Treat me like a woman

A mixed studies review into treatment burden to develop gender sensitive rheumatic care

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A mixed studies review into treatment burden to develop gender sensitive rheumatic care

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Preface

Rheumatoid arthritis (RA) occurs three times more in women that in men. Moreover, observational studies have suggested that, on a whole, women with RA do worse than men, reporting more severe symptoms, an earlier progression, worse functional outcomes and quality of life. These important differences between men and women in clinical manifestation and outcomes are not well understood and knowledge about gender differences in the presentation, course and outcomes of RA is very scarce.

With the study described in this report we will try to fill this knowledge gap by focusing on a factor that may be an important explanation for the gender differences observed: **treatment burden (TB)**. TB is a relatively new concept in care and research and can be defined as 'the self-care practices that patients with a chronic illness must perform to respond to the advice and treatment recommendations of their health care providers, as well as the impact that these practices have on patient functioning and well-being'. In studying TB the focus will not only be on RA but also on two other forms of inflammatory arthritis: Arthritis Psoriatica (AP) and Ankylosing Spondylitis (AS). The study was financed by ZonMw within the program gender and health (project number 849100005).

By means of an extensive literature search and conversations with patients and health care professionals we explored in a systematic way: 1) what the differences are in type and amount of TB experienced by men and women 2) which biological and socio-cultural factors are responsible for these differences; and 3) what the consequences are of these differences for health and well-being and the needs for health care. This study results into a research agenda and practical guidelines for health care professionals to make care for rheumatic diseases more gender sensitive.

In this place I want to thank all the patients that participated in our online survey, Reumafonds for their help in the recruitment of patients, and the advisory board for getting the focus of this project sharp.

Monique Heijmans,
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Summary

Background

Men and women differ markedly in the frequency and clinical presentation of rheumatic and other autoimmune diseases. This is especially true for Reumatoid Arthritis (RA) that happens three times more in women than in men. Except for differences in prevalence, there are also sex differences in the course and prognosis of RA and how RA impacts on the daily life of patients. Many observational studies have suggested that, on a whole, women with RA do worse than men, reporting an earlier progression, worse functional outcomes and quality of life. These sex differences in clinical manifestation and outcomes in RA are not well understood and until now treatment recommendations for RA hardly take account of these differences between men and women.

Why was this study done?

This study was done to get a better understanding of the differences reported in literature in the clinical presentation and outcomes between men and women with RA or other forms of inflammatory rheumatic diseases like Ankylosing Spondylitis (AS) and Arthritis Psoriatica (AP). In trying to understand these sex differences, we focused on a relatively new and innovative concept in care and research: treatment burden (TB). The term TB describes the self-care practices that patients with rheumatic and other chronic diseases must perform to follow the complicated management strategies that have been developed for these conditions. Where self-management is related to coping with the illness in every aspect of daily life, TB is restricted to the tasks resulting from medical advise and treatment. Treatment in RA, AS or AP is a lengthy process that requires considerable personal investment from the patient. Unfortunately, TB can overwhelm patients. They may be unable to cope with the multiple advices and demands placed on them by health care providers, a situation that leads to poor adherence to therapies and poor outcomes. For example, patients may find it hard to complete all the exercises designed to help to optimize movement of their limbs, experience side effects of medication or find it hard to inject medications. TB has been poorly examined in relation to the treatment of rheumatic disease.

What did we do?

In this study, the TB in RA, AS, AP was studied by undertaking a mixed studies review of the literature describing the patient experience of inflammatory rheumatic disease management. The review consisted of both qualitative and quantitative studies. Qualitative studies collect mostly textual data. For example, a qualitative study into RA treatment with biologicals might ask people how the treatment made them feel whereas a quantitative study might compare clinical outcomes between those receiving and not receiving biologicals. Our first aim was to describe the concept of TB in rheumatic diseases in detail. Our second aim was to explore wheter TB differs for men and women and if so, whether these differences could be an explanation for the reported differences between men and women in clinical presentation and outcome.

What did we find?

This study revealed a comprehensive picture of TB as experienced by patients with inflammatory arthritis. We found six main components of TB: dealing with physical discomfort and concerns about medication, technical aspects such as performing exercises and lifestyle adaptations in a good way, challenges in contact with care providers and care institutions, time investment for treatment and contacts with care, problems with maintaining or fulfilling roles as parent or employee and, most prominent, understanding of illness, the treatment and the advice that goes with it. Our literature review also provided insight into factors that influence the level of TB experienced (antecedents) and factors that result from TB (consequences). The antecedents could be divided in patient characteristics, disease characteristics, treatment characteristics, aspects of the patient-provider relationship, information provision, personal beliefs and concerns of patients and the social context in which patients live. Five broad categories of consequences of TB were found: adherence, quality of life, health care use and costs, workability, and social roles and identity. Taking into account these antecedents, consequences and attributes we were able to define a conceptual model of TB in rheumatic disease.

In a next step we looked for sex differences in TB and its antecedents and consequences. In only 25 of the 99 included studies (25%) explicit attention was paid to differences between men and women in the TB experienced. In almost all studies, only a (biological) distinction was made between men and women and no gender roles were considered. In two of the 25 studies no differences were found in experienced TB between men and women. In the other 23 studies more negative effects were found for women: women had more pain and more complaints, more frequent and more serious side effects of medication, spent more time on treatment and were less able to combine treatment with paid work than men. The preferences regarding information and decision-making also differed between men and women: women needed more information and wanted a more active role in the treatment than men. Women were themselves more active in their treatment and also better informed but this was less encouraged by health care professionals. For both men and women, the rheumatic disease had an impact on their identity as man or woman.

What do these findings mean?

Patients with RA, AS or AP experience TB coming from side effects of medication, adverse events or concerns about medication use. We also found that TB can be a result of interactions with health care professionals. Poor health professional–patient relationships and a lack of adequate information regarding treatment were associated with high levels of TB.
Health care professionals need to develop a relationship that is sensitive to patient’s preferences with regard to treatment choices, their own role in treatment, selfcare and information provision. This type of relationship will enable patients to become more actively involved in decision making and integrate treatment with their daily lives, ultimately improving adherence and treatment outcomes and diminish TB.
As women and men differ in the amount of TB experienced and these differences have their impact on outcomes, it is important to take sex differences into account when providing care to people with rheumatic diseases. The differences between men and women in TB identified in this review have clear implications for health care professionals to alleviate the burden of treatment for both sexes. As the perception of TB is highly subjective and determined by a number of antecedents that also differ for men and women, strategies to alleviate its impact need to be individualized, reflecting the circumstances and preferences of men and women seperately.

1 Background

1.1 Rheumatic diseases

Rheumatic diseases comprise over a hundred different diseases. Among the chronic autoimmune inflammatory diseases, Rheumatoid Arthritis (RA) is one of the most common and by far the most discussed in literature. RA affects the synovial joints, and with time causes significant functional losses due to persistent inflammatory activity in the joints, destruction of bone and cartilage, and extra-articular disease manifestations. [1; 2] Other frequent forms of inflammatory arthritis are Ankylosing Spondylitis (AS) and Arthritis Psoriatica (AP). Both AS and AP are forms of spondyloartritis. This is a collective name for a group of rheumatic diseases with common traits including inflammation in the pelvis, spine and/or joints of arms or legs. A distinction is made between axial spondyloartritis (Axial Spa) and peripheral spondyloartritis (Peripheral Spa); in axial Spondyloartritis, the complaints of the pelvis and spine are most prominent. AS is the most famous form of axial spondyloartritis, in Dutch also called the ‘Ziekte van Bechterew’. In peripheral spondyloartritis, especially the large joints in arms or legs become inflamed. AP is a form of peripheral spondyloartritis and above that a combination of inflammatory rheumatism and the skin disease psoriasis (www.ReumaNederland.nl). Although most patients with AP have axial involvement, it is less severe than in ankylosing spondylitis (AS). In the Netherlands more than 200.000 people suffer from RA, AS occurs in about 1 in 200 people (www.reumanederland.nl). The prevalence of AP is not well known. [3] RA as well as AS and AP may significantly reduce the quality of life of patients. RA is ranked at position number seven in the list of diseases with the highest impact in terms of daily limitations and impaired quality of life. [4]

1.2 Gender differences

Women and men differ markedly in the frequency and clinical presentation of rheumatic and other autoimmune diseases. This is especially true for RA in which the sex ratio is typically around 3:1. [5] Contrary to RA, AS is a male predominant disease with a male to female ratio of 5–3. AP affects men and women equally. The reasons for the overrepresentation of women in RA and men in AS are not clear, but genetic (X-linked) factors, hormonal aspects and differences in lifestyle factors are likely to be involved. [6]

Except for differences in prevalence, there are also sex differences in the course and prognosis of RA and how RA impacts on the daily life of patients. Many observational studies have suggested that, on a whole, women with RA do worse than men, reporting an earlier progression, worse functional outcomes and quality of life and higher mortality rates. [7–9] In addition, although severe clinical disease activity, structural damage, and deformities are reported equally in both sexes [10], women with RA generally report more severe symptoms [11] and greater disability [12] and often have higher work disability rates [13] compared with men. Some studies also suggest that men have better responses to treatments with biologic agents than women [14] and other studies indicate that being a man is a major predictor of remission in early RA.

These sex differences in clinical manifestation and outcomes in RA are not well understood and until now treatment recommendations for RA hardly take account of sex (Website American College of Rheumatology; www.nvr.nl). Common recommendations about management and therapeutic treatment of RA seem not to reflect one of the most obvious and important risk factors for the patient: sex and associated gender. Sex refers to the biological differences between females and males; gender refers to the roles, relationships, behaviors, and other traits that societies generally ascribe to men and women. Not paying attention to sex or gender differences probably holds back more efficient health care, as gender-based treatment will probably be more effective and would benefit patients of both sexes. For these reasons we have designed this study by which we want to fill the knowledge gap on sex and gender differences in the presentation, course and outcomes of RA and other inflammatory rheumatic diseases like AS and AP, and in this way provide clues for a more gender sensitive rheumatic care.

1.3 Treatment burden

In trying to understand the sex differences in clinical presentation and outcomes, in this study we focused on a relatively new and innovative concept in care and research: TB. TB refers to the problems and challenges that patients with chronic disease encounter and the self-care practices they must perform to follow the complicated management strategies that have been developed for these conditions. [15] In the case of rheumatic diseases as RA, AS or AP, TB may constitute of drug management, visits to the doctor, laboratory tests, demanding life-style changes such as a diet, alcohol restriction or exercise, visible and invisible deformations of the body, frequent health care visits, and maybe surgery.

TB is not a static concept but will differ between individuals and stages of treatment. Patients with similar conditions and treatment regimens may differ in the TB experienced depending on the time and effort they (have to) invest following their carers’ advice and on their personal context (e.g., social or family structure, culture, care delivery system, etc.). Based on qualitative studies, Gallacher et al. [16] defined a conceptual model, defining the attributes of TB that proved to be valid for chronic diseases like stroke, heart failure and diabetes. This model makes a distinction between logistical burdens (e.g. organizing appointments or visits from health professionals, organising rehabilitation, arranging transport), technical burdens (e.g. making lifestyle changes, taking medication, doing exercises), relational burdens (enrolling family and friends and health professionals or support, initiating interactions with possible carers), and making sense burdens (conceptualizing problems, understanding and learning about management, knowing when to seek help, differentiating between treatments). It is unclear if this model also fits the experiences of TB of patients with rheumatic diseases like RA, AS or AP. So far there is no synthesis of knowledge on attributes of TB in RA and its antecedents or consequences. In addition, evidence on sex differences in TB in RA has not been studied before but may be an important explanatory factor in the explanation of sex differences in course and health outcomes in patients with RA. Sex interacts with social, economic and biological determinants that probably also have their impact on the TB experienced and in this way create different outcomes for men and women.

1.4 Research questions

This project aims to answer the following research questions:

1. *What are the key attributes of TB as perceived by patients with inflammatory arthritis? do these attributes differ by sex?*
2. *Which biological and socio-cultural factors (antecedents) are associated with TB? do these factors differ by sex?*
3. *What is the association between TB and outcomes (e.g. disease activity, adjustment to treatment, quality of life, quality of care experienced, and health care use)?*
   do these associations differ by sex?

The main focus of this study is to explore the concept of TB in patients with inflammatory arthritis. We will include patients with RA, AP and AS. In a next step we will search for possible sex differences in these groups.

For answering the research questions a number of methods were used. Our main method was a mixed studies review of the literature. However, as TB is a relatively new concept and not systematically studied in RA or other inflammatory rheumatic diseases, we did some research to prepare our literature search. Globally, this study consisted of three parts:

1. Preparation of the mixed studies review.
2. Mixed studies review.
3. Summary of findings and building a conceptual model of TB.

The method and results of the preparatory phase will be discussed in chapter 2 and 3. The method for the literature review is described in chapter 4 and the results of this review in chapter 5. A discussion of the findings and a proposal for a conceptual model of TB can be found in chapter 6. A research agenda for research and practical guidelines for professionals to contribute to a more gender sensitive care in rheumatic diseases is presented in chapter 7.

References

1. Anyfanti P, Triantafyllou A, Panagopoulos P, et al. Predictors of impaired quality of life in patients with rheumatic diseases. Clinical Rheumatology, 2016; 35(7): 1705-1711.
2. Branco JC, Rodrigues AM, Gouveia N, et al. Prevalence of rheumatic and musculoskeletal diseases and their impact on health-related quality of life, physical function and mental health in Portugal: results from EpiReumaPt - a national health survey. RMD Open, 2016; 2:e000166.
3. Gelfand JM, Gladman DD, Mease PJ, Smith N, Margolis DJ, Nijsten T, et al. Epidemiology of psoriatic arthritis in the population of the United States. Journal of the American Academy of Dermatology, 2005; 53:573-577.
4. Sloot R, Flinterman L, Heins M, Lafeber M, Boeije H,et al. Reumatische aandoeningen in Nederland. Ervaringen en kengetallen. Utrecht: Nivel, 2016.
5. Van Vollenhoven RF. Sex differences in rheumatoid arthritis: more than meets the eye… BMC Medicine, 2009; 7:12.
6. Oliver JE, Silman AJ. Why are women predisposed to autoimmune rheumatic diseases? Arthritis Research & Therapy, 2009; 11:252.
7. Forslind K, Hafstrom I, Ahlmen M, Svensson B. Sex: a major predictor of remission in early rheumatoid arthritis? Annals of the Rheumatic Diseases, 2007; 66:46-52.
8. Kuiper S, Van Gestel AM, Swinkels HL, De Boo TM, Da Silva JA, Van Riel PL. Influence of sex, age, and menopausal state on the course of early rheumatoid arthritis. Journal of Rheumatology, 2001; 28:1809-1816.
9. Symmons DP. Epidemiology of rheumatoid arthritis: determinants of onset, persistence and outcome. Best Practice & Research: Clinical Rheumatology, 2002; 16:707-722.
10. Sokka T, Toloza S, Cutolo M, Kautiainen H, Makinen H, et al. The QUEST-RA Group: Women, men, and rheumatoid arthritis: analyses of disease activity, disease characteristics, and treatments in the QUEST-RA study. Arthritis Research & Therapy, 2009; 11:R7.
11. Barsky AJ, Peekna HM, Borus JF. Somatic symptom reporting in women and men. Journal of General Internal Medicine, 2001; 16:266-275.

12. Sherrer YS, Bloch DA, Mitchell DM, Roth SH, Wolfe F, Fries JF. Disability in rheumatoid arthritis: comparison of prognostic factors across three populations. Journal of Rheumatology, 1987; 14:705-709.
13. Puolakka K, Kautiainen H, Pekurinen M, Mottonen T, Hannonen P, et al. Monetary value of lost productivity over a 5-year follow up in early rheumatoid arthritis estimated on the basis of official register data on patients' sickness absence and gross income: experience from the FIN-RACo Trial. Annals of the Rheumatic Diseases, 2006; 65:899-904.
14. Hyrich KL, Watson KD, Silman AJ, Symmons DP. British society for rheumatology biologics register: predictors of response to anti-TNF-alpha therapy among patients with rheumatoid arthritis: results from the British Society for Rheumatology Biologics Register. Rheumatology (Oxford), 2006; 45:1558-1565.
15. Sav A, King MA, Whitty JA, et al. Burden of treatment for chronic illness: a concept analysis and review of the literature. Health Expectations, 2013; 1-13.
16. Gallacher K, Bhautesh J, Morrison D, Macdonald S, Blane D, et al. Qualitative systematic reviews of TB in stroke, heart failure and diabetes - methodological challenges and solutions. BMC Medical Research Methodology, 2013a; 13:10.

2 Method preparatory phase

In this phase we undertook the following research activities:

1. We conducted a quick search of the literature to see how treatment burden (TB) has been operationalized and defined for other chronic diseases.
2. We conducted a secondary analysis of data from existing databases in Nivel and Universitair Medisch Centrum Utrecht (UMC Utrecht) to get insight in the personal experiences of rheumatic patients with their treatment.
3. We distributed an online questionnaire among a group of patients with inflammatory arthritis to get insight into aspects of TB from a patient's perspective.
4. We made a classification of those aspects of the treatment for inflammatory rheumatic diseases that would be relevant for our study on TB and sex differences and that should be taken into account when making a search strategy for the literature search.

2.1 Quick scan of the literature

We made a first exploration of the concept of TB from literature by searching the databases of PubMed/Medline and PsychINFO using the terms 'treatment burden', 'burden of treatment', 'medication burden' and 'burden of medication' as keywords. We followed the suggestions by Save et al. [1]) who did a sensitivity analysis suggesting that these key search terms encompassed most of the research within the field of TB. In particular, this sensitivity analysis confirmed that medication was the most prominent form of treatment for chronic illness, necessitating the inclusion of this search term. We focused on literature from 2000 until 2018 and looked for definitions of TB, aspects that are distinguished as well as a framework for organizing these aspects.

2.2 Secondary analysis of existing databases

2.2.1 National Panel of People with Chronic illness or Disability (NPCD)

We conducted a secondary analysis of already available data on the personal experience with treatment of people with rheumatic diseases from the National Panel of People with Chronic illness or Disability (NPCD) conducted by Nivel. NPCD is a large longitudinal study survey among 4.000 people with all kinds of medically diagnosed chronic diseases. Patient in the NPCD fill in questionnaires twice a year about all kinds of topics that are relevant in the context of living with a chronic disease from their perspective. The NPCD exists since 1998. Patients with rheumatic diseases can be identified on the base op ICPC codes of a medically diagnosis of a rheumatic disease provided by their general practitioner.

The NPCD has never specifically asked for TB, but does assess topics related to TB. We used data from 1999 and 2012. In 1999, patients were asked questions about living with a chronic illness. They were presented with 76 adaptive tasks, generated from focus groups with people with chronic illness, about coping with chronic illness in daily life and what that means to them. So the question was broader than dealing with treatment alone as the items were about dealing with chronic disease in general, but treatment constituted an important part. For each adaptive task, patients could answer on a five point scale to what extent that adaptive task or challenge played a role in their daily life, ranging from no

role (1) to a very important role (5). Data were completed in April 1999 by 103 people with a medical diagnosis of RA (33 men, 70 women).
In April 2011, 409 people with rheumatic diseases filled in a NPCD questionnaire (300 women and 109 men). In this questionnaire items from the PAST questionnaire were submitted to them. [2] The PAST contains a list of 19 adaptive tasks that patients may encounter in daily life. Patients have to indicate to what extent they feel that these tasks are part of the daily management of their chronic illness (answering categories: never, sometimes, usually or always). Answering categories were dichotomised in never/sometimes and usually/always. The percentage of patient with rheumatic diseases that indicated that a task is usually/always part of their daily coping with the disease was reported as well as how this percentage differed between men and women.

2.2.2 Focus groups as part of the program ReumaUitgedaagd (UMC Utrecht)

ReumaUitgedaagd is a training by and for people with rheumatic diseases and developed by Reuma Nederland in collaboration with UMC Utrecht. In this self-management training patients learn how to cope with their disease in a way they want and that best fits their personal live. For the topics of the training focus groups were held with diverse groups of patients, using the method of concept mapping, to determine which topics are most important for patients in relation to self-management. [3] For this study we analysed the results of the focus groups again and picked out those aspects that are relevant for our own study on TB. The results were anonymous and could not be reduced to individual patients.

2.3 Online questionnaire

During one week we recruited patients with inflammatory rheumatic disease (RA, AP or AS) via an advertisement on the site of the Reumafonds and Facebook for participation in a short online questionnaire. Our aim was to recruit 20 patients, but 42 applied.
Patients had to answer one question:

> *We would like to hear from you which problems and challenges the treatment of your rheumatic disease entails for you. This can be very personal and, for example, have to do with medicine use, contacts with care providers or the hospital, fitting the treatment in daily life or at work, financial consequences or the need for information.*
> *Would you like to fill in the most important tasks and challenges below? There are no good or bad answers, it is about your experience. You can name a maximum of 10 things but less is also allowed. Do you want to put what is most important for you at 1, the next at 2 and so on?*
>
> *My main challenges in the treatment of my rheumatic condition for me are …*

2.4 Classifying aspects of treatment for inflammatory rheumatic diseases

We searched in treatment guidelines and on the site of patient organisations (www.reumanederland.nl) for the most important treatment categories that can be distinguished such as medicines prescribed and self-care tasks that are recommended.

References

1. Sav A, King MA, Whitty JA, et al. Burden of treatment for chronic illness: a concept analysis and review of the literature. Health Expectations, 2013; 1-13.
2. Van Houtum L, Rijken M, Heijmans M, Groenewegen P. Self-management support needs of patients with chronic illness: do needs for support differ according to the course of illness? Patient Education and Counseling, 2013; 93(3):626-632.
3. Ammerlaan JW, Mulder OK, De Boer-Nijhof NC, Maat B, Kruize AA, et al. Building a tailored, patient-guided, web-based self-managemnt intervention ‘reumauitgedaagd!’ for adults with a rheumatic disease: results of a usability study and design for a randomized controlled trial. JMIR Research \protocols 2016; 5:e113.

3 Results preparatory phase

3.1 Quick search of literature on treatment burden

3.1.1 Definitions

In literature, treatment burden (TB) has been defined and operationalized in different ways. Gallacher et al. [1-2] defined TB as the ‘workload’ of health care that patients must perform in response to the requirements of their health care providers as well as the ‘impact’ that these practices have on patient functioning and well-being. Workload includes the demands made on the patients’ time and energy due to treatment for a condition (e.g. attending appointments, undergoing investigations, taking medications) as well as other aspects of self-care (e.g. health monitoring, diet, exercise). ‘Impact’ includes the effect of the workload on the patient’s behavioural, cognitive, physical, and psychosocial well-being. Van Merode et al. [3] say that “TB is the patient’s perception of the aggregate weight of the actions and resources they devote to their health care, including difficulty, time, and out of pocket costs dedicated to health care tasks such as adhering to medications, dietary recommendations, and self-monitoring”. This definition was based on Boyd et al. [4] According to Mair et al. [5] TB represents the active work patients need to do including, learning about treatments and their consequences, completing administrative tasks, such as paper work, adhering to complex treatment regimens, managing medications, changing lifestyle behaviours, visiting multiple health professionals, and undertaking medical and other laboratory tests.

Despite different definitions most authors agree that:

- TB is a concept *different from illness burden.* [1-2, 6-7] Although TB is often inseparable from illness burden, it is not based on the natural history of the disease, but on the need to treat the disease in order to change its course or ameliorate its effects.
- In this way TB is also different from self management. Where self management is related to coping with a disease in every aspect of daily life, TB is restricted to those tasks that directly originate from medical treatment or the advice of health care providers.
- It is a dynamic concept changing over time in response to severity and control and the development of comorbidities. [6]
- It is possible that familiarity with or acceptance of treatment lessens the experience of burden through a process of adjustment. [6]
- Patients with the same workload can be burdened in different ways and to different extents. This can be explained by differences in the capacities of people. People may differ in their capacities for example by differences in functional morbidity, financial/social resources and literacy or by differences in the burden of the illness itself.
- TB is both objective (type and number of medications, time necessary to administer medication) and subjective (guilt, hopelessness, fears, beliefs).

3.1.2 Antecedents

Sav et al. [8] reviewed research on TB published between 2000 and 2011 and suggested that a number of factors can contribute to TB for chronic disease, including age and gender, illness duration or severity, treatment characteristics including the number and dose of medications, and family circumstances such as level of support. In this review there were no studies on rheumatic diseases.

3.1.3 Attributes

Like definitions, also attributes used in literature to operationalize TB differ, although there is also a lot of overlap: Gallacher [1] makes a distinction between logistical burdens (e.g. organizing appointments or visits from health professionals, organising rehabilitation, arranging transport), technical burdens (e.g. making lifestyle changes, taking medication, doing exercises), relational burdens (enrolling family and friends and health professionals or support, initiating interactions with possible carers), making sense burdens (conceptualizing problems, understanding and learning about management, knowing when to seek help, differentiating between treatments). Van Merode makes a distinction, based on interviews with multi-morbidity patients, between care aspects (communication with professionals, waiting, time, shortage of information, organisation of care), medication aspects (interactions, side effects, payments), aspects of the patient role (acceptance condition, depression, dependence on others) and aspects of daily life (keeping a diet, integrating physiotherapy in daily life, taking medication when travelling). Sav et al. [6] sees TB as a multidimensional concept including physical (side-effects from medication), financial (costs of treatment), temporal (time required to organize travel, receive treatment, learn about treatment, monitor treatment, manage side effects) and psychosocial time demands (dependency, fulfilling roles, the impact of treatment on significant others, treatment tasks that interfere with daily life, shame, stigma).

3.1.4 Consequences

A review by Sav [9] demonstrated that a higher TB is associated with poor treatment adherence, reduced health and well-being, ineffective use of health resources, reduced employment and low productivity, and has a negative impact on family and caregivers. Although this review focused on chronic diseases, rheumatic diseases were not included in the selected papers.

3.2 Aspects of TB in existing databases

From the secondary analyses of data of the NPCD database of Nivel, a number of aspects of treatment came forward that may cause TB for patients. A detailed description of the results is given in Appendix A. Summarizing the results of NPCD, based on the answers of 409 patients with inflammatory arthritis (300 women and 109 men) in April 2011, the most frequently mentioned tasks that may be a part of the TB-concept within the total group of people with rheumatic diseases were:

- monitoring complaints and symptoms at home (84%);
- performing exercises the right way (83%);
- taking medication according to prescription (77%);
- performing self-care tasks (60%);
- understanding the information from doctors and other caregivers (51%);
- performing exercises at home (45%);
- having conversations with care providers (18%).

In view of possible differences between men and women, women reported more often having to take a diet than men (53% vs 42%), to do exercises at home (49% vs 36%), using aids (35% vs 24%) and to cope with problems in relation to fulfilling social roles (48% vs 31%).

From the focus groups that were held in the context of ReumaUitgedaagd the following aspects were mentioned by patients (for a list of all aspects from the focus groups see Appendix B):

- information needs with respect to pregnancy and family planning;
- information about the fulfilment of family roles as a partner or parent and where to get help with respect to these topic when needed;
- communicating about rheumatic diseases with professionals and the social environment;
- coping with emotions, fear, uncertainty with respect to aspects of treatment and the disease in general;
- information about alternative treatments;
- information and skills about the right way to self-manage;
- information about rheumatic diseases and work;
- possibilities for and rights in choosing for treatments (Shared Decision Making).

3.3 Online questionnaire

Thirty-eight of the 42 respondents mentioned challenges related to the treatment of their rheumatic disease. The number of challenges per respondent varied from 1 to a maximum of 10, with a total of 244 challenges. One of the researchers (MH) thematically ordered these challenges and discussed this ordening in a meeting with the advisory board of this project consisting of rheumatologists, nurses, representatives from patient organisations, and researchers with an expertise in research on rheumatic diseases (see Appendix H).

The following attributes of TB were mentioned in the online survey (for a complete list of aspects see Appendix C):
- side effects of medication;
- technical aspects of medication use (daily routine, injecting, being adherent);
- uncertainty around diagnosis;
- time required for treatment and visits to health care providers;
- information needs with respect to different aspects of treatment, consequences of treatment;
- difficult access to information;
- using devices;
- interaction with professionals;
- financial consequences (out of pocket costs; hidden costs);
- social relationships (dependency from social network for help, stigma, shame, problems fulfilling roles);
- sexual problems in relation to medication use;
- uncertainty, fear about (long term) consequences of medication use and treatment in general;
- emotional impact of treatment;
- treatment and work; patients indicate to experience more difficulties in relation to work because of side effects and time-consuming treatments.

Not all aspects mentioned could be classified as attributes of TB. Some aspects mentioned had more to do with the burden of illness than burden directly from treatment. Examples were worse physical functioning, fatigue, sleeping problems, dealing with an uncertain future, dealing with less energy or mobility problems. Although it is still possible that some complaints are a side effect of the medical treatment. After discussion with the advisory board of this project, they were at this stage not included as attributes of TB but rather as possible antecedents influencing the level of TB, or as a consequence of TB. Other aspects mentioned by patients such as a higher age, being female, reading difficulties, lack of a social network or a longer illness duration were also considered as possible antecedents.

The following antecedents and consequences were also mentioned by patients in the survey:
Antecedents

- time it takes before you are set on medication;
- time to diagnosis;
- unpredictable course;
- pain/fatigue/limited energy;
- stigma/incomprehension social environment;
- treatments resulting from comorbidity

Consequences

- absenteeism due to doctor/hospital/other health care provider visit;
- consequences for sexuality;
- emotional well-being/distress.

3.4 Defining aspects of treatment in inflammatory arthritis

Diseases as Reumatoid Arthritis (RA), Ankylosing Spondylitis (AS) and Arthritis Psoriatica (AP) cannot be cured. Treatment is aimed at inhibiting inflammation, reduce pain and try to get the best possible quality of life for the patient as possible. Treatment consists of medicines, supplemented by physiotherapy and sometimes surgery. In addition self-management by the patient with respect to exercise, diet and alcohol is important (www.reumanederland.nl).

Medicines

A rheumatologist will usually start with NSAIDs. When these medicines do not work sufficiently, the positive effects and the possible side effects of a medication will always be weight up, preferably together with the patient, and will determine the choice of another prescription. The most frequently prescribed medications in the most common sequence during the course of the disease are:

- *NSAIDs*
  NSAIDs are painkillers with a slightly anti-inflammatory effect, such as naproxen, ibuprofen and diclofenac.

- *Corticosteroids*
  Corticosteroids are sometimes prescribed (shortly or in combination with a DMARD) to quickly stop the inflammation. An example of this group is prednisone.

- *DMARDs*
  These are classic rheumatic drugs, which are effective and cheap. Because it can take a long time before they work, sometimes a corticosteroid is prescribed in addition to the DMARD and NSAID. DMARDs include methotrexate (MTX), sulfasalazine, leflunomide, hydroxychloroquine and azathioprine. These drugs ensure that the inflammatory symptoms decrease. Methotrexate (MTX) is often used first. It represses the immune system, inhibits inflammation, and supports the functioning of most biologicals.

- *Biologicals*
  The group of biologicals is deployed after DMARDs, Corticosteroids and/or NSAIDs have insufficient effect over time. There are different biologicals but they have in common that they slow down the immune system, so that the inflammation is inhibited. The biologicals prevent permanent damage and can stop the progression of the disease in patients with severe RA.
  Different groups can be distinguished within the biologicals. For example, there are so-called TNF-alpha blockers (adalimumab, certolizumab pegol, etanercept, golimumab, infliximab). TNF-alpha blockers block an important protein in the immune system (Tumor Necrosis Factor, alpha, TNF-α) thus inhibiting the immune system and thus the inflammation. In addition, there are abatacept and tocilizumab. Abatacept disrupts communication between cells of the immune system (the B cells and the T cells) and tocilizumab blocks the interleukin-6 receptor, as a result of which the protein responsible for the inflammation (interleukin-6) has no chance.
  Over time the effect of the first biological can decrease, then another biological is given from the aforementioned series of biologicals or the biological rituximab. Rituximab also inhibits immune cells (the B cells). Biologicals are usually used in combination with other medications, often MTX.
  Most biologicals are administered parenterally: intravenous or subcutaneous by injection. Recently there are also targeted synthetic DMARDs that are administered orally. The latter ones have to be taken relatively more often. Biologicals that are administered intravenous or subcutaneous are only recommended in combination with MTX, while the currently approved DMARDs that are administered orally can also be taken as monotherapy (treatment recommendations by European League Against Rheumatism (EULAR) and the American College of Rheumatology (ACR)).

Physiotherapy/exercise

For maintaining flexibility in the joints, exercise or physical therapy is prescribed.

Surgery

Sometimes joints are 'cleaned' with an operation. The thickened tissue in joints and muscles is then removed to prevent damage to bone and cartilage. In the worst case, artificial joints may be necessary.

Self-management

For the protection of the joints patients are recommended to make a number of lifestyle adaptions in their daily life to further protect their joints. For example to perform heavy and light work interchangeably, avoid peak load or long-term overload, alternate rest and move or use tools to make an action lighter. Also a healthy life style (diet, no alcohol, no smoking) can be a part of self-management advise.

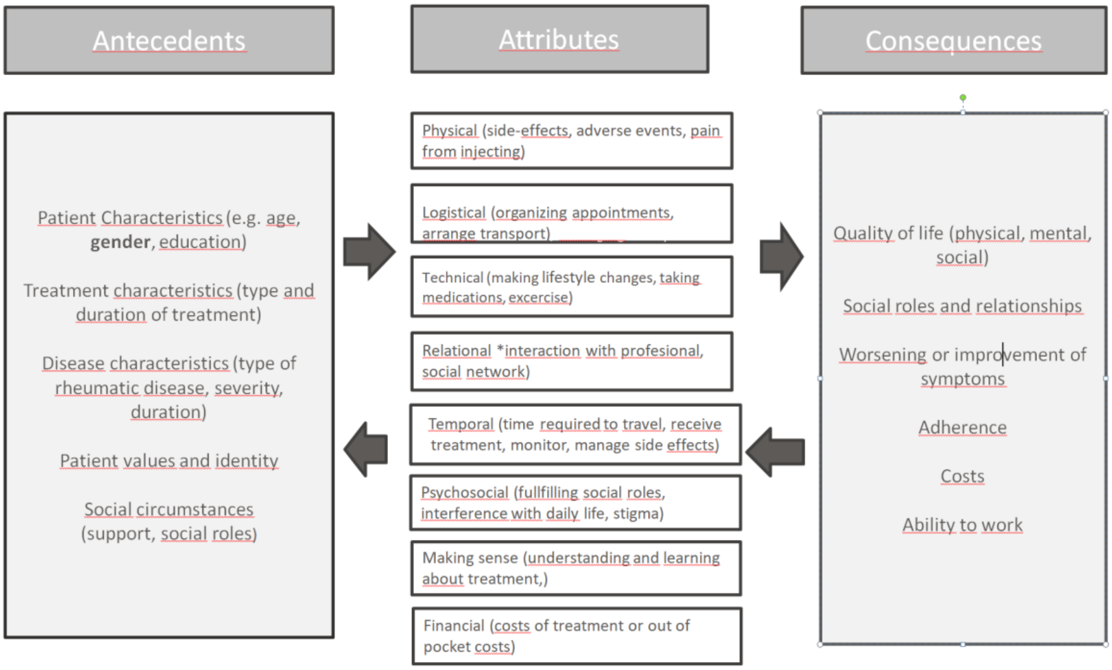
3.5 Conceptual framework to guide data collection and analysis

Based on the findings in this preparatory phase and taking the results of all sources into account we developed a conceptual framework to guide our data collection and analysis (figure 3.1).
The framework shows several *antecedents* which lead to burden, the major *attributes of TB* found in studies in other chronic diseases, and the *consequences* of TB. We distinguished eight key dimensions

of TB that we expect to find for rheumatic disease, based on the findings in TB-research in other chronic diseases and based on our own results of the secondary data-analysis and online survey: physical, logistical, technical, relational, temporal, psychosocial, financial and sense-making attributes. The framework operates in a cyclic way (e.g., some consequences can become antecedents and vice versa).

In this study we were especially interested to what extent this conceptual model holds for patients with inflammatory arthritis and whether the connections between the different parts of the model are different for men and women.

Figure 3.1 Conceptual Framework for study categorization



References

1. Gallacher K, Bhautesh J, Morrison D, Macdonald S, Blane D, et al. Qualitative systematic reviews of treatment burden in stroke, heart failure and diabetes: methodological challenges and solutions. BMC Medical Research Methodology, 2013a; 13:10.
2. Gallacher K, May CR, Montori VM, Mair F. Understanding patients'experiences of treatment burden in chronic heart failue using normalization process theory. Annals of Family Medicine, 2011; 9:235-243.
3. Van Merode T, Van der Ven K, Van den Akker M. Treatment burden in multimorbid patients in the Netherlands and Belgium. Patient experiences in different life domains (submitted).
4. Boyd CM, et al. Healthcare task difficulty mong older dults with multimorbidity. Medical Care, 2014; 52(suppl3):S118-125.
5. Mair FS, May CR. Thinking about the burden of treatment. BMJ, 2014; 349.
6. Sav A, King MA, Whitty JA, Kendall E, McMillan SS, et al. Burden of treatment for chronic illness: a concept analysis and review of the literature. Health Expectations, 2013; 18(3):312-324.
7. Tran VT, Montori VM, Eton DT, Baruch D, Falissard B, Ravaud P. Development and description of measurement properties of an instrument to assess treatment burden among patients with multiple chronic conditions. BMC Medicine, 2012; 10:68.

8. Sav A, King MA, Whitty JA, Kendall E, McMillan SS, et al. Burden of treatment for chronic ilness: a concept analysis and review of the literature. Health Expectations, 2015.
9. Sav A, Kendall E, McMillan SS, Kelly F, Whitty JA, et al. I say hard work: treatment burden among people with chronic illness and their carers in Australia. Health and Social Care in the Community, 2013; 21(6):665-674.

4 Method mixed studies review

A comprehensive search strategy was used to identify qualitative and quantitative studies seeking to understand the adult patient experience with inflammatory rheumatic disease management. We focused on both types of studies as qualitative studies are most suitable to uncover patients' perceived needs and behaviors and to provide conceptual depth about the patient experience. Quantitative studies give insight into the robustness of the relations found in qualitative studies and add possible new relationships with antecedents and outcomes of treatment burden (TB). This review focused on Rheumatoid Arthritis (AR), Ankylosing Spondylitis (AS) and Arthritis Psoriatica (AP).
A formal database search strategy using a combination of free text search terms and subject headings was created in consultation with an information scientist. The following terms were used (including synonyms and related terms) as index terms or free-text words: 'rheumatoid arthritis OR Spondylarthritis OR Arthritis, Psoriatic' AND 'therapy' AND 'sex/gender' AND 'patient perspective'. The complete search strategy can be found in Appendix D.
Databases searched were Pubmed, Cochrane Library reviews, Cochrane Library trials, Embase, PsycINFO and Cinahl.

4.1 Inclusion/exclusion criteria

We included quantitative and qualitative studies that explored the adult patient experience of RA, AP or AS management in any setting (e.g., primary care, secondary care, outpatient, nursing home) and provided information on TB from the patient's perspective. Limitations of English language, year of publication 2007 until October 2017, original studies and publication in a peer reviewed journal were set. The year of publication 2007 and onwards, was chosen to ensure that we collected information about current, rather than historical, patient care.
More specific our inclusion criteria were:

1. Studies concern patients with Rheumatoid Arthritis (RA), Arthritis Psoriatica (AP) or Ankylosing Spondylitis (AS or Bechterew).
2. Adult patients (≥18 years).
3. Discuss aspects of TB (e.g., one of the eight attributes from our conceptual model [figure 3.1]).
4. Present results from the patients' perspective.

For a full description of in- and exclusion criteria see Appendix E.

4.2 Data screening, extraction and analysis

All titles and abstracts were first screened by one researcher against the four inclusion criteria mentioned above. After that, abstracts that seemed to be eligible for full-text screening were screened by two other individuals against the same inclusion criteria. Any disagreements were solved with the first reviewer. Full paper screening, data extraction and analysis were also undertaken by two individuals with a third party involved for any disagreements.

Data extraction of full text was guided by a data-extraction form. In this data extraction form first general information and information with respect to study eligibility was gathered. Once a paper was found eligible, the following information was distracted: information on study details, participant details, in- and exclusion criteria, aim of the study, main results, study limitations, aspects of TB, antecedents and consequences of TB, and reported gender differences in TB, antecedents and consequences. Details of the data extraction form can be found in Appendix F.

Data were analysed using the conceptual framework as described in paragraph 3.5, figure 3.1. The eight attributes in this framework helped us to understand how patients organize tasks or practices, making them routine elements of everyday life. As we are conceptualising TB as a set of tasks performed by patients during their chronic disease management that must be implemented, embedded, and sustained in the patient's life, we thought this to be a suitable framework for analysis. Comparable frameworks like for example Normalization Theory have been shown to effectively conceptualise the practices involved for patients during their sickness careers, and were shown to be effective in understanding the TB experienced by patients with other diseases like chronic heart failure patients [1] or stroke [2].

During data analysis, data on TB were extracted from the results and discussion sections; for TB each study was coded independently by two researchers using the eight attributes of TB as defined in figure 3.1. A careful note was made of any TB that fell outside these categories, in order to assess if the framework in figure 3.1 was ‘fit for purpose’.

All the data collected in the data extraction form for the studies included are presented in tables in Appendix F. A pragmatic approach was then taken to further analyse and reorganise themes into a conceptual model of TB under headings that reflect different processes of care for RA, AS or AP. A sex/gender analysis was included to explore differences and similarities between and among women and men with RA, AP or AS in TB, its antecedents and consequences. Based on the conceptual model of TB that appeared and the additional gender analysis we made suggestions for future areas of research or improvements to health service delivery for men and women with inflammatory arthritis.

4.3 Quality Appraisal

Quality appraisal of qualitative studies was based upon published guidance by well-known qualitative researchers. [3] The criteria used are shown in Table 4.1. For each study the criteria were answered by yes/no or unclear. Two researchers independently carried out quality appraisal and reported this in a limitation section of the study. We used the quality appraisal as an indication of the robustness of our findings. Papers were not excluded based on quality appraisal because we wished to develop a model of TB of inflammatory rheumatic disease as comprehensive as possible and we intended to minimise the risk of missing any key concepts; another reason was that there is currently no consensus on the best way to appraise the quality of qualitative research for inclusion in systematic reviews. [4] For the quantitative studies (a minority) we looked at the study design to get an impression of the quality with RCTs having the highest and cross-sectional surveys the lowest quality.

Figure 4.1 Questions te determine quality of qualitative studies

Appraisal Question
Does the research, as reported, illuminate the subjective meaning, actions, and context of those being researched?
Are subjective perceptions and experiences treated as knowledge in their own right?
Is there evidence of adaption and responsiveness of the research design to the circumstances and issues of real-life social settings during the course of the study?
Does the sample produce the type of knowledge necessary to understand the structures and processes within which the individuals or situations are located?
Is the description detailed enough to allow the researcher or reader to interpret the meaning and context of what is being researched?
Are any different sources of knowledge about the same issue compared and contrasted?
Has the researcher rendered transparent the processes by which data were collected, analysed, and presented?
Has the researcher made clear his or her own possible influence on the data?
Is it clear how the research moves from a description of the data, through quotation or examples, to an analysis and interpretation of the meaning and significance of it?
Are claims being made for the generalisability of the findings to either other bodies of knowledge or to other populations or groups?
Is there any other aspect of the study that may affect quality, e.g., conflict of interest?

