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The effect of a comprehensive occupational therapy intervention programme on the occupational performance of people with rheumatoid arthritis, living in Soweto

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CHAPTER 2
REVIEW OF LITERATURE

2.1 INTRODUCTION

Rheumatoid arthritis has an extensive effect on all aspects of life including activity limitations and participation restrictions in the physical, personal, familial, social and vocational areas [22, 35]. RA also has consequences for the economic status of the diagnosed individuals. Of 186 individuals assessed with early RA, 42% were registered as work disabled after three years and nearly a quarter of these experienced an income reduction [4]. Three groups of researchers found that an older age negatively affected the ability of an individual with RA to maintain his/her work [4]. Learned helplessness by RA sufferers also impedes their functional status. Arthritis-specific helplessness has demonstrated a reliable relationship with a number of outcome variables such as increased depression and anxiety, lower self esteem, and impairment in performing activities of daily living (ADL) in both cross-sectional and prospective RA studies [36].

The purpose of OT is to facilitate task performance and to decrease the consequences of RA for daily life activities. Limited evidence exists demonstrating the efficacy of a comprehensive Occupational Therapy programme for patients with RA in improving functional ability [13].

This review considers the assessments tools available to measure disease activity and functional status in RA, the role of OT rehabilitation in RA and the various types of treatment offered by the OT, as well as reported efficacy and outcomes of these. Limited literature on the prevalence and the effects of socio-economic and cultural factors are also considered.

2.2 ASSESSMENT TOOLS

The literature presents a large number of assessment tools available for patients with RA. Many of these have been standardised and have been used extensively in research to establish the severity of the disease and its effect on the patients' everyday function or disability level. Different tools are necessary to consider the patients self-reported level of function in aspects of occupational performance in terms of the everyday functioning, health-related quality of life as well as their perceived physical and mental health. Disease activity is also an indicator of the progression of the disease process in RA and should therefore also be monitored.

The disease and its effect on functional status have been measured by two broad categories of instruments. Firstly, the disease-specific instruments e.g. American College of Rheumatology (ACR) functional class [6, 7]; Arthritis Impact Measure Score (AIMS) and the HAQ. Secondly, the generic instruments e.g. the SF-36, the Nottinghan Health Profile Questionnaire, The World Health Organisation Quality of Life (WHOQOL) instrument [37] and Euroqol [38].

Health services research is heavily dependent on valid health measures e.g. of health-related quality of life (HRQL) or health-related functional status (HRFS). These concepts have become important in the measurement of intervention-outcome and used as comparable outcomes in cost-effectiveness evaluation. However, in evaluation studies, quality of life outcomes have turned out to be a 'kaleidoscopic' concept since no consensus exists with regard to the meaning of the concept in either the research or clinical communities [39]. Using assessment tools from both categories, one is able to gather disease-specific data that compares functional status with markers of disease activity and to compare quality of life between different diseases.

Because improving the functional status of patients has become a central therapeutic goal of treatment for many diseases, it is important that health administrators, clinicians and researchers develop a common understanding of:

- What HRFS concepts mean
- Which measure is likely to be the most appropriate one in the context of the disease
- The evaluation of, for example, an interdisciplinary or integrated approach and the methods to assess intervention-related change (responsiveness of outcome measures). The methods by which a valid interpretation of the magnitude of that change in terms of relevance or importance can be achieved and the aspects of validity also need to be considered [40].

We find that the general concept of validity was traditionally defined as "the degree to which a test measures what it claims, or proposes, to be measuring" [40]. Validity can be defined in a number of ways. A common approach, called criterion validity, is to correlate measures with a criterion measure known to be valid. Separate from criterion validity is construct validity, where an investigator examines whether a measure is related to other variables as required by theory [41].

The construct validity of a test should be demonstrated by an accumulation of evidence [40]. Content validity is simply a demonstration that the items of a test are drawn from the domain being measured - it does not guarantee that the test actually measures phenomena in that domain or refers to the extent to which a measure represents all facets of a given social concept [41].

