on initiatives that can be offered by the physiotherapist. A restructuring and review of osteoarthritis care in Västmanland revealed that the total flow of referrals to the orthopaedic clinic for people with osteoarthritis of the hip or knee fell by 25% after the SOASP was introduced on a broad front in the primary care sector. The waiting times for the orthopaedic clinic have also fallen from 100 days to fewer than

50 days. Similar results have been reported previously in Jämtland. Reasonably, this also ought to generate savings that would more than fund several physiotherapists and SOASPs. Previous calculations from the Gottsunda Health Centre show that the SOASP costs around SEK 1,500 per patient compared to hip arthroplasty, which costs around SEK 70,000.

Following its investment in improving the osteoarthritis care process, Västmanland has reported the highest rise in the number of patients who have attended the SOASP and who have been registered in BOA. The number of registrations has tripled since 2013, which is the largest increase in percentage terms and absolute terms in the country. Örebro and Sörmland, together with Västmanland, were at the bottom with regard to the number of patients attending the SOASP (and registered in the BOA Register) just two years ago have now pulled away and in 2014 they occupy the top three positions in terms of percentage increase in the number of registrations. Västerbotten accounts for the fall of the year (a reduction of 37%). The reason for this downturn is not entirely clear. Previous surveys show a lack of interest among supervisors and managers, coupled with a focus on production rather than results, which has probably resulted in the units that run the SOASP ceasing to report. This means that the management lose the opportunity to follow up if resources are being used optimally and thus generating a better outcome for the patients. Nowadays, the concept of value-based care is being discussed, i.e. changing from the current focus on process to a focus on how much patient value in the form of health outcome per krona can actually be achieved with the treatment. In value-based care, the aim is to know whether care results in better health for the patient, which means that the outcome must be measured to a greater extent and the healthcare system must be organised accordingly. Regardless of whether they favour this or other concepts, all managers ought to be

interested in ensuring that resources are used optimally. If we do not measure we cannot know although focusing purely on results could be misleading. Time and resources must be used to implement effective measures, i.e. measures that generate the best results possible in relation to the cost. In simple terms, an expensive or more resource-intensive form of treatment ought to produce better results than a cheaper form of treatment if the use of more resources is to be justified. On the other hand, the result does not need to be noticed immediately and it could need to be evaluated over a longer period and with more dimensions, such as a reduced need for care or reduced leave of absence due to illness. It is essential on the operational level to think continuously about what is a good result, what could be better and how it can be achieved. It is then a question of evaluating the effect of the change, as a change does not always lead to an improvement. It is obviously also a case of measuring and evaluating the right things. Ultimately, it is not about the process but about what actually means something for the patient. In the BOA Register we have initiated a process aimed at investigating what patients feel are important factors that need to be measured in order to evaluate osteoarthritis and the effects of treatment. After that, we need to decide if and how we can best incorporate these aspects of the disease in the Register.

Improvement potential

In their endeavour to work with improvement initiatives, several units and county council/regions have discovered the significance of efficient routines when issuing result and change statements. Running an SOASP takes approximately three months. Follow-up can take place three months after the first appointment or on completion of the six-week exercise period. All patients, even those who do not take part in supervised exercise, should be followed up with an individual appointment. The units have up to six months to carry out a follow-up, which

provides leeway to accommodate public holidays, staff leave and other breaks. On average, a follow-up in the Register takes place 110-112 days later, which can be regarded as acceptable even if there is considerable variation – from 92 to 131 days. Of those who commence the SOASP, 68% are followed up individually. Those patients who drop out for some reason, or who failed to attend an appointment, are marked as dropouts in the Register. Six per cent of the patients discontinued the SOASP before the three-month follow-up and 1% dropped out as a result of arthroplasty. Only a small proportion died before the three-month follow-up (0.1%). Patients who lack data after three months due to the fact that for some reason the physiotherapist had not sent them an appointment, or had not registered the appointment are categorised as dropouts. The overall dropout level in the Register is 25% and varies between 5% for Gotland, which has the most complete data, and 51% for Gävleborg, which has the lowest proportion of complete data after three months. The fact that information is lacking for so many could make it difficult to make a fair assessment of the results and the dropout rate is an area that offers considerable potential for improvement.

One conceivable reason for dropping out could be that the completed form is not registered. This factor, however, probably affects the first appointment to a greater extent and could mean that units choose not to report at all. In the BOA Register there are 45 inactive units that have been logged on for six months but have not registered a patient.

The reason they do not register ought to be followed up by the contact persons in each county council. In addition, a number of units have reported previously but have failed to register any patients during 2014. This can be explained in part by the fact that this group also includes units that have stopped running the SOASP (orthopaedic clinics for example) as well as units that have

ceased to exist, changed name or merged with another unit.