References

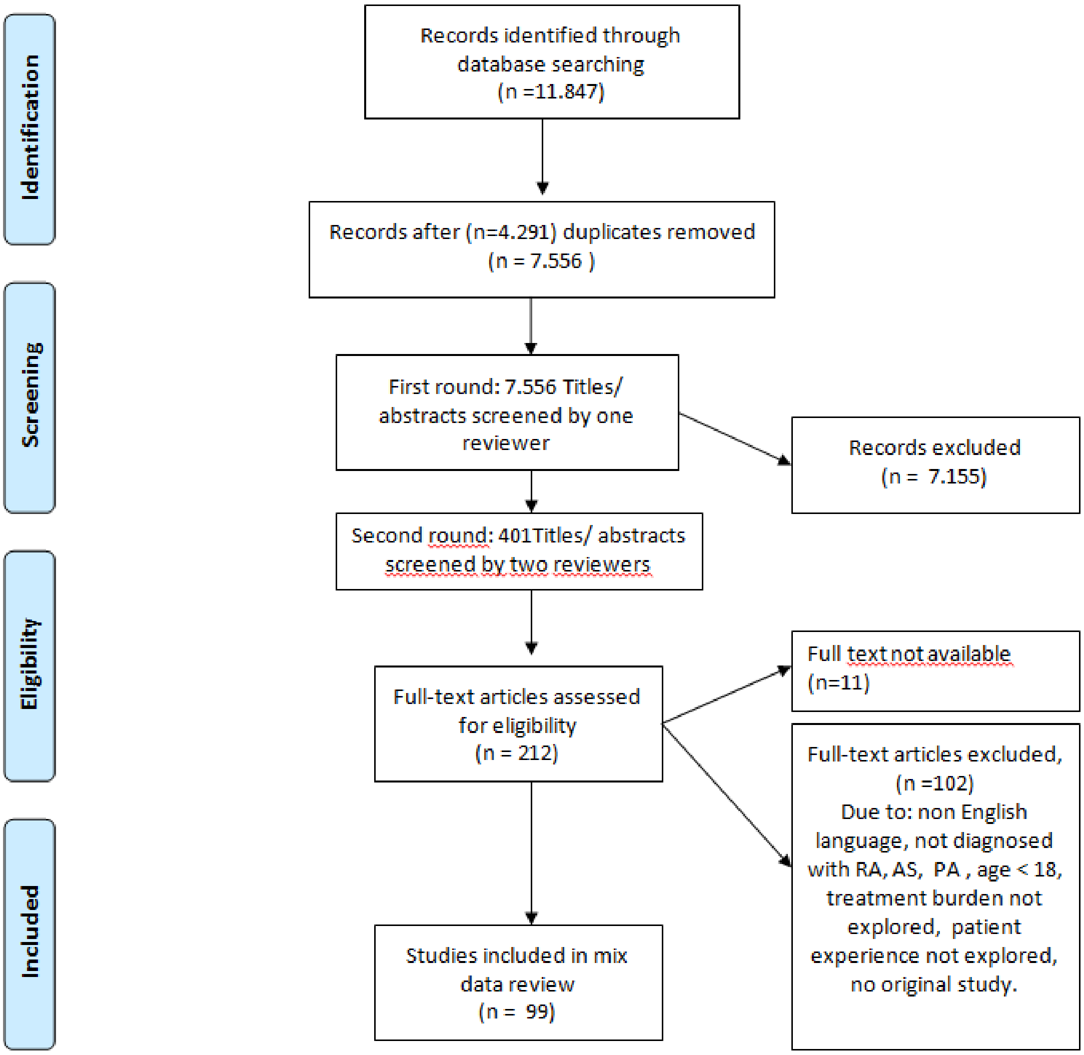
1. Jani B, Blane D, Browne S, Montori VM, May CR, Shippee ND, Mair FS. Identifying treatment burden as an important concept for end of life care in those with advanced heart failure. Current Opinion in Supportive and Palliative Care, 2013; 7:3–7.
2. Gallacher K, Morrison D, Jani B, Macdonald S, May CR et al. Uncovering treatment burden as a key concept for stroke care: a systematic review of qualitative research. Plos, 2013; 10:6.
3. Popay J, Rogers A, Williams G. Rationale and Standards for the Systematic Review of Qualitative Literature in Health Services Research. Qualitative Health Research, 1998; 8:341–351.
4. Dixon-Woods M, Sutton A, Shaw R, Miller T, Smith J, et al. Appraising qualitative research for inclusion in systematic reviews: a quantitative and qualitative comparison of three methods. Journal of Health Services Research & Policy, 2007; 12:42–47.

5 Results mixed studies review

5.1 Retrieved studies

In total, 11,847 papers were identified in the different databases. After removing duplicates, 7,556 studies remained. Of this group 7,155 were excluded based on title and abstract screening. Of the remaining 401 papers, title and abstract were screened another time by two different researchers. Disagreements were discussed with the first reviewer. After title/abstract screening 212 papers were found eligible for full-text screening. As the full text could not be retrieved for 11 studies, 201 were screened. Full texts were screened by two reviewers and in case of doubt discussed. Finally 99 met our inclusion criteria. Figure 5.1 demonstrates the inclusion and exclusion of papers at each stage of the screening process.

Figure 5.1 Flowchart of screenings process



5.2 Study details

None of the included studies stated the investigation of treatment burden (TB) as a research objective, but all contained substantial amounts of information on TB in the results or discussion section. Research objectives were noted to vary considerably between studies as were the attributes or TB demonstrating the heterogeneity of included papers. This paragraph contains a description of key characteristics of included studies, the aspects of treatment covered, the attributes of TB, the quality of the studies found and the evidence for gender differences that came from the included studies. All the results for each study are summarized in Appendix G.

5.2.1 Key descriptives

Key descriptives of the included studies (n=99) were as follows:

Country of study
Studies were conducted in many different countries but most came from UK (n=24) [8, 9, 11, 18, 25, 26, 27, 34, 37, 38, 39, 40, 41, 45, 47, 60, 65, 66, 70, 71, 77, 82, 90, 94] or the USA (n=20) [2, 4, 5, 12, 13, 17, 22, 30, 31, 44, 54, 56, 61, 72, 76, 79, 89, 99]. The other studies were conducted in the Netherlands (n=7) [3, 36, 45, 46, 86, 91, 92], Germany (n=3) [29, 33, 43], Sweden (n=3) [16, 58, 88], France (n=4) [28, 50, 64, 68], Denmark (n=3) [15, 87, 98], Canada (n=7) [6, 10, 14, 24, 32, 74, 96], Austria (n=1) [1]. Belgium (n=1) [1], South Africa (n=2) [7, 91], Saudi Arabia (n=2) [14, 55], Estonia (n=1) [49], Spain (n=2) [53, 57], Italy (n=1) [42], Mexico (n=1) [35], Denmark (n=4) [15, 84, 87, 98], Turkey (n=2) [95], Indonesia (n=1) [57], Portugal (n=1) [59],Australia (n=1) [73], Ireland (n=1) [93] and New Zealand (n=1) [101]. In some studies, the country was not specified or rather divers (n=5) [21, 23, 63, 69, 83, 97].

Settings
The majority of studies recruited patients from outpatient clinics (n=44) [1-9, 11, 15-15, 20, 22-24, 27, 29, 30-33, 39-43, 45-49, 59, 64-65, 70-71, 79, 87-88, 97-99, 102]. Ten studies were conducted in hospital [18, 23, 34-35, 38, 30, 44, 68, 79, 101]. Other studies recruited patients from health insurers databases (n=4) [13, 19, 25-26], patient organizations (n=4) [22, 28, 37, 67], a pharmacy (n=1) [17], a community centre (n=1) [61] or from a population based cohort (n=1) [66]. In other studies (n=7), the setting was not specified [10, 12, 16, 21, 60, 63, 86].

Sex of participants
Almost all studies included males as well as females although in almost all studies women were the large majority (70% or more). Two studies only concerned men [9, 97] and five only women [73, 75, 78, 81, 82]. In a number of studies sex was not reported (n=5) [14, 23, 44, 52, 57].

Age
Ages of participants ranged from 18-93 years. In a number of studies there was no information on age distribution (n=4) [10, 14, 23, 44].

Time since diagnosis
Time varied from just a few months until more than 20 years. Sometimes patients were purposively sampled for short illness duration or rather a more established form of the rheumatic disease. In many studies time since diagnoses was not reported at all.

Ethnicity

Ethnicity of the patient was specified in 33 of the 99 studies. [2, 8, 10, 17, 24-27, 29-31, 35, 39, 40, 42, 43, 45-47, 52, 55, 57, 61, 72, 75-76, 78-80, 83, 85, 90, 97, 99]. Almost without an exception these studies were conducted in the USA; there were a few studies from Canada and the UK that also gave information on ethnicity. In all samples ethnic groups were a minority. Almost all patients were white or Caucasian.

Comorbidity

The presence of comorbidity or multi morbidity was not reported in most studies. In the studies that gave some information on comorbidity (n=13) [6, 7, 13, 24-25, 29, 33, 35, 48, 54-55, 94, 99] the type of comorbidity was not specified but rather a percentage of any comorbidity or a comorbidity index score was given.

Study design

Most studies describing the patient experience of inflammatory rheumatic disease management used a qualitative design (n=43) [7, 9, 11, 14, 16, 17, 22, 27, 29,32, 34, 36-41, 43, 47-48, 55-56, 61, 62, 71, 75, 78, 79, 81-82, 85-88,90-92, 94-99]. These studies used interviews or focus groups or a combination of both to gather information from the patient. Sometimes these focus groups were more structured using for example concept mapping. All qualitative studies sought to identify common themes raised by participants. There were 29 quantitative studies [2, 3, 6, 8, 12, 13, 15, 18-20, 24, 28, 30, 35, 42, 49, 50, 51, 53, 58-59, 64, 66, 68, 70, 72, 76, 83-84]. In these studies data were gathered online or by paper and pencil questionnaires. Twelve studies used a combination of qualitative and quantitative methods [31, 33, 45, 51, 60, 65, 73-74, 77, 80, 89, 93]. One longitudinal study used questionnaires in combination with medical examination on different time points [56]. The other studies were cohort studies (n=4) [10, 25, 26, 54] or RCTs (n=7) [1, 4, 5, 21, 23, 44, 46]. Two used another design [63, 69].

5.2.2 Types of rheumatic diseases

The focus of this study was on the inflammatory disease RA, AP or AS. By far de most studies focused on RA (n=76) [1-3, 7-13, 15-19, 21-22, 25-27, 29, 31, 33-35, 37-43, 46, 48-49, 51-52, 54-58, 59-61, 63, 65, 68-76, 78-82, 84-86, 88-92, 96-99]; AP (n=4) [5-6, 24, 77], AS (n=7) [20, 44, 66-67, 83,87,93] or a combination of these diseases:RA and AS (n=4) [32, 47, 62, 64], RA and AP (n=2) [36,45], AR and AP and SA (n=6) [14, 23, 28, 58, 53, 94].

5.2.3 Aspects of treatment

There were 63 papers that focused on the experiences of patients with medical treatment. The other 36 studies focused on exercise/physiotherapy, interaction with health care professionals or the health care system, coping with the disease in general, advice with respect to lifestyle or costs (table 5.1). Of the studies that focused on medication, most were related to the use of biologicals (n=22) like adalimumab, certolizumab pegol, etanercept or infliximab. But most often the general term anti-TNFα was used. Studies on DMARDs almost all addressed MTX, as were the study in which DMARDs were compared to biologicals (n=12). Injections were the main topic of only one study but fear for or pain from injections was a frequent topic in the studies on biologicals.
There were 10 studies on exercise. Cost was the main topic in only one study although the financial burden of medication use was mentioned in a number of studies [3, 25, 26, 31, 36, 66, 81, 95]. Those studies about the interaction of patients with health professionals all had to do with shared decision making.

Table 5.1 Aspects of treatment studied (n=99)

Treatment aspect	Number of studies	Ref.nr.
Medication NSAIDs	1	[15]
DMARDs + NSAIDs	1	[6]
Medication DMARDs	12	[1, 4, 8, 11, 22-23, 27, 37,46, 48, 52, 56]
Biologicals	22	[2, 3, 5, 10, 12, 24-25, 28, 30, 35-36, 38-39, 41, 45, 47, 49-51, 53, 55, 58]
Biologicals and DMARDs	9	[13, 14, 17-21, 34, 54]
Medication in general	17	[7, 16,26, 29, 31, 33, 42, 44, 47, 57, 70, 73, 76-80]
Injections	1	[23]
Physiotherapy/exercise	10	[61-63, 67, 75, 85, 90, 96, 96, 99]
Interaction with the health care system/professionals/shared decision making	5	[72, 78, 91, 92, 94]
Coping with treatment in general	14	[9, 59, 60, 64-66, 74, 81, 83-84, 86, 97-98]
(Healthy) lifestyle other than exercise (e.g. diet/alcohol)	3	[69, 88, 89]
Costs	1	[95]
Other	3	[68, 71, 82]

5.3 Treatment burden

Although none of the included papers comprehensively covered the entire patient experience of TB or used the term TB, they each explored one or more attributes of TB in describing the patient experience with aspects of treatment.

The attributes that were found in the selected studies and the frequency in which they were studied are presented in table 5.2. All aspects of TB that were found fitted within the eight attributes of our conceptual framework (figure 3.1). In categorizing the attributes we experienced that there was an overlap in attribution categories and aspects of TB mentioned by patients could fall in different categories. Attributes of burden most assessed in the studies however were physical burden, especially in relation to the use of medication, technical burden, relational burden and sense making burden. They are described in more detail below and summarized in table 5.3.

Table 5.2 Attributes of TB studied

Attribute of treatment burden	Number of studies*	Ref.nr.
Physical burden	51	[1, 3, 10- 14, 17 – 19, 21 – 24, 28-30, 34-35, 37-39, 41-42, 45-46, 48, 51-54, 56-58, 63, 67-68, 73, 76-80, 82-83, 86, 91, 93, 96-97]
Logistical burden	5	[49, 50, 62, 71, 81]
Technical burden	8	[61, 62, 67, 74-75, 85, 93, 96]
Relational burden	15	[4-5, 13, 44, 53, 72, 78, 84-86, 89, 91, 93-94, 98]
Temporal burden	10	[48, 55, 57, 71, 74-75, 81, 84, 90, 93]
Psychosocial burden	12	[2-5, 6, 17, 20, 41, 47, 67, 71, 72]
Financial burden	8	[3, 25, 26, 31, 36, 66, 81, 95]
Making sense burden	20	[7-9, 12, 15, 27, 33, 35, 48, 53, 59=60, 64, 68, 70, 78, 89, 91, 96, 98]
More than 3 attributes	4	[64, 65, 88, 99]

* sum is more than 99 studies as more than one attribute of TB can be described in the same study

Physical burden

The large majority of studies that contained information about physical burden described the experiences of patients with the use of DMARDs, biologicals or a combination of these two. There was one study that gave information about TB of patients taking NSAIDs [15]. This study showed that 56% of the users were often worried about side effects due to NSAID treatment; 25% stated that they found the risk of side effects from NSAID so threatening that they were reluctant to take NSAID.
With respect to the use of DMARDs and biologicals, in general one can say that patients experience a lot of side-effects from the use of DMARD's and more positive effects of biologicals. Experiences with DMARDs and MTX in particular were frequently studied [1, 11, 13, 14, 17, 18, 19, 20, 21, 34, 54]. These studies report physical and systemic side effects from DMARDs use: weight gain [11, 14, 20, 21], chest infections [11], intestinal problems [11, 17, 18], anaemia [11, 20], fatigue [11, 13, 18], loss of hair [11, 14, 52], migraine [11]. In one study 60% of patients receiving standard dosage DMARDs reported adverse events such as nausea, diarrhea, stomatitis, xerostomia, headache and vertigo [1]. In the first phase of starting DMARDS many patients reported side effects, held negative perceptions or feelings (anxiety) about DMARD; when searching for information, they found negative information on medication and side effects; this resulted in a higher TB and lack of trust in rheumatologists [36, 48]. Six months after treatment initiation patients had still concerns about side effects, long term consequences, dependence but the fear of MTX increased: patients had concerns that intake was too high, and there was a desire to minimize. [48]
Biologicals may have a sudden and positive impact on RA patients' live in contrast to other medications. The use of biologicals led in almost all studies to quick and significant reductions in overall work and activity impairment [2-5, 15, 44] and had positive effects on quality of life and fatigue [3, 44], significantly reduced work absenteeism [4-5, 15, 55] as well as the number of household days lost and the number of days lost for participation in family, social and leisure activities [4-5, 15, 44]. Most patients with RA and AS were positive when thinking about treatment with TNF in the future [16] However, the stress of the patients' journey to 'qualify' for anti-TNF therapy, and the fear of failing or discontinuation of therapy, was also mentioned [34, 38]; Before they got their anti-TNF, many patients indicated to worry whether they would be eligible for these medications [34, 38] and they alternately experienced feelings of hope, desperation, anxiety and frustration; some patients hold the perception that anti-TNF therapy was restricted by costs, rather than being recommended by patient's needs. Despite the positive effects on fatigue and quality of life, many patients also had doubts about using

biologicals. Reasons were: high perceived costs [3, 12. 38], fear of side effects [7, 12, 15, 16, 20, 38, 48], doubt about the additional benefit of biologics, doing well on existing therapy , not wanting to use an injectable product, fears about long-term safety [12, 15, 16, 46, 48] or being afraid that effects could decline [16, 38, 46, 48]. Some patients were also hesitant to use biologicals as the written information provided on biologicals scared them. [20]
Patients indeed reported side effects from biologicals such as sweating, cold symptoms, sneezing, sore throat, decreased sense of smell and loss of hair [16]. For infliximab, infusion-reactions were mentioned by three studies [19, 21, 51] with an overall incidence of 1.3%; pruritus, flushing or dyspnae being most common. Injection site burning and stinging among RA patients receiving etanercept or adalimumab was reported by almost 60% of the patients [22, 51]. Self-injection was associated with a decreased risk for injection site burning compared with injection by a physician or an allied health care professional [22]. Injection related pain was lower with SQ MTX compared to SQ biologicals. [52]
Despite the overall positive effects of biologicals on pain, fatigue and general functioning, some patients continue to experience difficulties through previous biological damage, continuing flare-ups, and the previously mentioned concerns about anti-TNF therapy. Not in all studies, biologicals had a more positive impact than DMARDs: the multivariable-adjusted risk of hospitalization with a physician-confirmed definite bacterial infection was 2-fold higher overall and 4-fold higher in the first 6 months among patients receiving TNF antagonists versus those receiving MTX alone. [54]
Besides the large amount of studies on medication, there was also one study on surgery. [82] This study showed that patient reasons for surgery may vary considerably and their expectations were informed by previous surgical experience and information from health care professionals. Diverse, and occasionally ambivalent, perceptions of various aspects of postoperative treatment were expressed and all participants emphasized the importance of reassurance and understanding by the health care team. When describing the effect of surgery on their lives, all experienced a period of ‘frustrating dependence’ and adopted a variety of psychological and practical coping mechanisms. Experience of recovery and long-term outcome was influenced by factors extraneous to MCP arthroplasty. Factors influencing satisfaction included participants’ evaluation of the extent to which goals and preoperative expectations had been met and the impact of surgery on their lives.

Technical burden

Technical burden has to do with adherence to medication, exercise or following physiotherapy and following advice for a healthy life style.
A number of studies explored the experiences of patients with a form of exercise. In general, exercise enhanced patients’ confidence to manage their arthritis independently, provided a tool for patients to cope with RA, had psychological and social benefits, could improve self-confidence and contributed to feelings of a more healthy lifestyle [62, 63]. In most cases exercise was adaptable for patients most of the time, so it could be integrated with other life commitments [90, 96]. However, although health care professionals, peers and family and friends could influence exercise uptake positively by giving support, sustaining exercise was challenging for many patients. Some patients desired consistent and continuing contact with a familiar physiotherapist (e.g., via follow-up appointments, digital health technologies) which accommodated individual needs (e.g., different venues, session frequency). [64]
Patients had also a need on information about how to exercise safely [64, 67, 96] and mentioned an increase of symptoms (flares) [62] and pain [67]. Sometimes exercises were too difficult [62] and some patients distrusted exercise because of prior negative experiences [67]. Costs were as mentioned as a barrier to exercise. [62]

Patients also indicated that they often need help from friends or family to exercise and feel that as a barrier as they do not want to bother. There was also fear for exercising: fear for not knowing how to exercise or how to exercise safely and fear for an increase of symptoms. For most participants, walking 3–4 times a week was thought to be an acceptable programme for themselves or others with RA.

Many of the barriers to exercise identified by participants could be alleviated by detailed instructions on the type and duration of exercise recommended. [67]

In trying to live a healthy life, patients indicated to constantly balance between the ideal or prescribed situation on one side and reality on the other. [88] Patients indicated that they experience difficulties with respect to physical activities because of pain/stiffness and fluctuating RA and feel unsure about diet and alcohol use because of lack of information about correct use in relation to RA. [88] Some patients mentioned the advice to reduce alcohol consumption because of their medical treatment as a burden as this advice had also social consequences as friends and family did not always understand. In general, although motivated, patients expressed insufficiency, fear and challenge to adapt their lifestyle recommendations to every day life. In cases that patients felt they succeeded to live healthy it contributed to a better quality of life. [88]

Adherence to medication felt ambiguous for many patients. They described pharmacological treatment as a process of trial and error [98]. Waiting for a possible effect affected their quality of life, as they suffered from feelings of powerlessness and helplessness. Self-determination was also affected by medical regimes because of the perceived dependence on medication. [98] Many participants experienced a lack of acknowledgement of their psychological reactions among health professionals, and expressed a wish for more psychological support.
The way medications were administered had an effect on TB. Oral administrations of medicines were most desired and intravenous infusion most strongly rejected. [33] In addition, biologicals without a combination of MTX were strongly preferred as well as a regular intake, instead of intake every 1-2 weeks. The way of administration was one of the main contributions to TB for patients: many patients suffered from pain or fear for injections and preferred oral intake of medication.
In a study exploring patients' preferences with respect to subcutaneous (s.c.) or intraveneous (i.v.) medication, patients not satisfied with current treatment due to side effects were more likely to prefer s.c. administration because of the convenience of treatment at home and less interference with everyday life. Patients who had a preference for i.v. mentioned the perceived improved safety of hospital administration, the reassuring effect of the doctor's presence, smaller number of injections, anxiety for side effects at home and lack of a caregiver. [42]
Perceptions about medication also contributed to the level of TB experienced in relation to medication intake. Beliefs in the necessity of DMARDs, either for relief of symptoms or prevention of future joint damage, are reasons mentioned to initiate DMARDs and decrease TB. [91] Furthermore, trust in the rheumatologist and the health care system was also important in this respect. [91] However, patients expressed many concerns about initiating DMARDS. These related to the perceived aggressive and harmful nature of DMARDs, potential (or unknown) side effects, perceived influence on fertility and pregnancy, combination with other medicines, time to benefit, and manner of administration. Participants also worried about the future regarding long-term medication use and drug dependency and if a medicine proved to be ineffective, about the risks of future treatments and running out of options. To decrease uncertainty, participants wanted to be informed about multiple treatment options, both current and future. They not only wanted clinical information but also information on how the medications could affect their daily lives. Two studies showed that patients decided to stop with DMARDs because of side effects and safety concerns. [17] In another study on adherence to DMARDs 66% of the patients was non-compliant. Main reasons for non-compliance were the perception that arthritis medication is hard to get and the perception that RA medication is expensive. [26]

Logistical burden

There were only a few studies that mentioned logistical burdens. [49, 50, 62, 74, 81] Logistical burdens have to do with arranging appointments or visits with health care professionals, organising rehabilitation, arranging transport. It seems that patients with RA, AS or AP experience little logistical burdens of this type. Patients felt unsure about when to arrange an appointment with a clinician [4, 50]. One study on use of devices showed that patients often do not know where they should go when they need a device [62]. In a study where barriers were explored for RA patients to participate in rehabilitation programs, time/work, distance, cost and caregiving responsibilities were seen as real barriers to participating in treatment education programs. [74]

Relational burden

Relational burdens may arise in the interaction with health care professionals or the health care system or in an attempt to get support either from family and friends or health professionals.

In their contact with health professionals, shared decision making (SDM) is generally preferred by patients [92, 95], but the preferred level of involvement varies between and within individuals. Older patients for example prefer to be more dependent on health care staff, younger patients want more control and independence [72]. When asked about their preferred role in SDM, patients perceived this question as difficult, mostly because they were unaware of having a choice [92]. Preference regarding involvement may vary according to the type of treatment and the severity of the complaints. However, a considerable group of patients indicated that they would have liked more participation than they had experienced in the past [92, 95]. Perceived barriers for SDM could be divided into doctor-related (e.g., a paternalistic attitude), patient-related (e.g., lack of knowledge of the possibilities) and context-related (e.g., too little time to decide) factors. Patients indicated that they would be more satisfied with their contact with health professionals when 1) their professional would also view care as a shared endeavour, including patients responding actively to their clinician and clinicians exploring and negotiating with patients; 2) clinicians better understand the challenges faced by patients, appreciate the impact their illness has on them and focus on patients' priorities; and 3) clinicians use an open communication style, including the use of non-didactic, patient-centred approaches.

Many patients hold the perception that physicians do not frequently address personal problems [56, 83, 89]. Rheumatic diseases have a huge impact on all aspects of life but during consultations predominantly medical aspects are discussed. Normalization of QoL is the most important attribute of therapies to patients and they feel a need to discuss the impact of the disease on daily life in more detail. [38, 60, 64] Most physician-patient communication centred on symptoms and treatment rather than on the impact of RA on quality of life. [89] Patients wanted health professionals to acknowledge their broader well-being over the longer term; they do not expect clinical staff to directly address employment, housing and family problems, but wanted them to recognize the person beyond 'the patient'. [40, 53]

In addition, patients are searching for trust and reassurance of their health care provider [48, 59] and indicate that a trustful relationship is one of the most important factors that contribute to a successful treatment and less TB. In two cohorts' studies, 30% and 32% reported suboptimal SDM communication. Low trust in physician was independently associated with suboptimal SDM communication in both cohorts. A trusting patient–health care provider and trust in the health care system is especially important when deciding to take medication for RA [78, 79, 91]. Health care providers' recognition, that medications can both have positive and negative effects on partients, positively effect this relationship. [64]

Patients indicate that for good self-management clear communication from their professionals is needed, as well as multidisciplinary care and cooperation between professionals and sufficient, patient education. [32] Some patients indicated to miss information about medication options or were never told about choices. [17]

Financial burden

There were a few studies that also looked at the consequences of treatment for costs. [3, 25, 26, 31, 36, 66, 81, 95] Most studies were related to the use of biologicals and show that in terms of costs, biological treatment is more expensive for patients. Perceived or expected high costs were also a reason why patients were sometimes worried that they not would be eligible for biologicals.

Making sense burden

Patients report that they frequently encounter barriers in receiving information from health care professionals or health services. [7,43, 59, 60, 64, 65] Provision of information is lacking, inadequate time is allocated, timing is inappropriate, or information is given in a form that is incomprehensible. For example, although potentially eligible for biologic therapy, 62% of biologic-naïve patients were not aware of biologic therapies because information was not provided [89]. Patients expressed a desire for information at an early stage, when starting therapy, and not for example during a severe RA flare-up. [34]

Patients also reported that access to information following the consultation is insufficient, resulting in the need for them to spend time seeking information themselves and attempting to make personal sense of the array of changes that are occurring in their lives. [7]

In general patients indicate that they miss information about disease evolution, therapeutic aids, side effects, lifestyle advice, searching for trust and reassurance of their health care provider and info on future prospects. [48] Also information needs about the cause of disease, progression of disease, treatment and side effects, the impact on social and family life, professional life, the organization of the health care system or coping with emotions were mentioned. [60, 64] Many patients had concerns about anti-TNF use and missed health care support for this; patients felt uncertain about when symptoms require a physician visit [50, 97], their knowledge about the need for vaccinations, contraception and the right skills for using subcutaneous bio-drugs [97]; there often was a discrepancy between the level of knowledge and the level of skills suggesting a need for improving practical skills. [50]

However, information and support needs of patients fluctuate over time. [27, 48] At the time of diagnosis, many patients are concerned about the necessity of medication. Following prescription, patients absorbed information from written and verbal sources with reinforced beliefs about necessity but also raised concerns, including fear of side effects. Over time, beliefs were modified on basis of personal experience, particularly of medication effectiveness and side effects. Some patients described tensions and dissonance in their beliefs and experiences of methotrexate. [27] In a study on patients preferences to use biologicals or not patients reported fear of side effects (28%), unsureness about the additional benefit of biologic (27%) and fear of long-term safety (17%). [27] Another study on MTX showed that at treatment initiation there was fear of medication dependence and concerns about side effects, long term consequences, feeling unhealthy, medication dependence; patients searched for trust and reassurance of health care providers and tried to find a routine of daily self management. [4]

Table 5.3 Taxonomy of TB

Attribute	Taxonomy
Physical burden	Enduring medication side-effects Dealing with adverse events Coping with pain from injections Coping with fear for injecting Waiting for a medicine to work
Logistical burden	Organizing appointments with health professionals Organizing rehabilitation Arranging transport Combining household tasks, work and other activities with treatment Distance to treatment location

Attribute	Taxonomy
Technical burden	Doing physical exercise Managing comorbidities Follow a diet Follow a healthy lifestyle Adherence to medication Administration of Medication Using devices
Relational burden	Seeking advice or reassurance from health professionals Contacting health professionals for practical help Developing trustful relationships with professionals Dealing with paternalistic health care professionals Shared decision making Trying to collaborate Show preferences Dealing with different health care providers
Temporal burden	Time to visit health professionals Time to arrange travel Time to receive treatment Time to monitor treatment Time to recover from side effects
Psychosocial burden	Combining life roles with treatment Combining work with treatment and appointments Coping with emotions because of treatment Coping with reactions from friends and family Feelings of shame, guilt, fear Experiencing negative emotions about medications or other treatments, e.g. fear, guilt Coping with dependency from treatment
Financial burden	Costs for medication, aids Out of pocket costs Hidden costs for housing etc. Choosing between higher costs or better health (in case of biologicals)
Making sense burden	Making sense of symptoms Understanding investigations, acute interventions, change of medication Poor information provision Looking for information yourself Managing uncertainty of diagnoses Goal setting Using spirituality Understanding of necessity of medications and other treatment advices Integrating disease with male or female identity Coping with an uncertain disease course Choosing between medications
Other types of burden	-

5.4 Antecedents

Although a large number of antecedents of TB were identified, there was minimal information about the specific direction of their effect on TB, or on the strength of the relationship found, reflecting the lack of theoretical development within the research field. Antecedents were associated with characteristics of the patient, the disease, the treatment, the family or support network and the health-care system.

5.4.1 Patient characteristics

Sex seemed to be an antecedent of burden because men and women experienced TB differently in a number of studies. In general, women experienced more TB than men (see also paragraph 5.6 on sex differences). Age was also an antecedent in some studies: in general elderly people seemed to experience more TB than young people, as might seems logical given the likelihood of an increase in the number of conditions at an older age. Level of education and health literacy were especially related to sense making burdens. Lower educated people and people with low levels of health literacy (HL), more often expressed a need for information with respect to the correct use of medications, the way they should exercise, side effects of medication and were more in need of reassurance by their health care professional. Ethnicity and family history were especially related to beliefs about medication, that is the concerns that patients had about their medicines prescribed and the fear of side-effects and adverse events. Insurance type was related to perceived financial burdens and to the fear of patients that they were not eligible for biologics.

5.4.2 Disease characteristics

Although differences between RA, AP and AS in TB were not tested systematically, results suggest that type of disease matters for some aspects of TB. For example, feelings of stigma were mainly mentioned in studies of AS, feelings of shame in AP and feelings of shame because of deformities in RA. Although not measured often, comorbidity was associated with increased burden. The presence of comorbidities, especially psychological comorbidity such as anxiety or depression, were associated with higher levels of TB. Finally, the severity of the disease, pain, fatigue, mobility restrictions, a low stability of the disease and a longer illness duration could also lead to a higher TB.

5.4.3 Treatment characteristics

Type of medication, number of medications, and history of medications all influenced TB.
Using a high number of medications emerged as a common antecedent in the literature. TB was general high in case of DMARDS and lower in biologicals, although it depends which attribute of TB is taken into account. Also the place and way medication was administered contributed to different levels of TB. In general TB was higher in medications that had to be injected, but there were differences in TB between intravenous and subcutaneous injections, the latter overall causing less TB. Former experience with treatment and phase of treatment contributed also to the amount of TB experienced: if patients had negative former experiences with a type of medication, then starting a new type of medication caused more TB. A long period on biologicals could also contribute to more TB as patients experienced more side effects then those shorter on biologicals.
Finally, changes to medication regimens were also a key antecedent of burden.

5.4.4 Patient-professional relationship

An aspect of health care that emerged frequently was the health practitioner–patient relationship. Failure of health care practitioners to provide adequate information regarding treatment was associated with TB and was often linked to the perceived expertise of the health care professional. Poor communication between patients and health-care providers about medication adherence was likely to result in non-adherence, which was associated with TB. The location of the health-care centre sometimes emerged as an antecedent of financial and time burden. Shared decision making is important for patients. Feelings that a health care professional did not want to invest in shared decision making or an active patient role also caused TB in some patients. A trustful relation between patient and professional reduced TB.

5.4.5 Patient beliefs, skills and values

Concerns about the long term use of medication and side-effects (especially in case of DMARDs and biologicals) were often mentioned in the literature as antecedents of TB in relation to use of medication. If treatment, information provision, or contacts with a health professional did not meet the expectations of patients or did not match their preferences, this also caused TB. Male or female identity was sometimes challenged by the treatment (e.g., using devices, wearing special footwear, feeling tired because of DMARDs use, experience side effects as hair loss) which also caused TB for patients.

5.4.6 Social circumstances

Availability of family networks or support from a social network could lead to lower TB. However, the support and assistance provided by a caregiver could also result in TB for the patient as they felt guilty to bother them. Social roles like the role of caregiver or worker were often difficult to combine with appointments for treatment and time to travel to treatment and asked a lot of flexibility and creativity of patients.

Table 5.4 Overview of antecedents found in literature

Main category	Antecedents
Patient characteristics	Sex, age, educational level, health literacy level ethnicity, income, living situation, family-role, type of insurance, level of knowledge
Disease characteristics	Type of disease, severity of the disease, presence of comorbidity, level of pain, level of fatigue, presence of deformities, stability of the disease, presence of comorbidities, illness duration, depression
Treatment characteristics	Type of medication, number of medications, history of medications, administration mode, place where medication is administered, person by which medication is administered, amount of supervision during treatment, former experience with treatment, phase of treatment
Patient-professional relationship	Frequency of contacts with health care professionals, perceived quality of the relationship with professional, perceived support from professional, level of expertise of professional, perceived level of collaboration or SDM, extent to which patients feel autonomy in treatment choice, location of the health service
Information provision	The extent to which information is provided, quality of information, timing of information, tailoring of information
Patients beliefs, skills and values	The extent to which patient's identity as male or female is threatened, expectations about therapy, beliefs about medication (necessity beliefs, concerns), former experiences with medication, feelings of guilt/shame, perceived self-efficacy, preference for active role in treatment, ability to adapt
Social circumstances	Income, work status, social roles, caring tasks, housing, available social network

5.5 Consequences

Our literature review identified a number of consequences of TB including poor adherence, reduced health and well-being, ineffective use of health resources, reduced employment and low productivity, and negative health impacts on family and carers (table 5.5).

5.5.1 Adherence

One of the most widely cited consequences of TB was non-adherence to treatment. Non-adherence was then related to sub-optimal health outcomes including disease relapse, decreased quality of life and the unscheduled use of more expensive health care resources, such as increased emergency department visits and hospitalization. Non-adherence was most often linked to TB resulting from medication characteristics, including the number of medications, their frequency or mode of administration, side-effects and adverse events. The barriers and facilitators that were reported by patients themselves in relation to adherence presented large inter-individual variations however. A good patient-health professional relationship, knowledge about treatment, the absence of negative effects, an easy treatment regimen, patients' belief that they are able to fulfil the therapy, and an appropriate amount of information that is provided by the health care provider also appear to improve adherence.

5.5.2 Health and well-being

The health and well-being consequences of TB were many and varied substantially. TB was associated with a number of negative health outcomes including specific symptoms like fatigue, recurrence of symptoms, worse progression, decline in health, decreased treatment satisfaction and reduced quality of life. Treatment-related side-effects were often found to have a marked impact on quality of life, which was also affected by perceived TB, disease severity and disruption of lifestyle. TB also caused feelings of depression or anxiety.

5.5.3 Resource use

Although this outcome was not often mentioned in the studies selected, there was some evidence that TB increased the frequency of unscheduled health care and in general resulted in a higher health care use. Perceived financial burden caused by prescription of certain biologicals resulted in increased self-reported use of unscheduled care, such as emergency room visits and hospitalization. Dissatisfaction with health care or the health care professional resulted in shopping behaviour for other providers. Temporal or logistic burdens sometimes forced patients to decide not to go to physiotherapy or other organized treatment sessions.

5.5.4 Workability

The burden of treatment had a marked impact on the patient’s ability to attend work and maintain productivity. Absences from work were related to physical burdens as side-effects and fatigue, temporal burdens as time needed to travel, to attend appointments or receive treatments and logistical burdens as distance to the health care centre. Work absences sometimes lead to feelings of guilt among patients about burdening their co-workers and lost productivity or in case of men challenged their male identity.

5.5.5 Social roles and identity

The burden of treatment also had an influence on the extent to which patients felt able to fulfil social roles such as those of partner, caregiver, employee, friend; Result show that the higher the TB for patients the more difficulties patient have in fulfilling these roles. Some studies also noticed an impact of TB (e.g., side effects such as fatigue, pain, less energy) on male and female identity.

Table 5.5 Overview of consequences found in literature

Main category	Consequences
Adherence	Non-adherence to medication and other forms of treatment, treatment choices, treatment preferences
Health and wellbeing	Quality of life, pain, fatigue, number of symptoms, disease progression, depression, anxiety, disruption of daily life
Health care use and costs	Scheduled and non-scheduled care
Workability	Ability to attend work, work productivity, number of sick-days
Social roles and identity	Being able to fulfil social roles (partner, parent, caregiver, employee, friend) and feeling female or male

5.6 Gender differences

Of the 99 included studies only 25 [2, 6, 8, 10, 11, 14-15, 19, 24, 33, 37, 50, 51, 53, 55, 58, 60, 65, 74, 80, 84, 95, 98] reported about differences between men and women in aspects of TB experienced. Two studies only concerned men [9, 97] and five only women [73, 75, 78, 81, 82]. In these studies a comparison was not possible. The other 67 studies did not report on sex differences. As noticed earlier, in most studies the majority of the participants (>70%) were women and the group of men rather small to make comparisons. This may be one of the reasons why differences were not reported.

Of the 25 studies that looked at differences between men and women, three [11, 42, 49] found no significant differences in the experience of both groups with aspects of treatment. In the other studies some differences were found en described below, organized by aspect of TB.

Physical burden

In the studies that assessed sex-differences in the experience of patients with medication, women in all cases did worse: in a study on biologicals, patients who discontinued treatment after 6 months were more often women. The most common reasons for discontinuation were lack of perceived effectiveness and financial reasons. [2] In other studies on biologics, women reported more side effects such as fatigue [53], worse function and higher DAS28 scores (disease activity) [10], weight gain [14] and more infections [24]. Women had also significant more infusion reactions of infliximab therapy than men (2.21% vs. 1.49%) [19] and among RA patients receiving etanercept or adalimumab, women reported 1.5 times more injection site burning and stinging then men. [51]

In a study of RA patients starting with DMARDs, at baseline, men and women had similar disease activity and radio-graphic damage; men, however, had significantly worse erosion, while women had worse joint space narrowing. Despite similar treatment, women had worse disease progression over the 2-year follow-up (DAS28-ESR4), physician global scores, and tender joint counts. Self-reported measures (Health Assessment Questionnaire-Disability Index, patient global scores, fatigue, pain) were worse among women at baseline and throughout the study period. Men were more likely to achieve remission. So, despite similar treatment, in general, male patients reported better outcomes, in particular for pain and physical function, compared to female patients. [58]

Logistical burden

One study gave insights into the logistical burdens that patients experience. In a study where barriers were explored for RA patients to participate in rehabilitation programs, time/work, distance, cost and caregiving responsibilities were seen as real barriers to participating in treatment education programs.

Participants who did attend the program possessed resources allowing them to alter schedules, draw on family support, budget for unexpected monetary expenditures, and request accommodation to the regular program format. These findings demonstrate the need for extensive planning and effort required on the part of individuals to enable participation. This study also showed that women, especially those with younger children, are less flexible then men and have less possibilities to organize their care appointments. [74]

Technical burden

Women and men differ in their preferences for DMARDs intake (oral or intravenous and daily or a few times a week) although the direction of the preference was not further specified. [24]

Relational Burdens

A good and trustful relationship with health care providers is important for both men and women. Women differ however from men in the role they want to take during consultation and treatment in general. In a study exploring whether RA patients wished to participate in decisions about choosing an anti-TNF-a drug , there was a significant difference between men and women with regard to the decision-making process with health care providers: 61% of men wanted their rheumatologist to decide and 36% of women wanted their rheumatologist to decide. [65]

In one study, women were les satisfied with the care they received then men as they experienced more often then men that physicians do not address personal problems. [53]

Psychosocial time demands

The start of biologicals has in general a very positive impact on life, both physical and psychological; however in patients with a longer illness duration and patients that had already deformities of foot and hands the impact was less positive: they felt stigma and negative social reactions; some experienced a reduced tolerance of the drug and an increase in symptoms; general pain diminished by biologicals but not foot pain; limited choice of special footwear was experienced as a burden. Especially women experienced a negative impact on their personal identity and self-image when there were visible signs of the disease or when they had to wear special footwear. [37]

In a study conducted to understand how men experience AS and the challenges related to living with AS as a chronic disease it was shown that AS greatly impacts men's perceptions of themselves as men, their relationships as partners and fathers, their social lives and their masculine identity. [87]

In a study among AP patients, work limitations were associated with medication use with patients on more aggressive forms of therapy tending to have greater productivity impairment; when men and women received the same medication, women reported more limitations with respect to work than men. [6] Compared with paid workers included in the study, housewives had significantly lower work quantity ($p=0.041$), quality ($p=0.021$), and work satisfaction ($p=0.040$) scores.

Sense making burden

In general men know less about treatment and have less information on correct use of medications and how to exercise [60,65]. They also had less knowledge about complications (e.g., urinary infections) and the right preparation in relation to medication intake for surgery [50]

Although women had more knowledge, their information needs still were higher. In a study on needs with respect to foot health education, women expressed a greater need of information on the role of the podiatrist, information about RA medication and its effect on the feet and information about treatment options; women were more likely to agree that information should be provided on demand then men; men and women also differed in their preferences for websites that give information on foot care, women in general being more critical; women were in general more engaged in information seeking, positive health behaviours and demonstrating self-efficacy than men. [60]

A study also demonstrated that women struggle to find consumer-focused, accessible information on pregnancy planning, pregnancy and early parenting in relation to their chronic condition. Although most participants trusted their rheumatologist as their primary source, there was consistent demand for more comprehensive information and the importance of learning from women's personal experiences was strongly emphasised. Also, the need for information about available physical and emotional support services and improved advocacy about the impact of RA was evident. Participants considered that materials relating to RA specific to pregnancy and post-natal care are lacking. [73]
In a study in which beliefs about medication of patients with RA who are of South Asian origin were compared with patients of White British/Irish origin, women in both groups had more concerns about side effects of medication than men, especially with respect to the use of DMARDs [8] although in another study no differences in concerns between men and women were found. [11]

Financial burden
In three studies reporting on gender differences, costs were also assessed. In all studies women reported higher costs. In a study on direct and indirect health care costs related to ankylosing spondylitis (AS), women reported higher costs then men, probably because of higher disease activity. [95] In a study in which travel time, and travel cost related to contacts with health care providers for patients with rheumatoid arthritis (RA) were investigated during a three-month period, males generally have less contacts, less travel time in minutes and less travel costs then women. [84]

5.7 Quality appraisal

A summary of the quality appraisal for qualitative studies (n=43) [7, 9, 11, 14, 16, 17, 22, 27, 29, 32, 34, 36-41, 43, 47-48, 55-56, 61, 62, 71, 75, 78, 79, 81-82, 85-88, 90-92, 94-99] is given in table 5.6. Papers were generally of a reasonable quality. Aspects of quality that were most poorly described included acknowledgement of the researchers influence on the analysis, any notes of conflicts of interest and the use of other sources of knowledge to compare findings.

The quantitative studies were most cross-sectional, using surveys . There were only 7 RCT's. [1, 4, 5, 21, 23, 44, 46] According to quality guidelines for quantitative studies these studies should be rated 'weak' in general, except for the RCT's and a number of large cohort studies. [10, 25, 26, 54] But as said earlier, papers were not excluded based on quality appraisal because we wanted to develop a model of TB of inflammatory rheumatic disease as comprehensive as possible and we intended to minimise the risk of missing any key concepts.