Content validity is related to, but distinct from, face validity. The latter is not validity in the technical sense as it refers, not to what the test actually measures, but to what it appears superficially to measure. Face validity pertains to whether the test "looks valid" to the examinees who take it, the administrative personnel who decide on its use and other technically untrained observers. Content validity requires more rigorous statistical tests than face validity, which only requires an

intuitive judgment. Content validity is most often addressed in academic and vocational testing, where test items need to reflect the knowledge actually required for a given topic area (e.g. history) or job skill (e.g. accounting). In clinical settings, content validity refers to the correspondence between test items and the symptom content of a syndrome [41].

The terms responsiveness or sensitivity to change are used as indicators of the instrument's sensitivity to change, as well as an indicator of the magnitude of intervention-related change over time. Change over time indices are also applied to measurement instruments to evaluate them in terms of being sensitive to detecting change in before - after studies. In literature on psychometrics or clinimetrics the concept of responsiveness was introduced to denote the magnitude of change over time or sensitivity to change over time [39].

2.2.1 Assessment of Function

The Health Assessment Questionnaire (HAQ) [28, 29, 30] is used to assess a level of functional disability in patients with RA. It has been used extensively as an instrument to assess the improvement in patients' functional level, following a rehabilitation treatment programme [14, 15, 16, 20, 27].

Developed by Fries and co-workers at Stanford University [30], and first published in 1980 [42], it was among the first instruments based on patient-centred dimensions. The HAQ was designed to represent patient-orientated outcome and is a validated tool to quantify self-reported functional disability in RA [29]. The questionnaire can be completed face-to-face in a clinical setting by trained outcome assessors or can be self-administered. Eight functional categories are assessed by the HAQ: dressing and grooming, getting out of bed, eating, walking, hygiene, reach, grip, and other common activities of daily living. According to Bruce and Fries "It has played a major role in the diverse areas such as predilection of successful ageing and inversion of the therapeutic pyramid in RA" (Bruce, Fries, p167) [29]. The HAQ has established itself as a valuable, effective and sensitive tool for measurement of functional disability in RA and correlates well to duration of the disease rather than age-related loss of function [43].

There are 2 original versions of the HAQ: the full HAQ that assesses 5 dimensions of health outcome, and the "short" HAQ, or HAQ-DI (Health Assessment Questionnaire – Disability Index), as used in this study. The DI calculated is appropriate for measuring overall arthritis "severity" [42].

Krishnan et al have developed percentile benchmarks for the HAQ-DI which allows disability outcomes to be compared between different patient populations. The reference values they present numerically and graphically can be used in clinical practice to track the patient's functional disability and to measure response to therapy [43].

There have been numerous changes suggested and made to the HAQ by various researchers. One such change is by Hewlett et al whose criticism is that the HAQ does not consider the personal impact of disability. They developed the Personal Impact HAQ (PI HAQ), which has an additional 8 questions that patients need to rate in terms of importance of ability to perform, thereby personally measuring the impact of the disability. They concluded that the PI HAQ should rather complement other measures of disability e.g. the HAQ, than replace it [44]. Fries at al however stated that there does not appear to exist an instrument that can be considered the ideal generic instrument and rather encouraged the use of supplementary questions and discussions to get more specific information [29].

Another change to the HAQ is not due to criticism of "what" it measures, but rather criticism of "how" it measures change in disability. Tomlin et al looked at the Alternate HAQ (AHAQ) in order to make the scoring more sensitive to change. They suggest scoring all 60 items rather than only 20 and scoring each category as the mean of the items scored in that category [45]. The original scoring of the HAQ implies that only improvement in status on the worst item in a category causes a change in score for that category and therefore disability index DI. Progress on items whose functional disability score were not the worst in that category is not reflected in the category score or DI [45]. It is felt that vital information might get lost and true changes in the level of disability are masked. A 60-point scale exhibits a broader central band at the interval level, equivalent to a 0.5 – 2.5

range on the standard HAQ. Thus, there would be less chance that standard methods adjusting for baseline differences will be compromised [46]. The DI is then calculated by dividing the total scored, counting each question, out off 60 through 20. A dependent t-test between the HAQ and the AHAQ correlation coefficients reveal that the difference is not significant [45]. The AHAQ was shown to be more likely to reveal significant differences in data over time [45].