The BOA Register will work during 2016 to offer digital input to patients with direct transfer to the Register. The transfer of the details must take place securely and the patient needs to be able to log on securely and not have access to other information in the Register. The plan is to use the *My care contacts* service. The task of linking *My care contacts* to the Quality Register is taking place on the national level and BOA has chosen not to follow its own line in this matter and is instead awaiting this solution. It is unclear how many patients have already created an account in *My care contacts*, or will do so, and during the transition period this could be a limiting factor. However, the *My care contacts* service is being developed to gradually include more information and more functions, which could create a need and an interest among an increasing number of patients who will in time use the service in different contexts.

One of the aims of BOA is to reach patients earlier in the course of the disease. As we know that in many cases osteoarthritis develops as early as 40-45 years of age, we should be able to reduce the average age for patients who are included in the BOA Register from the present 65 years for patients with osteoarthritis of the knee and 67 years for patients with osteoarthritis of the hip. The target for the average age in the SOASP has been set (arbitrarily) at 58 years. Regardless of age, patients should naturally be offered rapid care through the SOASP. The average age for a hip operation is approximately 67 years and for a knee operation just under 69 years. It is reasonable that patients receive adequate care together with information and individually adapted exercise for many years before an operation becomes an option. Furthermore, only around 20% of all the individuals who have been diagnosed with osteoarthritis of the hip or knee will be a candidate for arthroplasty whilst the SOASP should be offered to everyone. As yet, we

see no trend towards a fall in the average age, which overall has risen since 2013.

Current events in BOA

The Quality Register is not static. Improvement work is also taking place internally based on the results we see and with the purpose of facilitating and stimulating the development of better care for patients. Apart from the work on introducing digital input directly, a number of other points that we have worked on during the year can be highlighted.

Changes in variables in the Register

In BOA, the Arthritis Self-Efficacy Scale (ASES) is used to measure a change in belief in one's own ability to influence pain and symptoms. Belief in one's own ability to influence one's symptoms has in studies been shown to be of considerable value in initiating and successfully implementing lifestyle changes, such as becoming physically active. ASES ranges from 10 (very uncertain) to 100 (very certain) and a meaningful change ought to be greater than 10. The patients have felt for a long time that the questions are difficult to answer. A qualitative research project, where the patients completed the form whilst thinking out loud as they answered the questions, indicated that several of the questions are not valid for the patient group. Other research projects in BOA have, however, shown that belief in one's own ability is linked to patient compliance and to a change in the physical level of activity after the SOASP (further information about this project can be found under *Research projects* at www-boaregistret.se). This resulted in a decision by the Steering Committee to retain the belief in one's own ability variable in the Register. There are other instruments that measure belief in one's own ability that have been developed to measure specific management of the disease or physical activity. These have, however, not been validated for patients with osteoarthritis of the hip and knee. By introducing a new instrument, the information that already exists in the Register

could be lost. The Steering Committee therefore decided to rework the questions in ASES and using item-response analysis it decided which dimensions of the instrument are information-bearing. Statistical methods can then be used to compare new results and results that have already been collected. The reworked form with fewer questions and alternative answers will be tested for validity and reliability and the main aim is to make it easier for the patients to answer the questions.

The Steering Committee has decided to delete the symptom duration question from the Register as the validity of the information is uncertain. The question is sometimes asked and answered as the time since the onset of symptoms and sometimes as the duration of the current problems. Symptom onset often takes place slowly and in many cases it occurred many decades before, making it difficult for the patient to state a specific point in time. Asking for the duration of the current problems is also based on the patient's information and it is difficult for the healthcare system to influence this. Perhaps the most important lead time, the time from the first appointment in the healthcare system to the commencement of treatment, cannot be measured at present. Nor can the time from the first appointment to diagnosis or from diagnosis to commencement of treatment. The main reasons for this are that the appointment (with a physiotherapist) in the primary care system is not registered in the patient administration register and the major differences and uncertainties regarding the use of a diagnosis code. Many physiotherapists do not use a diagnosis code and it is still rare for doctors to diagnose M16 (osteoarthritis of the hip) or M17 (osteoarthritis of the knee) without an x-ray. Furthermore, there is still no activity code for the SOASP. The BOA Register has brought this to the attention of the National Board of Health and Welfare with the support of the Swedish Association of Physiotherapists, the Swedish Association of

Occupational Therapists and the Swedish Orthopaedic Association.

Are we measuring the right things?