Table 5.6 A summary of quality appraisal of included qualitative studies (n=43)

Appraisal question	Yes	No	Unclear
Does the research, as reported, illuminate the subjective meaning, actions and context of those being researched?	43		
Are subjective perceptions and experiences treated as knowledge in their own right?	43		
Is their evidence of adaptation and responsiveness of the research design to the circumstances and issues of real-life social settings during the course of the study?	31	12	
Does the sample produce the kind of knowledge necessary to understand the structures and processes within which the individuals of situations are located?	30	6	7
Is the description detailed enough to allow the researcher or reader to interpret the meaning and context of what is being researched?	35	6	2
Are any different sources of knowledge about the same issue compared and contrasted?	28	15	
Has the researcher rendered transparent the process by which data were collected, analysed and presented?	40	3	
Has the researcher made clear his own influence on the data?	22	19	2
Is it clear how the research moves from a description of the data, through quotation or examples, to an analysis and interpretation of the meaning or relevance?	40	3	
Are claims being made for the generalisability of the findings?	34	9	
Is there any other aspect of the study that may affect quality e.g. conflict of interest?	18	25	

References of studies selected from the mixed studies review

1. Hobl EL, Mader RM, Jilma B, Duhm B, Mustak M, Broll H, et al. A randomized, double-blind, parallel, single-site pilot trial to compare two different starting doses of methotrexate in methotrexate-naive adult patients with rheumatoid arthritis. Clinical Therapeutics, 2012; 34(5):1195-203.
2. Hone D, Cheng A, Watson C, Huang B, Bitman B, Huang XY, et al. Impact of etanercept on work and activity impairment in employed moderate to severe rheumatoid arthritis patients in the United States. Arthritis Care & Research, 2013; 65(10):1564-1572.
3. Hoving JL, Bartelds GM, Sluiter JK, Sadiraj K, Groot I, Lems WF, et al. Perceived work ability, quality of life, and fatigue in patients with rheumatoid arthritis after a 6-month course of TNF inhibitors: prospective intervention study and partial economic evaluation. Scandinavian Journal of Rheumatology, 2009; 38(4):246-250.
4. Kavanaugh A, Smolen JS, Emery P, Purcaru O, Keystone E, Richard L, et al. Effect of certolizumab pegol with methotrexate on home and work place productivity and social activities in patients with active rheumatoid arthritis. Arthritis and Rheumatism, 2009; 61(11):1592-1600.
5. Kavanaugh A, Gladman D, Van der Heijde D, Purcaru O, Mease P. Improvements in productivity at paid work and within the household and increased participation in daily activities after 24 weeks of certolizumab pegol treatment of patients with psoriatic arthritis: results of a phase 3 double-blind randomised placebo-controlled study. Annals of the Rheumatic Diseases, 2015; 74(1):44-51.
6. Kennedy M, Papneja A, Thavaneswaran A, Chandran V, Gladman DD. Prevalence and predictors of reduced work productivity in patients with psoriatic arthritis. Clinical and Experimental Rheumatology, 2014; 32(3):342-348.
7. Kobue B, Moch S, Watermeyer J. "It's so hard taking pills when you don't know what they're for": a qualitative study of patients' medicine taking behaviours and conceptualisation of medicines in the context of rheumatoid arthritis. BMC Health Services Research, 2017; 17(1):303.
8. Kumar K, Gordon C, Toescu V, Buckley CD, Horne R, Nightingale PG, et al. Beliefs about medicines in patients with rheumatoid arthritis and systemic lupus erythematosus: a comparison between patients of South Asian and White British origin. Rheumatology (Oxford, England), 2008; 47(5):690-697.
9. Lack S, Noddings R, Hewlett S. Men's experiences of rheumatoid arthritis: an inductive thematic analysis. Musculoskeletal Care, 2011; 9(2):102-112.
10. Lee J, Mason R, Martin L, Barnabe C. Biologic therapy response and drug survival for females compared to males with rheumatoid arthritis: a cohort study. Rheumatology International, 2014; 34(10):1449-1453.
11. Lempp H, Hofmann D, Hatch SL, Scott DL. Patients' views about treatment with combination therapy for rheumatoid arthritis: a comparative qualitative study. BMC Musculoskeletal Disorders, 2012; 13:200.
12. Lisicki R, Chu L. What matters to patients and physicians when considering biologic therapy for rheumatoid arthritis? Postgraduate Medicine, 2008; 120(3):154-160.
13. Louder AM, Singh A, Saverno K, Cappelleri JC, Aten AJ, Koenig AS, et al. Patient preferences regarding rheumatoid arthritis therapies: a conjoint analysis. American Health and Drug Benefits, 2016; 9(2):84-92.
14. Lutf A, Hammoudeh M. Weight Gain and Hair Loss during Anti-TNF Therapy. International Journal of Rheumatology, 2012; 2012:593039.
15. Ornbjerg LM, Andersen HB, Kryger P, Cleal B, Hetland ML. What do patients in rheumatologic care know about the risks of NSAIDs? Journal of Clinical Rheumatology: Practical reports on rheumatic & musculoskeletal diseases, 2008; 14(2):69-73.

16. Linden C, Bjorklund A. Living with rheumatoid arthritis and experiencing everyday life with TNF-alpha blockers. Scandinavian Journal of Occupational Therapy, 2010; 17(4):326-334.
17. Brown EM, Garneau KL, Tsao H, Solomon DH. DMARD non-use in low-income, elderly rheumatoid arthritis patients: results of 86 structured interviews. Arthritis Research & Therapy, 2014; 16(1):R30.
18. Campbell RC, Batley M, Hammond A, Ibrahim F, Kingsley G, Scott DL. The impact of disease activity, pain, disability and treatments on fatigue in established rheumatoid arthritis. Clinical Rheumatology, 2012; 31(4):717-722.
19. Choquette D, Faraawi R, Chow A, Rodrigues J, Bensen WJ, Nantel F. Incidence and Management of Infusion Reactions to Infliximab in a Prospective Real-world Community Registry. The Journal of Rheumatology, 2015; 42(7):1105-1111.
20. Cinar FI, Cinar M, Yilmaz S, Simsek I, Erdem H, Pay S. Thoughts and perceptions of ankylosing spondylitis patients with regard to TNF inhibitors. Rheumatology International, 2014; 34(7): 979-986.
21. Combe B, Codreanu C, Fiocco U, Gaubitz M, Geusens PP, Kvien TK, et al. Efficacy, safety and patient-reported outcomes of combination etanercept and sulfasalazine versus etanercept alone in patients with rheumatoid arthritis: a double-blind randomised 2-year study. Annals of the Rheumatic Diseases, 2009; 68(7):1146-1152.
22. Curtis JR, Xie F, Mackey D, Gerber N, Bharat A, Beukelman T, et al. Patient's experience with subcutaneous and oral methotrexate for the treatment of rheumatoid arthritis. BMC Musculoskeletal Disorders, 2016; 17(1):405.
23. Gutierrez M, Di Matteo A, Rosemffet M, Cazenave T, Rodriguez-Gil G, Diaz CH, et al. Short-term efficacy to conventional blind injection versus ultrasound-guided injection of local corticosteroids in tenosynovitis in patients with inflammatory chronic arthritis: A randomized comparative study. Joint, Bone, Spine: Revue du Rhumatisme, 2016; 83(2):161-166.
24. Haddad A, Li S, Thavaneswaran A, Cook RJ, Chandran V, Gladman DD. The incidence and predictors of infection in psoriasis and psoriatic arthritis: results from longitudinal observational cohorts. The Journal of Rheumatology, 2016; 43(2):362-366.
25. Harrold LR, Peterson D, Beard AJ, Gurwitz JH, Briesacher BA. Time trends in medication use and expenditures in older patients with rheumatoid arthritis. The American Journal of Medicine, 2012; 125(9):937.e9-15.
26. Harrold LR, Briesacher BA, Peterson D, Beard A, Madden J, Zhang F, et al. Cost-related medication nonadherence in older patients with rheumatoid arthritis. The Journal of Rheumatology, 2013; 40(2):137-143.
27. Hayden C, Neame R, Tarrant C. Patients' adherence-related beliefs about methotrexate: A qualitative study of the role of written patient information. BMJ Open, 2015; 5(5).
28. Betegnie AL, Gauchet A, Lehmann A, Grange L, Roustit M, Baudrant M, et al. Why do patients with chronic inflammatory rheumatic diseases discontinue their biologics? an assessment of patients' adherence using a self-report questionnaire. The Journal of Rheumatology, 2016; 43(4):724-730.
29. Brandstetter S, Hertig S, Loss J, Ehrenstein B, Apfelbacher C. 'The lesser of two evils...' - views of persons with rheumatoid arthritis on medication adherence: a qualitative study. Psychology & Health, 2016; 31(6):675-692.
30. Bolge SC, Goren A, Tandon N. Reasons for discontinuation of subcutaneous biologic therapy in the treatment of rheumatoid arthritis: A patient perspective. Patient Preference and Adherence, 2015; 9:121-131.
31. Beard AJ. Cost as a feature of medication management communication in medical visits. US: ProQuest Information & Learning; 2009.
32. Bernatsky S, Feldman D, De Civita M, Haggerty J, Tousignant P, Legare J, et al. Optimal care for rheumatoid arthritis: a focus group study. Clinical Rheumatology, 2010; 29(6):645-657.

33. Alten R, Krüger K, Rellecke J, Schiffner-Rohe J, Behmer O, Schiffhorst G, et al. Examining patient preferences in the treatment of rheumatoid arthritis using a discrete-choice approach. Patient Preference and Adherence, 2016; 10:2217-2228.
34. Arkell P, Ryan S, Brownfield A, Cadwgan A, Packham J. Patient experiences, attitudes and expectations towards receiving information about anti-TNF medication - “it could give me two heads and I'd still try it!”. BMC Musculoskeletal Disorders, 2013; 14.
35. Pascual-Ramos V, Contreras-Yanez I. Motivations for inadequate persistence with disease modifying anti-rheumatic drugs in early rheumatoid arthritis: the patient's perspective. BMC Musculoskeletal Disorders, 2013; 14:336.
36. Pasma A, Van 't Spijker A, Luime JJ, Walter MJ, Busschbach JJ, Hazes JM. Facilitators and barriers to adherence in the initiation phase of Disease-modifying Antirheumatic Drug (DMARD) use in patients with arthritis who recently started their first DMARD treatment. The Journal of Rheumatology, 2015; 42(3):379-385.
37. Sanders L, Donovan-Hall M, Borthwick A, Bowen CJ. Experiences of mobility for people living with rheumatoid arthritis who are receiving biologic drug therapy: implications for podiatry services. Journal of Foot and Ankle Research, 2017; 10:14.
39. Sanderson T, Morris M, Calnan M, Richards P, Hewlett S. What outcomes from pharmacologic treatments are important to people with rheumatoid arthritis? Creating the basis of a patient core set. Arthritis Care & Research, 2010a; 62(5):640-646.
40. Sanderson T, Morris M, Calnan M, Richards P, Hewlett S. 'It's this whole picture, this well-being': patients' understanding of 'feeling well' with rheumatoid arthritis. Chronic Illness, 2010c; 6(3):228-240.
41. Sanderson T, Kirwan J, Almeida C, Morris M, Noddings R, Hewlett S. Item Development and Face Validity of the Rheumatoid Arthritis Patient Priorities in Pharmacological Interventions Outcome Measures. The Patient, 2016; 9(2):103-115.
42. Scarpato S, Antivalle M, Favalli EG, Nacci F, Frigelli S, Bartoli F, et al. Patient preferences in the choice of anti-TNF therapies in rheumatoid arthritis. Results from a questionnaire survey (RIVIERA study). Rheumatology (Oxford, England), 2010; 49(2):289-294.
43. Schildmann J, Grunke M, Kalden JR, Vollmann J. Information and participation in decision-making about treatment: a qualitative study of the perceptions and preferences of patients with rheumatoid arthritis. Journal of Medical Ethics, 2008; 34(11):775-779.
44. Sieper J, Kivitz A, van Tubergen A, Deodhar A, Coteur G, Woltering F, et al. Impact of certolizumab pegol on patient-reported outcomes in patients with axial spondyloarthritis. Arthritis Care & Research, 2015; 67(10):1475-1480.
45. Voshaar M, Vriezekolk J, Van Dulmen S, Van den Bemt B, Van de Laar M. Barriers and facilitators to disease-modifying antirheumatic drug use in patients with inflammatory rheumatic diseases: a qualitative theory-based study. BMC Musculoskeletal Disorders, 2016; 17(1).
46. Markusse IM, Akdemir G, Huizinga TW, Allaart CF. Drug-free holiday in patients with rheumatoid arthritis: a qualitative study to explore patients' opinion. Clinical Rheumatology, 2014; 33(8):1155-1159.
47. McArthur MA, Birt L, Goodacre L. "Better but not best": a qualitative exploration of the experiences of occupational gain for people with inflammatory arthritis receiving anti-TNFalpha treatment. Disability and Rehabilitation, 2015; 37(10):854-863.
48. Meyfroidt S, Van der Elst K, De Cock D, Joly J, Westhovens R, Hulscher M, et al. Patient experiences with intensive combination-treatment strategies with glucocorticoids for early rheumatoid arthritis. Patient Education and Counseling, 2015; 98(3):384-390.
49. Muller R, Kallikorm R, Polluste K, Lember M. Compliance with treatment of rheumatoid arthritis. Rheumatology International, 2012; 32(10):3131-3135.

50. Orefice D, Beauvais C, Gossec L, Flipon E, Fautrel B, Marguerie L, et al. Cross-sectional study of self-care safety skills in 677 patients on biodrugs for inflammatory joint disease. Joint, Bone, Spine: Revue du Rhumatisme, 2014; 81(6):502-507.
51. Curtis JR, Hobar C, Hansbrough K. Injection-site burning and stinging in patients with rheumatoid arthritis using injectable biologics. Current Medical Research and Opinion, 2011; 27(1):71-78.
52. Curtis JR, Xie F, Mackey D, Gerber N, Bharat A, et al. Patient's experience with subcutaneous and oral methotrexate for the treatment of rheumatoid arthritis. BMC Musculoskeletal Disorders, 2016; 17(1):405.
53. González CM, Carmona L, De Toro J, Batlle-Gualda E, Torralba AI, et al. Perceptions of patients with rheumatic diseases on the impact on daily life and satisfaction with their medications: RHEU-LIFE, a survey to patients treated with subcutaneous biological products. Patient Preference and Adherence, 2017; 11:1243-1252.
54. Curtis JR, Patkar N, Xie A, Martin C, Allison JJ, Saag M, et al. Risk of serious bacterial infections among rheumatoid arthritis patients exposed to tumor necrosis factor alpha antagonists. Arthritis and Rheumatism, 2007; 56(4):1125-1133.
55. Janoudi N, Almoallim H, Husien W, Noorwali A, Ibrahim A. Work ability and work disability evaluation in Saudi patients with rheumatoid arthritis. Special emphasis on work ability among housewives. Saudi Medical Journal, 2013; 34(11):1167-1172.
56. Jawaheer D, Maranian P, Park G, Lahiff M, Amjadi SS, Paulus HE. Disease progression and treatment responses in a prospective DMARD-naive seropositive early rheumatoid arthritis cohort: does gender matter? The Journal of Rheumatology, 2010; 37(12):2475-2485.
57. Lee WP, Lee SSS, Xin X, Thumboo J. Towards a better understanding of reasons for non-adherence to treatment among patients with rheumatoid arthritis: a focus group study. Proceedings of Singapore Healthcare, 2017; 26(2):109-113.
58. Hekmat K, Jacobsson LT, Nilsson JA, Lindroth Y, Turesson C. Changes and sex differences in patient reported outcomes in rheumatoid factor positive RA-results from a community based study. BMC Musculoskeletal Disorders, 2014; 15:44.
59. Cunha-Miranda L, Costa L, Ribeiro JS. NEAR study: Needs and Expectations in Rheumatoid ARthritis - do we know our patients needs? Acta Reumatologica Portuguesa, 2010; 35(3):314-323.
60. Graham AS, Stephenson J, Williams AE. A survey of people with foot problems related to rheumatoid arthritis and their educational needs. Journal of Foot and Ankle Research, 2017; 10:12.
61. Greysen HM, Greysen SR, Lee KA, Hong OS, Katz P, Leutwyler H. A Qualitative Study Exploring Community Yoga Practice in Adults with Rheumatoid Arthritis. Journal of Alternative and Complementary Medicine (New York, NY), 2017; 23(6):487-493.
62. Herrera-Saray P, Pelaez-Ballestas I, Ramos-Lira L, Sanchez-Monroy D, Burgos-Vargas R. Usage problems and social barriers faced by persons with a wheelchair and other aids. Qualitative study from the ergonomics perspective in persons disabled by rheumatoid arthritis and other conditions. Reumatologia Clinica, 2013; 9(1):24-30.
63. Hurkmans E, Van dGFJ, Vliet VTP, Schoones J. Dynamic exercise programs (aerobic capacity and/or muscle strength training) in patients with rheumatoid arthritis. Cochrane Database of Systematic Reviews [Internet]. 2009; (4). Available from: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD006853.pub2/abstract.
64. Beauvais C, Rahal A, Hassani KC, Pouplin S. Detection of educational needs of patients with inflammatory arthritis: Feasibility and results in routine care. Education Thérapeutique du Patient/Therapeutic Patient Education, 2014; 6(2):1-12.
65. Chilton F, Collett RA. Treatment choices, preferences and decision-making by patients with rheumatoid arthritis. Musculoskeletal Care, 2008; 6(1):1-14.

66. Cooksey R, Husain MJ, Brophy S, Davies H, Rahman MA, Atkinson MD, et al. The Cost of Ankylosing Spondylitis in the UK Using Linked Routine and Patient-Reported Survey Data. PLoS One, 2015; 10(7):e0126105.
67. Curbelo Rodríguez R, Zarco Montejo P, Almodóvar González R, Flórez García M, Carmona Ortells L. Barriers and Facilitators for the Practice of Physical Exercise in Patients With Spondyloarthritis: Qualitative Study of Focus Groups (EJES-3D). Reumatologia Clinica, 2017; 13(2):91-96.
68. Guennoc X, Samjee I, Jousse-Joulin S, Devauchelle V, Roudaut A, Saraux A. Quality and impact of information about interventional rheumatology: a study in 119 patients undergoing fluoroscopy-guided procedures. Joint, Bone, Spine: Revue du Rhumatisme, 2007; 74(4):353-357.
69. Hagen KB, Byfuglien MG, Falzon L, Olsen SU, Smedslund G. Dietary interventions for rheumatoid arthritis. Cochrane Database of Systematic Reviews [Internet]. 2009; (1). Available from: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD006400.pub2/abstract.
70. Hehir M, Carr M, Davis B, Radford S, Robertson L, Tipler S, et al. Nursing support at the onset of rheumatoid arthritis: Time and space for emotions, practicalities and self-management. Musculoskeletal Care, 2008; 6(2):124-134.
71. Blake A, Mandy PJ, Stew G. Factors influencing the patient with rheumatoid arthritis in their decision to seek podiatry. Musculoskeletal Care. 2013; 11(4):218-228.
72. Barton JL, Trupin L, Tonner C, Imboden J, Katz P, Schillinger D, et al. English language proficiency, health literacy, and trust in physician are associated with shared decision making in rheumatoid arthritis. The Journal of Rheumatology, 2014; 41(7):1290-1297.
73. Ackerman IN, Jordan JE, Van Doornum S, Ricardo M, Briggs AM. Understanding the information needs of women with rheumatoid arthritis concerning pregnancy, post-natal care and early parenting: A mixed-methods study. BMC Musculoskeletal Disorders, 2015; 16:194.
74. Bain L, Sangrar R, Bornstein C, Lukmanji S, Hapuhennedige S, Thorne C, et al. Identifying real and perceived barriers to therapeutic education programs for individuals with inflammatory arthritis. Clinical Rheumatology, 2016; 35(9):2317-2326.
75. Baxter S, Smith C, Treharne G, Stebbings S, Hale L. What are the perceived barriers, facilitators and attitudes to exercise for women with rheumatoid arthritis? A qualitative study. Disability and rehabilitation, 2015; 1-8.
76. Poulos C, Hauber AB, Gonzalez JM, Turpcu A. Patients' willingness to trade off between the duration and frequency of rheumatoid arthritis treatments. Arthritis Care & Research, 2014; 66(7):1008-1015.
77. Rothery C, Bojke L, Richardson G, Bojke C, Moverley A, Coates L, et al. A discrete choice experiment to explore patients' willingness to risk disease relapse from treatment withdrawal in psoriatic arthritis. Clinical Rheumatology, 2016; 35(12):2967-2974.
78. Salt E, Peden A. The complexity of the treatment: the decision-making process among women with rheumatoid arthritis. Qualitative Health Research, 2011; 21(2):214-222.
79. Salt E, Rowles GD, Reed DB. Patient's perception of quality patient--provider communication. Orthopedic Nursing, 2012; 31(3):169-176.
80. Sanderson T, Morris M, Calnan M, Richards P, Hewlett S. Patient perspective of measuring treatment efficacy: The rheumatoid arthritis patient priorities for pharmacologic interventions outcomes. Arthritis Care and Research, 2010b; 62(5):647-656.
81. Schneider M, Manabile E, Tikly M. Social aspects of living with rheumatoid arthritis: a qualitative descriptive study in Soweto, South Africa - a low resource context. Health and Quality of Life Outcomes, 2008; 6:54.
82. Sharrock C, Kennedy D, Spencer S. Patients' expectations, experiences and the determinants of satisfaction related to metacarpophalangeal arthroplasty. Musculoskeletal Care, 2014; 12(3):132-140.

83. Sieper J, Holbrook T, Black CM, Wood R, Hu X, Kachroo S. Burden of illness associated with non-radiographic axial spondyloarthritis: a multiperspective European cross-sectional observational study. Clinical and Experimental Rheumatology, 2016; 34(6):975-983.
84. Sørensen J, Linde L, Hetland ML. Contact frequency, travel time, and travel costs for patients with rheumatoid arthritis. International Journal of Rheumatology, 2014; 2014.
85. Bearne LM, Manning VL, Choy E, Scott DL, Hurley MV. Participants' experiences of an Education, self-management and upper extremity eXercise Training for people with Rheumatoid Arthritis programme (EXTRA). Physiotherapy, 2016.
86. Walter MJM, van't Spijker A, Pasma A, Hazes JMW, Luime JJ. Focus group interviews reveal reasons for differences in the perception of disease activity in rheumatoid arthritis. Quality of Life Research, 2017; 26(2):291-298.
87. Madsen M, Jensen KV, Esbensen BA. Men's experiences of living with ankylosing spondylitis: a qualitative study. Musculoskeletal Care, 2015; 13(1):31-41.
88. Malm K, Bremander A, Arvidsson B, Andersson ML, Bergman S, Larsson I. The influence of lifestyle habits on quality of life in patients with established rheumatoid arthritis-A constant balancing between ideality and reality. International Journal of Qualitative Studies on Health and Well-being, 2016; 11:30534.
89. McInnes IB, Combe B, Burmester G. Understanding the patient perspective - results of the Rheumatoid Arthritis: Insights, Strategies & Expectations (RAISE) patient needs survey. Clinical and Experimental Rheumatology, 2013; 31(3):350-357.
90. Nichols VP, Williamson E, Toye F, Lamb SE. A longitudinal, qualitative study exploring sustained adherence to a hand exercise programme for rheumatoid arthritis evaluated in the SARAH trial. Disability & Rehabilitation, 2017; 39(18):1856-1863.
91. Nota I, Drossaert CH, Taal E, van de Laar MA. Patients' considerations in the decision-making process of initiating disease-modifying antirheumatic drugs. Arthritis Care & Research, 2015; 67(7):956-964.
92. Nota I, Drossaert CH, Taal E, van de Laar MA. Arthritis patients' motives for (not) wanting to be involved in medical decision-making and the factors that hinder or promote patient involvement. Clinical Rheumatology, 2016; 35(5):1225-1235.
93. O'Dwyer T, McGowan E, O'Shea F, Wilson F. Physical Activity and Exercise: Perspectives of Adults With Ankylosing Spondylitis. Journal of Physical Activity & Health, 2016; 13(5):504-513.
94. Dures E, Hewlett S, Ambler N, Jenkins R, Clarke J, Gooberman-Hill R. A qualitative study of patients' perspectives on collaboration to support self-management in routine rheumatology consultations. BMC Musculoskeletal Disorders, 2016; 17(1).
95. Akkoc N, Direskeneli H, Erdem H, Gul A, Kabasakal Y, Kiraz S, et al. Direct and indirect costs associated with ankylosing spondylitis and related disease activity scores in Turkey. Rheumatology International, 2015; 35(9):1473-1478.
96. Kaptein SA, Backman CL, Badley EM, Lacaille D, Beaton DE, Hofstetter C, et al. Choosing where to put your energy: A qualitative analysis of the role of physical activity in the lives of working adults with arthritis. Arthritis Care and Research, 2013; 65(7):1070-1076.
97. Hewlett S, Ambler N, Almeida C, Cliss A, Hammond A, Kitchen K, et al. Self-management of fatigue in rheumatoid arthritis: a randomised controlled trial of group cognitive-behavioural therapy. Annals of the Rheumatic Diseases, 2011; 70(6):1060-1067.
98. Kristiansen TM, Primdahl J, Antoft R, Horslev-Petersen K. Everyday life with rheumatoid arthritis and implications for patient education and clinical practice: a focus group study. Musculoskeletal Care, 2012; 10(1):29-38.
99. Iversen MD, Scanlon L, Frits M, Shadick NA, Sharby N. Perceptions of physical activity engagement among adults with rheumatoid arthritis and rheumatologists. International Journal of Clinical Rheumatology, 2015; 10(2):67-77.

6 Discussion

To the best of our knowledge, this is the first literature review to explore treatment burden (TB) in rheumatic diseases and certainly the first one that explores differences in TB between men and women. We focused on the rheumatic diseases Rheumatoid Arthritis (RA), Ankylosing Spondylitis or Bechterew (AS) and Arthritis Psoriatica (AP). Ninetynine studies were included in our review, but none of these comprehensively covered the entire patient experience of TB; rather each one explored in depth a particular aspect of management or the patient experience in a specific context. In this way, this study offers a comprehensive conceptual model of TB in inflammatory rheumatic diseases as RA, AS or AP. Using this model in which we not only looked for attributes of TB but also on antecedents and consequences, we have been able to examine relationships between components of TB and theorize causal processes. The number of studies on TB in which differences between men and women were explored was rather limited (n=25). The results however were very straight forward: in all studies there was a higher TB in women.

6.1 Treatment burden

The project has provided a good picture of how TB is experienced by people with inflammatory rheumatic diseases. Starting from a conceptual model for data analysis based on studies in other chronic diseases [1-3] containing eight attributes of TB, our review showed that six of these attributes especially hold for rheumatic disease: dealing with physical discomfort and concerns about medication, technical aspects such as performing exercises and lifestyle adaptations in a good way, challenges in contact with care providers and care institutions, time investment for treatment and contacts with care, problems with maintaining or fulfilling roles as parents or employees and, most prominent, understanding of illness, the treatment and the advice that goes with it. Organizational aspects such as making appointments and arranging transport or financial aspects of TB such as out of pocket costs mentioned frequently in others studies on TB of patients suffering from stroke [1] or hearth failure [2], were less prominent in our review on aspects of TB for rheumatic disease.
Our results also showed that TB has both subjective and objective elements including number of medications, time to administer medication and doing exercises as well as feelings of hopelessness, fear and concerns about treatments. We were not able to given en extensive overview of differences between people with RA, AS and AP. The literature related exclusively to AS and AP was very limited; most studies were about RA. In studies were the diseases together were included, results were not described separately for each disease or there were no differences in aspects of TB between the diseases reported.
A key finding from this review is that RA, AS and AP patients spend substantial time and effort seeking out, cognitively processing, and reflecting on information about the management of their disease. There is also evidence that the provision of this information by health care professionals is on a whole inadequate. This resonates with previous literature on TB in heart failure patients [2, 4] and stroke patients. [1] Our review showed that access to information is often poor, timing is sometimes inadequate, and the information does not always fit the patients’ needs. This makes that patients feel poorly informed and consequently spend time and energy on searching for information about their disease themselves.
Both communication during the clinical encounter and provision of information to patients must be improved, as patients' understanding of the rationale behind therapies and their trust in their health care professionals and their management plans is pertinent to achieving optimum adherence [5]. A lack of knowledge means that patients are ill equipped to plan and organise their care, to develop

coping strategies, and to set goals for treatment. The clinical implications of these deficits in knowledge require further exploration. Improved information provision to decrease TB may be effective.

In addition to poor provision of information by health care providers, the exchange of information between patient and professional generally appears not optimal, resulting in a mismatch in ideas regarding goals and care preferences. Many patients in our review hold the perception that physicians do not frequently address personal problems [6-8], while they feel a need to discuss the impact of the disease on daily life in more detail. [9-11] Most physician-patient communication centred on symptoms and treatment rather than on the impact of RA on quality of life. [8] In addition, patients often miss trust and reassurance of their health care provider. A trusting patient–health care provider and trust in the health care system is especially important when deciding to take medication for RA. [12-14] A lack of information, not paying attention to the person behind the patient and a lack of trust experienced, leads to patient dissatisfaction, a prerequisite for nonadherence to subsequent management plans, as confidence and motivation are negatively affected. [15] It is therefore vital that health professionals spend time with patients to explore their care preferences. Previous research has shown that during the consultation, patients are not always forthcoming with their own agendas [16]; therefore, eliciting their ideas, concerns, and expectations is an important task on the part of the health professional.

In chronic diseases there is a strong emphasis on self management and Shared Decision Making (SDM) in which patients and professionals together set goals for self management. The complexity of predicting patients' preferences regarding involvement in SDM was reported in a number of studies. [17-18] Most patients with rheumatic diseases prefer SDM, but their preference may vary according to the situation they are in and the extent to which they experience barriers in getting more involved. Unawareness of having a choice is still a major barrier for patient participation. The attending physician seems to have an important role as facilitator in enhancing patient participation by raising awareness and offering options, but implementing SDM is a shared responsibility; all parties need to be involved and educated. [13, 18]

Patients reported many side effects from the use of medication, especially in case of DMARDs.

The experiences with biologicals were more positive. Frequently mentioned effects from DMARDs use were weight gain, chest infections, intestinal problems, anaemia, fatigue, loss of hair, and migraine. Patients also often held negative perceptions or feelings (anxiety) about DMARDs not only at the start of using DMARDs but also after a number of months.

Patients starting to use biologicals often reported a sudden and positive impact on their lives especially in relation to work and daily activities. [19-22] However, also frequently mentioned was the stress of patients to 'qualify' for anti-TNF therapy, and the fear of failing or discontinuation of therapy [9,23]; some patients hold the perception that anti-TNF therapy was restricted by costs, rather than being recommended by patients' needs.

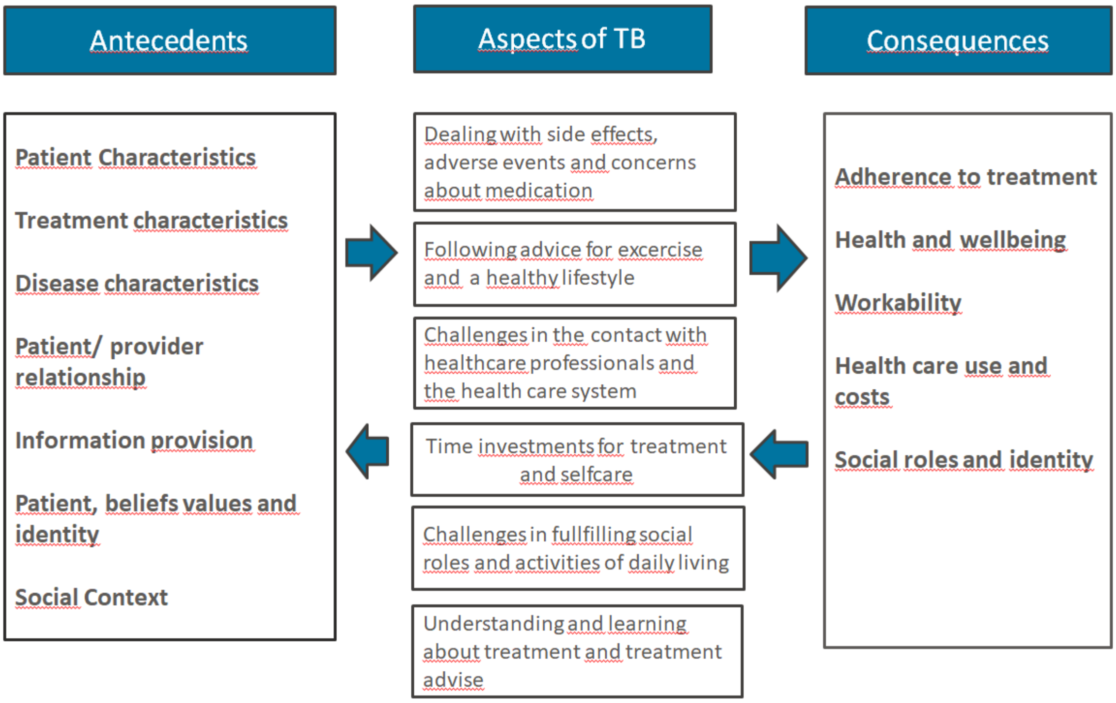
The way medications were administered had an effect on TB. Patients strongly preferred oral administrations of medicines instead of intravenous administration. [24] In addition, biologicals without a combination of MTX were strongly preferred as well as a regular intake, instead of intake every 1-2 weeks. The way of administration was one of the main contributions to TB for patients: many patients suffered from pain or fear for injections.

Many patients experience challenges in adherence to medication, exercise or physiotherapy and following advice for a healthy life style. They described it as constantly balancing between the ideal or prescribed situation on the one hand and reality on the other. [25] Patients indicated that they experience difficulties with respect to physical activities because of pain/stiffness and fluctuating RA and feel unsure about diet and alcohol use because of lack of information about correct use in relation to RA. [25] Following a healthy lifestyle had also social consequences for some patients as friends and family did not always understood; in general, although motivated, patients expressed insufficiency, fear and challenge to adapt their lifestyle recommendations to every day life. In cases that patients felt they succeed to live healthy it contributed to a better quality of life.

6.2 Conceptual model

Except from a detailed description of TB, our literature review also provided insight into factors that influence the level of TB experienced (antecedents) and factors that result from TB (consequences). The antecedents could be divided in patient characteristics, disease characteristics, treatment characteristics, aspects of the patient-provider relationship, information-provision, personal beliefs and concerns of patients and the social context in which patients live. Five broad categories of consequences of TB were found: adherence, quality of life, health care use and costs, workability, social roles and identity.
Taking into account these antecedents, consequences and attributes found in our review, the following model can be made:

Figure 6.1 Final model of TB for patients with inflammatory arthritis



6.3 Gender differences

This study showed that it is often difficult to disentangle the effect of sex (biological differences between males and females) from gender (a result of social role difference between men and women). Almost all studies in our review focused on sex differences. They showed a number of differences between men and women in TB, that have also been found in other studies. Women tended to discontinue anti-TNFα treatment earlier than men. The reasons that women mentioned were a lack of perceived effectiveness and financial burdens [26]. Several large studies have also shown that women tend to discontinue anti-TNF-α agents earlier than men. For example, Glintborg et al. [27] analysed information on 761 AP patients treated with anti-TNF-α agents from the Danish biologics registry

DANBIO. They showed that female sex was associated with shorter drug survival and that this finding could be explained by inferior response to treatment than men. Similar results were found following analysis of data from the British Society for Rheumatology Biologics Register. Among 566 AP patients who received anti-TNF-α agents, female gender was associated with higher drug discontinuation. [28] A similar trend was observed in AS and RA patients [29-31]. However, female sex was also associated with shorter survival on the medication in a stratified model that only included adverse effects as the event causing drug termination, suggesting that women also suffered from more side effects that led to discontinuation of the medical treatment [27]. In the studies that looked at sex differences in side effects in our review it was also found that women experience more severe side effects than men [32-36]. The reason for these gender differences in drug survival and response to therapy remain unclear. It has been suggested that sex hormones and musculoskeletal performance may explain the poor response of women to anti-TNF-α agents; however, such a linkage has not very well been established [37].

Being female also turned out to be a risk factor for work disability [38]. This was also found in studies on RA and AS not specifically focussing on aspects of TB [39-42]. These differences in work disability may be a consequence of the way men and women with rheumatic diseases perceive their health as women reported in general higher scores on subjective measures of pain, fatigue and perceived quality of life as measured with the SF-36 than men. [26, 32, 36] These differences were in general independent of age or disease related variables such as joint damage, suggesting that women may indeed experience more limitations in daily functioning than men. Women also in general hold more negative ideas about the disease in general or specific on medication use, expressing more concerns [43]. In literature it has been suggested that women have a more pronounced pain perception than men, which can lead to more limitation in functioning and poorer quality of life [44] and it has also been suggested that men are more likely to underscore their disability from illness, as they are likely to overestimate their functional activity. [45] These explanations for higher disability scores in women with rheumatic diseases deserve further attention.

An interesting finding from our review was that women wish a different role than men in medical consultations [36, 46] and also have different information needs [46]. Women wished to participate more in decisions about choosing medications and attached more importance to shared decision making than men [46]. Paternalistic professionals and a lack of information or inadequate or not timely information were also mentioned more often as TB by women than men [46]. Women were less satisfied with the care they received then men as they experienced more often than men that physicians did not address personal problems [36] while they needed it. In general men knew less about treatment and had less information on correct use of medications and how to exercise. [46-48]

6.4 Limitations of the studies found

Our study, in which 99 studies on aspects of TB were included, showed some important limitations that in part can be explained by the state of science and only recent attention for TB and gender differences in the experience of chronic diseases. First, our review highlights the dominance of quantitative and qualitative based papers to understand TB that were in general of low quality. Most quantitative papers used cross-sectional designs with small numbers of participants and the more sophisticated research designs such as RCTS were very limited. For these reasons we were not able to make firm statements about the robustness of the relationships between aspects of TB and antecedents and consequences nor about the causal direction of the relationships between these concepts. In addition, despite the known strengths of qualitative research, making it possible to understand, in-depth, the TB experiences of patients, the qualitative studies showed a wide variation in topics discussed, methods used, number of patients included and often missed some important information to be able to interpret the results in a correct way, such as illness duration, presence of comorbidity, number and types of medications used and living circumstances. This also makes comparisons across studies difficult.

Second, our review highlights a lack of longitudinal designs to understand and measure TB. Given that levels of TB experienced by a person can change over time in response to disease severity and control and the development of other chronic conditions [3] the limited number of longitudinal studies could be viewed as problematic. Two studies exploring the information needs of patients with RA longitudinally [49-50], clearly showed that these needs vary across the different phases of illness. Measuring TB via cross-sectional study designs, as it has been done, impedes our ability to fully understand the dynamic nature of TB.

Third, our review also showed that studies of TB on rheumatic diseases in developing countries and culturally different populations are lacking. The overwhelming majority of studies have been conducted among Anglo-Saxon populations in high-income countries such as the United States, United Kingdom, Canada, and countries in western Europe. Thus, there is limited knowledge about the experiences of people in different health contexts and among specific racial and cultural populations. This may also be an explanation that burden from costs or travelling to health care services were not mentioned very often in the studies included in our review.

Fourth, our aim was to explore sex and gender differences, but we found that almost all studies were limited to differences in sex. Attention for genderroles was very limited the exception being one study on housewives and the consequences of burden from taking biologicals for workability [38] and one study on the parenting role of young mothers causing difficulties to follow rehabilitation programs because of temporal and organizational strains. [51]

Finally, an important theme that is missing from current measures of TB is identity. Despite the recognition of the impact of treatment on everyday activities, how TB influences a person’s identity is limited. This was also recognized by Sav in a recent review. [52] We found two studies, one in men with AS and one in women with RA which both showed that the rheumatic disease highly impacts on their identity as a man or woman. [53-54]

References

1. Gallacher K, Bhautesh J, Morrison D, Macdonald S, Blane D, Erwin P, May CR, Montori VM, Eton DT, Smith F, Batty DG, Mair FS. Qualitative systematic reviews of treatment burden in stroke, heart failure and diabetes - Methodological challenges and solutions BMC Medical Research Methodology, 2013a; 13:10.
2. Gallacher K, May CR, Montori VM, Mair F. Understanding patients’experiences of treatment burden in chronic heart failue using normalization process theory. The Annalsof Family Medicine, 2011; 9:235-243.
3. Sav A, King MA, Whitty JA, Kendall E, McMillan SS, Kelly F, Hunter B, Wheeler AJ. Burden of treatment for chronic ilness: a concept analysis and review of the literature. Health Expectations, 2015.
4. Jani B, Blane D, Browne S, Montori VM, May CR, Shippee ND, Mair FS. Identifying treatment burden as an important concept for end of life care in those with advanced heart failure. Current Opinion in Supportive and Palliative Care; 2013; 7:3–7.
5. Achevat S de, Suarez-Almazor ME. Improving treatment adherence in patients with rheumatologic disease. http://www.musculoskeletalnetwork.com/nervous-system-diseases/content/article/1145622/1691476.

6. Jawaheer D, Maranian P, Park G, Lahiff M, Amjadi SS, Paulus HE. Disease progression and treatment responses in a prospective DMARD-naive seropositive early rheumatoid arthritis cohort: does gender matter? The Journal of Rheumatology, 2010; 37(12):2475-2485.
7. Sieper J, Holbrook T, Black CM, Wood R, Hu X, Kachroo S. Burden of illness associated with non-radiographic axial spondyloarthritis: a multiperspective European cross-sectional observational study. Clinical and Experimental Rheumatology, 2016; 34(6):975-983.
8. McInnes IB, Combe B, Burmester G. Understanding the patient perspective - results of the Rheumatoid Arthritis: Insights, Strategies & Expectations (RAISE) patient needs survey. Clinical and Experimental Rheumatology, 2013; 31(3):350-357.
9. Sanderson T, Morris M, Calnan M, Richards P, Hewlett S. What outcomes from pharmacologic treatments are important to people with rheumatoid arthritis? Creating the basis of a patient core set. Arthritis Care & Research, 2010a; 62(5):640-646.
10. Graham AS, Stephenson J, Williams AE. A survey of people with foot problems related to rheumatoid arthritis and their educational needs. Journal of Foot and Ankle Research, 2017; 10:12.
11. Beauvais C, Rahal A, Hassani KC, Pouplin S. Detection of educational needs of patients with inflammatory arthritis: Feasibility and results in routine care. Education Thérapeutique du Patient/Therapeutic Patient Education, 2014; 6(2):1-12.
12. Salt E, Peden A. The complexity of the treatment: the decision-making process among women with rheumatoid arthritis. Qualitative Health Research, 2011; 21(2):214-222.
13. Salt E, Rowles GD, Reed DB. Patient's perception of quality patient--provider communication. Orthopedic Nursing, 2012; 31(3):169-176.
14. Nota I, Drossaert CH, Taal E, van de Laar MA. Patients' considerations in the decision-making process of initiating disease-modifying antirheumatic drugs. Arthritis Care & Research, 2015; 67(7):956-964.
15. Nota I, Drossaert CH, Taal E, van de Laar MA. Arthritis patients' motives for (not) wanting to be involved in medical decision-making and the factors that hinder or promote patient involvement. Clinical Rheumatology, 2016; 35(5):1225-1235.
16. Barry CA1, Bradley CP, Britten N, Stevenson FA, Barber N.Patients' unvoiced agendas in general practice consultations: qualitative study. BMJ, 2000; 320(7244):1246-1250.
17. Dures E, Hewlett S, Ambler N, Jenkins R, Clarke J, Gooberman-Hill R. A qualitative study of patients' perspectives on collaboration to support self-management in routine rheumatology consultations. BMC Musculoskeletal Disorders, 2016; 17(1).
18. Akkoc N, Direskeneli H, Erdem H, Gul A, Kabasakal Y, Kiraz S, et al. Direct and indirect costs associated with ankylosing spondylitis and related disease activity scores in Turkey. Rheumatology International, 2015; 35(9):1473-1478.
19. Kavanaugh A, Smolen JS, Emery P, Purcaru O, Keystone E, Richard L, et al. Effect of certolizumab pegol with methotrexate on home and work place productivity and social activities in patients with active rheumatoid arthritis. Arthritis and Rheumatism, 2009; 61(11):1592-1600.
20. Kavanaugh A, Gladman D, van der Heijde D, Purcaru O, Mease P. Improvements in productivity at paid work and within the household and increased participation in daily activities after 24 weeks of certolizumab pegol treatment of patients with psoriatic arthritis: results of a phase 3 double-blind randomised placebo-controlled study. Annals of the Rheumatic Diseases, 2015; 74(1):44-51.
21. Ornbjerg LM, Andersen HB, Kryger P, Cleal B, Hetland ML. What do patients in rheumatologic care know about the risks of NSAIDs? Journal of Clinical Rheumatology: Practical Reports on Rheumatic & Musculoskeletal Diseases, 2008; 14(2):69-73.
22. Sieper J, Kivitz A, van Tubergen A, Deodhar A, Coteur G, Woltering F, et al. Impact of certolizumab pegol on patient-reported outcomes in patients with axial spondyloarthritis. Arthritis Care & Research, 2015; 67(10):1475-1480.