A second assessment that considers the patient's self reported satisfaction with their functional ability is the Canadian Occupational Performance Measure (COMP) [47]. This tool was developed by OT to evaluate occupational performance directly, for directing OT interventions and measuring client-centred outcomes. The COPM measures individuals' perceptions of disability by identifying those tasks that are important to them and difficult to perform. A statistical significant correlation was found when comparing the COPM to the HAQ and it is therefore felt that the HAQ will be adequate in accurately providing information regarding occupational performance of patients in this study [47].

2.2.2 Assessment of Health Related Quality of Life

Dr. John Ware and his team in 1988 developed the SF 36 Physical and Mental Health Summary scales [31, 32]. The SF 36 has long been established as a generic instrument for measuring dimensions of patient outcomes in numerous types of conditions regarding health related quality of life (HR-QOL) [29]. This self-reporting assessment scores four physical health scales, role limitations because of physical health problems; bodily pain, vitality (energy/fatigue), and general health perceptions. There are also four mental health scales; vitality, social functioning, role limitations because of emotional problems and general mental health (psychological distress and psychological well-being).

The SF-36 has been reviewed in over a hundred publications and has been extensively researched and standardised in over ten countries in order to make cross country comparisons available [48]. The SF 36 includes a single-item measure of health transition or change and can also be divided into two aggregate summary measures; the Physical Component Summary (PCS) and the Mental Component Summary (MCS). In the standard version of the SF 36 all scale questions refer to

a 4 week time period. The SF 36 Health Survey items and scales were constructed using the Likert method of summated ratings. Answers to each question are scored (some items need to be re-coded). These scores are then summed to produce raw scale scores for each health concept which are then transformed to a 0 – 100 scale. Scoring algorithms can then be applied to produce the PCS and MCS scores. These two summary scores have the major advantage of being norm based. They also have reduced floor and ceiling effects [32, 48].

The correlation to other tests has been researched and it correlates well with
The McMaster-Toronto Arthritis Questionnaire (MACTAR), Western Ontario and McMaster Universities of Osteoarthritis Index (WOMAC) and the Rheumatoid Arthritis Outcomes Score for upper and lower extremities [49].

The SF-36 is suitable for self-administration to persons age 14 and older as computerized administration, or administration by a trained interviewer in person or by telephone. The SF 36 has been administered successfully in general population surveys in the U.S. and other countries [50], as well as to young and old adult patients with specific diseases [51, 52]. It can be administered in 5-10 minutes with a high degree of acceptability and data quality [50]. Indicators of data quality that have yielded satisfactory results in studies to date include very high item completion rates and favourable results for a response consistency index based on 15 pairs of SF 36 items, which is scored at the individual level [52].

The reliability of the eight scales and two summary measures has been estimated using both internal consistency and test-retest methods. Studies of validity generally support the intended meaning of high and low SF 36 scores as documented in the original user's manuals [50, 52]. The content validity of the SF 36 has been compared to that of other widely used generic health surveys [50, 53]. Systematic comparisons indicate that the SF 36 includes eight of the most frequently measured health concepts. Tikly et al noted that the SF 20 domains, Physical Functioning and General Health have a high degree of internal consistency and reliability in SA population and recommended then use in future RA sudies [54]. In their study there was a high correlation between the HAQ-DI and SF 36 sub-scales that indicates high content/construct validity in the SF 36 [54].

2.2.3 Assessment of disease activity

The assessment of disease activity is a common approach used in chronic rheumatic diseases. It considers the underlying process, progression and deterioration triggered by the disease. Disease activity is different from disease severity, and it can be assessed relatively simply without the use of expensive research measurement tools [34].