During 2015, we will run focus groups made up of patients, physiotherapists and clinic managers in order to investigate whether we are measuring the right things in the Register. We want to know, for example, if the patients feel that we are picking up on adequate aspects of the disease through the patient-reported form that we use. We also want to know what physiotherapists feel they need to know in order to work in the best interests of the patient and what type of information the clinic managers need from the Register for them to fulfil their control and management remit. As part of this work, we also intend to investigate whether patients would like decision-making support in order to choose where they attend the SOASP and, if so, what information they would like in order to reach a decision.

BOA 2.0

In 2016, BOA intends to launch BOA Register 2.0. In conjunction with the launch, updates and efficiency enhancement will be introduced that will not be directly visible to the user. This includes using one instead of two data platforms, thus avoiding costly maintenance, as well as more efficient user management and routines for contact after one year. The changes that will be visible to users are mainly the result of more user-friendly output data reports.

Regional improvement project in Västra Götaland

The Västra Götaland Region has invested money from the rehab funding for the region to become the best at managing patients with osteoarthritis. The BOA Register has been granted this funding to work for a period of two years to highlight Västra Götaland as a first-rate example. We are now planning ways in which this work can be arranged optimally and hope that other county

councils/regions regard it as a challenge to demonstrate who really is best.

BOA for more joints

The Steering Committee had already decided that patients suffering only from osteoarthritis of the hand and who are already attending the SOASP should also be able to submit information to the Register. Interest in introducing osteoarthritis of the hand into the Register is high among the country's occupational therapists although there is a lack of human and financial resources for implementation. A further difficulty has been to link interested hand surgeons to this development and by doing so complete the care chain. The first step in this work is to achieve consensus within the profession about what should be registered and how the intervention should be arranged for those who only have osteoarthritis of the hand. The Swedish Rheumatism Association has made a small amount of funding available to initiate this work.

The Swedish Shoulder and Elbow Register has entered into discussions with the BOA Register on introducing the SOASP for patients with shoulder problems and to register in BOA. Even here a project manager is required to promote development and the Steering Committee is positive to the idea of BOA expanding and including patients with osteoarthritis of more joints in the body.

Internationalisation

For the past couple of years, BOA has had a 'sister register' in Denmark – GLAiD (Good Life with osteoarthritis in Denmark) www-glaid.dk. In 2014, collaboration was initiated with Norway, which

has now established a Norwegian equivalent – AktivA (Active with Osteoarthritis, www.aktivmedartrose.no). We have also received study visits from the Netherlands and the USA who are interested in the possibility of learning from or replicating the model, and we have been invited by the Department of Health in Cyprus and their professional organisation for physiotherapists to present BOA in Cyprus. In autumn 2015, a team from Hong Kong will come to Sweden and discussions are taking place with the Iranian ambassador about the possibility of managing people with osteoarthritis of the hip and knee more systematically.

Digitalisation

It is estimated that the SOASP reaches 17% of all those who at present seek help as a result of osteoarthritis of the hip or knee. We are achieving good results in a short space of time although there is a lack of effective routines for maintaining an increased level of physical activity over time. To reach more people with joint problems at an earlier stage, and to maintain the level of motivation to continue with simple exercises for osteoarthritis even after completing the SOASP, we have collaborated with Lund University on the development of a digital application – *Jojnts*. In *Jojnts* the users are given a series of simple hip and knee exercises to perform over a period of six weeks and there are short presentations dealing with osteoarthritis and lifestyle changes. The users can also receive individual coaching from a physiotherapist and in time group functions will be incorporated that will allow the participants to interact and support each other.

BOA's three operating areas

BOA stands for Better Management of Patients with Osteoarthritis. BOA comprises three operating areas: training of patients (SOASP), training of healthcare staff to deliver and evaluate the SOASP on an equal basis, and the National Quality Register, the BOA Register. The BOA Register is an intervention register for patients with problems in the hip and knee and it evaluates results following physiotherapeutic intervention – the SOASP.

Purpose and aims behind BOA

The main purpose of BOA is that all patients with osteoarthritis should be offered adequate information and exercise according to current treatment guidelines and that surgical intervention should only be considered in those cases where non-surgical treatment does not provide a satisfactory outcome. The aim is to increase health-related quality of life and the level of physical activity in patients with osteoarthritis, mainly in the hip and knee, and to reduce healthcare consumption and leave of absence as a result of osteoarthritis. Patients with osteoarthritis should receive equal treatment when they contact the healthcare system initially, regardless of where that contact takes place. Previous research shows that information and individually adapted exercise have an equally good effect as medicine on pain associated with osteoarthritis. In BOA we have put this knowledge into practice in an evidence-based SOASP offered to the patients. Osteoarthritis is one of the most common causes of inactivity among older people and many are afraid that activity will damage their joints. Inactivity is *per se* a major risk factor for physical and mental ill-health and premature death. The SOASP aims to provide patients with knowledge about how they can manage the disease through physical activity in order to avoid ill-health and live a good life despite

osteoarthritis. A further aim behind BOA is for physiotherapists to improve the quality of their treatment through systematic evaluation, feedback of results and open comparison.