23. Arkell P, Ryan S, Brownfield A, Cadwgan A, Packham J. Patient experiences, attitudes and expectations towards receiving information about anti-TNF medication - "it could give me two heads and I'd still try it!". BMC Musculoskeletal Disorders, 2013; 14.
24. Alten R, Krüger K, Rellecke J, Schiffner-Rohe J, Behmer O, Schiffhorst G, et al. Examining patient preferences in the treatment of rheumatoid arthritis using a discrete-choice approach. Patient Preference and Adherence, 2016; 10:2217-2228.
25. Malm K, Bremander A, Arvidsson B, Andersson ML, Bergman S, Larsson I. The influence of lifestyle habits on quality of life in patients with established rheumatoid arthritis-A constant balancing between ideality and reality. International Journal of Qualitative Studies on Health and Well-being, 2016; 11:30534.
26. Hone D, Cheng A, Watson C, Huang B, Bitman B, Huang XY, et al. Impact of etanercept on work and activity impairment in employed moderate to severe rheumatoid arthritis patients in the United States. Arthritis Care & Research, 2013; 65(10):1564-1572.
27. Glintborg B, Ostergaard M, Dreyer L et al. Treatment response, drug survival, and predictors thereof in 764 patients with psoriatic arthritis treated with anti-tumor necrosis factor a therapy: results from the nationwide Danish DANBIO registry. Arthritis & Rheumatology, 2011; 63(2): 382-390.
28. Saad AA, Ashcroft DM, Watson KD, Hyrich KL, Noyce PR, Symmons DP. Persistence with anti-tumour necrosis factor therapies in patients with psoriatic arthritis: observational study from the British Society of Rheumatology Biologics Register. Arthritis Research & Therapy, 2009; 11(2):R52.
29. Markenson JA, Gibofsky A, Palmer WR et al. Persistence with anti-tumor necrosis factor therapies in patients with rheumatoid arthritis: observations from the RADIUS registry. The Journal of Rheumatology, 2011; 38(7):1273-1281.
30. Heiberg MS, Koldingsnes W, Mikkelsen K et al. The comparative one-year performance of anti-tumor necrosis factor α drugs in patients with rheumatoid arthritis, psoriatic arthritis, and ankylosing spondylitis: results from a longitudinal, observational, multicenter study. Arthritis & Rheumatology, 2008; 59(2):234-240.
31. Pavelka K, Forejtova S, Stolfa J et al. Anti-TNF therapy of ankylosing spondylitis in clinical practice. Results from the Czech national registry ATTRA. Clinical and Experimental Rheumatology: 2009; 27(6):958-963.
32. Lee J, Mason R, Martin L, Barnabe C. Biologic therapy response and drug survival for females compared to males with rheumatoid arthritis: a cohort study. Rheumatology International, 2014; 34(10):1449-1453.
33. Lutf A, Hammoudeh M. Weight Gain and Hair Loss during Anti-TNF Therapy. International Journal of Rheumatology, 2012; 593039.
34. Choquette D, Faraawi R, Chow A, Rodrigues J, Bensen WJ, Nantel F. Incidence and Management of Infusion Reactions to Infliximab in a Prospective Real-world Community Registry. The Journal of Rheumatology, 2015; 42(7):1105-1111.
35. Haddad A, Li S, Thavaneswaran A, Cook RJ, Chandran V, Gladman DD. The incidence and predictors of infection in psoriasis and psoriatic arthritis: results from longitudinal observational cohorts. The Journal of Rheumatology, 2016; 43(2):362-366.
36. González CM, Carmona L, De Toro J, Batlle-Gualda E, Torralba AI, Arteaga MJ, et al. Perceptions of patients with rheumatic diseases on the impact on daily life and satisfaction with their medications: RHEU-LIFE, a survey to patients treated with subcutaneous biological products. Patient Preference and Adherence, 2017; 11:1243-1252.
37. Eder L, Chandran V, Gladman DD. Gender-related differences in patients with psoriatric arthritis. International Journal of Clinical Rheumatology, 2012; (6):641-649.
38. Kennedy M, Papneja A, Thavaneswaran A, Chandran V, Gladman DD. Prevalence and predictors of reduced work productivity in patients with psoriatic arthritis. Clinical and Experimental Rheumatology, 2014; 32(3):342-348.

39. De Roos AJ, Callahan LF. Differences by sex in correlates of work status in rheumatoid arthritis patients. Arthritis Care & Research, 1999; 12(6):381-391.
40. Odegard S, Finset A, Kvien TK, Mowinckel P, Uhlig T. Work disability in rheumatoid arthritis is predicted by physical and psychological health status: a 7-year study from the Oslo RA register. Scandinavian Journal Of Rheumatology, 2005; 34(6):441-447.
41. Montacer Kchir M, Mehdi Ghannouchi M, Hamdi W et al. Impact of the ankylosing spondylitis on the professional activity. Joint Bone Spine, 2009; 76(4):378-382.
42. Wallenius M, Skomsvoll JF, Koldingsnes W et al. Work disability and health-related quality of life in males and females with psoriatic arthritis. The Annals of the Rheumatic Diseases, 2009; 68(5):685-689.
43. Kumar K, Gordon C, Toescu V, Buckley CD, Horne R, Nightingale PG, et al. Beliefs about medicines in patients with rheumatoid arthritis and systemic lupus erythematosus: a comparison between patients of South Asian and White British origin. Rheumatology (Oxford, England), 2008; 47(5):690-697.
44. Unruh AM. Gender variations in clinical pain experience. Pain, 1996; 65(2-3):123-167.
45. Van Den Ende CH, Hazes JM, Le Cessie S, Breedveld FC, Dijkmans BA. Discordance between objective and subjective assessment of functional ability of patients with rheumatoid arthritis. British Journal of Rheumatology, 1995; 34(10):951-955.
46. Chilton F, Collett RA. Treatment choices, preferences and decision-making by patients with rheumatoid arthritis. Musculoskeletal Care, 2008; 6(1):1-14.
47. Graham AS, Stephenson J, Williams AE. A survey of people with foot problems related to rheumatoid arthritis and their educational needs. Journal of Foot and Ankle Research, 2017; 10:12.
48. Orefice D, Beauvais C, Gossec L, Flipon E, Fautrel B, Marguerie L, et al. Cross-sectional study of self-care safety skills in 677 patients on biodrugs for inflammatory joint disease. Joint, Bone, Spine: Revue du Rhumatisme, 2014; 81(6):502-507.
49. McArthur MA, Birt L, Goodacre L. "Better but not best": a qualitative exploration of the experiences of occupational gain for people with inflammatory arthritis receiving anti-TNFalpha treatment. Disability and Rehabilitation, 2015; 37(10):854-863.
50. Meyfroidt S, Van der Elst K, De Cock D, Joly J, Westhovens R, Hulscher M, et al. Patient experiences with intensive combination-treatment strategies with glucocorticoids for early rheumatoid arthritis. Patient Education and Counseling, 2015; 98(3):384-390.
51. Bain L, Sangrar R, Bornstein C, Lukmanji S, Hapuhennedige S, Thorne C, et al. Identifying real and perceived barriers to therapeutic education programs for individuals with inflammatory arthritis. Clinical Rheumatology, 2016; 35(9):2317-2326.
52. Sav A, Saleni A, Mair FS, McMillan SS. Measuring the burden of treatment for chronic diseases: implication sof a scoping review of the literature. BMC Medical research Methodology, 2017; 17:140.
53. Madsen M, Jensen KV, Esbensen BA. Men's experiences of living with ankylosing spondylitis: a qualitative study. Musculoskeletal Care, 2015; 13(1):31-41.
54. Sanders L, Donovan-Hall M, Borthwick A, Bowen CJ. Experiences of mobility for people living with rheumatoid arthritis who are receiving biologic drug therapy: implications for podiatry services. Journal of Foot and Ankle Research, 2017; 10:14.

7 Recommendations for research and practice

Based on the results of this study we can make some recommendations for research and clinical practice, both with respect to Treatment Burden (TB) and gender differences in inflammatory arthritis.

7.1 Recommendations for research on TB

- This study highlights a lack of longitudinal designs to understand and measure TB. Given that levels of TB experienced by patients can change over time in response to disease severity, change of treatment or the development of other chronic conditions, more longitudinal studies are recommended. Measuring treatment burden via cross-sectional study designs, hinders our ability to fully understand the dynamic nature of TB.
- In addition, most studies, both qualitative and quantitative, were not of very high quality. They were very diverse in methods used and in antecedents and outcomes studied. As TB is a relative new concept, the diversity in study designs is understandable. However, research on TB would profit from a clear model, recommendations or validated instruments to measure TB. These have not been developed so far.
- There is limited knowledge about the experiences of people in different health contexts and among specific racial and cultural populations. Most studies we found were conducted in white populations from the US and UK. The lack of research among other populations is problematic because understandings of key concepts, such as illness, health and treatment can be very different in non-traditional societies. So findings from studies on TB can not be automatically generalized to other cultures.
- Research aimed at improving communication and diminishing the TB from inadequate communication must include both patients and health professionals at the consultation level to achieve pragmatic interventions. Health service reconfiguration must prioritise enhanced communication between clinician and patient, with outcomes such as TB, patient satisfaction and treatment adherence being monitored.

7.2 Recommendations for clinical practice based on our findings on TB

- The attributes, antecedents and consequences identified in this review have clear implications for health care professionals to alleviate the burden of treatment for patients. As the perception of treatment burden could be subjective and determined by a number of antecedents, strategies to alleviate its impact need to be individualized, reflecting the individual’s circumstances and preferences.
- This review has also stressed the fact that it is not only just health outcomes that are important for patients and their family, but also the way in which health professionals achieve those outcomes for patients. The quality of the patient-professional relationship, the information provided, treatment choices made, the way advise is given and the type of advise all impact on TB and indirectly outcomes.
- Our study showed that the provision of information by health care professionals on a whole is inadequate according to patients and from their perspective too one-sided focussed on the medical aspects of treatment. Patients feel a need to discuss the impact of the disease on daily life in more detail and prefer more discussion of personal problems.

- Our review also showed that access to information is inadequate and often badly timed. Moreover, the information does not always fit the patients' needs. Both communication during the clinical encounter and provision of information to patients outsite the consultation room must therefore be improved and more tailored to the needs and preferences of patients. A lack of knowledge may make patients ill equipped to plan and organise their care, to develop coping strategies, and to set goals for treatment.
- The importance of a trustful relationship between patients and professionals was mentioned in a number of studies and a lack of trust experienced by patients leads to patient dissatisfaction. In addition, confidence and motivation of patients to follow treatment advise are negatively affected. It is therefore important that health care professionals invest in their relationship with patients and especially spend time with them to explore their needs and care preferences. Research has shown that during consultations, patients not always take the initiative to present their own agendas; therefore, proactively eliciting their ideas, concerns, and expectations is an important task on the part of the healthcare professional.
- Also preferences of patients with respect to their role in Shared Decision Making (SDM) should be explored. Unawareness of having a choice appeared to be a major barrier for patient participation in SDM. Health care professionals have an important role as facilitator in enhancing patient participation by raising awareness and offering options. However, implementing SDM is a shared responsibility, so also patients themselves need to be involved and educated.
- Medication use emerged as a key factor of TB. This finding is not surprising given that medication is one of the most common forms of treatment for rheumatc disease. The findings of TB from medication use present clear opportunities for health professionals to engage in greater discussions and improve medication management among patients. Addressing concerns, managing expectations by giving correct information and collaborate with patients in choosing the right medication are possible solutions.
- The way medications were administered had also an effect on TB. Most patients strongly preferred oral administrations of medicines instead of intravenous administration. Some patient preferred to take medication at home while others felt more save in a hospital. Taking into account the preferences of patients with respect to medication intake may improve adherence to treatment and diminish TB.
- There was often a discrepancy between knowledge about self-management and actual self-management behaviour. Many patients found it difficult to perform self-management at home independently. Not only the provision of information but also teaching skills may help patients to better self-manage.
- The dynamic nature of treatment burden means that for any one individual patient, their capacity to manage new and multiple treatments may vary over time. The complexity of this concept can best be managed through individualized care and ongoing evaluation that is responsive to the needs of each person.

7.3 Recommendations for research on gender differences

- We found very little studies on gender differences. Almost all studies were limited to (biological) differences between men and women. We think that one of the main reasons for this is that gender is difficult to operationalize in research. It is good to think about an operational definition of gender in research.

- A fundamental theme that is missing from current studies on TB is identity. Despite the recognition of the impact of treatment workload on everyday activities of men and women, how treatment burden influences a person's identity is limited. Identity, which can be highly associated with gender, may offer a missing link to explaining the subjective experience of TB.
- TB seems to be a promising concept for explaining differences in quality of life, well being, employment and care use of men and women. More systematic research on TB in relation to gender differences is therefore recommended.
- In particular, research into preferences of women and men with regard to information and decision-making is important because it can have a major influence on the extent to which they can deal with their illness and treatment.
- In quantitative research-designs, sufficiently large groups of men and women should be included, so that statistical analysis of the differences between men and women is actual possible.

7.4 Recommendations for clinical practice based on our findings gender differences

- It is important to share the findings of this study with professionals working in the field of rheumatic care to make them aware of the difference in TB as experienced by men and women. Paying attention to gender differences starts with awareness.
- Given the different needs and preferences of men and women in SDM and information needs in this study, it is important to tailor information to the specific needs of men and women, discuss their preferences with respect to an active patient role and define responsibilities. For example women indicated that they missed information with respect to accessible information on pregnancy planning, pregnancy and early parenting in relation to their chronic condition.
- In general the information needs of women are greater than those of men. Women also want a more active role in their treatment and want to be more involved in shared decision making. It is important to discuss these needs and preferences at the start of treatment.
- As women seem to experience more and different side effects from medication, it is important to give them timely and correct information and to manage expectations about treatment, so women can make informed decisions about treatment snf thr choice of medications.
- Also paying attention to the personal context and not only to medical aspects is important for gender sensistive care. Although studies on this topic were limited, they showed that personal circumstances of men and women can influence the level of TB. For women for example, revalidation was difficult to combine with household tasks and caring for their children.
- As TB is a dynamic concept that may change over time, regular assessment is required.

Appendix A - Secondary analyses NPCD data

April 1999

Er is in het NPCG nooit specifiek gevraagd naar treatment burden, wel naar onderwerpen die daaraan gerelateerd zijn. Een van de vragen ging over het leven met een chronische ziekte. Aan mensen met een chronische ziekte werden 76 adaptieve opgaven en uitdagingen voorgelegd, genoemd in focusgroepen door mensen met een chronische ziekte zelf, over het omgaan met een chronische ziekte in het dagelijks leven en wat dat voor hen betekent. Dit is dus breder dan het omgaan met de behandeling (treatment burden) alleen. Mensen konden antwoorden op een vijf puntsschaal van geen enkele rol tot een heel belangrijke rol. Ingevuld in april 1999, 103 mensen met een medische diagnose RA, 33 mannen, 70 vrouwen.

Aspecten van het omgaan met RA waarvan mensen aangeven dat ze een belangrijke tot heel belangrijke rol spelen in het leven

- In conditie blijven zodat toekomstplannen zoveel mogelijk uitgevoerd kunnen worden.
- Leren luisteren naar de signalen van je lichaam.
- Zoveel mogelijk zelf doen.
- Ervoor zorgen serieus genomen te worden door ziekenhuisstaf en artsen.
- Genieten van de ‘kleine dingen’ in het leven.
- Omgaan met beperkte energie.
- Mezelf zo lang mogelijk zelfstandig handhaven.
- Intenser leven, meer genieten van de dingen die nog wel gaan.
- Belangstelling houden voor mijn omgeving.
- Zo lang mogelijk mobiel blijven.

Aspecten waarvan vouwen aangeven dat ze een significant belangrijkere rol spelen in hun leven dan mannen

- Begrip voor mezelf opbrengen.
- Proberen gelijkmoedig te zijn.
- Mijn beperkte energie zo goed mogelijk over de dag verdelen.
- In conditie blijven zodat toekomstplannen zoveel mogelijk kunnen worden uitgevoerd.
- Blijven zoeken naar nieuwe uitdagingen.
- Niet in de put zitten.
- Een geregeld leven leiden.
- Niet altijd zeggen dat ik moe ben.
- Ervoor zorgen serieus genomen te worden.
- Omgaan met beperkte energie.
- Leren afhankelijk te zijn van anderen.
- Zo lang mogelijk zelfstandig blijven.
- Intenser leven, meer genieten van de dingen die nog wel gaan.
- Toegeven als ik niet meer kan.
- Belangstelling houden voor mijn omgeving.
- Hulp leren aanvaarden.
- Alleen de meest noodzakelijk hulp vragen.
- Zoveel mogelijk contact houden met familie en vrienden.

April 2011

In de voorjaarslijst 2011 zaten 409 mensen met reumatische aandoeningen, 300 vrouwen en 109 mannen. Aan hen is de PAST-vragenlijst voorgelegd, een adaptieve opgaven lijst die vraagt in welke mate bepaalde taken onderdeel uitmaken van de dagelijkse omgang met de chronische ziekte. In totaal zijn er 19 taken waarbij aangegeven kan worden of zij nooit, soms, meestal of altijd onderdeel uitmaken van de dagelijkse omgang met ziekte. Antwoordcategorieën zijn gedichotomiseerd in nooit/soms en meestal altijd. Percentage mensen dat aangeeft dat een taak meestal/altijd onderdeel uitmaakt van de dagelijkse omgang met de ziekte werd tussen manen en vrouwen vergeleken.

	Totale groep %	Man %	Vrouw %	Sign?
Omgaan met pijn en beperkingen	64	59	66	Ns
Medicijnen volgens voorschrift	77	77	76	Ns
Op bezoek gaan bij artsen en andere zorgverleners	39	35	40	Ns
Op voeding letten	50	42	53	<.05
Voldoende bewegen	83	80	83	Ns
Gezond leven	56	54	57	Ns
Omgaan met beperkte energie	59	54	62	Ns
Omgaan met emoties en spanningen	29	24	31	Ns
Hulp inroepen als dat nodig is	15	12	17	Ns
Ongezonde leefgewoonten opgeven	26	24	26	Ns
Thuis oefeningen doen	45	36	49	<.05
Hulpmiddelen gebruiken	32	24	35	<.05
De informatie van artsen en andere zorgverleners begrijpen	51	49	53	Ns
Omgaan met beperktere mogelijkheden, bv voor vakantie	44	31	48	<.01
Zelf klachten of symptomen in de gaten houden	84	82	85	Ns
Zelfzorgtaken uitvoeren zoals wondverzorging…	60	60	60	ns
Gezondheid in de gaten houden	21	23	19	Ns
Gesprekken aangaan met zorgverleners	18	13	20	Ns
Omgaan met een onzekere toekomst	36	34	37	Ns

Uit open antwoorden

Onbegrip op werk; omgaan met nieuwsgierige blikken; accepteren dat ik dingen niet meer kan

Samenvattend

Meest genoemde taken die ook onder treatment burden geschaard kunnen worden binnen de totale groep mensen met reumatische aandoeningen zijn: medicijnen nemen volgens voorschrift (77%), voldoende bewegen (83%), thuis oefeningen doen (45%), de informatie van artsen en

andere zorgverleners begrijpen (51%), zelf thuis klachten en symptomen in de gaten houden (84%), zelfzorgtaken uitvoeren (60%) en gesprekken aangaan met zorgverleners (18%).
Gelet op verschillen tussen mannen en vrouwen geven vrouwen vaker aan op hun voeding te letten, thuis oefeningen te doen en hulpmiddelen te gebruiken dan mannen.

Appendix B – Results from Reuma Uitgedaagd!

In een focusgroep werden behoeften van reumapatiënten voor ondersteuning van zelfmanagement voorgelegd die eerder uit een online focusgroep en in een besloten groep op facebook door reumapatiënten genoemd werden. Hieronder staan de aspecten die in het kader van treatment burden mogelijk relevant zijn.

Vragen over kinderen en zwangerschap

- Behoefte aan kennis over erfelijkheid en reuma.
- Behoefte aan professionele steun en advies/informatie in keuzes rondom zwangerschap.
- Behoefte aan uitwisseling met lotgenoten als het gaat om te beslissen wel/niet zwanger te worden, in relatie tot de erfelijkheid.
- Behoefte aan informatie over zwangerschap en medicatie.

Vragen met betrekking tot reuma en opvoeding

- Behoefte aan kennis/informatie/advies/lotgenotencontact over het hebben van reuma en rol als ouder.
- Behoefte aan kennis/informatie/lotgenotencontact over invulling van rollen binnen het gezin en verdeling van taken als je reuma hebt.
- Behoefte aan kennis/informatie/lotgenotencontact over communicatie met kinderen over reuma.
- Hoe kan ik hulp vragen bij praktische dingen in de opvoeding en verzorging van mijn kind nu ik reuma heb.
- Behoefte aan uitwisseling met lotgenoten begeleiding als het gaat om schuldgevoelens naar mijn kind omdat ik beperkt ben door de reuma.

Communiceren met anderen over de gevolgen van reuma

- Hoe communiceer je met andere over reuma.
- Hoe communiceer je met professionals over reuma.
- Hoe ervaren andere patiënten reuma en gaan ze er mee om.
- Op wat voor manier kan ik hulp van anderen inschakelen als ik die nodig heb.

Omgaan met emotionele gevolgen behandeling (of ziekte als geheel)

- Hoe kan ik omgaan met emoties zoals verdriet, boosheid, machteloosheid en depressieve gevoelens.
- Behoefte aan uitwisseling met anderen over het omgaan met emoties zoals verdriet, boosheid, machteloosheid en depressieve gevoelens.
- Behoefte aan professionele begeleiding bij het omgaan met emoties zoals verdriet, boosheid, machteloosheid en depressieve gevoelens.
- Omgaan met onbegrip.
- Hulp bij het maken van afwegingen bij belangrijke beslissingen in het leven.
- Behoefte aan vaardigheden om zelf actief om te gaan met emotie.
- Ik heb behoefte aan het benoemen en delen van emotionele ervaringen.
- Ik heb behoefte aan een concreet hulpmiddel om te bekijken of ik professionele hulp nodig heb .

Zelfmanagement

- Behoefte aan kennis over wat zelfmanagement inhoudt.
- Behoefte aan uitwisseling met lotgenoten over het maken van keuzes die passen bij mijn mogelijkheden.

- Behoefte aan het oefenen in het maken van keuzes die passen bij mijn mogelijkheden.
- Behoefte om te ontdekken hoe ik de regie/grip over mijn leven kan houden.
- Behoefte om te ontdekken hoe ik grenzen kan stellen.
- Behoefte om te weten welke behandelingen er allemaal zijn voor mijn reuma.
- Hoe kan ik informatie toepassen op mijn eigen situatie.
- Behoefte om te leren grip te krijgen op de grilligheid van mijn reuma.
- Behoefte om te leren hoe ik mijn klachten kan herkennen.
- Behoefte om te leren hoe ik mijn energie op de dag kan verdelen.

Reuma en werk
- Behoefte om te leren hoe ik mijn baas/collega/studie kan vertellen wat ik heb.
- Behoefte om te leren hoe ik mijn baas/collega/studie kan vertellen wat ik wel en niet kan ik wil mijn werk kunnen combineren met mijn reuma.
- Behoefte om te horen hoe anderen met het onderwerp werk en reuma omgaan.
- Behoefte om te leren hoe ik nog energie over kan hebben, naast mijn werk.
- Behoefte om te weten van welke hulpmiddelen ik gebruik kan maken die het werken makkelijker kunnen maken.
- Behoefte om te weten wat ik kan doen om voldoende inkomen ten generen ondanks mijn beperkingen door de reuma.

Contact met zorgverleners
- Hoe ik met mijn behandelaar kan samenwerken.
- Behoefte aan kennis over mijn ziekte en wat dit betekent voor mijn toekomst.
- Voorbeelden van anderen horen hoe ik mijn behandeling vol kan houden.

Alternatieve behandeling
- Ik heb behoefte aan om meer kennis te krijgen over alternatieve behandelingen.
- Ik heb behoefte aan om van andere te horen wat hun ervaringen zijn t.a.v. alternatieve behandelingen.
- Ik heb behoefte aan inzicht om in zelf in te schatten de veiligheid en pasbaarheid van een behandeling.

Autonomie
- Behoefte aan vaardigheden hoe ik zoveel mogelijk zelf kan blijven doen, zonder negatieve gevolgen daarvan.

AppendiX C – Results from online survey

Online enquête

Een week lang (Week 22 mei) heeft een oproep gestaan op de site van het Reumafonds en Facebook voor deelname aan het onderzoek. Na die week is de oproep op mijn verzoek verwijderd omdat ik voldoende aanmeldingen had (streven was 20 deelnemers).

Achtergrond deelnemers

- 42 deelnemers, drie mannen en 39 vrouwen.
- Leeftijd: gemiddeld 45,8 jaar (sd=15,2), range van 20 t/m 73 jaar.
- Opleidingsniveau: 47,6% hoger onderwijs (HBO/WO), 38,1% gemiddeld, 14,3% laag.
- Woonsituatie: 77% (on)gehuwd samenwonend, 17% alleenstaand, 3% gescheiden, 3% weduwnaar
- 40 hebben reumatoïde artritis, twee artritis psoriatica.
- Leeftijd waarop de diagnose gesteld werd varieert van 7 tot 62 jaar.
- 43% van de deelnemers geeft aan naast een reumatische aandoening ook nog een andere chronische aandoening te hebben: hoge bloeddruk (17%), andere gewrichtsaandoeningen (10%) en langdurige darmklachten (10%).
- Gebruik van geneesmiddelen voor de reumatische aandoening: Iedereen gebruikt één of meerdere medicijnen (N=42): 41% gebruikt pijnstillers als paracetamol, paracetamol met codeïne en Tramamol. 57% pijnstillers met ontstekingsremmende werking (NSAID's of COXibs). 69% gebruikt klassieke specifieke reumaremmers (DMARD's). 21% gebruikt corticosteroïden als prednison. 26% gebruikt Biologicals MabThera of TNF-alpha blokkers. 33% geeft aan nog andere medicijnen te gebruiken dan de hiervoor genoemde.
- Zorggebruik in de afgelopen 12 maanden in verband met de reumatische aandoening: huisarts (29%), reumatoloog (95%), reumaverpleegkundige (69%), praktijkondersteuner (5%), dagbehandeling (5%), fysio (43%), overig 14% waaronder acupuncturist, neuroloog, orthopeed, reumaconsulent.

Aspecten van treatment burden

Aan deelnemers werd de volgende vraag voorgelegd:

> Graag willen we van u horen welke opgaven en uitdagingen de behandeling van uw reumatische aandoening **voor u** met zich meebrengt. Dat kan heel persoonlijk zijn en bijvoorbeeld te maken hebben met medicijngebruik, contacten met zorgverleners of het ziekenhuis, het inpassen van de behandeling in het dagelijks leven of op het werk, financiële gevolgen of de behoefte aan informatie.
> Zou u hieronder de voor u meest belangrijke opgaven en uitdagingen in willen vullen? Alles is goed, het gaat om **uw ervaring.** U kunt maximaal 10 dingen noemen maar minder mag ook. Wilt u datgene wat voor u het belangrijkste is op 1 zetten, het volgende op 2 en zo verder?
>
> **Mijn belangrijkste opgaven en uitdagingen bij de behandeling van mijn reumatische aandoening zijn voor mij …..**

Door 38 van de 42 respondenten zijn opgaven en uitdagingen gerelateerd aan de behandeling van reuma genoemd op bovenstaande vraag. Het aantal aspecten per respondent varieerde van 1 tot maximaal 10. In totaal werden 244 opgaven een uitdagingen genoemd. Hieronder staan ze gecategoriseerd in categorieën met daaronder de letterlijke tekst van de respondenten. Een deel van de genoemde uitdagingen betreft geen treatment burden maar disease burden. Steeds staat aangegeven of het onder TB valt (attribuut) of een antecedent (A) of consequentie (C) is van TB.

Bijwerkingen medicatie (TB)

- Na 3 jaar ben ik nog steeds ziek na inname van MTX. Het is gelukkig wel minder nu.
- De reactie van mijn lever op medicatie.
- Reacties op de huid door medicatie.
- Bijwerkingen van de medicijnen (4x) \ bijwerkingen MTX injecties (uitslag dikke rode bulten).
- Misselijkheid als bijwerking van de methotrexaat. toch kan ik niet zonder.
- Bijwerkingen medicijnen.
- Last van bijwerkingen.
- Wekelijkse bijwerkingen van medicijnen na injecteren.
- Depramil helpt goed maar heeft ook veel nare bijwerkingen. Ik wil graag stoppen, maar mijn lichaam laat het niet toe

Medicijngebruik (TB)

- ***Inname medicatie volgens schema (TB)***
    - Structuur aanbrengen in tijden op de dag om medicijnen in te nemen.
    - Het dagelijks slikken van medicijnen (ik ben nogal nonchalant).
    - In het begin was het lastig zo veel medicijnen te slikken op één dag. Nu weet ik wat op welke tijdstippen ingenomen moet worden.
    - Niet vergeten elke dag je medicijnen te slikken.

- ***Toediening van medicatie (TB)***
    - De pijn tijdens het inbrengen van medicatie.
    - Het spuiten van medicatie.
    - Dagelijks medicijnen nemen.
    - Medicijngebruik is belastend.
    - Mezelf prikken.
    - Het altijd moeten zorgen dat je op vakantie je medicijnen op de juiste manier mee moet nemen (gekoeld, dus altijd …).

- ***Afhankelijkheid van medicijnen (TB)***
    - Continue medicijnen slikken staat me soms wel tegen.
    - Steeds meer medicijnen.
    - Voor de zoveelste keer nieuwe medicatie proberen omdat mijn lichaam immuun wordt.
    - Afhankelijkheid medicatie.
    - Het vele medicijngebruik.

Tijd die het duurt totdat je juist bent ingesteld (A or TB)

- De lange tijd die het duurt voordat medicatie afgestemd is (ongeveer 1,5 jaar).

(Tijd tot) Diagnose (A)

- Het duurde lang voordat andere doktoren het herkenden als mogelijke reuma en zij mij doorverwezen naar een reumatoloog.
- De diagnose vond ik schokkend om te horen.

Tijdsbelasting behandeling (TB)

- Heel veel fysiotherapieoefeningen, en als de ene klacht vermindert komt er weer een andere.
- Veel tijd kwijt aan controles.
- Heel veel tijd kwijt aan bezoek zorgverleners.
- Na de diagnose heb ik veel aanpassingen gedaan wat betreft leefstijl en om energie op te bouwen

Vragen rond behandeling (TB)

- Ik zou graag verder willen uitzoeken of er andere manieren zijn dan alleen medicijnen slikken. Ik probeer zo gezond mogelijk te leven.
- Twijfel of ik de juiste keuzes heb gemaakt wat betreft de behandeling.
- Wel of geen borstvoeding geven?
- Krijgt mijn dochter straks ook reuma net als mijn oma, mijn moeder en ik?
- Verschillende berichten over het wel of niet lichamelijk actief bezig mogen zijn (werk of sport) geven mij verwarring.
- Blijven de medicijnen aanslaan?

Zelf op zoek moeten naar informatie (TB)

- Informatie: arts en verpleegkundige weten veel maar vergeten soms informatie te delen. ik heb al snel geleerd om zelf veel informatie te zoeken.
- Zorgverleners die niet proactief zijn en feitelijk zeggen je moet het er mee doen en zelf het wiel uit vinden.

Hulpmiddelen gebruiken (TB)

- Steeds meer hulpmiddelen krijgen en moeten gebruiken.
- Dagelijkse dingen niet meer kunnen zonder hulpmiddelen.

Contacten met zorgverleners (TB)

- ***Kwaliteit van relatie (TB?)***
  - Ik heb wel hele positieve contacten met de reumaverpleegkundige die ik heb gezien. Begripvol.
  - Het gevoel dat je zeurt.
  - Ik voel mij door mijn reumatoloog en behandelaren serieus genomen. Zij denken met mij mee en geven mij advies.
  - Ik vind het zeer prettig dat er een directe lijn is tussen mij, de arts en de reumaconsulente. Ik kan met vragen of complicaties bij hen terecht.
  - Contact met reumatoloog zeer prettig . zij is zeer begripvol.
  - Contact met reumaconsulent prettig en aanvullen.
  - Contact met verpleegkundige panelonderzoek vond ik niet prettig.
  - Vaak terugschrikken om alweer te moeten bellen met de reumatoloog.
  - Het gevoel dat mijn reumatoloog mijn klachten bagatelliseert.

- ***Frequentie bezoek/aantal zorgverleners, tijdsbelasting (TB)***
  - Frequente bezoeken aan dokter.
  - Herhaaldelijk bezoek bij reumatoloog .
  - Behalve de reumatoloog nog meer artsen en tweedelijns zorgverleners bezoeken.
  - Veel operaties.
  - Afspraken maken met reumatoloog is lastig in verband met onderbezetting.

Onvoorspelbaar verloop ziekte (A)

- De pijn is heel onvoorspelbaar. Ik weet pas in de ochtend wat voor dag het gaat zijn en wat ik die dag kan doen.

- Niet weten hoe de dag is wanneer je je ogen open doet.
- Omgaan met het zwaard van Damocles.
- De onwetendheid hoe het verder manifesteert.
- Onzekerheid over de toekomst.
- Onvoorspelbaarheid van de pijn.
- Omgaan met wisselende beperkingen. elke dag is anders.
- Onzekerheid of je reuma rustig blijft.
- Niet weten of je de volgende dag voldoende energie hebt.
- Hoe houdt mijn reuma zich als ik straks bevallen ben (10 weken zwanger).

Beperkte energie (A)

- ➢ ***Vermoeidheid en minder flexibel door beperkte energie (A)***
    - Rekening houden met wat je in een week doet, niet teveel doen achter elkaar.
    - Altijd rekening houden met.
    - Vaak heel erg moe.
    - Sneller vermoeid raken.
    - Opstart problemen. ’s Ochtends kost het meerdere uren voor je echt jezelf bent en fit bent.
    - Vermoeidheid (5x).
    - De vermoeidheid en daarmee omgaan in het dagelijks leven.
    - De vermoeidheid onder controle krijgen.
    - Altijd rekening moeten houden met RA en niet te veel plannen op een dag of in het weekend.
    - Maat weten. Rust pakken als dat nodig is. niet met alles mee kunnen doen.
    - Steeds moe zijn, niet meer spontaan ergens heen.
    - Goede balans houden tussen actief zijn en rust pakken om op deze lage medicatie te kunnen blijven functioneren.
    - Sneller moe zijn.
    - Soms verminderde energieniveaus.
    - Het niet gewoon lekker kunnen rennen, zwemmen etc.
    - Het langzaam opstarten, je lijf wat niet mee wil doen (ik ben 42 en voel me af en toe 80).
    - Altijd opletten op overbelasting van gewrichten.
    - De dagelijkse vermoeidheid is zeer bepalend voor wat je kan doen.
    - Chronisch moe/vaak een niet fit gevoel.
    - De vermoeidheid is altijd aanwezig en speelt een grote rol op de dag.
    - Moeite met dingen doen om dat te verdelen.

Financieel (TB)

- De elektriciteit/stookkosten zijn heel hoog omdat ik te vaak douche vanwege pijn/stijheid en de kachel altijd aan heb.
- Qua zorgverzekering weer duurder uit omdat ik een uitgebreide polis moet hebben in verband met mijn RA.
- Moeten vechten voor vergoedingen.
- Financieel stappen terug.
- Dat de fysiotherapie niet meer volledig vergoed wordt.
- Goed meubilair heel belangrijk ook op de werkplek om gewrichtsklachten te voorkomen.
- Soms geeft RA beperkingen in verzekeringen en ben je wat duurder uit.
- Financieel: ook al is het niet heel veel wat ik zelf moet betalen, toch staat het me tegen.
- Financiële aspect, de hogere kosten die je hebt: energieverbruik is hoog. extra kosten medicijnen.
- Minder financiële draagkracht.
- Vergoeding door de zorgverzekeraar is minimaal. ik betaal alles zelf.

Gevolgen sociaal functioneren/sociale contacten

- ***Kleiner sociaal netwerk (A of G)***
  - Minder sociale contacten. Beperkt sociaal leven om werk vol te kunnen houden.
  - Instant houden sociaal netwerk.
  - Uitkijken dat je niet in een sociaal isolement valt.
  - Sociale contacten behouden.

- ***Omgaan met onbegrip/stigma (A)***
  - Ik schaam me soms als ik in de apotheek sta en een enorm pak aan medicatie krijg.
  - Rekening houden met dat een ander niet kan zien wat jij hebt en wat jij voelt waardoor misverstanden kunnen ontstaan.
  - Omgaan met onbegrip.
  - Moeite met soms botte reactieomgeving. vragen die mijn privacy niet accepteren.
  - Onbegrip of onwetendheid van derden.
  - Ik zou meer begrip van andere mensen willen hebben.
  - Pijn is niet zichtbaar voor een ander .
  - Het onbegrip van de omgeving.
  - Onzichtbaarheid van mijn beperkingen en pijn voor anderen, die daardoor te veel van mij verwachten.
  - Door mijn jonge leeftijd verwachten mensen niet dat ik RA heb. dit maakt het voor mij lastig te vertellen hoe het is.
  - Moeizaam contact met de familie, reacties van de omgeving.

- ***Veranderende sociale rollen/afhankelijkheid (G)***
  - Het toegeven aan je lichaam als je een slechte dag hebt en dit liefst ook nog bespreekbaar maken met je partner.
  - De RA heeft niet alleen gevolgen voor mij maar ook voor mijn partner en naasten (bijvoorbeeld zorg overnemen, huishouden en ook emotioneel).
  - Delicate balans tussen zelfredzaamheid en afhankelijkheid (te veel leunen op de partner).
  - Relevant zijn en blijven.
  - Afhankelijkheid, steeds minder zelf kunnen doen.
  - Hulp nodig bij vele dingen.
  - Angst dat de klachten erger worden en dat ik afhankelijk wordt van anderen.
  - Vrienden die moeilijk rekening kunnen houden met het feit dat ik niet meer alles kan of niet meer overal aan mee kan doen.
  - Afhankelijkheid van anderen. hulp nodige bij openen van flesen/potten/pakken/snijden van kaas.
  - Relatie minder energie, daardoor minder zin om dingen samen te ondernemen.
  - Tekort schieten in opvoeding.
  - Ik kan minder goed voor mijn kinderen zorgen vanwege pijn en vermoeidheid/ik kan niet zo lang met ze spelen.
  - Actief aanwezig blijven voor mijn gezin.

- ***Seksualiteit (G)***
  - Sexueel niet meer zo actief kunnen zijn als vroeger.
  - Ik ben vaak erg moe, dat is soms best lastig met intimiteit tussen mij en mijn man.
  - Minder zin in vrijen.
  - Het niet altijd mee kunnen doen aan sociale activiteiten.

- ***Dagelijkse beperkingen (G)***
  - Het reizen met openbaar vervoer.
  - Mijn huishouden niet meer kunnen doen.
  - Beperkt bij het uitvoeren van simpele handelingen.
  - Minder leuke dingen.
  - Niet meer kunnen autorijden.
  - Het omgaan met beperkingen, niet meer kunnen wat ik voorheen kan.

- ***Opgeven van hobby's (G)***
  - Speel al meer dan 40 jaar in een band. Gitaar spelen is nu echter een probleem passie.
  - Dingen niet meer kunnen en je daar op aanpassen.
  - Hobby's en sporten niet kunnen en slecht bewegen.
  - Minder sport.
  - Ik wil graag de dingen blijven doen die ik leuk vind.
  - Sporten moeten opgeven.
  - Fietsen lukt niet meer (handremmen).
  - Hobby moeten opgeven (paarden).
  - Uitdaging om actief te blijven sporten.
  - Ik vind het heel jammer dat lange wandelingen niet meer lukt.
  - Mijn hobby quilten/patchwork moet nu regelmatig onderbroken worden door pijn in handen/stijfheid.
  - Sporten. vanwege ontstekingen in voeten is hardlopen soms geen optie.
  - Tijdelijke gestopt met sport.

Fysiek functioneren/pijn (G)

- De ontstekingen gaan heel mijn lichaam door. Vaak gedurende een week waarin alles pijn doet en ik nauwelijks kan lopen.
- Slecht slapen.
- Ondanks de medicatie heb ik nog steeds last van ontstekingen.
- De pijn is nog steeds heel intens waardoor ik soms beperkt ben in de domste dingen zoals het opendraaien van een fles.
- Beperkingen in het dagelijks leven (gebruik van handen, voeten, knieën, moe, futloos).
- Vatbaarder zijn voor infecties.
- De muizen van beide handen opgezet en pijnlijk en daardoor minder te gebruiken.
- Linkerhand beperkt door operatief verwijderde middenhandsbeen.
- Minder kracht in handen.
- Pijn, echter meestal wel goed te bestrijden.
- Overgewicht vanwege het niet meer kunnen sporten.
- Soms slechte nachtrust. omgaan met pijn, het went nooit.
- Pijn (4x).
- Leven met pijn en vermoeidheid.
- Het omgaan met de pijn.
- Ochtendstijfheid en bij kou en vochtig weer verminderde beweeglijkheid.
- Beperkingen in de handen: stijf/pijn.
- Altijd de pijn, soms meer soms minder.

Vragen/onzekerheid (TB)

- Zou graag weten of aan de muizen van mijn hand iets te doen is. Volgens huisarts niet.
- Zorgen om toekomst (arbeidsongeschiktheid).
- Hopen dat reuma stabiel blijft de komende jaren.

Emotionele belasting algemeen (Gevolg)

- Frustratie als dingen niet lukken.
- Psychisch heeft het veel met mij gedaan. Negatief zelfbeeld.
- Geen vertrouwen meer hebben in je lichaam.
- Verzet.
- Rouw/veranderproces.
- Minder plezier in dingen.
- Accepteren dat ik vaker ziek ben dan mijn vrienden.
- Dat ik het geestelijk weer op de rit krijg nu het even wat minder is.
- Somberheid.
- Eenzaam.

Emotionele reactie op de behandeling (G)

- Omgaan met tegenslagen in de behandeling.
- Omgaan met tegenslagen in de behandeling: ik voel me heel goed en dan kom ik bij de reumatoloog en dan blijken mijn bloedwaarden niet goed.
- Mentale gezondheid (vooral na diagnose, dat werd genegeerd door het ziekenhuis).

Werk (Gevolg)

- Ik heb een nieuwe fulltime baan aangenomen maar maak me zorgen of ik dit wel aan kan.
- Ik voel me echt heel rot als ik me ziek moet melden op werk vanwege pijn maar soms kan ik echt niet lopen of als er ontstekingen zijn.
- Tekort schieten op werk.
- Tijdelijk gestopt met werk.
- Hoe lang kan ik nog werken? Werken valt me steeds zwaarder.
- Mijn werk niet meer kunnen doen (afgekeurd).
- Vechten voor (weer) een plek op de arbeidsmarkt.
- Met werk rekening houden met je reuma. Zo ben ik van een baan als verpleegkundige in een verpleeghuis naar een kantoorbaan.
- Werk tevreden proberen te houden ondanks frequente afwezigheid ivm doktersbezoek.
- Het vele vrij moeten nemen voor controles vind ik belastend voor mijn werkgever.
- Mogelijke gevolgen voor uitoefenen beroep.
- Niet in staat zijn zwaar werk te doen of te tillen.
- Wachten tot het moment dat je minder of niet meer kunt werken is moeilijk.
- Repetitieve handelingen niet kunnen doen, bijvoorbeeld computer werk met een muis niet langdurig achter elkaar.
- Invloed op mijn werk.
- Carrière, niet weten of ik de reuma geheim kan houden.
- Ik wil graag blijven werken.
- Mijn werk op moeten geven (coupeuse).
- Zorgen om toekomst (arbeidsongeschiktheid).
- Afgekeurd.
- Ik heb een jaar contact en mijn bazin durft het niet aan mij een vaste aanstelling te geven in verband met mijn reuma.
- 100% afgekeurd.
- Goed kunnen blijven functioneren in verband met geen arbeidsongeschiktheidsverzekering en een eigen bedrijf.
- Ziekmelden op het werk als ik weer last heb van mijn reuma.
- Impassen van mijn aandoening op het werk.
- Werken kost veel energie.