Disease activity is assessed to characterize the current status of the disease and to appreciate activity related pain. It is also used to monitor the patient over time and follow the progression of the disease. Any increase in activity reflects exacerbation of disease, while lowering of activity indicates remission. An increase in disease activity leads to alteration in the patient's physical ability and impairment of their quality of life. Many of these are irreversibly damaged as a result of cumulative disease activity [55]. The measurement of disease activity is used to assess change over time as an effect of treatment. It is a valid and accepted criterion for assessing short or long term treatment [34].

The ACR criteria [6, 7] and the Eular criteria which include tender and swollen joint count, global assessment of disease activity by patient and physician, acute-phase reactants, pain and physical disability are used to document disease activity.

Three other measurement methods of disease activity in RA are available. One of which is the DAS which has a number of versions. The most commonly used is the DAS28 which includes 28 joint counts. The DAS28 is easier to complete than the DAS and it’s correlation to the original DAS is 0.97 [33]. It is a clinical index of disease activity that combines information from swollen joints, tender joints, the acute phase response and general health. It has been extensively validated and is finding increasing use both in RA clinical trials and for monitoring individual RA patients.

The DAS28 consists of a 28 tender joint (range 0 – 28), a 28 swollen joint count (range 0 – 28), erythrocyte sedimentation rate (ESR) (DAS28 3 variables (3V)) and an optional general Health assessment (DAS28 4 variables (4V)) on a visual analogue scale (range 0 - 100). The level of disease activity can be interpreted as

low (DAS28 ≤3.2), moderate (3.2< DAS28 ≤5.10), or high (DAS28 >5.1). A change of 1.2 of the DAS28 in an individual patient is considered a significant change [33]. A patient is considered to be in disease remission when their DAS28 < 2.6.

The other specific disease activity measurements that are used specifically for RA are the Rheumatoid Arthritis Disease Activity Index (RADAI) combining current and past global disease activity, pain, morning stiffness and a joint count. Although when it was compared with DAS (r=0.53), it showed a poor correlation [56]. The Chronic Arthritis Systemic Index (CASI) which incorporates the HAQ however did compare well with the DAS for discriminating between high- and low-disease-activity patients [57].

2.3 THE ROLE OF OCCUPATIONAL THERAPY IN THE TREATMENT OF RA

Rehabilitation is defined as management of the consequences of a disease [12]. The management of RA is based on a multidisciplinary team approach in which OT plays a major role that has been well described in the literature for decades. In 1966 Cohen et al [24] described this role as educating and assisting patients to preserve their joint integrity using adjusted techniques, splinting and assistive devices.

The efficacy and outcomes of OT in the treatment of RA was more recently addressed in two systematic reviews. In their review in 2002 Steultjens et al, described this role as training of motor function, instruction on joint protection and energy conservation, implementing the use of assistive devices, splinting, and training of skills. The reviewers found 40 research articles in which these functions of the OT are described [13]. Intervention of this kind is mostly based on in-patient treatment or as out-patient follow up at hospital clinics. Taal et al reviewed 31 articles on programmes that aim to improve knowledge, behaviour, health status and self-management [20].

In the OT management of RA the patients' participation in their everyday activities is the focus of attention. When the body functions and structures are impaired for whatever reason, activity participation or occupational performance (OP) will be

interrupted [35]. It is this interruption of OP that is the prime concern, as well as the impact of dysfunction on a person, rather than the dysfunction itself. When OP has been limited by dysfunction and the OT considers that intervention to restore adaptive skills is not feasible, the OT may feel that the most appropriate method of restoring the performance is through adaptation not of the person's skills but of the way in which the activity is performed [58].

The philosophy of OT emphasises a client centred approach when addressing a patient's OP problems but no studies using the PI HAQ could be found that consider the identified needs of individual RA patients in the setting of personal objectives to improve occupational performance and functional ability. This is a shortcoming that needs to be considered in future research considering the environment they live in and resources available to them.

As the current study focuses on a comprehensive OT intervention programme, all aspects of efficacy and outcomes will be discussed.