1. Training of patients – SOASP

Target group

The SOASP is aimed at patients who have problems in the hip or knee to such an extent that they seek medical care. An x-ray examination or previous diagnosis are not necessary. All patients who are considered would benefit from the SOASP are given an appointment with a physiotherapist prior to commencing the programme. The patient's medical history and the examination by the physiotherapist form the basis for a clinical diagnosis or exclusion of other causes. This approach is entirely in accordance with the National Board of Health and Welfare guidelines for diseases in the motor organs, including osteoarthritis. According to these guidelines, which were published in May 2012, a diagnosis of osteoarthritis is made with the aid of medical history, typical symptoms and a clinical examination. An x-ray should only be used in cases where there is uncertainty or when referral to a specialist is being considered. Even if it was to later emerge that the problems were due to osteoarthritis, the treatment offered in the SOASP – information and exercise – is directed at the functional impediment and treatment risks are negligible. Patients with inflammatory joint disease, or any other disease that produces more symptoms than osteoarthritis (such as malignancy or generalised pain), or spine compression fracture, mainly need another form of treatment and are therefore excluded from the SOASP and the Register. Patients who do not understand Swedish ought to receive individual care, possibly with the aid of an interpreter, to ensure they benefit from the information in the right way. Nor

do they need to answer the form that is registered in the BOA Register. In 2015, there will be the opportunity to register attendance at the SOASP with the aid of an interpreter.

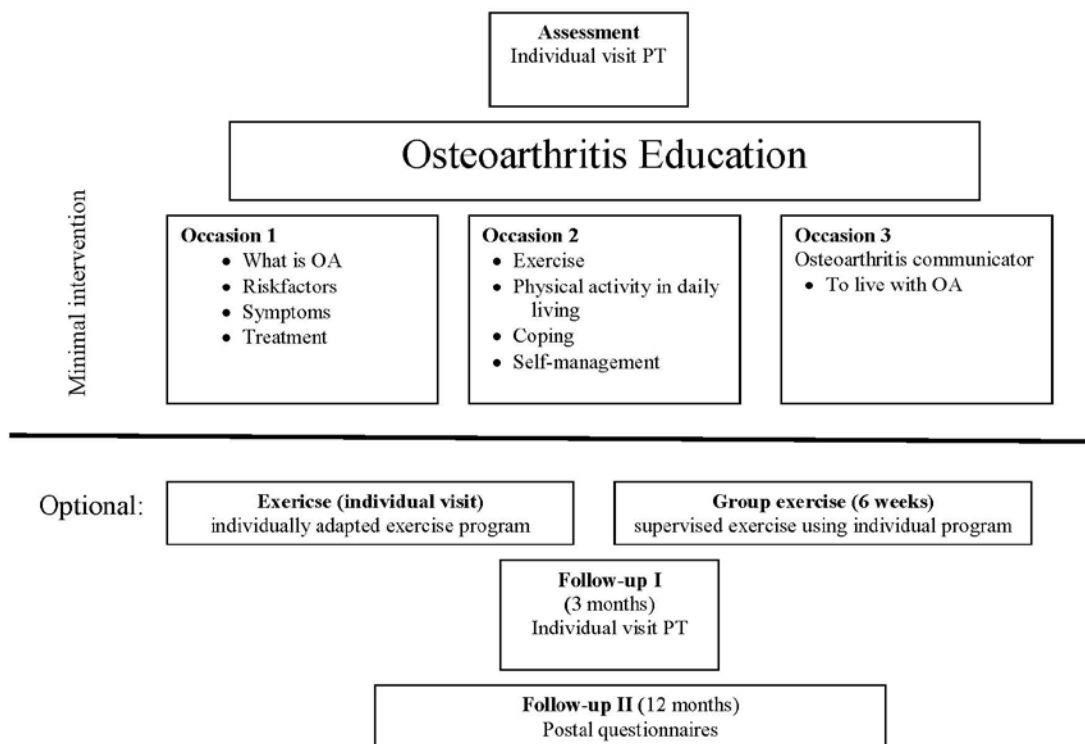
Information

The SOASP was created in the light of current research in this field and the patient's thoughts and wishes regarding treatment for osteoarthritis. The SOASP in BOA contains a 'minimal intervention', which is run in a similar way at all units (Figure 55). The content includes information about the nature of osteoarthritis, risk factors, available treatments and self-efficacy tips. The SOASP is led by a physiotherapist and in some cases an occupational therapist is also involved. They have both received specialist training and have good knowledge of osteoarthritis. The SOASP also includes one session led by an 'expert patient', i.e. a patient with osteoarthritis who has attended a special training programme in order to be able to speak about what it is like to live with osteoarthritis and