- Werk, minder energie. werken kost daardoor geestelijk moeite.
- Door ontstekingen in vingers en hanen kan ik bepaalde taken niet uitvoeren.
- Minder kunnen werken.
- Werk fulltime maar zou eigenlijk minder moeten werken. gedeeltelijk afkeuren doen ze niet meer.
- Niet fulltime kunnen werken.

Woning (Gevolg of TB)
- Aanpassingen in woning.
- Zorgen of woning wel geschikt blijft.
- Aanpassingen aan woning moeten doen.

Niet ingedeeld
- De reuma is tot daar aan toe , maar alles er om heen .
- Stress.
- Proberen te blijven zoals ik ben.
- Proberen blijven te genieten van het leven, ondanks de pijn.
- Na iedere operatie duurt het herstel langer.

Samenvattend

Spontaan genoemd door patiënten tijdens enquête:

Antecedenten
- Tijd die het duurt voordat je ingesteld bent op medicatie.
- Tijd tot diagnose.
- Onvoorspelbaar beloop.
- Pijn/vermoeidheid/beperkte energie.
- Stigma/onbegrip sociale omgeving.

Attributen TB
- Bijwerkingen medicatie.
- Houden aan medicatieschema.
- Daadwerkelijk toedienen/innemen medicatie.
- Afhankelijkheid medicatie.
- Tijdsbelasting behandeling/contact zorgverleners.
- Afspraken maken en inplannen.
- Werkverzuim/minder flexibel door behandelingen en zorgafspraken.
- Vragen/onzekerheden rond behandeling.
- Informatie zoeken rond behandeling.
- Hulpmiddelen gebruiken om te functioneren.
- Financiële gevolgen behandeling (taxikosten, eigen bijdrage edicijnen/hulpmiddelen/aanpassingen woning.
- Emotionele belasting behandeling.

Gevolgen
- Ziekteverzuim vanwege bezoek arts/ziekenhuis/andere zorgverlener.
- Gevolgen seksualiteit?
- Emotioneel welbevinden/distress.

Appendix D - Search strategy mixed studies review

Search blocks

1. Inflammatory rheumatic diseases (RA, AP, AS)

"Arthritis, Rheumatoid"[Mesh:NoExp] OR "Spondylarthritis"[Mesh:NoExp] OR "Spondylarthropathies"[Mesh:NoExp] OR "Arthritis, Psoriatic"[Mesh] OR "Spondylitis, Ankylosing"[Mesh] OR rheumatoid arthriti*[tiab] OR spondyloarthritis ankylopoietica*[tiab] OR ankylosing spondyl*[tiab] OR spondylarthritis ankylopoietica*[tiab] OR bechterew*[tiab] OR marie struempell[tiab] OR rheumatoid spondyliti*[tiab] OR spondylitis ankylopoietica*[tiab] OR spondylarthr*[tiab] OR spinal arthriti*[tiab] OR marie strumpell[tiab] OR spondyloarthropath*[tiab] OR arthritic psoriasis[tiab] OR psoriatic arthr*[tiab] OR psoriasis arthropath*[tiab]

2. Burden

burden*[tiab] OR "Workload"[Mesh] OR "Adaptation, Psychological"[Mesh] OR "Health Expenditures"[Mesh] OR workload*[tiab] OR patient work[tiab] OR adapt*[tiab] OR coping[tiab] OR load[tiab] OR expenses[tiab] OR cost[tiab] OR costs[tiab] OR payment*[tiab] OR expenditure*[tiab] OR spending[tiab] OR time[tiab] OR impact*[tiab] OR barriers[tiab] OR problem*[tiab] OR difficult*[tiab] OR challenge*[tiab] OR "Drug-Related Side Effects and Adverse Reactions"[Mesh] OR "adverse effects" [Subheading] OR adverse effect*[tiab] OR adverse reaction*[tiab] OR adverse drug reaction*[tiab] OR side effect*[tiab]

3. Gender differences

"Sex"[Mesh] OR "Sex Characteristics"[Mesh] OR "Women"[Mesh] OR "Female"[Mesh] OR "Men"[Mesh] OR "Male"[Mesh] OR gender[tiab] OR woman[tiab] OR women[tiab] OR female*[tiab] OR feminin*[tiab] OR male[tiab] OR males[tiab] OR men[tiab] OR sex characteristic*[tiab] OR sex based[tiab] OR sex factor*[tiab] OR sex distribution[tiab] OR sex difference*[tiab] OR sex dimorphism*[tiab]

4. Treatment

"Therapeutics"[Mesh] OR "therapy" [Subheading] OR "Drug Administration Schedule"[Mesh:NoExp] OR therapies[tiab] OR therapy[tiab] OR treatment*[tiab] OR medication*[tiab] OR medicine*[tiab] OR care[tiab] OR "Self Care"[Mesh] OR "Self Medication"[Mesh] OR "Rehabilitation"[Mesh] OR self care*[tiab] OR selfcare[tiab] OR self management[tiab] OR selfmedication[tiab] OR self administration[tiab] OR self-monitor*[tiab] OR rehabilitation[tiab] OR monitoring*[tiab] OR "Appointments and Schedules"[Mesh] OR "Referral and Consultation"[Mesh] OR "Physician-Patient Relations"[Mesh] OR appointment*[tiab] OR consult*[tiab] OR contact*[tiab] OR doctor-patient relation*[tiab] OR physician-patient relation*[tiab] OR nurse-patient relation*[tiab] OR communicat*[tiab] OR interaction[tiab] OR "Health Knowledge, Attitudes, Practice"[Mesh] OR "Health Literacy"[Mesh] OR "Patient Education as Topic"[Mesh] OR "Health Communication"[Mesh] OR health education[tiab] OR information*[tiab] OR medical advice[tiab] OR treatment advice[tiab] OR shared decision making*[tiab] OR shared decisionmaking*[tiab] OR sdm[tiab] OR health litera*[tiab] OR health knowledge*[tiab] OR "Activities of Daily Living"[Mesh] OR "Life Style"[Mesh] OR activities of daily living[tiab] OR adl[tiab] OR life style[tiab] OR lifestyle[tiab] OR health behavior*[tiab] OR health behaviour*[tiab] OR “Travel"[Mesh:NoExp] OR "Health Services Accessibility"[Mesh] OR mobility[tiab] OR mobile[tiab] OR transport*[tiab] OR travel*[tiab] OR public transfer[tiab] OR access*[tiab] OR "Self-Help Devices"[Mesh] OR "Orthopedic Equipment"[Mesh] OR assisted device*[tiab] OR self-help device*[tiab] OR assistive technolog*[tiab] OR walking stick*[tiab] OR walkers[tiab] OR orthotic device*[tiab] OR braces[tiab] OR "Disability Evaluation"[Mesh] OR work capacity evaluation*[tiab] OR functional disab*[tiab] OR disability evaluation*[tiab] OR "Social Support"[Mesh] OR "Family"[Mesh] OR social support[tiab] OR family[tiab] OR "Drug Utilization"[Mesh] OR "Glucocorticoids"[Mesh] OR "Glucocorticoids" [Pharmacological Action] OR "Methotrexate"[Mesh] OR "Anti-Inflammatory Agents, Non-Steroidal"[Mesh] OR "Anti-Inflammatory Agents, Non-Steroidal"[Mesh] OR "Antirheumatic Agents"[Mesh] OR "Antirheumatic Agents" [Pharmacological Action] OR "Prednisone"[Mesh] OR "Antibodies, Monoclonal"[Mesh] OR medication[tiab] OR glucocorticoid*[tiab] OR biologicals[tiab] OR methotrexate[tiab] OR MTX[tiab] OR non steroidal anti-inflammatory agent*[tiab] OR non steroidal antiinflammatory agent*[tiab] OR nonsteroidal anti-inflammatory agent*[tiab] OR nonsteroidal antiinflammatory agent*[tiab] OR NSAID*[tiab] OR anti-rheumatic agent*[tiab] OR antirheumatic agent*[tiab] OR anti-rheumatic drugs[tiab] OR antirheumatic drugs[tiab] OR DMARD[tiab] OR anti-inflammatory analgesic*[tiab] OR antiinflammatory analgesic*[tiab] OR prednison*[tiab] OR anti-TNF*[tiab] OR monoclonal antibodies[tiab] OR TNFalpha blocker*[tiab] OR TNF-alpha blocker*[tiab] OR infliximab[tiab] OR adalimumab[tiab] OR etanercept[tiab]

5. Patient perception

"Perception"[Mesh] OR "Attitude"[Mesh] OR "Feedback"[Mesh] OR "Self Report"[Mesh] OR perception*[tiab] OR belief*[tiab] OR feedback[tiab] OR attitude[tiab] OR sensemaking[tiab] OR sense making[tiab] OR meaning[tiab] OR patient experience*[tiab] OR self-report*[tiab] OR patient-report*[tiab] OR selfreport*[tiab] OR patientreport*[tiab] OR "Surveys and Questionnaires"[Mesh] OR "Qualitative Research"[Mesh] OR "Focus Groups"[Mesh] OR "Interview" [Publication Type] OR "Interviews as Topic"[Mesh] OR "Narration"[Mesh] OR "Personal Narratives as Topic"[Mesh] OR "Grounded Theory"[Mesh] OR "Observational Studies as Topic"[Mesh] OR "Observational Study" [Publication Type] OR "Tape Recording"[Mesh] OR survey*[tiab] OR questionnaire*[tiab] OR measur*[tiab] OR interview*[tiab] OR discussion*[tiab] OR thematic analys*[tiab] OR content analys*[tiab] OR constant comparison*[tiab] OR focus group*[tiab] OR ethnograph*[tiab] OR ethnograf*[tiab] OR etnograf*[tiab] OR field stud*[tiab] OR participant observati*[tiab] OR phenomenolog*[tiab] OR narration*[tiab] OR narrative[tiab] OR qualitative stud*[tiab] OR qualitative analys*[tiab] OR qualitative research*[tiab] OR qualitive method*[tiab] OR multimethodolog*[tiab] OR mixed method*[tiab] OR tape recording*[tiab] OR audio recording*[tiab] OR observation*[tiab] OR grounded theor*[tiab] OR audiorecording*[tiab] OR taperecording*[tiab] OR audiotape*[tiab]

6. Filters

NOT (("Adolescent"[Mesh] OR "Child"[Mesh] OR "Infant"[Mesh] OR adolescen*[tiab] OR child*[tiab] OR schoolchild*[tiab] OR infant*[tiab] OR girl*[tiab] OR boy*[tiab] OR teen[tiab] OR teens[tiab] OR teenager*[tiab] OR youth*[tiab] OR pediatr*[tiab] OR paediatr*[tiab] OR puber*[tiab]) NOT ("Adult"[Mesh] OR adult*[tiab] OR man[tiab] OR men[tiab] OR woman[tiab] OR women[tiab])) NOT (animals[mh] NOT humans[mh])
Filters activated: Publication date from 2007/01/01

Results for each database

Database	Result searches	Without duplicates
Pubmed	4355	**4349**
Cochrane Library reviews	509	**498**
Cochrane Library trials	1176	**425**
Embase	4475	**1751**
PsycINFO	640	**425**
Cinahl	692	**108**
TOTAAL	11847	**7556**

Search History PubMed 18 oktober 2017 (read from bottom-up)

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#7	#6 NOT (("Adolescent"[Mesh] OR "Child"[Mesh] OR "Infant"[Mesh] OR adolescen*[tiab] OR child*[tiab] OR schoolchild*[tiab] OR infant*[tiab] OR girl*[tiab] OR boy*[tiab] OR teen[tiab] OR teens[tiab] OR teenager*[tiab] OR youth*[tiab] OR pediatr*[tiab] OR paediatr*[tiab] OR puber*[tiab]) NOT ("Adult"[Mesh] OR adult*[tiab] OR man[tiab] OR men[tiab] OR woman[tiab] OR women[tiab])) NOT (animals[mh] NOT humans[mh])	7557
#6	#1 AND #2 AND #3 AND #4 AND #5	7923
#5	"Perception"[Mesh] OR "Attitude"[Mesh] OR "Feedback"[Mesh] OR "Self Report"[Mesh] OR perception*[tiab] OR belief*[tiab] OR feedback[tiab] OR attitude[tiab] OR sensemaking[tiab] OR sense making[tiab] OR meaning[tiab] OR patient experience*[tiab] OR self-report*[tiab] OR patient-report*[tiab] OR selfreport*[tiab] OR patientreport*[tiab] OR "Surveys and Questionnaires"[Mesh] OR "Qualitative Research"[Mesh] OR "Focus Groups"[Mesh] OR "Interview" [Publication Type] OR "Interviews as Topic"[Mesh] OR "Narration"[Mesh] OR "Personal Narratives as Topic"[Mesh] OR "Grounded Theory"[Mesh] OR "Observational Studies as Topic"[Mesh] OR "Observational Study" [Publication Type] OR "Tape Recording"[Mesh] OR survey*[tiab] OR questionnaire*[tiab] OR measur*[tiab] OR interview*[tiab] OR discussion*[tiab] OR thematic analys*[tiab] OR content analys*[tiab] OR constant comparison*[tiab] OR focus group*[tiab] OR ethnograph*[tiab] OR ethnograf*[tiab] OR etnograf*[tiab] OR field stud*[tiab] OR participant observati*[tiab] OR phenomenolog*[tiab] OR narration*[tiab] OR narrative[tiab] OR qualitative stud*[tiab] OR qualitative analys*[tiab] OR qualitative research*[tiab] OR qualitive method*[tiab] OR multimethodolog*[tiab]	5550692

Search	Query	Items found
	OR mixed method*[tiab] OR tape recording*[tiab] OR audio recording*[tiab] OR observation*[tiab] OR grounded theor*[tiab] OR audiorecording*[tiab] OR taperecording*[tiab] OR audiotape*[tiab]	
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#3	"Sex"[Mesh] OR "Sex Characteristics"[Mesh] OR "Women"[Mesh] OR "Female"[Mesh] OR "Men"[Mesh] OR "Male"[Mesh] OR gender[tiab] OR woman[tiab] OR women[tiab] OR female*[tiab] OR feminin*[tiab] OR male[tiab]	10650650

Search	Query	Items found
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#2	burden*[tiab] OR "Workload"[Mesh] OR "Adaptation, Psychological"[Mesh] OR "Health Expenditures"[Mesh] OR workload*[tiab] OR patient work[tiab] OR adapt*[tiab] OR coping[tiab] OR load[tiab] OR expenses[tiab] OR cost[tiab] OR costs[tiab] OR payment*[tiab] OR expenditure*[tiab] OR spending[tiab] OR time[tiab] OR impact*[tiab] OR barriers[tiab] OR problem*[tiab] OR difficult*[tiab] OR challenge*[tiab] OR "Drug-Related Side Effects and Adverse Reactions"[Mesh] OR "adverse effects" [Subheading] OR adverse effect*[tiab] OR adverse reaction*[tiab] OR adverse drug reaction*[tiab] OR side effect*[tiab]	7306032
#1	"Arthritis, Rheumatoid"[Mesh:NoExp] OR "Spondylarthritis"[Mesh:NoExp] OR "Spondylarthropathies"[Mesh:NoExp] OR "Arthritis, Psoriatic"[Mesh] OR "Spondylitis, Ankylosing"[Mesh] OR rheumatoid arthriti*[tiab] OR spondyloarthritis ankylopoietica*[tiab] OR ankylosing spondyl*[tiab] OR spondylarthritis ankylopoietica*[tiab] OR bechterew*[tiab] OR marie struempell[tiab] OR rheumatoid spondyliti*[tiab] OR spondylitis ankylopoietica*[tiab] OR spondylarthr*[tiab] OR spinal arthriti*[tiab] OR marie strumpell[tiab] OR spondyloarthropath*[tiab] OR arthritic psoriasis[tiab] OR psoriatic arthr*[tiab] OR psoriasis arthropath*[tiab]	141036

Search History Embase 18 October 2017

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#9	#8 AND [2007-2017]/py	4475
#8	#7 NOT 'conference abstract'/it	6874
#7	#6 NOT (('adolescent'/exp OR 'child'/exp OR adolescent*:ti,ab OR child*:ti,ab OR schoolchild*:ti,ab OR infant*:ti,ab OR girl*:ti,ab OR boy*:ti,ab OR teen:ti,ab OR teens:ti,ab OR teenager*:ti,ab OR youth*:ti,ab OR pediatr*:ti,ab OR paediatr*:ti,ab OR puber*:ti,ab) NOT ('adult'/exp OR 'aged'/exp OR 'middle aged'/exp OR adult*:ti,ab OR man:ti,ab OR men:ti,ab OR woman:ti,ab OR women:ti,ab)) NOT ([animals]/lim NOT [humans]/lim)	11064
#6	#1 AND #2 AND #3 AND #4 AND #5	11501
#5	'perception'/exp OR 'attitude'/exp OR 'feedback system'/exp OR 'self report'/exp OR perception*:ab,ti OR belief*:ab,ti OR feedback:ab,ti OR attitude:ab,ti OR sensemaking:ab,ti OR 'sense-making':ab,ti OR meaning:ab,ti OR 'patient experience*':ab,ti OR 'self-report*':ab,ti OR 'patient-report*':ab,ti OR selfreport*:ab,ti OR patientreport*:ab,ti OR 'surveys'/exp OR 'questionnaire'/exp OR 'qualitative research'/exp OR 'interview'/exp OR 'narrative'/exp OR 'grounded theory'/exp OR 'observational method'/exp OR 'recording'/exp OR 'content analysis'/exp OR 'thematic analysis'/exp	6784969

Search	Query	Items found
	OR 'constant comparative method'/exp OR 'ethnography'/exp OR 'field study'/exp OR 'phenomenology'/exp OR 'panel study'/exp OR survey*:ab,ti OR questionnaire*:ab,ti OR measur*:ab,ti OR interview*:ab,ti OR discussion*:ab,ti OR 'thematic analys*':ab,ti OR 'content analys*':ab,ti OR 'constant comparison*':ab,ti OR 'focus group*':ab,ti OR ethnograph*:ab,ti OR ethnograf*:ab,ti OR etnograf*:ab,ti OR 'field stud*':ab,ti OR 'participant observati*':ab,ti OR phenomenolog*:ab,ti OR narration*:ab,ti OR narrative:ab,ti OR 'qualitative stud*':ab,ti OR 'qualitative analys*':ab,ti OR 'qualitative research*':ab,ti OR 'qualitive method*':ab,ti OR multimethodolog*:ab,ti OR 'mixed method*':ab,ti OR 'tape record*':ab,ti OR 'audio record*':ab,ti OR taperecord*:ab,ti OR audiorecord*:ab,ti OR audiotape*:ab,ti OR observation*:ab,ti OR 'grounded theor*':ab,ti	
#4	'therapy'/exp OR therapies:ab,ti OR therapy:ab,ti OR treatment*:ab,ti OR medication*:ab,ti OR medicine*:ab,ti OR care:ab,ti OR 'drug administration'/exp OR 'self care'/exp OR 'self monitoring'/exp OR 'rehabilitation'/exp OR 'drug self administration'/exp OR 'self care*':ab,ti OR selfcare:ab,ti OR 'self management':ab,ti OR selfmedication:ab,ti OR 'self administration':ab,ti OR 'self-monitor*':ab,ti OR selfmonitor*:ab,ti OR rehabilitation:ab,ti OR monitoring*:ab,ti OR 'patient referral'/exp OR 'doctor patient relation'/exp OR 'doctor nurse relation'/exp OR appointment*:ab,ti OR consult*:ab,ti OR contact*:ab,ti OR ((doctor NEAR/3 patient NEAR/3 relation*):ab,ti) OR ((physician NEAR/3 patient NEAR/3 relation*):ab,ti) OR ((nurse NEAR/3 patient NEAR/3 relation*):ab,ti) OR communicat*:ab,ti OR interaction:ab,ti OR 'attitude to health'/exp OR 'health literacy'/exp OR 'patient education'/exp OR 'medical information'/exp OR 'shared decision making'/exp OR 'health education':ab,ti OR information*:ab,ti OR 'medical advice':ab,ti OR 'treatment advice':ab,ti OR 'shared decision making*':ab,ti OR 'shared decisionmaking*':ab,ti OR sdm:ab,ti OR 'health litera*':ab,ti OR 'health knowledge*':ab,ti OR 'daily life activity'/exp OR 'lifestyle'/exp OR ((activit* NEAR/3 'daily liv*'):ab,ti) OR adl:ab,ti OR 'life style':ab,ti OR lifestyle:ab,ti OR 'health behavior*':ab,ti OR 'health behaviour*':ab,ti OR 'travel'/exp OR 'health care access'/exp OR mobility:ab,ti OR mobile:ab,ti OR transport*:ab,ti OR travel*:ab,ti OR 'public transfer*':ab,ti OR access*:ab,ti OR 'self help device'/exp OR 'orthopedic equipment'/exp OR 'assisted device*':ab,ti OR 'self-help device*':ab,ti OR 'assistive technolog*':ab,ti OR 'walking stick*':ab,ti OR walkers:ab,ti OR 'orthotic device*':ab,ti OR brace*:ab,ti OR 'physical disability'/exp OR 'work capacity'/exp OR 'functional disability'/exp OR 'work capacit*':ab,ti OR 'functional disab*':ab,ti OR 'disability evaluation*':ab,ti OR 'social support'/exp OR 'family'/exp OR 'social support':ab,ti OR family:ab,ti OR spouse:ab,ti OR partner:ab,ti OR 'drug utilization'/exp OR 'glucocorticoid'/exp OR 'methotrexate'/exp OR 'nonsteroid antiinflammatory agent'/exp OR 'antirheumatic agent'/exp OR 'prednisone'/exp OR 'monoclonal antibody'/exp OR 'biological product'/exp OR medication:ab,ti OR glucocorticoid*:ab,ti OR biologicals:ab,ti OR methotrexate:ab,ti OR mtx:ab,ti OR 'non steroid* anti-inflammatory agent*':ab,ti OR 'non steroid* antiinflammatory agent*':ab,ti	16105719

Search	Query	Items found
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#3	'gender and sex'/de OR 'gender'/exp OR 'sex'/de OR 'sex difference'/exp OR 'female'/de OR 'male'/de OR gender:ab,ti OR woman:ab,ti OR women:ab,ti OR female*:ab,ti OR feminin*:ab,ti OR male:ab,ti OR males:ab,ti OR men:ab,ti OR 'sex* characteristic*':ab,ti OR 'sex based':ab,ti OR 'sex* factor*':ab,ti OR 'sex* distribution':ab,ti OR 'sex* difference*':ab,ti OR 'sex* dimorphism*':ab,ti	10724181
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#1	'rheumatoid arthritis'/de OR 'spondylarthritis'/exp OR 'ankylosing spondylitis'/exp OR 'psoriatic arthritis'/exp OR 'spondyloarthropathy'/exp OR 'rheumatoid arthriti*':ab,ti OR spondylarthr*:ab,ti OR 'spondyloarthritis ankylopoietica*':ab,ti OR 'ankylosing spondyl*':ab,ti OR bechterew*:ab,ti OR 'marie struempell':ab,ti OR 'rheumatoid spondyliti*':ab,ti OR 'spondylitis ankylopoietica*':ab,ti OR 'spinal arthriti*':ab,ti OR 'marie strumpell:ab,ti' OR spondyloarthropath*:ab,ti OR 'arthritic psoriasis':ab,ti OR 'psoriatic arthr*':ab,ti OR 'psoriasis arthropath*':ab,ti	219807

Search History Cochrane Library (Wiley) 25 oktober 2017 (read from bottom-up)

Search	Query	Items found
#6	#1 AND #2 AND #3 AND #4 AND #5 Publication Year from 2007	1731
#5	perception* or belief* or feedback or attitude or sensemaking or (sense next/3 making*) or meaning or "patient experience" or "self-report" or (patient next/3 report*) or selfreport* or patientreport* or survey* or questionnaire* or measur* or interview* or discussion* or (thematic next/3 analys*) or (content next/3 analys*) or (constant next/3 comparison*) or (focus next/3 group*) or ethnograph* or ethnograf* or etnograf* or (field next/3 stud*) or (participant near observati*) or phenomenolog* or narration* or narrative or (qualitative next/3 stud*) or (qualitative next/3 analys*) or (qualitative next/3 research*) or (qualitive next/3	422458

Search	Query	Items found
	method*) or multimethodolog* or (mixed next/3 method*) or (tape next/3 record*) or (audio next/3 record*) or taperecord* or audiorecord* or audiotape* or observation* or (grounded next/3 theor*):ti,ab,kw	
#4	therapies or therapy or treatment* or medication* or medicine* or care or "drug administration" or (self next/3 care*) or selfcare or (self next/3 manage*) or selfmedication or "self administration" or (self next/3 monitor*) or selfmonitor* or rehabilitation or monitoring* or appointment* or consult* or contact* or (doctor near/3 patient near/3 relation*) or (physician near/3 patient near/3 relation) or (nurse near/3 patient near/3 relation*) or communicat* or interaction or "health education" or information* or "medical advice" or "treatment advice" or "shareddecision making" or "shared decision makings" or (shared next/3 decisionmaking*) or sdm or (health next/3 litera*) or (health near/3 knowledge*) or (activit* near/3 daily near/3 liv*) or adl or "life style" or lifestyle or (health next/3 behavior*) or (health next/3 behaviour*) or mobility or mobile or transport* or travel* or "public transfer" or access* or "assisted device" or "assisted devices" or (self next/3 help near/3 device*) or (assistive NEXT/3/3 technolog*) or "walking stick" or "walking sticks" or walkers or "orthotic device" or "orthotic devices" or brace* or (work near/3 capacit*) or (functional near/3 disab*) or (disability near/3 evaluation*) or (social near/3 support*) or family or spouse* or medication or glucocorticoid* or biologicals or methotrexate or MTX or (non next/3 steroid* next/3 anti next/3 inflammatory next/3 agent*) or (non next/3 steroid* next/3 antiinflammatory next/3 agent*) or (nonsteroid* next/3 anti next/3 inflammatory next/3 agent*) or (nonsteroid* next/3 antiinflammatory agent*) or NSAID* or (anti next/3 rheumatic next/3 agent*) or (antirheumatic next/3 agent*) or (anti next/3 rheumatic next/3 drug*) or (antirheumatic next/3 drug*) or DMARD or (anti next/3 inflammatory next/3 analgesic*) or (antiinflammatory) or prednison* or (anti next/3 TNF*) or antiTNF or "monoclonal antibodies" or (TNFalpha next/3 blocker*) or (TNF next/3 alpha next/3 blocker*) or infliximab or adalimumab or etanercept:ti,ab,kw	880301
#3	gender or woman or women or female* or feminin* or male or males or men or (sex* near/3 characteristic*) or (sex near/3 based) or (sex* near/3 factor*) or (sex* near/3 distribution) or (sex* near/3 difference*) or (sex* near/3 dimorphism*):ti,ab,kw	657945
#2	burden* or workload* or "patient work" or adapt* or coping or load or expenses or cost or costs or payment* or expenditure* or spending or time or impact* or barriers or problem* or difficult* or challenge* or adverse effect* or (adverse near/3 reaction*) or (side near/3 effect*):ti,ab,kw	559817
#1	(rheumatoid next/3 arthriti*) or spondylarthr* or (spondyloarthritis next/3 ankylopoietica*) or (ankylosing next/3 spondyl*) or bechterew* or "marie struempell" or (rheumatoid next/3 spondyliti*) or (spondylitis next/3 ankylopoietica*) or (spinal next/3 arthriti*) or "marie strumpell" or spondyloarthropath* or "arthritic psoriasis" or (psoriatic next/3 arthr*) or (psoriasis next/3 arthropath*):ti,ab,kw	11409

Search History Cinahl (Ebsco) 29 oktober 2017 (read from bottom-up)

Search	Query	Items found
S8	S6 NOT ((MH ("Adolescence" OR "Child+") OR TI (adolescen* OR child* OR schoolchild* OR infant* OR girl* OR boy* OR teen OR teens OR teenager* OR youth* OR pediatr* OR paediatr* OR puber*) OR AB (adolescen* OR child* OR schoolchild* OR infant* OR girl* OR boy* OR teen OR teens OR teenager* OR youth* OR pediatr* OR paediatr* OR puber*)) NOT (MH ("Adult+") OR TI (adult* OR man OR men OR woman OR women) OR AB (adult* OR man OR men OR woman OR women))) NOT (MH "Animals" NOT MH "Human") Limiters - Published Date: 20070101-20171231	692
S7	S6 NOT ((MH ("Adolescence" OR "Child+") OR TI (adolescen* OR child* OR schoolchild* OR infant* OR girl* OR boy* OR teen OR teens OR teenager* OR youth* OR pediatr* OR paediatr* OR puber*) OR AB (adolescen* OR child* OR schoolchild* OR infant* OR girl* OR boy* OR teen OR teens OR teenager* OR youth* OR pediatr* OR paediatr* OR puber*)) NOT (MH ("Adult+") OR TI (adult* OR man OR men OR woman OR women) OR AB (adult* OR man OR men OR woman OR women))) NOT (MH "Animals" NOT MH "Human)	1118
S6	S1 AND S2 AND S3 AND S4 AND S5	1151
S5	MH ("Perception+" OR "Attitude+" OR "Feedback" OR "Self Report+" OR "Surveys+" OR "Observational Methods+" OR "Interviews+" OR "Narratives" OR "Videorecording+" OR "Focus Groups" OR "Audiorecording" OR "Questionnaires+" OR "Life Histories" OR "Qualitative Studies+" OR "Grounded Theory" OR "Content Analysis" OR "Thematic Analysis" OR "Constant Comparative Method" OR "Ethnographic Research" OR "Field Studies" OR "Phenomenological Research" OR "Panel Studies+") OR TI (perception* OR belief* OR feedback OR attitude OR sensemaking OR sense-making OR meaning OR patient experience* OR self-report* OR patient-report* OR selfreport* OR patientreport* OR survey* OR questionnaire* OR measur* OR interview* OR discussion* OR thematic analys* OR content analys* OR constant comparison* OR focus group*’ OR ethnograph* OR ethnograf* OR etnograf* OR field stud* OR participant observati* OR phenomenolog* OR narration* OR narrative OR qualitative stud* OR qualitative analys* OR qualitative research* OR qualitive method* OR multimethodolog* OR mixed method* OR tape record* OR audio record* OR taperecord* OR audiorecord* OR audiotape* OR observation* OR grounded theor*) OR AB (perception* OR belief* OR feedback OR attitude OR sensemaking OR sense-making OR meaning OR patient experience* OR self-report* OR patient-report* OR selfreport* OR patientreport* OR survey* OR questionnaire* OR measur* OR interview* OR discussion* OR thematic analys* OR content analys* OR constant comparison* OR focus group*’ OR ethnograph* OR ethnograf* OR etnograf* OR field stud* OR participant observati* OR phenomenolog* OR narration* OR narrative OR qualitative stud* OR qualitative analys* OR qualitative research* OR qualitive method* OR multimethodolog* OR mixed method* OR tape record* OR audio record* OR taperecord* OR audiorecord* OR audiotape* OR observation* OR grounded theor*)	1026521

Search	Query	Items found
S4	MH ("Therapeutics+" OR "Self Administration+" OR "Drug Administration Schedule" OR "Self Care+" OR "Rehabilitation+" OR "Referral and Consultation" OR "Appointments and Schedules+"OR "Remote Consultation" OR "Professional-Patient Relations+" OR "Attitude to Health+" OR "Attitude to Illness+" OR "Health Literacy" OR "Patient Education+" OR "Activities of Daily Living+" OR "Life Style+" OR "Travel" OR "Health Services Accessibility" OR "Assistive Technology Devices+" OR "Orthopedic Equipment and Supplies+" OR "Disability Evaluation" OR "Work Capacity Evaluation" OR "Support, Psychosocial" OR "Family+" OR "Drug Utilization" OR "Drug Therapy+" OR "Glucocorticoids" OR "Methotrexate" OR "Antiinflammatory Agents, Non-Steroidal+" OR "Antirheumatic Agents+" OR "Antibodies, Monoclonal+" OR "Biological Products+" OR "Prednisone") OR TI (therapies OR therapy OR treatment* OR medication* OR medicine* OR care OR selfcare OR “self-management” OR selfmedication OR “self-Administration” OR self-monitor* OR selfmonitor* OR rehabilitation OR monitoring* OR self-care* OR selfcare OR appointment* OR consult* OR contact* OR doctor patient relation* OR physician patient relation* OR nurse patient relation* OR communicat* OR interaction OR “health education” OR information* OR medical advice OR treatment advice OR shared decision making* OR shared decisionmaking* OR sdm OR health litera* OR health knowledge* OR activit* daily liv* OR adl OR life-style OR lifestyle OR health behavior* OR health behaviour* OR mobility OR mobile OR transport* OR travel* OR public transfer* OR access* OR assisted device* OR self-help device* OR assistive technolog* OR walking stick* OR walkers OR orthotic device* OR brace* OR work capacit* OR functional disab* OR disability evaluation* OR social support* OR family OR spouse OR medication OR glucocorticoid* OR biologicals OR methotrexate OR MTX OR non steroid* anti-inflammatory agent* OR non steroid* antiinflammatory agent* OR nonsteroid* anti-inflammatory agent* OR nonsteroid* antiinflammatory agent* OR NSAID* OR anti-rheumatic agent* OR antirheumatic agent* OR anti-rheumatic drugs OR antirheumatic drug* OR DMARD OR anti-inflammatory analgesic* OR antiinflammatory analgesic* OR prednison* OR anti-TNF* OR antiTNF OR monoclonal antibodies OR TNFalpha blocker* OR TNF-alpha blocker* OR infliximab OR adalimumab OR etanercept) OR AB (therapies OR therapy OR treatment* OR medication* OR medicine* OR care OR selfcare OR “self-management” OR selfmedication OR “self-Administration” OR self-monitor* OR selfmonitor* OR rehabilitation OR monitoring* OR self-care* OR selfcare OR appointment* OR consult* OR contact* OR doctor patient relation* OR physician patient relation* OR nurse patient relation* OR communicat* OR interaction OR “health education” OR information* OR medical advice OR treatment advice OR shared decision making* OR shared decisionmaking* OR sdm OR health litera* OR health knowledge* OR activit* daily liv* OR adl OR life-style OR lifestyle OR health behavior* OR health behaviour* OR mobility OR mobile OR transport* OR travel* OR public transfer* OR access* OR assisted device* OR self-help device* OR assistive technolog* OR walking stick* OR walkers OR orthotic device* OR brace* OR work capacit* OR functional disab* OR disability evaluation* OR social support* OR family OR spouse OR medication OR glucocorticoid* OR biologicals OR methotrexate OR MTX OR non steroid* anti-inflammatory agent* OR non steroid* antiinflammatory agent* OR nonsteroid* anti-inflammatory agent* OR nonsteroid* antiinflammatory agent* OR NSAID* OR anti-rheumatic agent* OR antirheumatic agent* OR anti-rheumatic drugs OR antirheumatic drug* OR DMARD OR anti-inflammatory analgesic* OR antiinflammatory analgesic* OR prednison* OR anti-TNF* OR antiTNF OR monoclonal antibodies OR TNFalpha blocker* OR TNF-alpha blocker* OR infliximab OR adalimumab OR etanercept)	1971081

Search	Query	Items found
S3	MH ("Sex Factors" OR "Female" OR "Male" OR "Women+" OR "Men+") OR TI (gender OR woman OR women OR female* OR feminin* OR male OR males OR men OR sex* characteristic* OR sex based OR sex* factor* OR sex* distribution OR sex* difference* OR sex* dimorphism*) OR AB (gender OR woman OR women OR female* OR feminin* OR male OR males OR men OR sex* characteristic* OR sex based OR sex* factor* OR sex* distribution OR sex* difference* OR sex* dimorphism*)	1187122
S2	MH ("Workload" OR "Coping+" OR "Adaptation, Psychological+" OR "Health Care Costs" OR "Adverse Drug Event+" OR "Adverse Health Care Event+") OR TI (burden* OR workload* OR “patient work” OR adapt* OR coping OR load OR expenses OR cost OR costs OR payment* OR expenditure* OR spending OR time OR impact* OR barriers OR problem* OR difficult* OR challenge* OR adverse effect* OR adverse reaction* OR side effect*) OR AB (burden* OR workload* OR “patient work” OR adapt* OR coping OR load OR expenses OR cost OR costs OR payment* OR expenditure* OR spending OR time OR impact* OR barriers OR problem* OR difficult* OR challenge* OR adverse effect* OR adverse reaction* OR side effect*)	840575
S1	MH ("Arthritis, Rheumatoid" OR "Spondylitis, Ankylosing" OR "Arthritis, Psoriatic" OR "Spondylarthritis+" OR "Spondylarthropathies+") OR TI (rheumatoid arthriti* OR spondyloarthritis ankylopoietica* OR ankylosing spondyl* OR spondylarthritis ankylopoietica* OR bechterew* OR “marie struempell” OR rheumatoid spondyliti* OR spondylitis ankylopoietica* OR spondylarthr* OR spinal arthriti* OR “marie strumpell“ OR spondyloarthropath* OR “arthritic psoriasis” OR psoriatic arthr* OR psoriasis arthropath*) OR AB (rheumatoid arthriti* OR spondyloarthritis ankylopoietica* OR ankylosing spondyl* OR spondylarthritis ankylopoietica* OR bechterew* OR “marie struempell” OR rheumatoid spondyliti* OR spondylitis ankylopoietica* OR spondylarthr* OR spinal arthriti* OR “marie strumpell“ OR spondyloarthropath* OR “arthritic psoriasis” OR psoriatic arthr* OR psoriasis arthropath*)	16101

Search History PsycINFO (Ebsco) 29 oktober 2017 (read from bottom-up)

Search	Query	Items found
S4	S1 AND S2 Limiters – Publication Year: 2007-2018	640
S3	S1 AND S2	1437
S2	DE ("Coping Behavior" OR "Adaptive Behavior" OR "Emotional Adjustment" OR "Health Care Costs" OR "Side Effects (Drug)" OR "Side Effects (Treatment)") OR TI (burden* OR workload* OR “patient work” OR adapt* OR coping OR load OR expenses OR cost OR costs OR payment* OR expenditure* OR spending OR time OR impact* OR barriers OR problem* OR difficult* OR challenge* OR adverse effect* OR adverse reaction* OR side effect*) OR AB (burden* OR workload* OR “patient work” OR adapt* OR coping OR load OR expenses OR cost OR costs OR payment*	1726478

Search	Query	Items found
	OR expenditure* OR spending OR time OR impact* OR barriers OR problem* OR difficult* OR challenge* OR adverse effect* OR adverse reaction* OR side effect*)	
S1	DE "Rheumatoid Arthritis" OR TI (rheumatoid arthriti* OR spondyloarthritis ankylopoietica* OR ankylosing spondyl* OR spondylarthritis ankylopoietica* OR bechterew* OR “marie struempell” OR rheumatoid spondyliti* OR spondylitis ankylopoietica* OR spondylarthr* OR spinal arthriti* OR “marie strumpell“ OR spondyloarthropath* OR “arthritic psoriasis” OR psoriatic arthr* OR psoriasis arthropath*) OR AB (rheumatoid arthriti* OR spondyloarthritis ankylopoietica* OR ankylosing spondyl* OR spondylarthritis ankylopoietica* OR bechterew* OR “marie struempell” OR rheumatoid spondyliti* OR spondylitis ankylopoietica* OR spondylarthr* OR spinal arthriti* OR “marie strumpell“ OR spondyloarthropath* OR “arthritic psoriasis” OR psoriatic arthr* OR psoriasis arthropath*)	2745

Appendix E – Inclusion and exclusion criteria

Inclusion Criteria	
Types of studies	Original studies with a publication date from 2007 (inclusive)-present.
	Studies from any geographical location.
	English language.
	Studies using qualitative or quantitative methods of analysis (to describe patterns or themes raised by participants) seeking to understand the patient experience, describing the processes of RA management experienced by patients and their active contributions towards this. This includes original qualitative studies, studies involving analysis of quantitative data, and qualitative study as part of a mixed methods study e.g. the study both has a qualitative component but also quantitative studies analysing patient experiences with treatment burden .
Types of participants	Adults (>18 yrs).
	Diagnosed with rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis
	Being treated in any 'usual care' setting: primary; secondary; tertiary care, e.g. by a general practitioner, in the hospital, hospice, community, home or rehabilitation.
	Receiving care typical for that geographical location i.e. not part of experimental or pilot studies.
Types of outcome measures (guided by Normalization theory)	Physical burdens (side-effects from medication, adverse events, pain from injecting etc)
	Logistical burdens (e.g. organizing appointments or visits from health professionals, organising rehabilitation, arranging transport)
	Technical burdens e.g. enacting lifestyle changes, performing rehabilitation exercises, modifying environments, taking medications, using assistive technologies.
	Relational burdens e.g. enrolling family, friends and health professionals for support, initiating interactions with possible carers and supporters, maintaining relationships during treatment.
	Temporal burden (time required to organize travel, receive treatment, learn about treatment, monitor treatment, manage side effects)
	Psychosocial time demands (dependency, fulfilling roles, the impact of treatment on significant others, treatment tasks that interfere with daily life, shame, stigma).
	Sense making burdens e.g. conceptualising problems, understanding and learning about management strategies, knowing when to seek help, differentiating between treatments.
	Financial Burden (out of pocket costs)

Exclusion Criteria	
Types of studies	Non English language.
	Published pre 2000.
	Grey literature/not published in a peer reviewed journal.
	Dissertations/theses.
	Proceedings.
	Published abstracts.
	Reviews
	Treatment guidelines documents.
	Commentary articles, written to convey opinion or stimulate research/discussion, with no research component.
Participants	Rheumatic diseases that not belong to the group of inflammatory arthritis such as for example arthrosis
	Mixed groups of participants e.g. patients and carers or health care providers, unless results from patients are explicitly separate from other participants.
Types of outcome measures	Anyone other than the patient's perspective of patient work e.g. health professionals.
	Burden on health services/systems or health professionals.
	Economic burden at a society level e.g. costs to government or councils.
	Burden from the carer's perspective

Appendix F – Data-extraction form

Data extractie formulier voor full teksten

General information	
Date form completed ***(dd-mm-yyyy)***	
Name of person extracting data	
First Author	
Study title *(title of paper/that data are extracted from)*	
DOI number	
Year of publication	

Study eligibility

Toelichting: Vul eerst de hokjes bij de inclusie criteria in en bepaal dan voor ieder studie karakteristiek of het aanwezig is of niet en geef dit aan in de laatste kolom. In principe moet bij ieder karakteristiek tenminste één hokje met 'ja' aangekruist zijn om een 'ja' te krijgen in de laatste kolom. Alle karakteristieken in de laatste kolom moeten op 'yes' staan wil de studie geïncludeerd worden.