2.4 EFFICACY AND OUTCOMES OF OT IN RA

A systematic review in 2002 by Steultjens et al considered the level of evidence to establish the role and effectiveness of Occupational Therapy in the treatment of RA between 1966 and 2001 by identifying the research methodology used. They established that these included randomised control trials (RCT), controlled clinical trials (CCT) and other designs (OD). Studies were considered to be of high quality if at least 6 criteria for internal validity, 3 descriptive criteria, and 1 statistical criterion were scored positively on the list recommended by Van Tulder at al [13]. Their review concluded the following about the effectiveness of OT in the treatment of RA in the following areas; training of motor function and instruction on joint protection were effective interventions.

2.4.1 Training of motor function

In 1991 Palmer and Simons reported that daily exercise should be considered a part of training motor function in the treatment of RA [59]. Other studies have shown that as few as three isometric contractions per day can significantly increase muscle strength in RA patients. In addition to passive or gentle assisted exercises, during the acute phase, isometric exercise is recommended because it is less painful. It has been suggested that resisted exercise should be avoided because it may be deforming due to the alteration of the relationship of tendons to axes of movement [59].

In the review by Steultjens et al of seven studies (6 RCTs/CCTs, 1 OD) that focused on the intervention of "training motor function", no evidence for the effectiveness of training motor function in patients' with RA was found on the outcome or the process measured [13]. The interventions in the studies they considered did not include daily exercise and varied from group instruction on expressive dance, use of a continuous passive motion machine after arthroplasty, to hand exercises. The interventions based on hand exercises varied widely with regard to type of exercises, type of device used, type of setting for therapy (at home without supervision or at an OT department with supervision), and duration of the intervention [13].

2.4.2 Education on joint protection and energy conservation

The efficacy of patient education has been debated for many years. The aim of educating patients with RA is mainly to improve knowledge, behaviour and health status, thereby improving their lives [20]. Therapists have included "joint protection" (JP) in their therapy since the publication of Cordery et al's article on the principles of JP, in 1965 [59].

Some studies and interventions aim specifically to improve the patient's self-management of the consequences of the disease. This requires a change in not only knowledge, behaviour and health status, but also psychosocial health status – i.e. an internalisation of the concepts so that the behaviour change is sustained.

Only one of the RCT reviewed by Steultjens et al held high methodological quality. Based on these results, they concluded that there is limited evidence that instruction on joint protection leads to an improved functional ability [13].

Taal et al reviewed 31 articles published between 1980 and 1995. Their systemic review established the efficacy of Occupational Therapy treatment programmes in RA by breaking the evaluation down in several components of the treatment programme used with patients [20]. These included:

- a thorough problem analyses,
- use of theoretical model,
- influence on the patient's knowledge,
- behaviour and health status,
- teaching of effective self-management skills,
- use of effective teaching methods,
- self-management skill strengthening,
- self-efficacy appraisals,
- involvement of people from the patient's social environment
- a proper evaluation of the programmes effectiveness.

Further considered were:

Changes in knowledge

Fifty-two percent of the studies reviewed considered changes in knowledge. Significant short and long term benefits were found [20].

Changes in Behaviour

When changes in behaviour were studied (52% OD articles reviewed) the behavioural effects of programmes for RA patients were disappointing. Most programmes included only lectures and no behavioural approaches [20]. Hammond et al commented on the fact that timely identification of readiness to change is important. They point out that people not yet contemplating change will not respond to traditional interventions or behavioural programmes. This is often the case in patient's with early RA, who feel it is "too early" for them or they "don't really need it yet" [19]. These patients feel they can still cope as "I'm

not that bad yet". It is felt that only 40% of patients with RA will be interested in attending JP-programmes, so it may not be appropriate for all patients [17]. In a later study by Hammond and Freeman they again noted that behavioural approaches (i.e. skills practice, goal setting and home programmes) are significantly more effective in increasing use of joint protection than information-orientated education [21].