about their experience of basic treatment. These osteoarthritis communicators are trained by the Swedish Rheumatism Association. The aim behind their involvement is that participants in the SOASP will find it easier to identify with the person providing the advice and recommendations and by doing so they can together find solutions to the difficulties experienced in conjunction with physical activity in daily life.

At those locations where the local branch of the Swedish Rheumatism Association has resources and activities for patients with osteoarthritis, those attending the SOASP can deepen their knowledge of osteoarthritis through study groups or talks and they can also be offered ongoing exercise under the auspices of the Association. The involvement of osteoarthritis communicators in the SOASP is entirely free of charge to the healthcare system. The osteoarthritis communicators work on a voluntary basis although their travel expenses are reimbursed.

Figure 55. SOASP organisation



Individually adapted exercise

Following the theory part of the SOASP, the patient is offered an individually tested exercise programme and the opportunity to exercise regularly according to this programme together with other people under the guidance and supervision of a physiotherapist. The exercises could contain elements aimed at improving mobility, stamina, muscle strength and function. Exercise of muscle function is not based on a certain number of specific exercises, sets, or repetitions, but more on neuromuscular control and quality of movement. Pain during exercise is not an obstacle but should not exceed the limit for what is regarded as acceptable pain by the patient. A possible increase in pain after exercise should also cease after 24 hours otherwise the duration and/or intensity ought to be adjusted. Interviews with patients have shown that feedback is felt to be a particularly important part of the exercise programme. The physiotherapist is present and available for ongoing feedback on the quality of movement and performance as well as the choice of exercises and the dosage during each session.

The exercise part is voluntary although the aim is that as many people as possible, following the theoretical part of the SOASP, should feel a desire and a need to learn more about how they can in the best possible way deal with their disease and the problems it entails by exercising correctly and being physically active in their daily lives. All patients undergo a follow-up three months after the first appointment or when the exercise part has been concluded. Discussion regarding suitable home exercises and planning for continued physical activity/exercise following completion of the SOASP are an important part of the arrangement and ought to be introduced early on and take place in parallel with the monitored

exercises. Exercise can alleviate the symptoms of osteoarthritis effectively although this effect is short-lived. To achieve a more long-lasting effect of exercise as a form of treatment, it is required that the exercise is planned over the long term and is performed continuously. Physical Activity on Prescription could be a suitable means for the healthcare system to stimulate an increase in the level of activity by the patients. Long-term disease requires long-term treatment.

2. Training of the profession

Physiotherapists and those occupational therapists who are interested are trained through BOA to run and evaluate the SOASP fairly. The two-day training programme covers current evidence in the field and aims to provide deeper knowledge of osteoarthritis and the non-surgical treatment of osteoarthritis. The training also includes basic register knowledge as the use of a quality register in physiotherapeutic work is still a relatively new and unknown field.

3. National Quality Register

The SOASP aims to influence patient-reported, health-related quality of life, pain, physical level of activity, fear of movement, motivation for surgery and belief in one's own ability to influence the symptoms. These variables are registered in the BOA Register together with patient satisfaction and other variables. The physiotherapist who runs the SOASP is in the majority of cases also the person who reports the data to the Register. Evaluation takes place prior to the SOASP, after three months (in conjunction with completion of the SOASP) and after one year. One hundred patients who completed the one-year follow-up questionnaire the previous year are selected at random each year for an annual follow-up as long as they live.

Facts about BOA

The BOA Register began as a three-year project in 2008 in Skåne, Värmland, Västerbotten and Västra Götaland with financial support through specially allocated county council funding and the Social Insurance Agency. The BOA Register became a National Quality Register in December 2010.

Organisation

The BOA Register is run at the request of and with support from the Swedish Association of Local

Authorities and Regions, the Swedish Association of Physiotherapists, the Swedish Association of Occupational Therapists and the Swedish Orthopaedic Association. The Register is funded primarily through grants from the Decision Group for National Quality Registers and the Västra Götaland Region. The BOA Register is linked to the Competence Centre at the Västra Götaland Register Centre.

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