Study Characteristics	Inclusion Criteria	Yes/No/Unclear
Disease	• RA Yes ☐ No☐ • Arthritis psoriatica Yes ☐ No☐ • Ankylosing spondylitis (Bechterew) Yes ☐ No☐ • Juvenile Arthritis Yes ☐ No☐	
Participants	• All participants are over 18 years old Yes ☐ No ☐ • Not all participants are over 18 years old (but at least 80% of participants are over 18 years old) Yes ☐ No☐	
Treatment burden	☐ Physical burdens (side-effects from medication, adverse events, pain from injecting etc) ☐ Logistical burdens (e.g. organizing appointments or visits from health professionals, organising rehabilitation, arranging transport), ☐ Technical burdens (e.g. making lifestyle changes, taking medication, doing exercises) ☐ Relational burdens (enrolling family and friends and health professionals or support, initiating interactions with possible carers) ☐ Temporal burden (time required to organize travel, receive treatment, learn about treatment, monitor treatment, manage side effects) ☐ Psychosocial time demands (dependency, fulfilling roles, the impact of treatment on significant others, treatment tasks that interfere with daily life, shame, stigma). ☐ Making sense burdens (conceptualizing problems, understanding and learning about management, knowing when to seek help, differentiating between	

Study Characteristics	Inclusion Criteria	Yes/No/Unclear
	treatments). ☐ Financial burdens (out of pocket costs) ☐ Other…………………………………………………………………………………………	
Subjective experience	**Gives insight into the subjective experiences of patients with aspects of treatment?** Yes ☐ No☐ Unclear ☐	

Decision:	**Included ☐/excluded ☐**
Reason for exclusion	It doesn't fulfil the criteria of: ☐ Diseases ☐ Age ☐ Treatment burden ☐ Patient perspective ☐ Other : (please specify)
Notes:	

Toelichting: Bij de inclusie of exclusie letten we in eerste instantie niet op genderverschillen. Het doel van onze studie is namelijk tweeledig. Het beschrijven van de aspecten van het concept treatment burden voor de vier ziekten en de eventuele antecedenten en consequenties van treatment burden. Vervolgens kijken we of er ook nog iets specifieks gezegd wordt over men/vrouw verschillen. Dit kan in het dataextractieformulier worden aangegeven
Onderstaande tabellen dienen ingevuld te worden als full-tekst geïncludeerd wordt

Study details	**Provided, namely …**	**Not provided**	**Unclear**
Type of study	☐ Qualitative study (interview, focus group etc) ☐ Quantitative study (survey, questionnaire etc) ☐ Mixed study (both qualitative and quantitative) ☐ Intervention study ☐ RCT ☐ Cohort ☐ Patient control ☐ case study ☐ Other…………………………………..	-	-
Setting	☐ Hospital ☐ Outpatient care ☐ Long term care or nursing home ☐ Primary care ☐ Community ☐ Home care ☐ Other, ……………………….	☐	☐
Aim of the study	☐	☐	☐
Year of the study		☐	☐
How are participants sampled or selected for the study? (e.g. theoretical, purposive, random).	☐	☐	☐

Study details	Provided, namely …	Not provided	Unclear
How are participants described in the inclusion criteria?	☐ By age ☐ By disease ☐ By symptom or severity of the disease ☐ By type of treatment ☐ By sex, ☐ female ☐ male ☐ Other, ………………………………………………………………………………………	☐	☐
How are data collected? (e.g. interviews, questionnaires, focus groups)	☐	☐	☐
How are data analysed? (e.g. grounded theory, thematic analysis, concept mapping, statistical analyses)	☐	☐	☐
What were the main outcomes of the study?		☐	☐
Main results	☐	☐	☐
What is the overall conclusion or recommendations of the study?	☐	☐	☐
Is there a separate description of the results for men and women?	☐	☐	☐
Are there differences between men and women in study results?	☐	☐	☐
What (if any) study limitations are declared?	☐	☐	☐

Participant details			
	Provided, namely …	**Not provided**	**Unclear**
Type of rheumatic disease	☐ RA ☐ Arthritis psoriatica ☐ Ankylosing spondylitis (Bechterew) ☐ Juvenile Arthritis ☐ Other	☐	☐
Inclusion criteria		☐	☐
Exclusion criteria		☐	☐
Number of participants		☐	☐
Min age of participants		☐	☐
Max age if participants		☐	☐
Mean age of participants		☐	☐
Number of males		☐	☐
Number of females		☐	☐
Employment	☐ Employed ☐ Unemployed ☐ Retired ☐ Other	☐	☐
Marital status	☐ Married/Living with a partner ☐ Living alone	☐	☐
Socio-economic status		☐	☐
Ethnicity		☐	☐

Participant details			
	Provided, namely …	Not provided	Unclear
Other relevant characteristics		☐	☐
Comorbidities		☐	☐
Number and type of medication		☐	☐
Type of treatment other than medication		☐	☐
Severity of the disease		☐	☐

Treatment burden			
	Provided, namely …	**Not provided**	**Unclear**
How described? (attributes)		☐	☐
Is information given about aspects of TB specific for men and/or women?		☐	☐
Antecedents (factors that influence the type or the amount of TB; for example time since diagnosis, severity of disease, gender, educational level, family roles etc)		☐	☐
Is information given about antecedents of TB specific for men and/or women?		☐	☐
Consequences (impact that TB has for example eon quality of life, work, family roles		☐	☐
Is information given about consequences of TB specific for men and/or women?		☐	☐

Appendix G – Study methods and results for each included study

Ref. No	Paper	Disease	Type of TB	Aspect of TB	Country of origin	Setting	No of participants and gender	Age	Ethnicity	Co-morbidity	Medications	Time since diagnosis
1	Hobl, 2012	RA	Physical burden	Medication/MTX	Austria	Outpatient care	n=19, 6 (32%) men, 13 (68%) women	56 years (sd=13)	UC	UC	UC	UC
2	Hone, 2013	RA	Psycho-social	Medication/ Etanercept	USA	Outpatient care	n=204, 28% men, 72% women	46.6 (±10.9) years	White=167 (82%), Hispanic/Latino=18 (9%), African American=12 (6%), Other=6 (3%)	UC	Methotrexate=31%, NSAIDs=19%, Prednisone=19%, Hydroxychloroquine=11%, Other=20%	5.1 (±7.8) years, range:0-46
3	Hoving, 2009	RA	Physical, Financial, Psycho-social	Medication/ TNF	Netherlands	Outpatient care	n=59, 45 (76.3%) female, 14 (23.7%) men	49.2 (±8.7) years	UC	UC	UC	10.7 (±8.9) years
4	Kavanaugh, 2009	RA	Relational, psycho-social	Medication, MTX	USA	UC	RAPID 1 (trial nr. 1): n=982; CZP 200 mg plus MTX: 82.4% women, CZP 400 mg plus MTX: 83.6% women, Placebo plus MTX: 83.9% women RAPID 2 (trial nr. 2): n=619; CZP 200 mg plus MTX: 83.7% women, CZP 400 mg plus MTX: 78% women, Placebo plus MTX: 84.3% women	RAPID 1 (trial nr. 1): CZP 200 mg plus MTX: 54.4 ± 11.6 years, CZP 400 mg plus MTX: 52.4 ± 11.7 years, Placebo plus MTX: 52.2 ± 11.2 years RAPID 2 (trial nr. 2): CZP 200 mg plus MTX: 52.2 ± 11.1 years, CZP 400 mg plus MTX: 51.9 ± 11.8 years, Placebo plus MTX: 51.5 ± 11.8 years	UC	UC	UC	RAPID 1 (trial nr. 1): CZP 200 mg plus MTX: 6.09 ± 4.22 years, CZP 400 mg plus MTX: 6.16 ± 4.36 years, Placebo plus MTX: 6.21 ± 4.36 years RAPID 2 (trial nr. 2): CZP 200 mg plus MTX: 6.09 ± 4.09 years, CZP 400 mg plus MTX: 6.5 ± 4.3 years, Placebo plus MTX: 5.63 ± 3.92 years

Ref. No	Paper	Disease	Type of TB	Aspect of TB	Country of origin	Setting	No of participants and gender	Age	Ethnicity	Co-morbidity	Medications	Time since diagnosis
5	Kavanaugh, 2015	AP	Relational, psycho-social	Medication, Certolizumab-pogol	USA	UC	N=408; 55,3% women, 44,7% men	47,9 years	UC	UC	biologicals	uc
6	Kennedy, 2014	AP	Psychosocial	Medication, DMARDS+NSAID	Canada	Outpatient care	N=186; 112 men (60,9%); 74 women (39,1%)	50.5 years	UC	Functional Comorbidity Index	Biologics: 48%, DMARDs: 52%, NSAIDs: 61%	14.2 years
7	Kobue, 2017	RA	Sense-making	Medication general	South Africa		N=18, 100% women	53.9 years (range 23 - 76)	UC	11 women with comorbidity; hpertension (n=10) and/or diabetes (n=3)	UC	UC
8	Kumar, 2008	RA	Sense-making	Medication, DMARD	UK	Outpatient care	Four groups: patients with Asian background and RA (n=50, 84% women) (1), patients with Asian background and SLE (n=50, 94% women) (2), patients with white background and RA (n=50, 76% women)(3) and patients with white background and SLE (n=50, 88% women) (4);	Group 1: 39 - 61 years; Group 2 28 - 26 years; group 3 52-66 years; group 4 39-58 years	South Asian or British origin	uc	Current DMARD therapy (type and number of medications)	Group 1: 8 yrs (5-11), group 2: 7 yrs (4-11), group 3: 12 yrs (6-19), group 4: 10 yrs (6-20)
9	Lack, 2011	RA	Sense-making	Medication	UK	Outpatient care	n=12 (100% men)	28-78 years	uc	uc	uc	1.5-55 years

Ref. No	Paper	Disease	Type of TB	Aspect of TB	Country of origin	Setting	No of participants and gender	Age	Ethnicity	Co-morbidity	Medications	Time since diagnosis
10	Lee, 2014	RA	Physical	Medication	Canada	UC	N=567; 148 men, 419 women	uc	90% Caucasian	uc	etanercept: 60.8% females and 61.1% males infliximab (20.3% females, 16.1% males) adalimumab (17.0% females, 17.5% males)	M= 11,8 years
11	Lempp, 2012	RA	Physical	Medication, DMARD	UK	Outpatient care	N=18; 4 men, 14 women	21-70 years; M=49 years	1 Asian, 1 Black African, 1 Black British, 1 British Bengali, 1 Caribbean, 1 Columbian, 11 White British/English, 1 Welsh	uc	patients receiving combinations of DMARDs with less than 2 years of RA, and;	uc
12	Lisicki, 2008	RA	Physical, sensemaking	Medication, biologicals	USA	uc	N=729; 74,9% female	53 years	uc	uc	patients with established RA (longer than 2 years) receiving DMARDs combination, combinations of TNF inhibitors combined with methotrexate, or alternative DMARDs	uc

Ref. No	Paper	Disease	Type of TB	Aspect of TB	Country of origin	Setting	No of participants and gender	Age	Ethnicity	Co-morbidity	Medications	Time since diagnosis
13	Louder, 2016	RA	Divers	Medication, biologicals, DMARD	USA	from a health insurers database	N=380; 70 men (18,4%), 310 women (81,6%)	54,9 years	uc	RxRiskV comorbidity score 5.2 (sd=2.9)	biologic DMARD therapy and tofacitinib	M=9.2 years (sd=9.2)
14	Lutf, 2012	RA, AP, AS	Physical	Medication, TNF	Quatar	Outpatient care	N= 150 (82 RA, 34 AS, 32 psoriatic arthritis, 4 other)	UC	UC	UC	Anti-TNF therapy	UC
15	Ørnbjerg, 2018	RA (97%)	Sense-making	Medication	Denmark	Outpatient care	N=180, 74% women	37 - 55 years (M= 45 years)	uc	uc	DMARDs and over the counter drugs	9 years median, variation 1-57 years
16	Linden, 2010	RA	Physical, psycho-social	Medication, TNF	Sweden	uc	n=15, 4 men, 11 women	25 - 70 years	uc	uc	TNF-Alpha blockers	Year of RA debut is reported
17	Brown, 2014	RA	Physical, financial, sense-making	Medication, DMARD	USA	Pharmacy benefits program	n=86, 9 men, 77 women	80 years (±10.3)	83 white, non-Hispanic, 3 black, non-Hispanic	UC	DMARDs	20 years (± 15.9)
18	Campbell, 2012	RA	Physical	Medication DMARC Biologicals	UK	Hospital	n=557, 156 (28%) men, 401 (72%) women	54.6 years (SD=13.8)	UC	UC	No treatment = 38 (6.9%) DMARD monotherapy = 201 (36.3%) DMARD combination=197 (35.6%) Anti-TNF±DMARDs = 117 (21.1%)	9.73 years (SD=9.49)

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19	Choquette, 2015	RA	Physical	Medication inflximat	Canada	Canadian registry to collect infusion-related real-world data in patients treated with infliximab	1632, 722 (44.2%) men, 910 (55.8%) women	48.2 years	UC	UC	232 (16.7%) patients had been previously treated with at least 1 biologic agent other than infliximab. The most common used biologic agent was etanercept (11.4%), followed by addalimumab (6%)	UC
20	Cinar, 2014	AS	Psychosocial/time demands	Mediccation TNF	Turkey	Outpatient care	n=101, 95 men, 6 women	36.5 years	UC	UC	Current use of anti-TNF-α drugs: Infliximab: 16 (15.8%) Etanercept: 51 (50.5%) Adalimumab: 34 (33.7%)	12.36 years of disease duration (± 6.42)
21	Combe, 2009	RA	Physical burden	Medication	not clear. International consortium?	not clear	n=254, 203 (79.9%) women, 51 (20.1%)	51.4 years (SD=12.9)	UC	UC	patients using corticosteroids: n=126 (49.6%)	6.6 years (SD=5.0)
22	Curtis, 2016	RA	Physical	Medication, MTX	USA	Patient community	N=392 , 91% women; biologic (n=218), SQ MTX (n=49), and oral MTX (n=115)	M=48 years (sd=10)	92% white	UC	among the patients treated with a biologic, the most commonly used agents were etaner-cept (23 %) and adalimumab	uc

Ref. No	Paper	Disease	Type of TB	Aspect of TB	Country of origin	Setting	No of participants and gender	Age	Ethnicity	Co-morbidity	Medications	Time since diagnosis
											(24 %). Approximately 2/3 of the biologic users were concomitantly taking MTX	
23	Gutierrez, 2016	AP	Physical	Injecties	Not clear	Hospital and outpatient care	n=114, gender=UC	UC	UC	UC	UC	UC
24	Haddad, 2016	AP	Physical	Medicatie, biologicals	Canada	Prospective observational PsA and Psoriasis cohort	n=695 patients with PsA and n=509 patients with psoriasis; men: 401 (58%) in PsA group, 290 (57%) in psoriasis group; female: 294 (42%) in PsA group, 219 (43%) in psoriasis group	49.5 (±13.3) in PsA group and 46.5 (±13.1) in psoriasis group	PsA group: white=601 (86%), other=94 (14%); psoriasis group: white=391 (77%), other=118 (23%)	PsA group: diabetes=69 (10%), congestive heart failure=5 (1%), chronic obstructive lung disease=2 (0.0003%), liver disease=19 (3%), cancer=27 (4%) Psoriasis group: diabetes=35 (7%), congestive heart failure=0 (0%), chronic obstructive lung disease=0 (0%), liver disease=6 (1%), cancer=23 (5%)	PsA group: use of NSAID=419 (60%), use of DMARD=391 (56%), use of biologics=160 (23%) Psoriasis group: use of NSAID=18 (4%), use of DMARD=50 (10%), use of biologics=22 (4%)	12.5 (± 11.1) years in PsA group, 16.2 (±14) years in psoriasis group

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25	Harrold, 2012	RA	Financial	Medication, biologicals	UK	Cohort of an health insurance program	n=225, 33% men, 77% women	70.5 (0.81 sd) years	Hispanic=5.6%, black/non-Hispanic=12.7%, white=76.4%	Comorbidity burden: 0=15%, 1-2=41.3%, ≥3=58.1%	Noncytotoxic disease-modifying antirheumatic drugs=25.2%, cytotoxic disease-modifying antirheumatic drugs=28.5%, biologics=4.6%	UC
26	Harrold, 2013	RA	Financial	Medication general	UK	Cohort of an health insurance program	n=184, 76.2% women	<55=8.2%, 55-64=6.9%, 65-74=38.8%, 75-84=36.5%, 85+=9.7%	Hispanic=10.1%, black/non-Hispanic=8.3%, white=75.7%	UC	UC	UC
27	Hayden, 2015	RA	Sense-making	Medicatie, MTX	UK	Outpatient care	n=15, 4 men, 11 women	20-29=2, 30-39=0, 40-49=1, 50-59=4, 60-69=6, 70-79=2	Caucasian British=13, other=2	UC	UC	up to 2 months=2, 3-4 months=5, 5-6 months=3, 7-8 months=1, 9-10 months=0, 11-12 months=1, ≥12 months=3
28	Betegnie, 2016	RA, AP, AS	Physical	Medication, biologicals	France	Other, members patient organization	n=581, 147 men, 434 women	Mean=46	UC	UC	UC	time since first symptoms, longer than 10 yrs=63,3%
29	Brandstetter, 2016	RA	Physical	Medication general	Germany	Outpatient care	n=18, 8 men, 10 women	Mean=61,4	Migration background in 11,1%	88,9% any, provided for each participant	Provided for each participant	Years (SD)= 9,8 (7,1)

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30	Bolge, 2015	RA	Physical	Medication, biologicals	USA	Outpatient care	n=250, 68 men, 182 women	Mean=51	80,8% white, 19,2% non-white	UC	Discontinuation characteristics provided	11(7) yrs
31	Beard, 2009	RA	Financial	Medication	USA	Outpatient care	n=200. 52 men, 148 women	45,2-88,5 (62,3)	Black/african american= 45, white/caucasian=143, american indian/alaskan native=7, other =5, spanish or hispanic origin=2	UC	Known for each patient	UC
32	Bernatsky, 2010	RA, Bechterew	Sense-making	Medication	Canada	outpatient care	n=18. 4 men, 13 women	mean=58	UC	UC	UC	UC
33	Alten, 2016	RA	physical	medication dmarcs	Germany	Patients treated in outpatient clinics a	Focusgroups (n=20), Questionnaire n=1.588, 1168 women (74%) and 345 men (22%)	45% between 50-64 years	uc	uc but 63% mild to moderate disaese activity	injectable DMARDs (54%), oral only (43%)	55% less than 10 years of disease duration, 44% > 10 years
34	Arkell, 2013	RA	Physical, Sense-making	medication TNF	UK	Hospital	n=10, 5 men, 5 women	range: 46 - 85	uc	uc	anti-TNF	range 5-26 years
35	Pascual-Ramos, 2013	RA	Financial	Medication DMARDs	Mexico	Hospital	N=149, 17 men (13,4%) and 132 women (88,6%)	M=38,5 (sd=12,8)	Mexican	59,1% had comorbidity	M =2,4 DMARD's (sd=0.7)	recently diagnosed
36	Pasma, 2015	RA , PA	Sense-making, physical, relatio-nal	Medication DMARDs	Netherlands		N=33, 29 women and 4 men; RA (n=23), PA (n=10)	M=51, range 39-59	uc	uc	DMARDs	n=12 < 1 year, n=12 i - 2 year, n=9 2 - 5 year

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37	Sanders, 2017	RA	Physical	Medication, biologicals	UK	From patient organizations	n=5, 4 women, 1 men	M=64, range 35 - 78	uc	uc	biological therapy M5,4 years; (Rutuximab (n=2); Humira injections (n=2), Enbrel (n=1)	M=20,2 years (range 6 - 32)
38	Sanderson, 2009	RA	Physical	Medication, TNF	UK	Hospital	n=17, 4 men and 13 women	M=52,8, range 27 - 74	uc	uc	Etanercept (n=4), inflimab (n=5), adalimumab (n=4); n=4 discontinued therapy	M=19,4 range 4 - 40 years
39	Sanderson, 2010a	RA	Physical	Medication biologicals	UK	Outpatient clinic	n=23, 18 women, 5 men	M= 59 years, range 27 - 74 years	no minority groups	uc	ant-TNF therapy (n=13),discontinued anti_TNF therapy (n=4), other types of DMARDs (n=6)	m = 18,3 range 3 - 40 years
40	Sanderson, 2010c	RA	Physical	Medication (TNF), surgery	UK	Hospital	23, 18 females, 5 males	27 - 79 years	White population, 1 non-whire	UC	13 on anti-TNF medication, 10 on other (Among them 4 that discontinued ant-TNF therapy	very divers
41	Sanderson, 2016	RA	Physical	Medication biologicals	UK	Oupatient	Men group, women group, mixed group, two groups with anti-TNFα experience (n=26 total, 21 women and 5 men))	range 29 - 79 years.	uc	uc	N=13 on anti-TNFα therapy	range 2 - 36 years

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42	Scarpato, 2010	RA	Physical	Medication, TNF	Italy	Rheuma-tology centres	N=802; The subject population included 617 (76.9%) women and 185 (23.1%) men	The mean (S.D.) age was 55.62 (13.08) (median 57, range 18–85) years	Patients were distributed nation-wide (33% from northern Italy, 36% from central Italy and 31% from southern Italy).	uc	The vast majority of patients (n ¼ 768, 95.8%) were on DMARDs—either monotherapy (43.9%) or combination (51.9%). The most prescribed DMARDs were MTX (82.3%), HCQ (36.8%) and LEF (27.4%). Most patients were also concomitantly treated with NSAIDs (69.4%), COX-2 inhibitors (38%) or corticosteroids (70.8%).	The mean disease duration was 8.82 (8.34) (median 6, range 0–47) years.
43	Schildman, 2008	RA	Physical	SDM, Medication	Germany	Outpatient clinic	22, 19 females, 3 males	56.9	German (n=20), Other (n=2)	UC	Xivers	UC Longstanding RA
44	Sieper, 2015	AS	Physical	Medication general	USA	Hospital	325 patients with active axial SpA were randomized 1:1:1 to placebo, CZP 200 mg every 2 weeks, or CZP 400 mg every 4 weeks; n=298 completed	uc	uc	uc	3 groups: placebo, CZP 200 mg every 2 weeks, or CZP 400 mg every 4 weeks	uc

Ref. No	Paper	Disease	Type of TB	Aspect of TB	Country of origin	Setting	No of participants and gender	Age	Ethnicity	Co-morbidity	Medications	Time since diagnosis
							the trial. Groups were balanced wit hrespectto demographic variables					
45	Voshaar, 2016	RA (71%), PA (17%)	Physical	Medication, DMARD	Netherlands	Outpatient clinic	285, 171 women (60%)	M=59,6 (sd=15,4)	Caucasian	UC	MTX (n=239, 84%), Biological DMARD (n=81, 28%), Hydroxychloquine (n=52, 18%), Glucocorticosteroid (n=29, 10%)	UC, both early and established patients
46	Markusse, 2014	RA	Physical	Medication	Netherlands	Outpatient	N=20, 13 women. 7 men	M=71 (Range 52 - 74)	Caucasian	UC	DMARDs (n=17)	M=15 (Range 4 - 25)
47	McArthur, 2015	RA and AS	Psycho-social, temporal	Medication, TNF	England	Outpatient clinic	N=27, 19 RA, 8 AS; RA 5 men and 14 women); AS, 6 men and 2 woemn	RA (m=59 years; range 21 - 78 years; AS (N=54 years, range 34 - 68)	uc but probably white (all English as mother language)	uc	anti-TNFα (RA: M= 14 months (range 5 - 84); AS M=33 months (range 2 - 20))	RA M=8 (range 2-30); M=12,5 (range=2-20)
48	Meyfroidt, 2015	RA	Physical	Medication DMARDs	Belgium	Outpatient care	N=26 for interview, 8 men (31%) and 18 women (69%) and; n=18 for focusgroup 5 men (36% and 9 women (64%);	Interview M=55 (range 22-68(; Focusgroup M=57 (range 23-63)	uc	used medication for comorbidity: Interview: n=12 (46%) Focusgrup n=6(43%)	glucocorticoids + DMARDs	Early RA (< 1 year of diagnosis)
49	Müller, 2012	RA	Logistic (com-pliance)	Medication biologicals	Estonia	Health insurers database	N=1.259; N=219 men (17,4%) and 1.040 women (82,6%)	M 59,2 (sd 13,1), range 19 - 93	uc	64% had comorbidity	uc	M=11.6 (sd=11.5)

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50	Orefice, 2014	RA (61%). AS or AP (39%)	Technical/logistic	Medication, biologicals	France	Hospitals and community-based rheumatologists	N=677, 67% women, 33% men	M=54, range 44 - 63	uc	uc	biodrugs, 36% via intravenous infusion, 64% via subcutaneous injection	130 months (range 62 - 235)
51	Curtis, 2011	RA	Physical	Medication, biologicals	USA	Hospital	Rerospective:N=504, 67% women Prospective: N=3.326, 70% women	M=52 years	uc	uc	etanercept (55%) or adalimumab.(45%)	uc
52	Curtis, 2016	RA	Physical	Medication, MTX	USA	Patient community	N=392 , 91% women; biologic (n=218), SQ MTX (n=49), and oral MTX (n=115)	M=48 years (sd=10)	92% white	UC	among the patients treated with a biologic, the most commonly used agents were etaner-cept (23 %) and adalimumab (24 %). Approximately 2/3 of the biologic users were concomitantly taking MTX	uc
53	Gonzalez, 2017	RA, AP, AS	Physical, reational, sense-making	Medication, biologicals	Spain	Outpatient clinic	N=592 51.4% RA, 23.8% AS, 19.6% had AP; 58,6% female	M=41.7 years (SD 13.1)	uc	uc	Sc biological drug was the first for 60,4% of patients, second for 26,1%, and third for 13,5%	Median disease duration was 10 years (P25–75: 5–18)

Ref. No	Paper	Disease	Type of TB	Aspect of TB	Country of origin	Setting	No of participants and gender	Age	Ethnicity	Co-morbidity	Medications	Time since diagnosis
54	Curtis, 2007	RA	Physical	Medication TNF, MTX	USA	Hospital	TNFa antagonist (n=2,393 persons,3,894 person-years; 73% women); MTX only (n= 2,933 persons, 4,846 person-years; 73% women)	TNFa antagonist: M= 50(sd=12) MTX only: M=55 (sd=13)	uc	Number of comorbidities: TNFa antagonist: 0,7(sd=1,1) MTX only: 0,9 (sd=1,2)	Anti-TNFα or MTX or combination	uc
55	Janoudi 2013	RA	Tempo-ral, work	Medication/ biologicals	Saoedi arabia	Outpatient clinics	N=120, 13 males (10.8%) and 107 females (89.2%)	M=46, 6 (sd=11.9)	78,3% Arabic	59,2% comorbidity mainly hypertension, diabetes, osteoarthritis	12.5% MTX alone, 48.3% on MTX plus steroids, and19.2% on MTX plus other DMARDs (all grouped as conventional therapy); 16.7% on biologics	uc
56	Jawaheer, 2010	RA	Physical	Medication, DMARDs	USA	Outpatient clinic	n=293; men (n=67) and women (n=225)	M=49,6 (sd=13,3), women slightly younger (p=.02)	uc	uc	DMARDs	6.2 months (SD 3.5 mo)
57	Lee, 2017	RA	Physica, temporal	Medication	Indonesia	General hospital	N=26, gender not specified	M=55, range 31 - 64	Chinese (n=13), malay (n=9), Indian (n=4)	uc	Self-administred oral medication	uc
58	Hekmat, 2014	RA	Physical	Medicatiion and treatment impact	Sweden	All RA patients in Malmo	n=1016 in 1997; n=916 in 2002; n=1625 in 2005; n=1700 in 2009; 72 - 74% were women	Variend beteen M=61.9 (sd 14.1) and M=63.9 (13.6) depending on survey	uc	uc	Varied depending ons survey: cortcosteroids (19-31%), MTX (20-58%) Biologics (16-29%); in general more intensive medication in later years	Varied beteen 15 years (sd.13.6) and 17.2 (sd. 12.1) depending on survey

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59	Cunha-Miranda, 2010	Making sense	Treat-ment general	RA	Portugal	Outpatient care	n=223, 39 men, 184 women	55, 1 years (SD=14.5)	UC	UC	UC	12% <2 years; 18% 2-5 years; 70%> 5 years
60	Graham 2017	Sense-making/ informa-tion needs	foot care	RA	UK	nc	n=543, 487 (87%) women, 56 men (13%)	86% between 40-69 years	UC	UC	UC	67,3% had an illness duration > 5 years
61	Greysen, 2017	Physical burden	yoga	RA	USA	Community Yoga settings	n=17, 16 women	56.1 year (SD=10.7)	12 white, 2 asian, black, 2 other	UC	UC	20.9 years (sd=10.7)
62	Herrera-Saray, 2013	Technical/ logistical	use of devices	RA, AS	Mexico and Colombia	in Mexico via rheumatologists, in Colombia via snowballing	n=15, 6 women.	Mean age 41	UC	UC	UC	UC
63	Hurkmans, 2009	Physical	Excercise	RA	Not clear	UC	n=575 patients, 8 studies included, mostly women	Average age of 52 years in most trials	UC	UC	UC	The average disease duration varied between 5 to 14 years. In one trial, the disease duration was 20 years.
64	Beauvais, 2014	Sense-making, divers	Treat-ment general/ educatio-nal needs	RA , AS	France	Outpatient care	n=72, 9 men, 63 women	57 years (24–87)	UC	UC	biologics treatment, yes=26	13.6 years (1–40)

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65	Chilton, 2008	Divers	Treat-ment general	RA	UK	Outpatient care	qeustionnaire: n=109, 23 men, 86 women interview: n=7, 2 men, 5 women	questionnaire: 65 years (median) interview: 52 years (median, 37-80)	UC	UC	UC	UC
66	Cooksey, 2015	financial	Treat-ment general	AS	UK	population-based AS cohort	n=482, 77% men, 23% female	55.5 years (SD±15.9)	UC	UC	UC	19.8 years
67	Curbelo Rodriguez, 2018	Physical, technical, psychosocial	Exercise	AS	Spain	Local spondylitis association	n=11, 7 (64%) men, 4 (36%) women	30 min. age, 70 max. age	UC	UC	UC	57% had a history of SpA of over 10 years
68	Guennoc, 2007	Physical, sensemaking	Fluoros-copy	RA	France	Hospital	n=119, 35 (29.4%) men, 84 (70.6%) women	56.7 years (range 15-93)	UC	UC	UC	UC
69	Hagen, 2009	Physical	Diet	RA	UC	UC	n=837 patients, 15 studies included, percentage of females varied between studies from 34.6 to 100%	mean age varied between studies from 49.5 to 58.5 years	UC	UC	UC	UC
70	Hehir, 2008	Sensemaking	Treatment general	RA	UK	Outpatient care	n=24 patients and 74 letters, 8 men, 16 women	age range from 33 to 84 years	UC	UC	UC	UC
71	Blake, 2013	Logistic, Temporal, Psycho-social	Podo-therapy	RA	UK	Outpatient care	n=9, 5 men, 4 women	40-72(58)	UC	UC	UC	12,6 yrs

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72	Barton, 2014	Relational, psycho-social	SDM	RA	USA	Outpatient care	N=509, 75 men and 434 women	RA panel M 64 years (sd=11);USCF RA cohort M 55 years(sd=14)	USCF RA Cohort: 64% Englsih, 22% Spanish, 14% Mandarin; RA Panel	UC	UC	Disease duration yrs(SD). RA panel 26(11). UCSF RA cohort 12(8).
73	Ackerman, 2015	Physical	Treatment general	RA	Australia	Outpatient care	N=27, only women	Median 32(IQR 31-36)	UC	UC	Disease-modifying antirheumatic drugs, except if pregnant or planning to conceive. No numbers on how many actually took these drugs.	Median 5 (IQR 2-13)
74	Bain, 2016	Technical, temporal	Selfmanagement	RA	Canada	Outpatient care	N=163, 30 men and 133 women	3 age 15-24, 8 age 25-34, 14 age 35-44, 33 age 45-54, 53 age 55-64, 26 age 65-74, 26 age 75+	UC	UC	UC	UC
75	Baxter, 2015	Technical, temporal	Exercise	RA	New Zealand	Hospital	N=8	62 years (range 56–82 years)	Caucasian	uc	uc	M=6 years (range 5–29 years)

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76	Poulos, 2014	Physical	Treatment general	RA	USA	Outpatient care	N=849, 217 men, 631 women	12 age 18-24, 25 age 25-34, 84 age 35-44, 213 age 45-54, 315 age 55-64, 200 age65+	663 White non-Hispanic, 86 African American non-Hispanic, 22 Other, non-Hispanic, 42 Hispanic, 36 2 or more races	UC	At the time of the study, most patients (76%) used an oral prescription medication, 30% were receiving regular injections, and 17% were receiving regular infusions. Thirty-four percent had received regular injections previously and 30% had received regular infusions previously.	UC
77	Rothery, 2016	Physical	Treatment general	AP	UK	Hospital & online	Focus group: N=18, DCE N=247, 115 male and 132 female	107 < 55 years old, 139 55+ year old. Mean age = 55.	UC	UC	77 Methotrexate alone, 38 other DMARDs alone, 30 Biologic alone, 68 Methotrexate in combination with others, 8 Other DMARDs in combination, 26 no medication	141 < 9 years, 78 9+ years, 28 missing.Mean 8.6 years
78	Salt, 2011	Physical	Treatment general	RA	USA	Outpatient clinic	N=30, all women	Age range from 29 to 86 years	10 African American, rest unknown	UC	UC	Ranging from 2 tot 49 years

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79	Salt, 2012	Relational	SDM	RA	USA	Hospital	15, 10 females and 5 males	28 - 74 year (M=57 year)	10 White, 4 African American, 1 Native	UC	UC	2 months to 40 years (M=12,1 year)
80	Sanderson, 2010b	Physical	Treat-ment general	RA	USA	outpatient clinics	N=26 (81% women) and n=254 (76% women)	61% > 60 Years	white	uc	50% DMARD's; 45% biologics	>50% more theam 10 years
81	Schneider, 2008	Relationa, Temporal, Financial	Treat-ment general	RA	South Africa	Outpatient clinic	60 women	Mean 52,8, range: 29-60	UC	UC	UC	5-10 years for 43%, 1-4 years in 23%, 11-25 years in 27% and 26+ years for 7%.
82	Sharrock, 2014	Physical	Surgery	RA	UK	Hospital	N=6, only women	2 in their 50s, 2 in their 60s, 2 in their 70s	UC	UC	UC	4 months to 3 years post-surgery
83	Sieper, 2016	Physical	Treat-ment general	AS	Germany, France, Italy, Spain, UK	Rheumatologists and their patients	N=631 for all patients, N=419 for responders	mean 41,8 (SD 12) for all patients, mean 41,9 for responders and 41,2 for non-responders.	White	UC	In all patients, 169 (25,8%) had traditional DMARD, and 231 (36,1%) had a biological agent. For responders, this was 125 (28,1%) DMARD and 187 (43,2%) biological agent.	For al patients, mean 51,6 months (SD=60), for responders mean 55,7 months (SD=57,4)
84	Sorenson, 2014	Temporal	Treat-ment general	RA	Denmark	Outpatient clinic	N=2847, 708 male and 2139 female	679 age <= 50, 1868 age 51-75, 300 age >76	UC	UC	2249 have no biological medicine, 598 do have it.	684 have disease duration 0-2 years, 1136 3-10 years, 1027 10+ years.

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85	Bearne, 2017	technical	Excercise	RA	UK	Outpatient clinic	N=12	32 to 87 years	white (n=7), black carribean (n=4), pakistani (n=1)	uc	uc	12 - 59 months
86	Walter, 2017	Physical, relational	Treatment general	RA	Netherlands	UC	29, 23 females, 6 males	M=56.8 (sd=8.9)	UC	UC	DMARD (n=26) and Biologicals (n=14)	M=12.3 years (Sd=4.1)
87	Madsen, 2015	Divers	Treatment general	AS	Denmark	Outpatient clinic	n=13, 100% men	range 32-58; M=44	uc	uc	Biologicals (n=12); DMARD's + NSAID (n=1)	M=7,2 years; range 0.3-20
88	Malm, 2016	Divers	Lifestyle	RA	Sweden	Six rheumatic disease treatment-centres, both urban and rural	n=24; 8 men and 14 women	range 30-84 years	uc	uc	uc	range 8 - 23 years
89	McInnes, 2013	Relational, sensemaking	Treatment general	RA	USA	Patients of physicians	N=586, 77% female	mean age 55.6 years	UC	UC	Currently taking: methotrexate, 51%; methotrexate, 37%; anti-inflammatories, 45% oral corticosteroids, 36%; leflunomide, 11%. Ever taken: oral corticosteroids, 36%; anti-inflammatories, 36%; leflunomide,	UC

Ref. No	Paper	Disease	Type of TB	Aspect of TB	Country of origin	Setting	No of participants and gender	Age	Ethnicity	Co-morbidity	Medications	Time since diagnosis
											21%; injected steroids, 19%; gold, gold salts, 19%; hydroxychloroquine, 17%; sulfasalazine, 16%	
90	Nichols, 2017	Temporal	Exercise	RA	UK	UC	N=14, 5 males, 9 females	Mean 61.4, range 44-82	All white	UC	3 with biologic DMARD therapy, 2 with combination non-biological DMARD, 8 with signle non-biological SMARD and 1 without DMARD	Mean years: 13.2, range 1-36
91	Nota, 2015	Physical. Sensemaking	SDM	RA	Netherlands	Outpatient clinic	N=32, 26 women.	Mean age 54 (range 25-82)	UC	UC	50% synthetic DMARDs, 50% biologic agent DMARDs.	Mean 7.8 years (range 0-40)
92	Nota, 2016	Relational	SDM	RA	Netherlands	Hospitals	N=29, 19 women.	Mean age 56 (range 17-74).	UC	UC	20 with traditional DMARDs, 9 with biologic DMARDs combined with methotrexate.	8 years (range 0-38).
93	O'Dwyer, 2016	Physical, technical, temporal	Excercise	AS	Ireland	Outpatient clinic	N=17; 9 men, 8 women.	Mean age 39.3 years (SD 9.5_	UC	UC	UC	Median 12 years (range 2-36)
94	Dures, 2016	Relational	SDM	RA	UK	hospital	N=19, 14 women.	Range 27-75 years	UC	UC	UC	Between 0.75 and 40 years

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95	Akkoc, 2015	financial	Costs	AS	Turkey	Hospitals	N=648, 231 females.	Mean 40.6 (SD 11.4)	UC	49 with Uveitis, 33 with heart disease, 31 with diabetes, 26 with allergy, 22 with respiratory disease, 21 with Crohn's disease, 13 with rheumathoid arthritis.	66.5% with biologic agents, 50.5 with DMARDs, 37.7% with NAIDs.	Mean 7.7 years.
96	Kaptein, 2013	Technical, Physical, Sensemaking	Excercise	RA	Canada	Outpatient clinics	N=40, 24 female	Mean 55.8, range 29-72	UC	UC	UC	Mean 12.3 years, range 1-40
97	Hewlett, 2011	sense-making	Coping with flares	RA	5 countries	Outpatient clinic	N=67, 57 women and 10 men	M=57.0	92% Caucasian (n=62)	uc	DMARDs (84%); Anti-TNF/Biologicals (45%)	M=14.5 (sd=1,3)
98	Kristiansen, 2012	relational, sensemaking	Diverse aspects of treat-ment	RA	Denmark	Outpatient clinic	N=32, 19 women and 13 men	Range 31 - 78 years	uc	uc	uc	Range: 2 months - 27 years
99	Iversen, 2015	Divers	Excercise	RA	USA	Outpatient clinic	23, 96% female	M=63 years (SD=10)	83% Caucasian	0.7	77% biologic DMARD; 69% nonbiologic DMARDS	24 years

Study outcomes

Ref. No	Paper	Type of TB	Aspect of treatment	Research Question/aim	Sampling	Type of study	Way of data collection	Inclusion-criteria	Exclusion-criteria	Main results	Limitations of study	Differences according to gender
1	Hobl, 2012	Physical burden	Medication/MTX	To compare pharmacokinetic parameters and clinical response of standard (15 mg) and an accelerated (25 mg) dosing regimen of methotrexate in RA.	purposive sampling	Intervention study (RCT)	Questionnaires and blood sampling	UC	Previous MTX use, pulmonary or infectious disease (HIV, hepatitis B or C), inactive RA (DAS-28 ≤3.2), general contraindications to MTX therapy, gestation or lactation, age younger than 18 years	MTX reduced parameters such as the number of swollen and tender joints, the DAS-28 and HAQ scores, the VAS scores, the Patient Global Assessment, the Evaluator Global Assessment, but there was no statistical or clinical significance between the dosing regimens. 60% of patients receiving standard dosage reported adverse events and 56% of patients receiving accelerated dosage (no statistical significant differences). Adverse events were nausea, diarrhea, stomatitis, xerostomia, headache and vertigo.	Limited sample size to detect differences in adverse events between the two groups, limited generalizability, observer performing the joint count was not masked, patients were allowed to take concomitant medications (such as NSAIDs)	UC
2	Hone, 2013	Psychosocial	Medication/ Etanercept	To evaluate the effects of etanercept (TNF) on work productivity outcomes in employed patients	Purposive sampling	Quantitative	Questionnaires assessed by telephone	18-70 years, employment (full or part time) for at least 3 months prior to starting etanercept, no	Patients who were employed for less than 5 hours per week, not speaking English, disability	Etanercept led to significant reductions in overall work and activity impairment. The continuers (patients who continued etanercept after 6 months) showed a	No data on clinical outcomes, dosage regimen was not assessed	Patients who discontinued treatment were more often women. The most

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				with RA. In addition, to assess the effect of etanercept on domestic productivity and satisfaction				plans to retire in the next 6 months, candidates for treatment with biologic agents, had been prescribed etanercept for moderate to severe RA, were scheduled to begin etanercept therapy within 1 month of providing informed consent	or receiving long-term disability benefits, had received TNF antagonist therapy prior to the baseline interview	significant decerase in overall work impairment (41.9% at baseline vs. 25.2% at 6 months), absenteeism (8.4% versus 2.3%), presenteeism (38.9% vs. 24.3%) and activity impairment (55.7% vs. 30.9%) and a 76.4% reduction in work hours lost weekly due to RA.		common reasons for discontinuation were lack of effectiveness and financial reasons.
3	Hoving, 2009	Physical, Financial, Psychosocial	Medication/TNF	To assess the effects and costs of a 6-months treatment course of tumour necrosis factor (TNF) inhibitors on: 1. work ability, 2. quality of life, 3. fatigue in patients with RA	purposive sampling	Quantitative	Question-naires	Working age, diagnosis of RA, inadequate response to at least two DMARDs, no contraindications, willing to comply with the research protocol	UC	The use of TNF inhibitors showed positive effects on work ability, quality of life and fatigue. Total mean costs showed a twofold increase in mean costs per week per patient (difference €169).	Short follow-up	UC

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4	Kavanaugh, 2009	Relational, psychosocial	Medication, MTX	To assess the impact of Certolizumab pegol (CZP) in combination with methotrexate (MTX) on productivity in the work place and at home, and on participation in family, social and leisure activities in patients with RA. This study combines 2 RCT's (RAPID1 and RAPID 2). Each RCT has 3 arms: 1) CPZ 200 mg plus MTX, 2) CZP 400 mg plus MTX and 3) placebo plus MTX	UC	Intervention study (RCT)	Questionnaires	UC	UC	CZP (both dosages) significantly reduced work absenteeism and presenteeism, as well as the number of houshold days lost and the number of days lost for participation in family, social and leisure activities	Last observation carried forward (LOCF) method to impute missing data, use of control population	UC
5	Kavanaugh, 2015	Relational, psycho-social	Medication,Certolizumabpogol	What are the effects of certolizumab pegol on productivity (outside and inside the home) and on participation in	Random	RCT with 3 arms: 1) placebo, 2) CZP 200 mg , 3) CZP 400 mg	Questionnaires; Work Productivity Survey (novel questionnaire assessing	age ≥ 18 years; diagnosis of adult-onset active PsA of ≥6 months duration ; -patients had to have active	inflammatory arthritis other than PsA ; secondary, non-inflammatory condition symptomatic	CZP treatment significantly improved productivity at paid work and at home, and resulted in greater participation in social activities for patients with PsA.	No long-term results are studied;Early withdrawal of some patients;Use of LOCF (last observation carried forward) method to impute	UC

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				family, social and leisure activities in adult patients with PsA			the impact of PsA on productivity at work and at home and on participation in family, social and leisure activities)	psoriatic skin lesions or documented history of psoriasis; - erythrocyte; - previously failed treatment with at least one disease modifying antirheumatic drug sedimentation rate ≥28 mm/h or C-reactive protein level above upper limit of normal ;	enough to interfere with evaluation of CZP for PsA; received previous treatment for PsA with more than two biologics or at least two TNF inhibitors; or had primary failure to a prior TNF inhibitor		missing data	
6	Kennedy, 2014	Psycho-social	Medica-tion DMARDs en NSAID	To investigate predictors (clinical, demographic and work-related) of reduced productivity in PsA	Purposive	Quantitative	Questionnaire and clinical measures	patients had to be employed or worked as homemaker	UC	Work limitations are associated with demographic, clinical and work-related factors in PsA. Medication use was associated with work limitation in multivariate, but not univariate, linear regression analysis, with patients on more aggressive forms of therapy tending to	potential selection bias (sig. differences between eligible and ineligible respondents); lack of data on income; limited generalizability; sample from one specialized PsA clinic	Female gender was een predictor van work productivity, maar dit is niet gerelateerd aan treatment burden (aan een bepaalde