Physical health status

Physical health status improvement with educational interventions was found to be less effective. Although 53% of the studies showed short-term benefits, long term effects on physical health status were only found in 2 studies [20]. In a study by Lorig at al, they concluded that health education in chronic arthritis might add significant and sustained benefits to conventional therapy, while reducing costs. They did not only confirm the short term benefits of health education, but also showed prolonged benefits in reducing pain and use of medical services [26]. Hammond et al also demonstrated that their JP-Programme group gained long-term benefits in maintained functional ability and decreased early morning stiffness [21].

Psychosocial Health Status

Positive short term changes in psychosocial health status were found in 31% of the interventions. Only one led to long-term benefits. Only two studies did thorough analyses of the problem by using needs assessment surveys [20]. Hewlett et al developed the PI HAQ that assess the personal impact (as discussed under point 2.2.1) of the disease and found that this individual personal impact scale lends more meaning to disability scores, improving the interpretation of clinical research data [44].

Transformation of meaning perspectives in patients with RA appears to be positively influenced by the OT rehabilitation process. They showed that some of patients' definitions were transformed, e.g. "dependant" to "interdependent, "laziness" to "personal limitation" and "incompetence" to "self-responsiveness". This indicated that self-respect was positively appreciated [22].

Self-Management Skill Strengthening

Taal et al reported on the revised arthritis self-management programme (ASMP) by Lorig et al, which strongly emphasises the enhancement of self efficacy and showed significant improvements with regards to pain, disability and depression [20]. Hammond et al's RCT on patients with early disease showed that an intensive OT programme was successful in leading to greater use of self management [19].

A meta-analysis by Warsi et al suggests that arthritis self-management education programmes lead to small but significant reductions in pain and disability. It is generally assumed that these programmes are a highly effective and relatively inexpensive way of providing patients with tools to better manage their arthritis [60].

Theoretical Models

Eleven studies provided information on a theoretical model, which seemed to lead to greater effects on changes in knowledge only [20]. Cognitive-behavioural programmes however, show good benefits in changing behaviour and health status. This finding indicates that changes in coping with pain may mediate health status outcomes [20].

Self-Efficacy

10 studies employed methods based on a self-efficacy approach. Both short and long term effects were found on self-efficacy expectations, changes in behaviour, pain or physical health and psychosocial health status [20]. Lorig et al noted that with the ASMP groups, self-efficacy appeared to increase as time passes [26].

A RCT study by Nunez et al [27], subsequent to reviews/meta-analysis by Taal et al [20] and Steultjens et al [13] looked at 43 patients and the effect of therapeutic education added to conventional drug therapy. The programme was based on theories of social learning and self-management and used strategies of active learning. The therapeutic education and functional re-adaptation (TEFR) programme lasted for 1 year and combined individual and group treatment

sessions. The TEFR included energy saving principles, joint protection, pain control and physical exercise. The conclusion was that the TEFR plus pharmacological therapy significantly improved disability measured by the HAQ, pain intensity, number of tender and swollen joints and global patient and physician disease assessment at 18 months with respect to baseline [27].

In conclusion, it would seem that programmes that included group treatment were better at improving knowledge and physical health status, but not psychosocial health status. Self efficacy-enhancing education for RA patients improved health status independently of the forms of behaviour that were taught. The use of educational-behavioural approaches and increased teaching time, to motivate and teach skill effectively, also appears to be important.

2.4.3 Implementing the use of assistive devices

An assistive device (AD) is any item, piece of equipment or product system, whether acquired commercially, modified or customised, that is used to increase, maintain or improve the functional capabilities of individuals with disabilities [61].

Patients have reported that some AD make their tasks easier [59]. In a local study at the Pretoria Academic Hospital Occupational Therapy department, they issued 111 AD to patients with RA in 2002. Of these they found that 83% of all assistive devices in use are designed to compensate for loss of strength. This included dagger knives with built up handles and tap turners. 11% of AD's were used to compensate for dexterity [61]. Nordenskiold reported a significant decrease in pain when assistive devices were used while performing kitchen tasks. It is not clear whether the reason for the use of the ADs is because of loss of strength specifically or compensates for dexterity [17].

Of the two studies reviewed by Steultjens et al which focussed on ADs, only one had a sufficient methodological quality. They concluded however that there was insufficient data to determine the effectiveness of ADs exists [13].

2.4.4 Splinting

The aim of splinting is to support tender and swollen joints, decrease pain, prevent and improve deformity. From talking to patients at the Chris Hani Baragwanath OT RA Clinic, one is led to believe that these aims are achieved in various patients:

Support:

Patients have reported a reduction in hand function as a result of wrist pain. When the wrist is supported in a splint, pain is reduced and hand function improves [59].

Rest:

It is thought that joint motion aggravates inflammation and increases pain. Therefore, immobilising the joint in a splint should reduce stress to the capsules and ligaments, allowing the muscles to relax, eliminating pain with motion and reduce inflammation [59].

Prevention or correct deformity:

Splinting has been successfully used to manage ulna drift at the MP-joints [59].

Studies reviewed by Steultjens et al [13], considered these factors when assessing the effectiveness of splints with rheumatoid arthritis patients:

- Compliance -in the RCT, positive significant results on compliance in use of splints was reported.
- Reduction in pain – this was assessed with regards to two aspects – reduction in pain immediately after provision of the splint and after a period of time. Only four of sixteen studies reviewed by Steultjens et al, showed a significant decrease in pain when splints were used.
- Grip strength - grip strength was assessed with regards to two aspects – immediately after provision of the splint and after a period of time. In two high quality studies it was reported that patients had an increase in grip strength while wearing the splint, but it was found that there are no significant differences in the groups where grip strength was measured after wearing the splint for some time.
- Range of motion - four studies measured range of motion, and in the two high quality RCTs no significant differences between the groups who used splints

and those who did not, was found. One low quality RCT demonstrated significant improvement after patients wore an anti-boutonniere splint for six weeks.

There are thus indicative findings that splints are effective in reducing pain both immediately after provision and after splinting over a period of time. Also, there are indicative findings that splinting has a negative effect on dexterity. Furthermore, indicative findings for a gain in grip strength immediately after provision of the splint have been reported [13].

There is no detailed research on the long-term benefits of splinting and it is clear that a lot more high quality studies are needed to prove both the role and efficacy of splinting.

2.4.5 Comprehensive Intervention

When evaluating comprehensive OT intervention Steultjens et al found only four studies. They concluded that there is limited evidence for the effectiveness of comprehensive OT intervention due to the poor methodological quality of the studies completed to date [13]. Studies can be divided into effectiveness for those with longer duration of disease and those with new onset.

In a study where average disease duration was 14.1 years, a significant positive effect of comprehensive OT on functional ability was found by Helewa et al [14]. This was a high quality RCT, level 1a, (criteria explained under 2.3). The study, done in Toronto, Canada, focussed on the effectiveness of a home OT programme to improve function for adults with RA compared to a control group. Patients facing problems in self-care, light housekeeping and mobility received a total evaluation of disease activity. Activities of daily living (ADL) were enhanced by education on joint protection, positioning, proper footwear, use of splints, foot splints and assistive devices, use of mobility devices, advice on leisure activities, psychosocial counseling and stress management. Statistically significant improvements in composite scores consisting of active joint count, grip strength, ESR, morning stiffness, and functional change were reported in the treatment group ($p = 0.04$) [14].

They found that patients with RA clearly benefited from an OT programme in their own homes [14].

It should be noted that the mean disease duration of the patients in the other studies discussed to this point was two years or more.

Cohen et al support these findings in their study which compares the contributions of home therapy with those of traditional physical therapy. They report that home therapists used in patient and family counseling, lend emotional support and reinforce motivation as well as contributing to important evaluations which help to avert potential problems. Home therapists can periodically check the techniques taught *in situ* [24].

Li and Iverson when considering the effects of rehabilitation in 2005 looked at the outcomes of rehabilitation and reviewed comprehensive Occupational Therapy programmes for patients with average disease duration of between 7.5 and 15.6 years [62]. None of the studies reviewed included home based intervention.