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										have greater productivity impairment; Education status, work schedule control, and support at work were significantly negatively correlated with work productivity impairment.		behandeling)
7	Kobue, 2017	Sensemaking	Medication	To assess patients' conceptualisation and understanding of medicines in RA.	Purposive	Qualitative	Interviews and a review of participants' medical record (to enable a comparison of interview responses with the doctors' notes and pharmacy records)	UC	UC	Medicine taking in the context of RA is complex and appears strongly mediated by individual and contextual factors. Poor patient understanding, individual conceptualisation of medicines and medicine taking, and the availability of a range of additional medicines and remedies impact on adherence. The study underlines the need for healthcare providers to engage in more effective patient education about drug regimens and medicine taking.	Only female participants	No differences found

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8	Kumar, 2008	Sense-making	Medica-tion, DMARD	To assess whether patients with RA and SLE (systemic lupus erythematosus) who are of South Asian origin have different beliefs about medicines in general, and about DMARDs in particular, compared with patients of White British/Irish origin.	Purposive	Quantitative	Questionnaire	classification criteria for RA or SLE; taking a DMARD for longer than 3 months prior to study		patients of south asian origin had significant higher general overuse, general harm and specific concern scores compared with patients of white british/irish origin; scores on specific necessity was not different between the two ethnic groups.Results of regression (predictors of BMQ scores): 1. predictors of Specific Necissity: level of disability, use of HCQ drug 2. predictors of Specific Concern± ethnic origin (patients of sout asian origin higher score), disease (patients with RA higher score), RE (role emotional scale of SF-36) score, current use of LEF and of anti-TNF-a therapy 3. predictors of general overuse: ethnic origin (Asians higher score), RE score, family history of RA/SLE (patients with positive family history lower score) 4. predictors of general harm: ethnic origin (Asians higher score), educational status, RP score (role physical scale of SF-36)	only included patients who currently taking DMARD. Excluding patients who refused DMARDs or discontinued DMARDS à it is likely that these patients have other views; no data on previous drug-related adverse events or disease activity; amongst Asian origin, there is a level of acculturation (a process through which members of one culture acquire the norms and values of another culture), but this data was not collected; no data on socio-economic status; only included patients who currently taking DMARD. Excluding patients who refused DMARDs or discontinued DMARDS; it is likely that these patients have other views;	No differences in beliefs aboub medication according to gender; gender was a covariat but not significant in regression analysis

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9	Lack, 2011	Sense-making	coping in general	to investigate the psychosocial experiences in coping with RA in men	Purposive	Qualitative	Interviews	a medical diagnosis of RA	UC	Four themes were generated: 1. loss of power and control : revealed men's emotional distress as a result of loss of physical ability and strength 2. use of power and control : how participants used masculinity to 'be a man' about dealing with RA 3. adjustment : a more reflective and accepting attitude in men's descriptions of RA 4. influencing factors (age, pain, medication, relationships and health staff communication) : medication could have dramatic but also negligible effects	Possible influence of cohort effects due to sample of white British, married men in their 50s and 60s; the effect of class or wealth on the experience of RA was not discussed.	only men
10	Lee, 2014	Physical	Medica-tion, biologicals	To assess sex differences in disease activity during biologic therapy and how these influence the drug survival and	Purposive	Population-based observational cohort	Questionnaires every six months	Included patients of the registry of the southern part of the province ; enrolled in October 2011; biologic-naïve	UC	At biologic initiation, females and males had similar disease activity, but females reported worse physical function (HAQ) and more fatigue, but the same global disease activity score	UC	Yes, during biologic treatment, females reported more fatigue, worse

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				therapeutic switching.						(DAS28) as males. -during biologic treatment, females reported more fatigue, worse function and higher DAS28 scores (disease activity) - Frequency of switching on biologics were the same between females and males (worse disease activity and patient-reported outcomes through the course of therapy did not translate into differences in drug survival or more frequent switching for females on biologic therapy). The choice of initial biologic therapy did also not differ between females and males.		function and higher DAS28 scores (disease activity)
11	Lempp, 2012	Physical	Medication, DMARD	is to explore expectations, the impact on quality of life, concerns and management of patients with newly diagnosed and established RA	Purposive, stratified by gender, ethnicity and disease duration	Qualitative	Interviews	patients receiving combinations of DMARDs with less than 2 years of RA, and; patients with established RA (longer than 2	being seriously ill ;having learning, hearing or communication difficulties	Four themes emerged: 1. patients' expectations about combined therapy (desire to improve physical symptoms, maintain some degree of independence, continue with paid work) 2. the impact of treatment	recruitment from one large inner city outpatient clinic	"there was no notable difference by **gender**, ethnicity, age and disability in patients' accounts"

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				when in receipt of combination therapy (combination of DMARDs or TNF inhibitors combined with methotrexate or alternative DMARDs).				years) receiving DMARDs combination, combinations of TNF inhibitors combined with methotrexate, or alternative DMARDs; 18 years or older		on quality of life (mixed results: positive and negative references to health issues, e.g. pain, control of RA, mobility, side effects, independence, personal relationships, change in social life) 3. Concerns about combined treatment (many expressed several worries about medication and potential side effects: see table 4); majority described actual physical and systemic side effects (weight gain and loss, chest infections, intestinal problems, anaemia, fatigue, loss of hair, migraine) 4. management of combined therapy at home (communication with clinic staff, receiving information about medications, incorporating treatment in daily basis);		

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12	Lisicki, 2008	Physical, sense-making	Medica-tion, biologicals	Assess patients' preferences of using BRM therapy (biologic response modifier) and reasons why not taking them (for example fear of side effects).		Quantitative	Online survey	Inclusion criteria of patients: - US residents - age 18 years or older - physician-diagnosed moderate-to-severe RA - taking qualified RA medications for at least 3 months	UC	Patients receiving Biologicalsranked the following 9 factors from most to least important: efficacy, safety/side effects, years on market, physician's experience with product, physician's personal preference, method of administration, dosing frequency, cost (out of pocket), and patient support programs. Patients receiving DMARDs ranked safety, cost and physician's experience with the product as most important. Reasons for not trying BRM included: high cost (37%), fear of side effects (28%), unclear of additional benefit of biologic (27%), doing well on existing therapy (26%), did not want to use an injectable product (21%), fear of long-term safety (17%). Physicians and patients share similar concerns when deciding to initiate BRM therapy.	patients receiving BRMs were not surveyed at the time that the actual decision was made to start their BRM therapy à recall bias- only 1 point in time - nonresponse bias/unwillingness to participate	Not described

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13	Louder, 2016	Physical, relational	Medication, biologicals, DMARD	Describes the attributes and patient preferences of novel treatment (biologic DMARD & targeted synthetic DMARDs) in patients with RA.	Purposive	Quantitative	Survey	age 21 to 80; currently enrolled in fully insured Humana commercial health plan; at least 2 RA-related medical claims in the previous 12 months, at least 30 days apart	enrolled in administrative service-only groups; residing in nursing home; eligible for low income subsidies;evidence of a paid claim for tofacitinib or for biologic DMARD	Patients received a survey and were asked to rank treatment attributes by importance score. Mean patients' ranking of treatment attribute importance, in decreasing order, was route of administration, 34.1 (± 15.5); frequency of administration, 16.4 (± 6.8); serious adverse events, 12.0 (± 9.3); cost, 10.1 (± 6.2); medication burden, 9.8 (± 8.2); joint pain reduction, 8.9 (± 3.8); and daily tasks improvement, 8.8 (± 4.7). For the route of administration attribute, the part-worth utility was highest for the oral route. Conjoint simulation results showed that 56.4% of respondents would prefer an oral route of administration.	Nonresponse bias (some differences between responders and non-reponders)	Not Reported

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14	Lutf, 2012	Physical	Medication, anti-TNFα	is to investigate the incidence of weight gain and hair loss as side effects of anti-TNF therapy	Purposive	Qualitative	Interview	uc	uc	Weight gain was observed in 20 patients (13.3%) with average gain of 5.5 Kg. These were 18 females and 2 males. Anti-TNF was stopped in 5 patients (25%)because of side effects. Hair loss during anti-TNF therapy was reported in 5 females (3.3%) and anti-TNF was stopped in all of them.		Yes, there were differences between incidence in weight gain between men and female
15	Ørnbjerg, 2018	Sense-making	Medication,NSAID	To investigate the knowledge of patients with arthritis about side effects/risks of the combination of prescribed drugs (pain medication) and over-the-counter prescribed NSAIDs (nonsteroidal anti-inflammatory drugs)	Purposive	Quantitative	questionnaire	patients with inflammatory arthritis or osteoarthritis ;willing to return the questionnaire within week	patients who did not understand Danish; patients who could not cooperate; patients who did not administer their medication themselves	Eighty-seven percent of patients had taken prescribed NSAIDs or OTC analgesics during the previous 2 weeks, 36% being NSAIDs, and 36% used analgesics regularly. Fifty-four percent would increase the dose of drugs in a bad period, and they were more likely to over-use the OTC drugs than the prescribed drugs. Factors recognized to increase the risk of side effects were: higher dose	UC	women reported more pain in general then men

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										(81% of patients), long-term treatment (68%), previous side effects (57%), combination of NSAIDs (49%), and old age (31%). Twenty-three percent assumed that acetaminophen increased the risk of side effects; 56% were often worried about side effects due to NSAID treatment. 25% stated that they found the risk of side effects from NSAID so threatening that they would reluctant to take NSAID. 75% said that the benefit they received from taking NSAID was more important than the risk of adverse effects.		
16	Linden, 2010	Physical, psychosocial	Medication, anti-TNFα	to assess experiences of everyday life with TNF-alpha blockers	Purposive	Qualitative	interview	uc	uc	Most effects of TNF alpha blockers were positive, but there was also anxiety about side effects and what medication would do with the body over long-term period 1. morning stiffness		

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										and pain decreased, mobility and strength increased, nodules disappeared, number of exacerbations and fatigue decreased, sleep became better, energy increased, swelling declined; several informants felt happier, sharper and experienced more self-esteem; 2. enabling care for oneself and others (easier to manage oneself: e.g. washing hair, getting into bathtub, turning round in bed; able to taking care of oneself: e.g. exercise, dancing; more active in taking care of home and family) 3. enabling improved or continued productivity (able to work full-time again, getting sharper) 4. more rewarding leisure time (able to perform more leisure activities and be socially active, easier to see		

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										friends) 5. drawbacks of the medication (remaining problems, most of informants did not experience any side effects, but some were mentioned: sweating, cold symptoms, sneezing, sore throat, decreased sense of smell and loss of hair; most were positive when thinking about treatment with TNF in the future, but some expressed anxiety: effects could decline, effects of medication on body)		
17	Brown, 2014	Physical, financial, sense-making	Medication, DMARD	To explore the experiences, perceptions, and knowledge among a population of low-income, elderly RA patients that has never used or stopped using DMARDs	purposive sampling	Qualitative	Structured telephone interviews	eligibility for the PACE program (Pharmaceutical Assistance Contract for the Elderly), two physician visits coded with a diagnosis of RA at least 7 days apart, subject's	recent rheumatology visits	Of 86 patients, 19 had previously used DMARDs, 10 of whom discontinued them because of side effects or safety concerns. Among 67 never-users, 35 reported that their physicians had never offered them DMARDs, 13 described fear of side effects and 49 knew nothing about them.	small cohort; homogeneous group of low-income, older non-users that had drug insurance and had not seen a rheumatologist recently; self-report of RA; possibility of recall bias	UC

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								confirmation of his/her RA diagnosis, no prescriptions for DMARDs in the prior 12 months, no rheumatologists visits				
18	Campbell, 2012	Physical	Medication DMARC Biologicals	To evaluate the impact of treatment type and disease activity assessments on fatigue levels measures in patients with established RA.	purposive sampling	Quantitative	Clinical assessment recorded as part of routine clinic visits	Adults (>18 years old); firm diagnosis of RA (made by a consultant rheumatologist)	UC	Fatigue in patients with RA is not specifically influenced by the type of treatment: there was no significant difference in mean fatigue levels between patients receiving no DMARD treatment, DMARDs and TNF-inhibitors. Patients who had received a large number of previous DMARDs or biologics had more fatigue.	single side study; one time point, small sample size, channeling bias: worse patients tend to receive more aggressive therapies	UC
19	Choquette, 2015	Physical	Medication infliximat	To explore variables associated with the incidence of infusion reactions of infliximab therapy.	purposive sampling	Quantitative	Registry for patients receiving infliximab	receive infliximab as per the Canadian Product Monograph, provide informed consent, be prescribed	UC	322 of 24,852 infliximab infusions were associated with infusion reaction with an overall incidence of 1.3%. Of these, 154 were mild, 152 moderate and 16 severe. Most common	risk of selection bias, delayed reactions are most likely to be missed because reactions were included if they occurred within 24h	Female sex was significantly associated with an increased incidence of

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								infliximab by an appropriate physician, receive the infliximab infusions in a community-based infusion center		reactions were pruritus, flushing or dyspnae.		infusion reactions (2.21% vs. 1.49% in male).
20	Cinar, 2014	Psychosocial/time demands	Mediccation on anti-TNFα	To investigate patients' views about their treatments and the factors that influence the treatment decisions of patients with AS who have been using anti-TNF-α drugs.	purposive sampling	Quantitative	questionnaires and clinical parameters	patients with AS who were regularly seen at the rheumatology outpatient clinic, 18 years and older, using anti-TNF-α therapies for at least 3 months	UC	Patients wanted to start anti-TNF-a therapy, as they hoped to alleviate severe pain and morning stiffness, but they were anxious about side effects and they were afraid of starting the therapy because of the information was given with the written consent form.	almost no female participants, patient memory about feelings at the start of the treatment, HLA-B27 was not examined	UC
21	Combe, 2009	Physical burden	Medication biologicals	to study the long-term therapeutic response of etanercept, added to or in place of sulfasalazine, versus sulfasalazine alone in patients with active RA.	random	Intervention study (RCT)	questionnaires, physical examination and laboratory determinations	≥18 years old; ≤20 years of disease duration; active adult-onset rheumatoid arthritis (functional class I-III), defined as ≥6 swollen and ≥10 painful joints; at	received etanercept or other TNF antagonists; received a DMARD other than sulfasalazine within 3 months before baseline; use of any	etanercept and etanercept plus sulfasalazine are efficious for the long-term management of patients with RA. Adverse events in the etanercept group were injection site reactions and pharyngitis/laryngitis. Treatment-emerged infections and medically	UC	UC

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								least one of the following: erythrocyte sedimentation rate (ESR) ≥28 mm at the end of the first hour, serum C reactive protein (CRP) ≥ 20 mg/l or morning stiffness ≥ 45 min; stable doses of sulfasalazine (2-3 g daily) for ≥ 4 months before screening, without signs of toxicity	immunosuppressive biological agents or cyclophosphamide within 6 months before screening; parenteral corticosteroids within 4 weeks before screening; presence of relevant comorbidity; diagnosis of cancer, congestive disease, leucopenia, renal disease, thrombocytopenia or connective tissue disorder; pregnant or breastfeeding women	important infections were significant higher with etanercept than with etanercept and sulfasalazine or with sulfasalazine alone.		
22	Curtis, 2016	Physical	Medication, biologicals	: (1) to examine the prevalence of Injection Site Burning and	random sampling	Quantitative and Qualitative	retrospectively via medical record	Retrospective: RA patients who were currently being treated with	uc	the overall prevalence of ISBS was 17 % retrospectively and 58% prospectively.Out of the	Cross-sectional; Retrospective data and prospective data not comparable	Women reported 1.5 times more Injection Site

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				Stinging (ISBS) among RA patients receiving etanercept or adalimumab; (2) to compare the proportion of patients with ISBS documented in medical records to rates reported by patients when specifically and prospectively asked about ISBS by their physicians; and (3) to identify factors independently associated with ISBS			review; prospectively by interviews	either etanercept or adalimumab who had visited the reumatologists offices in the preceding 6 months Prospective: patients receiving SQ etanercept or adali-mumab		1939 patients that prospectivelly experienced at least som ISBS, 22% rated the level of ISBS as moderate to severe (13% of total).Increased risk of ISBS was associated with female gender, fybromyalgia, depression and more severe RA; Self-injection was associated with a decreased risk for ISBS compared with injection by a phy-sician or an allied health care professional.	because of slight differences in populations	Burning and Stinging then men

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23	Gutierrez, 2016	Physical	Injections	To compare the short-term efficacy of conventional blind injection (CBI) versus ultrasound-guided injection (USGI) in patients with painful tenosynovitis and chronic arthritis. In addition, to investigate if USGI is a less painful procedure than CBI	purposive sampling	Intervention study (RCT)	Questionnaires	>18 years, persistent pain in the involved tendon and referral to injection clinic, tendon involvement in at least one of the anatomical areas (wrist, hand or ankle), stable treatment regime for at least 4 weeks before study entry, able to give informed consent	History of tendon tear, previous injection in the affected tendon, recent serious infection or infection near to the area of injection, planned tendon surgery within the study period, inability to follow the protocol	USGI was significantly less painful than CBI. USGI had a significantly better response on the Health Assessment Questionnaire compared to CBI	small sample size, short-term follow-up, possibility of different techniques employed, patient unblended for type of injection	UC
24	Haddad, 2016	Physical	Medication, biologicals	To compare the incidence rate and the type of infection in patiens with psoriasis and patients with PsA, as well as to find predictors of infection	purposive sampling	Quantitative	Questionnaires, physical examination and laboratory determinations	clinical evaluation since January 1, 2006; only infections reported after the first visit in 2006	UC	The incidence rate of infection is higher in PsA than in patients with psoriasis (19.6 vs. 12.2 per 100 person-years) and higher in patients treated with biologics vs. nonbiologics. Female sex and treatment with biologics were associated	Patients self-report of infections, potential selection bias	Female sex was associated with infection in the PsA cohort

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										with infection in the PsA cohort. A lower Psoriasis Area and Severity Index score and a higher Funcitonal Comorbidity Index were associated with infection in the psoriasis cohort. Ultraviolet treatment was protective against infection in both cohorts		
25	Harrold, 2012	Financial	Medication, biologicals	To examine how expansions in insurance coverage of nonbiologic and biologic disease-modifying antirheumatic drugs affect the access, costs and health status of older patients with RA	purposive sampling	Cohort	Data of the cohort is collected with yearly interviews	RA	Institutional respondents, respondents of 3 months or less of entitlement	For TB: The total prescription drug cost increased ($2645 in 2000 to $4685 in 2006), whereas out-of-pocket prescription costs remained constant ($842 in 2000 to $832 in 2006)	small sample size, low proportion of people using biologic agents, no information on disease activity or disease severity	UC
26	Harrold, 2013	Financial	Medication general	To assess the risk of cost-related medication nonadherence (CRN) in older patients with RA	purposive sampling	Cohort	Data of the cohort is collected with yearly interviews	All community-dwelling respondents where administrative claims were	UC	RA patients have a 3.5-fold increased risk of Cost related non-adherence than patients with other conditions.	heterogeneity of populations, not able to access which medications were affected by CRN	UC

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				compared to older patients with other morbidities				available				
27	Hayden, 2015	Sensemaking	Medicatie, MTX	To explore how beliefs about necessity and concerns about methotrexate become established in patients with inflammatory arthritis and how patients use information in managing their beliefs and concerns	purposive sampling	Qualitative	Semistructured interviews	≥18 years, diagnosed with an inflammatory arthropathy within 24 months, started on methotrexate, appropriate level of English suitable for interviews	UC	At the time of diagnosis, the experience of illness was influential for beliefs about medication necessity. Following prescription, patients absorbed information from written and verbal sources with reinforced beliefs about necessity but also raised concerns, including fear of side effects. Over time, beliefs were modified on basis of personal experience, particularly of medication effectiveness and side effects. Some patients described tensions and dissonance in their beliefs and experiences of methotrexate.	Interviews were conducted at one single time point, recall of experiences and beliefs, not included patients who had refused methotrexate	UC

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28	Betegnie, 2016	Physical	Medication, biologicals	To explain why patients with chronic inflammatory rheumatic diseases (CIRD) receiving biologics discontinue these biologics of their own accord.	Questionnaire sent to all members of 3 patient organizations	Quantitative	Questionnaires	>18, CIRD treated (or formerly treated) with at least 1 biologic DMARD	UC	Five predictive factors of stopping biologicals of their own accord by patients were identified: pain (low level), treatment history (more than 1 line of biologics tried), self-administration of injection, negative beliefs about treatment, and lack of perceived medical and social support	UC	UC
29	Brandstetter, 2016	Physical	Medication general	To explore medication adherence among adherent and non-adherent persons suffering from rheumatoid arthritis (RA)	Stratified purposive	Qualitative	Interviews	Physician-diagnosed RA, being treated for RA in Asklepios Clinic Bad Abbach, 18+ of age	Suffering from psychiatric diseases, not speaking German	Influential factors were: experiences with medication, outcome expectations, knowledge of therapeutic options, the traits 'openness' 'conscientiousness' belief in medical progress, characteristics of the medication, level of trust in one's physician, and perceived autonomy. Facilitating strategies were: establishing routines, using social support and the deliberate suppression of	1) Patients from one outpatient clinic specialised in the treatment of rheumatologic disorders. 2) Social desirability may arise and cause biased results.	UC

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										information about potential adverse events.		
30	Bolge, 2015	Physical	Medication, biologicals	To examine reasons why rheumatoid arthritis patients discontinued subcutaneous (SQ) anti-tumor necrosis factor (anti-TNF) treatment in the past 12 months	identified from four databases: the 2008, 2009, and 2010 National Health and Wellness Surveys, and the Lightspeed Research Ailment Panel. By telephone	Quantitative	Questionnaires	Diagnosis of RA by HCP, discontinued use of an SQ anti-TNF medication in the past 12 months, aged 18+, US residents, could read and write english	UC	From the patient perspective, ther are unmet needs with regard to the effectiveness and injection experience associated with SQ anti-TNF medications, which may lead to discontinuation.	1) proportion of patients with poor injection experience who discontinue versus those who simply tolerate the experience and continue treatment unkown. 2)possible recall bias as a median of 6 months passed 3) formal medical records were not used so RA diagnosis and treatment discontinuation characteristics cannot be confirmed.	
31	Beard, 2009	Financial	Medication	To improve physician-patient communication about medication costs and medication regimen management in an	purposive sampling	Both quantitative and qualitative	5 primary data sources: (1) patient medical records. (2) clinic visit	≥ 45, physician confirmed diagnosis of RA	Not able to speak English, not mentally competent to participate, a terminal illness	1) patients identifying as white/caucasian and those with no prescription drug coverage were significantly more likely to discuss medication costs. 2) in over 20% of visits, patients	1) Patient and physician samples were convenience samples; self-selection biases are possible. 2) Uneven recruitment by	UC

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				effort to improve patient medication satisfaction and subsequent medication adherence			audiotapes. (3) patient interviews. (4) self-reported questionnaires (5) physician report			disclosed self-initiated changes to their medication regimens	physician. 3) Numerous statistical tests were performed, increasing the chances of Type 1 error. 4) Some categories of the outcome variable of interest were small. A larger sample size would have been beneficial. 5) Cross-sectional study design does not permit determinations of causal relationships among the variables. 6) Presence of a tape recorder may have altered physician and patient behavior in the medical visit.	
32	Bernatsky, 2010	Sense-making	Medication	To identify barriers to optimal care for individuals with rheumatoid arthritis	Purposive sampling	Qualitative	Focus group interviews	UC	UC	For patients: issues on management or RA: optimal communication needed, interdoctor or	1) The demographics (age and sex) of the subjects who participated were	UC

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										multidisciplinary care needed, patient education needed.	indeed consistent with an unselected RA population. However, though we tried to "cast a wide net" and use several sources of recruitment, we cannot absolutely certain that our sample reflected the whole spectrum of persons with RA. 2) It may be that our participants tended to be more assertive and educated than the general population; regardless, we believe that the participants were able to provide insights that help us understand quite a spectrum of the population that we serve.	

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33	Alten, 2016	physical	medication biological DMARDs and targeted synthetic DMARDs	To assess the importance of oral administration and other treatment characteristics differing between available second-line DMARDs for RA patients'preferences using a discrete-choice experiment	Purposive sampling	Qualitative and quantitative	, then discrete choice experiment tto asssess preferences	diagnosis of RA, age > 18, sufficient p0rficiency of German language and treated with at lest one DMARD.	uc	oral administrations was most desired and intravenous infusion most strongly rejected. No combination with MTX strongly preferred as well as a regular intake, instead of intake every 1-2 weeks. Way of administration highest impact on treatment burden; oral intake reduced TB.As side effects patients rated allergic reactions as less worse than infections	only outpatients; sample little bit biased towards motivated patients; all data self-reported	men and women differend in their preferences but tdirection not further specified
34	Arkell, 2013	Physical, sense-making	medication TNF	to study patients experiences, attitudes and expectation about the information they receive prior to starting ant-TNF therapy	purposive sampling	Qualitative	focusgroup	Patients were purposively sampled from an existing list of RA patients at the hospital to get a variety of patient age, disease duration, pre anti-TNF disease activity and anti-TNF agent received.	uc	Four key themes :1) in weighing the risks and benefits of anti-TNF therapy, most participants attached limited importance to side effects, as their desire for RA symptom control was overriding; 2) there was a desire for information at an early stage and not during a severe RA flare-up; 3) the process of starting anti-TNF; before they got their ant-	As participants had been taking anti-TNF for some considerable time their experiences may be affected by recall bias.	Not reported

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										TNF, many patients indicated to worry whether they would be eligible for these medications; They remembered little about the investigations they underwent, and none said they would have objected to being tested for blood borne viruses; 4) the experience of being on anti-TNF: Most were positive, describing positive effects on quality of life as well as on symptoms.		
35	Pascual-Ramos, 2013	Financial	Medication, biologicals	What are the motivations of patients for non-adherence to disease modifying ant-rheumatic drugs?	purposive sampling	Quantitative	Questionnaire	patients with at least one drug indication; one year follow-up and at least two consecutive six-months rheumatic evaluations that included assessment of compliance; early RA; age > 18	uc	99 (66,4%) of the 149 patients was non - compliant. Main reasons for non-compliance according to prescriptions: education (OR 1.12 (95% CI: 1.1. - 1.24), p=.03), perception that arthritis medication is hard to get (OR: 5.68 (95% CI: 2.46-13.0), p<.001) and perception that RA medication is expensive (OR: 5.27 (95% CI: 2.1 - 13.84, p<.001)	non validated questionnaire; cohort of Mexican early RA patients, with specific selection criteria.	Not reported

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36	Pasma, 2015	Physical	Medication, DMARDs	to explore themes associated with adherence in the initiation phase for first time use of DMARDs in patients with inflammatory arthritis	Purposive	qualitative	interviews with non-adherent patients and focusgroups wit h patients in general	age >18, prescribed DMARD started less then 2 years ago; all patients had symptomatic disease receiving standard care	uc	Reasons for non-adherence in the first phase of starting DMARDS: side effects, negative perceptions or feelings(anxiety) about DMARD, negative information on medication and side effects, lack of trust in rheumatologist	possible recall bias, motivated patients	Not reported
37	Sanders, 2017	Physical	Medication, biologicals	to gain an understanding of the experiences of patients with RA receiving biological therapy in relation to lower limb mobility	purposive	Qualitative	semi-structured interviews, face to face	medical diagnosis of RA, on biological treatment > 6 moths, age> 18, being able to give informed consent	diagnosis of inflammatory arthritis other than RA, unable to speak or understand English	The start of biologicals had a very positive impact on life, both physical and psychological; however in patients with a longer illness duration and patients that had already deformities of foot and hands the impact was less positive: they felt stigma and negative social reactions; some experienced a reduced tolerance of the drug and an increase in symptoms; general pain diminished by biologicals but not foot pain; limited choice of special footware was experienced as a burden.	small sample size; selection from a patient groupd could mean highly motivated patients	negative impact on women's personal identity and self-image when there were visble signs of the disease or when they had to wear special footware

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38	Sanderson, 2009	Physical	Medication, TNF	to explore RA patients experience of accessing, receiving and discontinuing anti-TNF therapy after an initial failure	Purposive sampling to get enough variation	Qualitative	Interviews	patients having received one or mare anti_TNF therapy; diagnosis of RA	uc	Anti-TNF therapy may have a sudden and positive impact on RA patient's live in contrast to othe medications. However, the stress of the patients's journey to 'qualify'for ant-TNF therapy, and the fear of failing or discontinuation of therapy, should not be underestimated;emotions when trying to access anti _TNF: hope, desperation, anxiety and frustration; there was a perception that anti-TNF therapy was restricted by costs, rather than being recommended by patient's need	small sample size; single center study	not reported
39	Sanderson, 2010a	Physical	Medication	to esthablish treatment outcomes important for RA patients since the use of anti-TNF therapy became common	Purposive sampling to get enough variation	Qualitative	Interviews	diagnsosi of RA; experience with anti-TNF therapy	uc	this study gives insight into effects of treatment that make treatment burden less: RA under control (less symptoms, stable RA, less side effects), being able to do things (undertake activities and able to plan), emotional health (positive	single hospital; number of patients on a specific medication are small; no minority groups	not reported

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										feelings, regaining your own identity and not just being a patient, better life), coping with illness (being able to cope better, improves healthcare and relationship with provider)		
40	Sanderson, 2010c	Physical	Medication (TNF), surgery	to explore the meaning of 'feeling well' for people with rheumatoid arthritis (RA).	purposive sampling	qualitative	interviews	patients who had received anti-TNF therapy and patients who were on other therapy	NC	Perceptions of well-being were affected by the degree to which the 'RA was under control' through medication or other treatment; Stress caused by the condition and treatment (e.g. surgery) or life events (e.g. bereavement, redundancy) could disrupt psychological wellness; although physical symptoms were felt to be well assessed and were targeted for treatment, interviewees wanted health professionals to acknowledge their broader well-being over the longer term; Interviewees did not expect clinical staff to directly address	all interviews were conducted with RA patients from one UK hospital, which may provide a distinctive type of care. In addition; only one interviewee being from a non-white population.	UC

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										employment, housing and family problems, but wanted them to recognize the person beyond 'the patient, full stop' (AL) and be able to signpost where they might access help for issues having an effect on their arthritis and global well-being.		
41	Sanderson, 2016	Physical, psychosocial	Medication	to develop a set of patient priority treatment outcomes for pharmacological interventions in RA	Purposive sapling to get diverse groups	Qualitative	Conceptmapping	Diagnosis of RA, anti-TNFα	uc	Level of TB from medication determined by effects on pain, joint damage, fatigue, mobility and ability to perform daily tasks; When medication has a positive impact on these outcomes TB is less. Higher TB when selfmanagement is more complicated or when it is harder to combine with social roles, when there are less personal resources and higher social expectation.	Too less men to discover gender effects; high dropout rate	not reported
42	Scarpato, 2010	Physical	medication, TNF	to identify the determinants of anti-TNF-naive patient preferences	were consecutively enrolled in the study	quantitative	questionnaire	diagnosis of RA according to the 1987 ACR criteria and eligibility for	previous therapies with an anti-TNF-a drug and administration of	40% of the RA patients dissatisfied with current treatement: inefficacy (83.2%), side effects	not reported	No differences by gender found

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				for the route and frequency of administration of anti-TNF agents				an anti-TNF-a drug	any other s.c. or i.v. drugs at regular intervals (for instance, insulin, desensitization therapies and heparin	(22.8%), inconvenience of administration (2.3%). Preference for interveneous or subcutaneous: no difference in either gender, age, RA duration or in the category or total number of drugs used; distance of the patient from the hospital did not influence the choice. However, patients not satisfied with current treatment due to side effects were more likely to prefer s.c. administration, . preference for i.v. because of perceived improved safety of hospital administration, the reassuring effect of the doctor's presence, smaller number of injections, anxiety for side effects at home and lack of a caregiver ; preferring s.c. because of the convenience of treatment at home and no interference with everyday life		

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43	Schildman, 2008	Relational	SDM, Medication	To elicit the perceptions and preferences of patients with rheumatoid arthritis regarding information and participation in treatment decision-making.	Theoretical sampling	Qualitative	individual interviews with interview guide	diagnosis of RA, minimal two sequent treatments	UC	Decision-making about treatment, as viewed by the patients, is not a single event but is, rather, a sequence of decisions. Patients initially respond to treatment suggestions by their physicians, whereas in the later stages of the decision-making process they make their own decisions—for example, modifying the dosage or stopping the treatment or re-evaluating the treatment together with their physician. Timely and sufficient information is important for SDM.	not representative; selection bias	UC
44	Sieper, 2015	Physical	Medication, biologicals	to study the effect of Certolizumab Pegol (CZP) treatment on individual QOL components (pain, fatigue and sleep) in a Axial SpA population.	Random sampling	RCT with 3 arms: 1) placebo, 2) CZP 200 mg , 3) CZP 400 mg	questionnaire	age≥18, diagnosis of SpA	uc	Patients treated with CZP reported significant improvements from week 1 for nocturnal back pain (placebo 20.6, CZP 200 mg every 2 weeks 21.9, and CZP 400 mg every 4 weeks 21.6; P < 0.001) and ASQOL (placebo 21.0, CZP 200 mg	relatively short timespan (24 weeks)	not reported

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										every 2 weeks 22.3, and CZP 400 mg every 4 weeks 21.9; P < 0.05) compared with placebo, while signifi-cant improvements in total back pain were seen from day 2. Patients treated with both CZP dosing regimens also had significantly greater improvements in fatigue, MOS-SPI, SF-36 PCS, MCS, and domains compared with placebo. Im-provements were similar in both AS and nonradiographic axial SpA patients.		
45	Voshaar, 2016	Physical	Medication, DMARD	to identify facillitators and barriers of DMARD use in patients with rheumatic diseases	Random sampling	Quantitative and Qualitative	questionnaire with open answers + focusgroups	DMARD use, >18 yearsability to read and write Dutch	None	The barriers and facilitators that were reported by patients presented large inter-individual variations. A good patient-health professional relationship, knowledge about treatment, the absence of negative effects, an easy treatment regimen, patients' belief that they are able to fulfil the therapy, and an	possible selection bias because non-adherent patients might be less willing to participate; modest responsrate on the questionnaire (42%); only caucasian patients	UC

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										appropriate amount of information that is provided by the healthcare provider appear to improve adherence. barriers that resulted in non-adherence in the present study included not believing in the necessity of anti-rheumatic medication, a busy lifestyle, and receiving contradictory information from the healthcare provider.		
46	Markusse, 2014	Physical, sensemaking	Medication	to explore patients' opinion about tapering and discontinuing antirheumatic drugs	Consecutive	Qualitative	Focusgroups	uc	uc	Not only positive emotions about drug discontinuation such as hope, happiness, and relief, but also fear and disappointment were mentioned. Some patients expect that drug discontinuation will be possible in other patients and/or themselves, while others do not expect this. The concept of increase in disease activity after discontinuing medication	Not reported	UC

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										was mentioned, and while patients expect that disease activity will decrease again after restarting medication, they expect that this will take (too much) time.		
47	McArthur, 2015	Psychosocial, temporal	Medication, TNF	to understand the experience of occupational gain in people with RA and AS receiving anti-TNFα treatment and considering the implications fot occupational therapy rheumatology interventions	purposive sampling	qualitative	semi-structured indepth-interviews	Clinically diagnosed RA and AS patients who had a positive response to anti_TNFα treatment; diversity in disease duration; > 18 years	not able to give informed consent; non-english speaking	Most patients started anti-TNF treatment because other medications failed; in general this therapy improved biological, psychological and social functioning (=occupational gain); however patients continue to experience difficulties through previous biological damage, continuing flare-ups, cocerns about anti-TNF therapie (antecedents). These disruptions determined the level of retained or regained employment. Many people had concerns about anti-TNF use and missed health care support for this; after improving by anti-TNF	patients had a long illness duration and so an increased change of biological damage; only patienst that reacted positively on anti-TNF treatment were included	uc

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										patients had to re-negatiate roles; lack of understanding by social environment; concerns about future side effects		
48	Meyfroidt, 2015	Physical, sense making	Medication/DMARDs	to gain a longitudinal, in-depth understanding of patients experiences with combination treatment od DMARDS's and glucocorticoids at two times in the early phase of their treatment	purposive sampling	qualitative	interviews (4-6 months after treatment initiation; focusgroups > 1 year after treatment initiation)	age > 18; medical diagnosis of RA; early RA (< 1 year); prescribed with combination therapy	uc	Patient experiences differ across time: 1) at treatment initiation: fear of CHs; concerns about side effects, long term consequences, feeling unhealthy, medication dependence; searching for trust and reassurence of health care provider; in search for routine of daily selfmanagement; 2) 4 - 6 months after treatment initiation: Fear of MTX, concerns that intake is too high, deesir eto minimize; concerns about side effects, long term onsequences, feeling unhealthy, medication dependence; missing information about disease evolution, therapeutic aids, side	information on experiences at treatment initiation retrospective; two different interview methods	uc

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										effects, lifestyle advice;searching for trust and reassurence of health care provider; 3) after 1 year: fear of MTX, desire to stop/minimize; concerns about side effects, long-term consequences, re-experience of flares, treatment effectiveness; missing info on future prospects		
49	Müller, 2012	Logistic (compliance)	Medication biologicals	to explore self-reported compliance and factors contrinuting to this	random sampling	quantitative	structured questionnaires	age > 18; medical diagnosis of RA; ≥contact with provider during past 12 months.	uc	80.3% of the patients was compliant; side effects and fear of side effects were main reasons for non-compliance; higher age, higher frequency of visits to the reumatologist, satisfaction with health care providers and sufficient information (antecedents) correlated with better compliance	not described	gender was not related to compliance
50	Orefice, 2014	Logistic	Medication, biologicals	to describe self-care safety skills of patients taking biodrugs for RA	random sampling	quantitative	cross-sectional survey evaluating	receiving care for RA, AS or AP; biodrug intravenous or	uc	patients felt uncertain about when symptoms require a physician visit, their knowledge about the need	questions about hyothetical situations; possible selction bias: less	men had less knowledge about complications

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							coping and safety skills of patients taking biodrugs	subcutaneous > 3 months; able to understand and write French		for vaccinations, contraception and the right skills for using subcutaneous biodrugs; there often was a discrepancy between the level of knowledge and the level of skills suggesting a need for improving practical sklills	men, well informed patient group	(e.g urinary infections) and the right preparation in relation to medication intake for surgery
51	Curtis, 2011	Physical	Medication, biologicals	: (1) to examine the prevalence of Injection Site Burning and Stinging (ISBS) among RA patients receiving etanercept or adalimumab; (2) to compare the proportion of patients with ISBS documented in medical records to rates reported by patients when specifically and prospectively asked about ISBS by their	random sampling	Quantitative and Qualitative	retrospectively via medical record review; prospectively by interviews	Retrospective: RA patients who were currently being treated with either etanercept or adalimumab who had visited the reumatologists offices in the preceding 6 months Prospective: patients receiving SQ etanercept or adali-mumab	uc	the overall prevalence of ISBS was 17 % retrospectively and 58% prospectively.Out of the 1939 patients that prospectivelly experienced at least som ISBS, 22% rated the level of ISBS as moderate to severe (13% of total).Increased risk of ISBS was associated with female gender, fybromyalgia, depression and more severe RA; The likelihood of ISBS was greatest for the etaner-cept vial and syringe, which had a roughly twofold greater risk of ISBS compared with other	Cross-sectional; Retrospective data and prospective data not comparable because of slight differences in populations	Women reported 1.5 times more Injection Site Burning and Stinging then men

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				physicians; and (3) to identify factors independently associated with ISBS						injector mechanisms either for etanercept or adalimumab; Self-injection was associated with a decreased risk for ISBS compared with injection by a phy-sician or an allied health care professional.		
52	Curtis, 2016	Physical	Medication, MTX	to identify suboptimal patient experience with MTX	purposive samping	quantitative	prospective, cross-sectional, online survey	self-reported RA and recently (< 12 months) initiated a new biologic therapy (SQ MTX or oral MTX)	uc	Symptoms significantly more prevalent in the SQ and oral MTX groups included diarrhea, fatigue, malaise, and hair loss. For example between one-third and one-half of patients receiving either formulation of MTX reported malaise and between half and three-quarters reported fatigue, a much greater proportion than in the biologic users (22 %).Injection related pain was lower with SQ MTX compared to SQ biologics. Out of a total of 8 potential symptoms and side effects examined, higher dose MTX (> = 20 mg/week) was	survey population as a convenience sample; diagnosis of RA and medication use were self-reported; crossectiona; A substantial part of the patients on biologics also used MTX which suggests overlapping groups	Not reported

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										associated with a 2.26 (1.25–4.09) greater likelihood of more side effects referent to < =10 mg/week. Ragarding injection-related pain, 24 % of biologic treated patients said that their injections hurt ‘often’ as compared to 18 % of SQ MTX users		
53	Gonzalez, 2017	Physical, reational, sensemaking	Medication, biologicals	to explore perceptions of patients with rheumatic diseases treated with subcutaneous (SC) biological drugs on the impact on daily life and satisfaction with current therapy, including preferred attributes.	Consecutively	Quantitative	paper and pencil survey	medical diagnosis of RA, PA or AS; treated with SC biological drugs at the time of the survey and at least since the last medical appointment	First prescribed biological drug	Patients with rheumatic diseases on SC biological therapy perceive a high disease impact on different aspects of daily life, despite being highly satisfied with their treatment; the perception is that physicians do not frequently address personal problems. Normalization of QoL is the most important attribute of therapies to patients.	no clinical data, no onformation on treatmnet history; sever group (on biologicals)	Females tended to perceive higher levels of impact of the disease then men on all aspects; equally satified with treatment; women had a stronger perception that physicians do not adddress personal

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												problems
54	Curtis, 2007	Physical	Medication TNF, MTX	To evaluate the risk of serious bacterial infections associated with tumor necrosis factor (TNF) antagonists among rheumatoid arthritis (RA) patients.	Purposive sampling	Retrospective cohort	Hospital medical records with claims-identified suspected bacterial infections were abstracted	RA patients >18 years old, diagnosis of RA; have received an infusion or filled a prescription for a TNFa antagonist (e.g., etanercept, infliximab, or adalimumab) or filled at least 3 prescriptions for MTX. Those who received a TNFa antagonist were the exposed cohort, and those who received MTX only were the unexposed/comparator cohort.	RA patients who received less-aggressive DMARD regimens (e.g., hydroxychloroquine only)	Over a median followup time of 17 months, the rate of hospitalization with a confirmed bacterial infection was 2.7% among the patients treated with TNF antagonists compared with 2.0% among the patients treated with MTX only. The multivariable-adjusted hazard ratio (HR) of infection among the patients who received TNF antagonists was 1.9 (95% confidence interval [95% CI] 1.3–2.8) compared with patients who received MTX only. The incidence of infections was highest within 6 months after initiating TNF antagonist ther-apy (2.9 versus 1.4 infections per 100 person-years; multivariable-adjusted HR 4.2, 95% CI 2.0–8.8).The multivariable-adjusted risk of	restricted to bacterial infections;only the first hospital medical record for each patient was abstracted and therefore did not examine repeated infections;not able to quantify the dose of the TNFa antagonist received, which, particularly for infliximab, may be clinically im-portant	Not specified

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										hospitalization with a physician-confirmed definite bacterial infection was 2-fold higher overall and 4-fold higher in the first 6 months among patients receiving TNF antagonists versus those receiving MTX alone.		
55	Janoudi 2013	temporal, work	medication/biologicals	to examine the effect of active RA on work ability and work satisfaction in Saudi Arabia with a special emphasis on housewives' work ability; to determine predictors of Workdisability	Consecutively	Qualitative	Interviews and anaylisi of patient records	Medical diagnosis of RA with an adult onset	Patients with disease duration less than 6 months and/or taking contraindicated medications were excluded	Work productivity lost due to RA was estimated to be 3.64 hours.The use of biologicals was significantlyrelated to more work quality, quantity, and satisfaction	small sample size and self-reported data	Compared with paid workers included in the study, housewives had significantly lower work quantity (p=0.041), quality (p=0.021), and work satisfaction (p=0.040) scores. No interaction effect

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												between gender and biologicals was found
56	Jawaheer, 2010	Physical	medication, DMARDs	To assess gender differences in disease characteristics and treatment responses over time in a disease-modifying antirheumatic drug (DMARD)-naive seropositive early rheumatoid arthritis (RA) cohort	Consecutively	Quantitative, longitudinal (baseline, 6 and 12 months and 2 years)	Medical examination and self-reported questionnaires	medical diagnosis of RA, be within 14 months of symptom onset; have no prior treat-ment with a DMARD; have positive titers for rheumatoid factor (RF) antibodies (≥ 40 IU/ml); and have at least 6 swollen joints (of 66) and at least 9 tender joints	uc	At baseline, men and women had similar disease activity and radio-graphic damage; men, however, had significantly worse erosion, while women had worse joint space narrowing. Despite similar treatment, women had worse disease progression over the 2-year followup (DAS28-ESR4), physician global scores, and tender joint counts. Self-reported measures (Health Assessment Questionnaire-Disability Index, patient global scores, fatigue, pain) were worse among women at baseline and throughout the study period. Men were more likely to achieve remission.	the early RA cohort used was clinic-based and was selected for severe RA. It is thus not representative of population-based early RA; small sample sixe especially for men; some loss to follow up	At baseline, men and women had similar disease activity and joint damage. Responses to treatment over time were better among men in this prebiologic era; women had worse progression despite similar treatment.
57	Lee, 2017	Temporal, physical	Medication	To explore common reasons for non-	Purposive	Qualitative	Focusgroup	(1) having RA for 1 year, (2) taking	uc	Of the 26 patients who participated in the study,	relatively small sample; possibility of	uc

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				adherence to treatment in patients with rheumatoid arthritis in Singapore				self-administered oral medication for RA, and (3) potentially non-adherent to treatment		seven reported non-adherence to medication, two reported non-adherence to doctors' appointments, and 11 reported non-adherence to both. The most commonly mentioned reasons for non-adherence were forgetfulness , low perceived need for treatment , actual or perceived medication side effects, intentional delay due to busyness, concerns about side effects, dependency or a general dislike of medication, and high costs. Eleven participants acknowledged more than one of these four reasons for non-adherence.	social desirable answers	
58	Hekmat, 2014	physical	Medication and treatment impact	To analyse Patient reported outcomes in surveys of this population conducted between 1997 and 2009, and	Purposive	quantitative	questionnaires In 1997, 2002, 2005 and 2009	on a clinical diagnosis of RA by a rheumatologist and fulfilment of the 1987 American College	uc	Patients reported less severe outcomes for all measures in the later surveys compared to 1997, and patients' global disease activity assessment and self-	the sample size, which affects the precision of some of the outcome estimates, the lack of longitudinal data for	Despite similar treatment, male patients reported better

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				to assess differences in treatment and outcome in male and female patients.				of Rheumatology (ACR) criteria for RA		reported pain were further improved in 2009 compared to 2005. Treatment with biologics increased over time from 1997 (none) to 2009 (29%), with no difference between men and women. Visual analogue scales (0-100) for patients' global assessment of disease activity [mean 45 (95 % CI (45-47) vs. 38 (35-40)] and pain [mean 46 (44-49) vs. 38 (36-40)] decreased from 1997 to 2009, with numerically greater improvement in male patients. The mean SF-36 physical component scores also improved, and were higher in men than in women in all surveys.	analysis of individual cases, and the lack of available objective measures of disease activity due to the study design.	outcomes, in particular for pain and physical function, compared to female patients. We suggest that patient reported outcomes should be reported separately in male and female patients with RA.
59	Cunha-Miranda, 2010	Sensemaking/information needs	Treatment general	To determine which are the principal sources of information about RA, what unmet needs exist and what is the level of	purposive sampling	Quantitative	Questionnaires	Diagnosis of RA		For TB: Overall, 78% had additional information needs, especialy about therapy and treatment options (27%), support options (!8%), scientific developments (18%), how to	Lack of detailed information on patientcharacteristics; two types of datacollection and in that way not completely	UC

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				patient involvement in therapeutic decison						improve symptoms and coping with RA in daily life(16%); difficulties in treatment as experienced by patients: access to medications is a problem for 18,4% of the patients, due to financial reasons (46,3%) and lack of treatment availability in pharmacies (22%); Overall 22,4% felt not supported in their self-management	comparable	
60	Graham 2017	Sensemaking/information needs	treatment general (footcare)	To identify what people need in relation to foot health education and the barriers experienced to its'provison	purposive sampling	Both Quantitative and Qualitative	Questionnaires,online	Diagnosis of RA, membership of the NRAS, ability to understand English and ability to access the internet	UC	46% of RA patient do not know what to ask about footcare and RA; they lack awareness of the implications of foot health problems. lack knowledge on where to access information on safe-selfmnagement and where to access professional foot services.: 72% had not received information about footcare; patients indicate that they need written information inorder to support verbal information during consultation. there is a lack of acces to footcare	limited to the views of people that were recruited through a UK patient support group	Women had a greater need of information on the role of the podiatrist, information about RA medication and its effect on the feet and information about treatment options; women were more likely to

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										health services; Patients want information about foot care at time of diagnosis as they view access to early information as an enabler of selfmanagement; Information needs are age related with younger people have less needs		agree that information should be provided on demand then men; men and women differ in their preferences for websites that give information on foot care; women were more engaged in information seeking, positive health nehaviours and demonstrating self-efficacy than men.
61	Greysen, 2017	Technical burden	excercise	to explore experiences with yoga participation as a symptom management strategy	convenience sampling	Qualitative	telephone interview with open answering categories	medical diagnosis RA; treated in outpatient rheumatology clinics; age > 18; participating in yoga during the	UC	This study concludes that yoga is an acceptable complementary therapy from the perspective of patients, often leading to better physical and mental health. Main barriers for	sample is limited to geographical area; self-selection to participate in yoga; semistructured interviews may guide the answers to some	UC

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								last 12 months		yoga: costs, increase of symptoms (flares), class difficulty and costs; Main benefits: a tool to cope with RA, psychological and social benefits, self-confidence, more general healthy lifestyle	extent	
62	Herrera-Saray, 2013	Technical/logistical	use of devices	The objective of this study was to identify the usage and accessibility problems faced by the disabled (whether in pain or not) users of assistive devices (conventional wheelchairs), identify physical barriers that limit their mobility, and recognize the socio-cultural practices excluding them from the design process of such devices. Another main purpose of this paper is to improve the	convenience sampling	qualitative	interviews	any gender, age 18 years or older, users of assistive devices (cane, walker and/or wheelchair), presence of pain and chronic pain and work or activities inside or outside their home.	UC	We identified 6 issues associated with usability problems from the patient's standpoint: barriers for use of wheelchairs (usability and acceptability), creative adaptations, potential use of technical devices, independence, body perception and assistive devices, and architectural barriers. The ergonomic and usability requirements and the resulting level of independence vary across wheelchair users with chronic pain and those whose disability does not involve pain. The latter are more independent in their movements and decisions.	The findings of this study are limited in their application because they are only useful in the context of developing societies that do not have adequate architectural infrastructure for people with disabilities, or where there are restrictions on the purchase of electric wheelchairs.	UC

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				ergonomic criteria that influence the design and manufacture of assistive devices.								
63	Hurkmans, 2009	Physical	Excercise	To assess the effectiveness and safety or short- and long-term exercise therapy programs (aerobic capacity and/or muscle strength training) for people with RA.	studies for the review are selected when meeting the inclusion criteria	Review	Literature search	RCT's testing an exercise program, frequency of the program at least twice weekly for more than 20 minutes, duration of program more than 6 weeks, aerobic exercise intensity more than 55% of the maximum heart rate and/or muscle strengthening exercises starting at 30% to 50% of one repetition maximum, performed under supervision.	UC	Aerobic capacity training (land as well as water based) had a positive effect on aerobic capacity immediately after the intervention. If performed in water, a positive effect was also seen for functional ability. No deleterious effects on disease activity, self-reported pain, radiological damage or safety were found	low number of inlcuded studies because of strict inclusion criteria, 6 of the 8 studies were published more than 10 years ago, limited generalizability	No specific data for subgroups (men and women) were reported in the trials
64	Beauvais, 2014	Sensemaking, divers	Treatment general/educational	This study had two objects: (1) to assess the feasibility	purposive sampling	Quantitative	Questionnaires	UC	UC	64% of the participants expressed at least one educational need. Most	select sample; underrepresentation of men; the	UC

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			needs	of a systematic procedure to detect the patients' educational needs in current practice; (2) to determine the type of patients' needs.						patients had more than one educational need. The most common reported types of educational needs were needs with regard to the disease (55%, e.g. cause of disease, progression of disease), treatment (39%, e.g. treatment adherence, knowledge of side effects), social and family life (35%, e.g. help from social network, contact with patient association), professional life (44%, e.g. unemployment), health care system (34%) or emotional status (49%)	questionnaire was not validated	
65	Chilton, 2008	Divers	Treatment general	To investigate RA patients treatment preferences, their decision-making and treatment choices of three antitumour necrosis factor-a (TNF-a) therapy. In particular, this study investigates whether RA patients wished to	purposive sampling	Both Quantitative and Qualitative	questionnaire and interviews	diagnosis of RA, receiving two or more disease-modifying anti-rheumatic drugs (DMARDs)	disabilities or difficulties with English	In both the questionnaire and interviews, adalimumab was found to be the preferred treatment, because it is convenient to administer and allows patients to regain control in life. Factors of treatment choice described as potential treatment burden were logistical and time factors (travelling to the hospital), technical factors	UC	There was a significant difference between men and women with regard to the decision-making process with health care providers. 61% of men wanted their

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				participate in decisions about choosing an anti-TNF-a drug and the factors that influenced their choice.						(administer drug: subcutaneous vs. intravenous) and relational factors (interaction with health care providers). Shared decision-making is not preferred by all patients: respondents of the questionnaire and older patients were more dependent on health care staff; younger patients wanted more control and independence.		rheumatologist to decide and 36% of women wanted their rheumatologist to decide.
66	Cooksey, 2015	financial	Treatment general	to assess the costs, including out of pocket costs, of AS in Wales UK by using a combination of patient-reported and linked-routine data.	purposive sampling	Quantitative	questionnaires and linked clinical datasets	participants were part of a population-based AS cohort, diagnosis of AS (confirmed by rheumatologist), from Wales	UC	The total cost of AS in the UK is estimated at £19016 per patient per year, calculated to include GP attendance, administration costs and hospital costs derived from routine data records, plus patient-reported non-NHS costs, out-of-pocket AS-related expenses, early retirement, absenteeism, presenteeism and unpaid assistance costs.The major cost of AS is as a result of loss of working hours, early retirement and unpaid car-er’s time.	questionnaires could be completed both via postal or electronic method, visits to GPs are difficult to accurately identify using routing data, patients tend to over-report visits to health professionals, costs that are not captured	UC

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67	Curbelo Rodriguez, 2017	Physical, technical, psychosocial	Exercise	To explore barriers and facilitators to exercise in patients with spondyloarthritis	Purposive sampling	Qualitative	Focus groups	Diagnosis of spondyloarthritis	UC	Barriers to exercise are disinformation, fear, pain, distrust and prior negative experiences with exercise. Facilitators to exercise are complementary to barriers, regularity, social and professional support. Patients demand more knowledge and education on exercise together with better monitors that accompany them in their coping with disease and exercise.	UC	UC
68	Guennoc, 2007	Physical, sensemaking	overige behandeling, Fluoroscopy	To investigate the quality and impact of information given to patients scheduled for fluoroscopy-guided invasive rheumatology procedures.	purposive sampling	Quantitative	Questionnaires	Invasive procedure done under fluoroscopic guidance	UC	62.8% received information on the procedure (20.5% information on potential adverse events). 80.9% thought this information would have been useful. 74.8% would have liked to receive additional information. 10.1% received written information. Anxiety was reported by 59.8%. Anxiety was more common in patients who received	Modest number of patients, missing data	UC

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										written information and in patients undergoing their first intervention. The results on pain and anxiety are presented for men and women separately.		
69	Hagen, 2009	Physical	Diet	To assess potential benefits and harms of various dietary regimes in RA	studies for the review are selected when meeting the inclusion criteria	Review	Literature search	RCT's or controlled clinical trials (CCT's); patients with RA; study that tested dietary manipulation (e.g., Mediterranean or Cretan, vegetarian, acid-base balance, fasting); comparison group included other dietary interventions, placebo or usual diet	Dietary supplement studies (e.g., fish oil supplements)	diets may reduce pain. Two trials comparing element diet with ordinary diet dit not report differences in pain.	High risk of bias trials	UC
70	Hehir, 2008	Sense-making	Treatment general	To explore the content of clinical discussions of nurse clinics which aim to support newly	purposive sampling	Quantitative	Clinical letters	Letters of patients who had more than one appointment over a one-year period	Patients who did not desire a second appointment	Three themes of discussion were emerged: 1. emotional support, 2. practicalities of the treatment of RA, 3. self-management of RA. For TB:	Detailed discussions were not reported in the letters, it was not clear from the letters who asked questions:	UC

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				diagnosed RA patients.						the most frequently mentioned topics of the second theme were medication (adherence, monitoring, efficacy, side effects), information to GP purpose of nurse-led clinics and nature of RA, its pathology and consequences. The most frequently mentioned topics of the third theme were flare management, pacing and planning, self-management of RA and joint protection.	the patient, partner or research nurse	
71	Blake, 2013	Logistic, Temporal, Psychosocial	Podotherapy	To describe the factors that influence the patient with RA in their decision to self-report foot problems.	Purposive, stratified	Qualitative	Interviews	Diagnosis of RA, attending the local hospital rheumatology outpatient department	UC	Due to the multitude of factors influencing the individual's decision to seek help, the patient cannot be given sole responsibility for their foot health if we wish to achieve timely and appropriate podiatry, as recommended in the literature. Responsibility should be three-way: the patient, the members of the rheumatology team and, once in the podiatry service, the podiatrist should	Having fully analysed the data, it would have been of interest to conduct further interviews in a wider range of localities to investigate the themes raised more broadly.	UC

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										maintain this.		
72	Barton, 2014	Relational, psychosocial	SDM	to examine patterns of perceived communication around decisionmaking in two cohorts of adults with RA	Random	Quantitative	telephone interviews	1. RA Panel: persons with RA being treated over a 1-month period by a random sample of Northern California rheumatologists. The data for this study consist of all interviews conducted in 2011, with a total of 275 participants. 2. The UCSF RA Cohort is a multisite observational cohort enrolled from 2 outpatient clinics staffed by UCSF faculty and fellows, the Rheumatoid Arthritis Clinic at San Francisco General Hospital and the	uc	In the two cOhorts 30% and 32% reported suboptimal SDM communication. Low trust in physician was independently associated with suboptimal SDM communication in both cohorts. Older age and limited English proficiency were independently associated with suboptimal SDM in the UCSF RA Cohort, as was limited health literacy in the RA Panel Cohort.	1. Patient reports of communication may be subject to recall bias12, and such bias may be greater among those with low trust or poor understanding of the healthcare encounter. 2. The measure of decision-making communication used was one of self-report and not one of direct observation 3. Our measure of health literacy in the RA Panel is self-reported and does not capture all domains of this complex concept, nor does it measure numeracy; use of the single item screener that focuses on reading ability may lead to measurement bias when compared	not reported

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								university-based UCSF Arthritis Center.			to a longer instrument of health literacy.	
73	Ackerman, 2015	Physical	Treatment general	This study aimed to determine the need for (and preferred mode/s of delivery of) information regarding pregnancy, post-natal care and early parenting among women with RA.	Purposive sampling	Qualitative & quantitative	Telephone interviews (15 participants) and focus groups (12 participants, 5 face-to-face and 7 virtual)	be aged 18-45; have been diagnosed with RA by a rheumatologist; be on disease-modifying antirheumatic drugs (DMARDs), except if pregnant or planning to conceive; and have been pregnant within the last 5 years, be currently pregnant, or planning to become pregnant in the next 5 years	UC	The data demonstrate that women struggle to find consumer-focused, accessible information on pregnancy planning, pregnancy and early parenting in relation to their chronic condition. Although most participants trusted their rheumatologist as their primary source, there was consistent demand for more comprehensive information and the importance of learning from women's personal experiences was strongly emphasised. Also, the need for information about available physical and emotional support services and improved advocacy about the impact of RA was evident. Participants considered that materials relating to RA specific to pregnancy and post-natal care are lacking.	we acknowledge that this research did not capture the views of family members or health professionals, nor the perspectives of women with other inflammatory arthritis.	Only women

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74	Bain, 2016	Technical, temporal	Selfmanagement	This study sought to identify barriers faced by inflammatory arthritis (IA) patients in attending a Therapeutic Education Program (TEP) and understand how patients overcame perceived barriers.	Random	Qualitative & quantitative	Questionnaires and focus groups	diagnosis of IA, Englishspeaking, and 18 years of age and over.	UC	Barriers that were identified were major contributors to limiting individuals with IA from attending the TEP and thus obtaining self-management information, potentially impacting patient outcomes. Questionnaire respondents identified time/work, distance, and cost as real barriers to participating in the TEP. Perceived barriers that did not prevent the majority of any group from participating were caregiving responsibilities, coping, and health.Participants who attended the program possessed resources allowing them to alter schedules, draw on family support, budget for unexpected monetary expenditures, and request accommodation to the regular program format. These findings demonstrate the need for extensive planning and effort required on the part of individuals to	Participants in the study might have attended other programs given in the clinic as well, potentially affecting full attendance in the IA TEP or influencing their responses. The questionnaire may have biased the qualitative results as the themes identified in the focus group mirrored the barriers presented in the questionnaire.	Our results suggest that demographic characteristics do not necessarily predict what barriers an individual may face in attending a program, but may be associated with an individual’s potential ability or motivation of overcoming barriers.

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										enable participation. Other key contributors to initially committing to attend the program were the need for also receiving other medical resources (e.g., access to other health professionals) and an understanding of the key features and benefits of the program prior to committing.		
75	Baxter, 2015	Technical, temporal	Excercise	examined the attitudes and perceived barriers to exercise of women with rheumatoid arthritis (RA)	Purposive sampling	Qualitative	Telephone interviews	Adults with a diagnosis of RA aged 18 years and above, with the ability to walk 200 m or more unassisted	inability to communicate in English, or if the individual's ability to give informed consent	patients need often help from friends or family to exercise and feel that as a barriere as they do not want to bother. There was fear for excercising:: fear of the unknown (not knowing how to excercise including a safe level of exercise), fear for an increase of symptoms and fear for safety. For most participants, walking 3–4 times a week was thought to be an acceptable programme for themselves or others with RA. Many of the barriers to exercise identified by participants could be alleviated by detailed instructions on the	Sample size and sex of participants might be a limitation. While our study was open to both men and women, only women volunteered to be participants.	Not applicable as Only women

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										type and duration of exercise recommended		
76	Poulos, 2014	Physical	Treatment general	This study aimed to quantify the rate at which RA patients are willing to trade off between the time required to administer treatment (duration) and treatment frequency.	random	Quantitative	Online discrete choice experiment	Respondents were required to be age >=18 years, capable of reading and understanding English, living in the US, having a self-reported physician diagnosis of RA, and having moderate to severe RA symptoms	respondents who had a RAPID-3 score < 6.	the relative preference for a 1-hour change in duration (from 2 hours) of a quarterly infusion is more than 6 times greater than the relative preference for an increase in annual treatment frequency by one (from 12 times per year), about 5 times greater than the relative preference for an increase in treatment response rate of 1 percentage point (from 60% to 61%), and more than 3 times greater than the relative preference for a change in mode of administration (between injection and intravenous infusion). The relative preference for this change in hours required for treatment (from 2 hours to 1 hour) is also 12 and 2 times greater than the relative preferences for changes of 1 percentage point in the chance of mild or serious	One inherent limitation is that the patients evaluated hypothetical RA treatment profiles that do not have the same clinical consequences of actual choices. Another limitation is that respondents' self-reported diagnoses of RA were not independently verified. As in any survey research study, we need to be mindful of sample representativeness as a potential study limitation. The study sample is small relative to the population, and it was drawn from 2 different sources: the KN online panel and the RISE group.	UC

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										treatment reactions, respectively.		
77	Rothery, 2016	Physical	Treatment general	The objective of this study is to assess patient preferences for treatment-related benefits and risk of disease relapse in the management of low disease states of psoriatic arthritis (PsA).	UC	Quantitative & qualitative	Focus group and discrete choice experiment	For focus group UC, for DCE patients with minimal disease activity.	UC	The study has two main findings. Firstly, the most important benefit attribute was the elimination of severe side effects of sickness and nausea. This was ranked more important than moving from a health state with moderate pain or discomfort, moderate anxiety or depression and some problems with performing usual activities (no problems with mobility and self-care) to a health state with none of these problems. Secondly, the results suggest that patients are willing to accept a very large increase (over 30 %) in risk of relapse in exchange for improvements in levels of sickness/nausea and health status.	Low response rate; large proportion of irrational answers; it was not possible to explore how different medications and patient characteristics might affect patient preferences as any split in the sample into subgroups would lead to very small sample sizes for each group; outcomes may be different in patients with early disease when first on therapy.	UC
78	Salt, 2011	Physical, relational, sense making	interaction healthcare	to understand the decisionmaking process that women with rheumatoid	Purposive sampling	Qualitative	Interviews	English-speaking women who were 18 years of age or older, with a	UC	Pain and the patients' acceptance of the diagnosis of RA are important components of decision	UC	Only women

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				arthritis (RA) use when deciding to participate in an evidence-based treatment regimen.				current diagnosis of RA based on the 1987 ACR classification criteria, as determined by a health care professional specializing in rheumatology, were invited to participate in the study.		initiation. After knowledge aquisition, perceptions of their medications were important factors in the decision-making process for medication. A trusting patient–health care provider relationship was described as important when deciding to take medication for RA. Health care providers' recognition of both the positive and negative effects of medications on participants positively affected this relationship.		
79	Salt, 2012	Relational	SDM	to develop a model of patients'perception of quality patient-healthcare provider communication	theoretical sampling	Qualitative	interview individual and group; grounded theory; constant comparative analysis from focus groups and interviews	english speaking, age > 18, diagnosis of RA and willing to participate in an interview	UC	The participants described a multifaceted, dynamic process of quality patient–healthcare provider communication involving the interrelationship between appropriate time and 4 key communication exchanges: patient honesty when explaining symptoms, patients asking questions and offering opinions, healthcare providers asking questions and offering opinions, and healthcare	men and women with RA from one university rheumatology clinic. Although this rheumatology clinic serves a diverse population, interviewing persons at multiple sites throughout the United States may have resulted in different findings.	UC

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										providers. In this way communication is likely to lead to significant reduction of potentially harmful and costly miscommunications and reduction in the stress level involved in patient–healthcare provider communication.		
80	Sanderson, 2010b	Physical	medication general	**to develop a complementary core set with patients to promote inclusion of their priority outcomes in pharmacologic interventions.**	purposive sampling	Qualitative and quantitative	Group interviews (n=26) and survey (n=254)	UC	UC	254 participants ranked prioritytreatment outcomes for pharmaceutical care: pain, activities of daily living, joint damage, mobility, life enjoyment, independence, fatigue, and valued activities. The 8 priorities represent 3 domains of treatment outcomes: direct impact of RA, psychosocial well-being, and function/participation. Chi-square tests showed that disease severity, disease duration, sex, and patients' perceptions of managing, self-efficacy, and normality influenced the selection of priority treatment outcomes.	Due to the large numbers of outcomes being selected as very impor-tant by patients, it was not possible to rank all of the outcomes, and only the top 5 (nominal group study) or top 6 (survey study) were ranked. Patients were only white	Men more frequently selected "Able to drive" and women more frequently selected "Less fatigue" as a priority

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81	Schneider, 2008	Relational, Temporal, Financial	Treatment general	We undertook a cross-sectional study, using the International Classification of Functioning, Disability and Health framework, to investigate the personal and social consequences of RA in women, living under largely impoverished conditions.	convenience sampling	Qualitative	Interviews	Participants fulfilled the 1987 American College of Rheumatology classification criteria for RA, and attended the Arthritis Clinic at Chris Hani Baragwanath Hospital, and lived in Soweto, South Africa	UC	The main features of living with RA were pain, muscle stiffness at the body level, difficulties in doing various activities such as mobility, washing, dressing, domestic activities, using transport and obtaining and maintaining employment at the person level. At the societal level the participants described difficulties moving around, interacting socially and taking part in community activities, fulfilling social roles and earning a living. Environmental facilitators such as assistive devices and health care services improved functioning. Barriers such as physical environments, lack of transport and basic services, such as electricity, and attitudes of others lead to social exclusion, loss of a sense of self and independence. Low income, lack of sufficient public transport, and sparse basic	Some of limitations of the study include the cross-sectional nature of the study done in a tertiary care setting and not categorising participant responses with respect to disease activity and severity at the time of the interview. As alluded to earlier, disease activity fluctuates and this might impact on the responses of participants. Furthermore, undertaking observations of the women in their daily activities would provide further information to triangulate the description of their experiences of living with RA.	Only women

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										services were poverty features that exacerbated negative experiences.		
82	Sharrock, 2014	Physical	Treatment other, Surgery	The present study aimed to gain an in-depth understanding of patients' expectations and experiences, and the determinants of satisfaction related to MCP arthroplasty and postoperative rehabilitation.	Criterion sampling	Qualitative	Interviews	undergone MCP arthroplasty within the last 3 years at one of two London hospitals	UC	Participants' reasons for surgery varied considerably and their expectations were informed by previous surgical experience and information from healthcare professionals. Diverse, and occasionally ambivalent, perceptions of various aspects of postoperative treatment were expressed and all participants emphasized the importance of reassurance and understanding by the healthcare team. When describing the effect of surgery on their lives, all experienced a period of 'frustrating dependence' and adopted a variety of psychological and practical coping mechanisms. Experience of recovery and long-term outcome was influenced by factors extraneous to MCP arthroplasty, including	Given the diversity of experiences in the present study, it is unlikely that data saturation was met. In order to increase the potential sample size, patients were invited to participate if they had had their surgery within the last three years; however, this may have introduced an element of recall bias. In addition, the ability to apply qualitative research findings to the general population is limited. Participants were recruited from two hospitals only and it is possible that services differ among hospitals, impacting on patients' experiences.	Only women

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										medical condition and disease at adjacent joints. Factors influencing satisfaction included participants' evaluation of the extent to which goals and preoperative expectations had been met and the impact of surgery on their lives.		
83	Sieper, 2016	Physical	Treatment general	To assess the impact of non-radiographic axial spondyloarthritis (nr-axSpA) on patients and society based on real-world evidence from the Adelphi nr-axSpA Disease Specific Programme, a cross-sectional survey of rheumatologists and their patients in Germany, France, Spain, Italy and the UK.	convenience sampling	Quantitative	patient record forms and patient self-completion forms.	Eligible physicians were rheumatologists seeing 2+ patients with nr-axSpA in a typical month, who have qualitfied as rheumatologists between 1975-2010 and are actively involved in patient drug management. Patient participants had to go to one of the eligible physicians for consulting with nr-axSpA.	None	non-responders to treatment had impaired activity of 47.4% versus 33.3% in responders. Clinical outcomes were consistently better in biological-treated versus -naïve patients. Average pretreatment pain levels were 6.6 and 6.2, respectively (p=0.072) but reduced to 2.5 and 4.0, respectively at the time of the survey.	Physicians were not required to base their diagnosis on formal classification criteria or clinical test results, resulting in misdiagnosis in some cases and inclusion of patients with AS. Consequently the burden of nr-axSpA may have been overestimated in our population.	UC

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84	Sorenson, 2014	Temporal, relational	Treatment general	To investigate travel time, and travel cost related to contacts with health care providers for patients with rheumatoid arthritis (RA) during a three-month period.	convenience sampling	Quantitative	Questionnaire	Had to be diagnosed with RA s defined by the ACR 1987 criteria, plus had to visit one of 11 participating Danish rheumatology outpatient clinics between july 2006 and july 2007.	None	Over a 3-month period, patients with RA had on average 4.4 (sd 5.7) contacts with health care providers, of which 2.8 (sd 4.0) contacts were with rheumatology outpatient clinics. Private car and public travel were the most frequent modes of travel. The average patient spent 63 minutes and 13 C on travelling per contact, corresponding to a total of 4.6 hours and 56 C during the 3-month period. There was great variation in patient travel time and costs, but no statistically significant associations were found with clinical and sociodemographic characteristics.	In this study, we relied on patients self-report of the travel time and cost. A substantial proportion of the patients (8.3%) did not provide valid response, plus there are potential biases in self-report data. Recall bias may be important as we asked patients to report their use of health care services during a three-month period. There may be some element of under- or overreporting although it is difficult to assess the direction and consequences. Next to that, 15% of eligible patients did not respond to the questionnaire at all and further 8 percent who responded to	As seen in Table 4, males generally have less contacts (mean 3.9 vs 4.6), less travel time in minutes (mean 254 vs 284) and less travel costs (mean 50 vs 58). Could be due to age differences or so though, and is not reported in text.

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											the questionnaire did not provide answers on the travel time and cost questions. We were able to identify difference between responders and nonresponders, and it appeared that responders were younger, more likely to be married/cohabiting, living in a city area, had longer education, and were in the labor market. Respondents were also in less severe health states as nonresponders.	
85	Bearne, 2017	Technical	Excercise	explores participants' experiences of Education, self-management and upper extremity eXercise Training for people with Rheumatoid Arthritis programme	Purposive	Qualitative	Individual semi-structured interviews	aged ≥18 years with established RA of <5 years duration, with no contraindications to exercise	intramuscular or upper extremity intra-articular corticoste-roid injections in the previous 4 weeks, upper extremity surgery or physiotherapy in the previous 6	Excercise enhanced participants' confidence to manage their arthritis independently and was adaptable so it could be integrated with other life commitments. Whilst healthcare professionals, peers and family and friends influenced exercise uptake,	Interviewer not completely independen	not reported

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				(EXTRA)					months and inability to provide written informed consent	sustaining exercise was challenging. Participants desired consistent and continuing contact with a familiar physiotherapist (e.g. via follow-up appointments, digital health technologies) which accommodated individual needs (e.g. different venues, session frequency). Patients had also a need on information about how to excercise safely		
86	Walter, 2017	Physical, relational	Treatment general	to understand the discripancy between doctors and patients in treatment burden/disaese burden experienced	purposive sampling	qualitative	focusgroups /Thematic analysis	by age and ability to write and read Dutch	UC	From the focus groups seven themes emerged that relate to a high diseae burden and that patients foud hard to cope with, of which three had to do with TB: perceived stress, sometimes induced because patient feel misunderstood by professionals, tiredness due to side effects of medication intake and the relationship with professionals in general.	Second, the response rate for the questionnaire was modest, 42 %.	UC
87	Madsen, 2015	Divers	Treatment general	to understand how patients experience	purposive sampling	qualitative	interviews	male gender; age > 18; diagnosis of	uc	analysis of interviewdata revealed 4	no limitations reported	Only men, but this study

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				AS and the challenges related to liiving with AS as a chronc disease				AS according to EULAR criteria for AS		themes:1)approaching diagnosis (increase of physical symptoms, uncertainty/anxiety); 2)ill in social context (lack of understanding, less social contacts, difficult to keep role as friend/partner/parent); 3) challenged as a man because of physical limitations; 4) importance of staying as physically active as possible		shows that AS greatly impacts men's perceptions of themselves as men, their relationships as partners and fathers, their social lives and thier masculine identity.
88	Malm, 2016	Divers	Lifestyle	to explore how patients with established RA experience the influence of lifestyle adaptations (e.g. physical activity, diet, smoking, alcohol) on quality of life	purposive sampling to get a diverse group	qualitative	interviews	diagnosis of RA; age > 18	uc	patients are constant balancing betwee the ideal or prescribed situation and reality. Experience difficulties with respect to physical activities because of pain/stiffness and fluctuating RA; feel unsure about diet and alcohol use because of lack of information about correct use in relationto RA; Although motivated, patients expressed insufficiency, fear and challenge to adapt their lifestyle recommendations	no limitations reported	not reported

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										to every day life. when patients felt they succeed to live healthy it contributes to a better quality of life		
89	McInnes, 2013	Relational, Sensemaking	Lifestyle	To gain insight into the management and treatment of rheumatoid arthritis (RA) from the perspective of patients with moderate to severe disease.	convenience sampling	quantitative & qualitative	survey via computer-assisted telephone interviews	18+ years old, diagnosed with RA and provided informed consent. Biologic-naïve patients were included if they were potential candidates for biologic therapy. The entry criteria for these candidates, developed by the RAISE Patient Needs Survey Steering Committee and expert rheumatologists, included either a Disease Activity Score in 28 joints (DAS28) >3.2 or an acute-phase response, plus erosive disease	UC	Most physician-patient communication centered on symptoms and treatment rather than the impact of RA on quality of life (QoL). Biologic users had significantly more “good” days per month than biologic-naïve patients (71% vs. 61%). Of all patients, 22% reported high levels of pain on the day of the interview. A majority of patients considered their lives to be controlled by RA, despite the fact that they were receiving the current standard of care. Although potentially eligible for biologic therapy, as defined by a broad set of criteria for this investigation, 62% of biologic-naïve patients were not aware of biologic therapies.	Exclusion of patients with mild disease, plus they did not assess patients for fibromyalgia while this could have affected the results.	UC

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								and moderate-to-severe, active RA. Biologic-experienced patients were included if they were receiving either a subcutaneous or an intravenous tumour necrosis factor inhibitor (TNFi).				
90	Nichols, 2017	Temporal	Exercise	This study explores the experience of participants taking part in a hand exercise programme for people with rheumatoid arthritis with a focus on adherence.	purposive sampling	qualitative	interviews	participants were adults (18+ years) diagnosed with RA reporting pain and dysfunction of hands and who were either not on medication or on a stable drug regime for three months or more.	UC	The ability to establish a routine determined whether participants adhered to the exercise programme. Establishing a routine depended on participants being able to fit the exercises into their schedule. People with RA often need to make changes to adapt to the demands of their condition. Empowering participants with the confidence to self-modify their programme was a critical skill to cope with changes in their lives or symptoms. A positive mind	A limitation of this study was that it was conducted within the context of a clinical trial so may not apply to patients in clinical settings. The participants had all agreed to participate in an RCT of exercises so may have been more likely to comply with an exercise programme than patients seen in everyday clinical practice. Also, we had planned to	

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										set towards exercising, putting in effort, being in control, and taking ownership of the programme were related to adherence with the programme and could be likened to internal motivation. Externally motivated individuals show greater reliance on coercive methods such as rewards or support from others.	interview up to 10 participants who reported that they had not benefited from the exercise programme but we were only able to identify four participants fulfilling these criteria. Therefore, the majority of participants had benefited from the programme which may introduce bias.	
91	Nota, 2015	Physical. Sensemaking	SDM	To explore what considerations patients have when deciding about disease-modifying antirheumatic drugs (DMARDs) and what information patients need to participate in the decision-making process.	convenience sampling	qualitative	interviews	This study focused on patients diagnosed with rheumatoid arthritis, ankylosing spondylitis, or psoriatic arthritis, who recently (<1 month previous) consulted their rheumatologist and discussed initiating DMARDS. The	UC	Beliefs in the necessity of DMARDs, either for relief of symptoms or prevention of future joint damage, were reasons to initiate DMARDs. Furthermore, trust in the rheumatologist and the health care system was important in this respect. Patients expressed many concerns about initiating DMARDS. These related to the perceived aggressive and harmful nature of DMARDs, potential (or	The participants in this study were recruited from two hospitals, thereby questioning the generalizability of the results. Our sample contained only a few patients who decided not to initiate the drugs. Whereas qualitative data have the advantage to gain new insights, they do not permit	UC

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								participants were required to speak Dutch.		unknown) side effects, influence on fertility and pregnancy, combination with other medicines, time to benefit, and manner of administration. Participants also worried about the future regarding long-term medication use and drug dependency, and if a medicine proved to be ineffective, about the risks of future treatments and running out of options. To decrease uncertainty, participants wanted to be informed about multiple treatment options, both current and future. They not only wanted clinical information but also information on how the medications could affect their daily lives.	measurement of the impact of each of these factors on decision-making. More quantitative studies are needed to confirm our results.	
92	Nota, 2016	Relational	SDM	The aim of this study is to gain insight into arthritis patients' motives for (not) wanting to be involved in medical decision-	convenience sampling	Qualitative	Interviews	Patients diagnosed with rheumatoid arthritis (RA) scheduled to have an appointment with the	UC	Many patients perceived the questions about involvement in SDM as difficult, mostly because they were unaware of having a choice. Shared decision-making (SDM) was	Firstly, the participants in this study were recruited from two hospitals. Although these hospitals are large hospitals covering	UC

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				making (MDM) and the factors that hinder or promote patient involvement.				rheumatologist, who could complete an interview in Dutch without assistance.		generally preferred, but the preferred level of involvement varied between and within individuals. Preference regarding involvement may vary according to the type of treatment and the severity of the complaints. A considerable group of respondents would have liked more participation than they had experienced in the past. Perceived barriers could be divided into doctor-related (e.g. a paternalistic attitude), patientrelated (e.g. lack of knowledge) and context-related (e.g. too little time to decide) factors. This study demonstrates the complexity of predicting patients' preferences regarding involvement in MDM: most RA patients prefer SDM, but their preference may vary according to the situation they are in and the extent to which they experience	both urban and rural areas, this might limit the generalisability of the results. Secondly, although we tried to prevent selection bias by preselecting patients diagnosed with RA before they consulted their rheumatologist, we cannot guarantee that it did not occur. Thirdly, this was a retrospective study in which patients were asked to reflect on a recentmedical decision, but sometimes that decision occurredweeks or months prior to the interview. However, what is potentially lost by these limitations was gained by allowing respondents to tell their own story.	

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										barriers in getting more involved. Unawareness of having a choice is still a major barrier for patient participation. The attending physician seems to have an important role as facilitator in enhancing patient participation by raising awareness and offering options, but implementing SDM is a shared responsibility; all parties need to be involved and educated.		
93	O'Dwyer, 2016	Physical, technical, temporal	Excercise	This studyaimed to explore the attitudes toward Physical activity and exercise of adults with AS.	Purposive sampling	qualitative & some quantitative	interviews & questionnaires	Adults (over 18 years) with a diagnosis of AS, and able to read and understand English were eligible for inclusion.	UC	Four themes emerged from the analysis: (1) benefits, (2) barriers, (3) motivation, and (4) strategies and enablers. Benefits included amelioration of symptoms, improvements in general health, and enhancement of quality of life. Subthemes of barriers to physical activity (Pha) included lack of resources, negative attitudes to exercise, misinformation, and condition-related factors. Motivation to exercise was	Despite the purposive selection of participants, nonvolunteers may have held different views. Our research team (made up of physical therapists and a rheumatologist) had experience in researching PA and exercise among adults with rheumatic conditions. Despite every effort	US

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										influenced by intrinsic and extrinsic factors. Awareness of the benefits of PA appears insufficient to motivate individuals with AS to exercise;	to be cognizant of the bias inherent within the research team, this could not be confidently ascertained.	
94	Dures, 2016	Relational	SDM	This study explored the perspectives of patients attending those routine consultations to identify aspects of the interaction that influenced collaboration and self-management.	convenience sampling	Qualitative	Interviews	18+ years old, confirmed diagnosis of IA and had capacity to consent.	US	Three themes encompass participants' thoughts about interactions that facilitated collaboration in consultations and their ability to self-manage their IA: first, patients and clinicians viewing care as a shared endeavour, including patients responding actively to their IA and clinicians exploring and negotiating with patients; second, the need for clinicians to understand the challenges faced by patients, appreciate the impact of IA and focus on patients' priorities; and third, clinicians using an open communication style, including the use of nondidactic, patient-centred approaches. A fourth theme was perceived benefits of	All participants were selected on the basis that their treating clinicians had received training in provision of support for self-management, and this means that the patients had experiences that might not reflect those of patients in general. It is also possible that patients who agreed to be interviewed were those with the most positive experience of interactions with their clinicians.	UC

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										actively engaging in consultations, including increased confidence to deal with the impact of IA and greater acceptance of a long term condition.		
95	Akkoc, 2015	Financial	Costs	This study assessed quality of life, direct and indirect healthcare costs related to ankylosing spondylitis (AS).	convenience sampling	qualitative	interviews	18+ with AS for at least 12 months	UC	Pharmacy costs (€4,032.73) were highest among overall expenditures, followed by additional AS-related consultation (€2,480.38), outpatient (€225.02), and inpatient costs (€29.98). Over half of AS patients (54.8 %) experienced work loss. Related average annual costs were €414.16, based on income level. 10.3 % of AS patients incurred an additional €2,008.07 in 1 year. 6.8 % of patients required caregivers and incurred €778.70 in average annual patient paid costs.	All patients were diagnosed at tertiary medical centers, which may explain the unexpectedly high proportion of AS patients receiving biologic therapy.	Results indicate higher disease activity scores among female patients compared to males.
96	Kaptein, 2013	Technical, physical, sensemaking	Exercise	explores participants' experiences of Education, self-management and upper extremity	Purposive	Qualitative	Individual semi-structured interviews	aged ≥18 years with established RA of <5 years duration, with no contraindications to exercise	intramuscular or upper extremity intra-articular corticosteroid injections in the previous 4 weeks,	Excercise enhanced participants' confidence to manage their arthritis independently and was adaptable so it could be integrated with other life	Interviewer not completely independen	not reported

Ref. No	Paper	Type of TB	Aspect of treatment	Research Question/aim	Sampling	Type of study	Way of data collection	Inclusion-criteria	Exclusion-criteria	Main results	Limitations of study	Differences according to gender
				eXercise Training for people with Rheumatoid Arthritis programme (EXTRA)					upper extremity surgery or physiotherapy in the previous 6 months and inability to provide written informed consent	commitments. Whilst healthcare professionals, peers and family and friends influenced exercise uptake, sustaining exercise was challenging. Participants desired consistent and continuing contact with a familiar physiotherapist (e.g. via follow-up appointments, digital health technologies) which accommodated individual needs (e.g. different venues, session frequency). Patients had also a need on information about how to excercise safely		
97	Hewlett, 2011	Physical	coping with flares	to explore patients' perspectives of flare that prompts them to seek medication review	Purposive	qualitative	focusgroups	Adults with RA and experience of flare	uc	In case of flare patients increase their usual level of self-management by resting, pacing, applying heat or cold and escalating medications such as gluco-corticoids, often without seeking medical advice: The tipping point for seeking professional help is reached when multiple symptoms cannot be controlled by even increased self-	the participants were mainly white, and other racial and ethnic groups may have different experiences	Not reported

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										management strategies, and patients cannot run their normal lives. They may be supported or prompted in this decision by family; patients experience uncertainty about whether something is a true flare and what they should do; they indicate that healthcare professionals often hold different views of flares resulting in confusion and misunderstanding and it hinders shared treatment decisions		
98	Kristiansen, 2012	relational, sensemaking	divers aspects of treatment	exploration of how everyday life is affected by RA in a Danish population, and sought to explore the implications for patient education and clinical practice	Purposive	qualitative	focusgroups, segmented by disease duration (<1,5 year and > 1,5 year)	diagnosis of RA	uc	ambiguous feelings towards the medication, being concerned about long-term side effects.Participants described pharmacological treatment as a process of trial and error. Waiting for a possible effect affected their quality of life, as they suffered from feelings of powerlessness and helplessness. Self-determination was also affected by medical regimes. Alcohol was also mentioned	Focusgroups did not invite to discuss more intimate topics such sexuality	Younger women described feeling that they needed to get the doctor's permission if they wanted to embark on a pregnancy.

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										by many participants, as they had been advised to reduce alcohol consumption because of their medical treatment. This could also have social consequences; Many partici-pants experienced a lack of acknowledgement of their psychological reactions among health professionals, and expressed a wish for more psychological support.		
99	Iversen, 2015	Divers	Excercise	to explore perceptions of physical activity engagement and maintenance among adults with RA and their rheumatologists	purposive sampling	qualitative	in-depth interviews	to be eligible patients had to be either in the top tenth decile or bottom tenth decile of self-reported physical activity participation level; age ≥18	UC	patients 1) wish that doctors discuss excercise early in diagnosis; 2) want information about excercises that are safe to perform; 3) indicated fear about worseing of their disesae or want special guidelines for physical activities tailored to their needs; 4) experience competition when excersiing in public venues	patients came from a single center, had a relatively high SES and were predominantly women	uc

Appendix H – Advisory board

Name	Position	Organisation
Mw. dr. J. Ammerlaan	Rheumatic Nurse; Researcher	UMCU
Mw. drs. N. de Boer	Patient Research Partner	UMCU
Prof. dr. R. Geenen	Professor Psychosocial Aspects of Rheumatic Disease	Utrecht University
Mw. dr. J. Korevaar	Programleader General Practice Care	Nivel
Dhr. Drs. E Leijten	Reumatoloog	UMCU
Prof. dr. J. Rademakers	Research Coordinator/Professor Health Literacy	Nivel/Maastricht University