They reported on a six week workbook-based education program with a comprehensive programme. Patients (n=25) chose to attend individual or group sessions of two to four where assistive devices and splints were provided when needed. Patients in the workbook group (n=16) also attended standardized education sessions for 1.5 hours a week over a period of 6 weeks. They observed that 50% of patients in the workbook group versus 22% in the traditional group achieved a better balance of rest. The result was however not statistically significant (P = 0.10). In addition, 50% in the workbook group demonstrated greater improvement in physically active time ($p = 0.07$) [62].

The second study found a group attending comprehensive OT groups and cognitive behavioral therapy (CBT) improved in disease-specific knowledge when compared with a control group. The CBT group demonstrated moderate changes in pain coping behavior [63]. Neither groups showed significant changes in physical, psychological, nor social health status compared with the control group. Findings

of this study should be interpreted with caution because some vital information is missing [62].

The research in treatment of RA in newly diagnosed patients shows that needs and treatment for patients with early RA may differ from those with advanced disease. Here the emphasis is more on prevention and maintenance of joint integrity. The effects of OT are not as easily measured at this stage.

Li et al [62] also reported on Hammond et al that studied patients with early RA receiving comprehensive OT versus usual medial care. The comprehensive OT included individual and group sessions. Assistive devices and referral to community resources were provided if needed. There were no significant differences for disease activity, physical, functional, and psychosocial measures between groups, although more patients in the OT group practiced self-management methods at 6 months and this trend was maintained when assessed at 12 and 24 months [62].

In conclusion, there does seem to be limited evidence that comprehensive OT intervention is effective. For the purpose of this study, literature on comprehensive OT intervention with additional home based intervention was critical ($p < 0.05$). Only two studies could be found meeting these criteria [14, 24]. There is evidence to support that this approach to treatment can lead to significant improvement in OP.

2.5 EFFECTS OF ETHNICITY AND SOCIOECONOMIC STATUS IN RA

The disease is known to occur in all populations, although much of the work on the impact of the disease on functional disability and mortality has been done in the industrialised world. In SA, there is evidence of an urban-rural gradient, with virtually no cases reported in some rural areas and 0.9% prevalence in an urban Black South African population. The urban-rural gradient differences in prevalence strongly suggest a role of an environmental agent in the pathogenesis of RA, but no causes have been conclusively identified to explain this variation in prevalence [1].

There is definitely a difference in clinical manifestations in RA between ethnic groups. A study in San Antonio, Texas comparing Hispanics, Non-Hispanic whites (NHW), African Americans (AA) and Asians, showed that there is ethnic variation in both the frequency and types of HLA-DRB1 alleles containing the shared epitope (SE). They also showed later age at RA onset and lower prevalence of subcutaneous nodules among AA were related to a lower frequency in SE. In spite of the degree of ethnic variation in the SE, there are few ethnic differences in the SE's influence on the clinical expression of RA [64].

Iren et al supports this. In a study done at the Washington University School of Medicine, they found that the HAQ disability in RA disease activity was higher in AA than Caucasians. However, ethnicity was not independently associated with the outcomes when socio-economic and psychological factors were taken into account [65].

In Amsterdam they confirmed that patients with low socio-economic status (SES) have worse health outcomes than patients with high SES. However, this difference was only present in patients with disease duration of 0 – 5 years. The results indicated that patients with low SES might have a different perception or interpretation of quality of life than patients with high SES and that they make less use of allied health care [66].

In their service provided to patients in Dallas, Texas Cohen et al developed an allied health care programme that uses inexpensive equipment for the home exercise programme. It includes broom sticks; ropes suspended over doors as pulleys and weights of sandbags or weighted household containers [24]. Although the focus on low cost intervention is emphasised in this programme, their study population still greatly differs greatly from the Soweto population, we therefore still lack evidence and information on what is more effective for the South-African population.

Some preliminary findings on living with RA in the Soweto community indicated that having arthritis has significant impact on one's life not only at the level of

doing various activities of mobility, self care and domestic work, but also at the level of social inclusion and feeling confident in oneself [25].