Conclusion: All groups showed significant improvements over time regardless of treatment. Intensive lumbrical treatment was significantly better only for Purdue left hand, however, dexterity tasks such as Purdue both hands and Purdue assembly also showed greater improvement for this group (D scores were small to moderate). It appears that a more intensive lumbrical treatment may affect dexterity more than strength at 4 weeks follow-up. Future CTS research should examine the effects of more intensive lumbrical treatments on impairments over a longer follow-up period.

Disclosure: N. A. Baker, None; **K. Moehling**, None; **E. Rubinstein**, None; **N. Gustafson**, None; **M. Baratz**, None.

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Clinical Effectiveness and Costs of an Integrated Rehabilitation Programme Compared with Outpatient Physiotherapy for Chronic Knee Pain. Mike Hurley[1], Dr Nicola E. Walsh[2] and Sally Jessep[3]. [1]St George's University of London, London, United Kingdom, [2]University of the West of England Bristol, Bristol, United Kingdom, [3]Kent, United Kingdom

Background/Purpose: Chronic knee pain is a major cause of disability. Management guidelines recommend exercise and self-management interventions. We previously described a rehabilitation programme that integrates exercise and self-management *(Enabling Self-Management and Coping with Arthritic Knee Pain through Exercise, ESCAPE-knee pain*) that produced short term improvements in pain and physical function. Sustaining these improvements is problematic. In addition, the programme is untried in the community where it is most likely to be delivered. This study evaluated the feasibility of delivering *ESCAPE-knee pain* in a community setting, and compared its clinical effectiveness and costs with Out-Patient Physiotherapy.

Methods: This was a pragmatic, randomised controlled trial. 64 people with chronic knee pain were randomised to receive Out-Patient Physiotherapy or the *ESCAPE-knee pain* programme in a Local Adult Education Community Centre. Primary outcome was physical function assessed using the Western Ontario and McMaster Universities Osteoarthritis Index. Secondary outcomes included pain, objective functional performance, anxiety, depression, exercise-related health beliefs, exercise self-efficacy and healthcare utilisation. All outcomes were assessed at baseline and 12 months after completing the interventions (primary endpoint). ANCOVA investigated between-group differences.

Results: Both groups demonstrated similar improvements in clinical outcomes, except health beliefs and self-efficacy where imporvements were greater in *ESCAPE-knee pain* participants. Out-Patient Physiotherapy cost £130 per person and its participants had healthcare utilisation costs over one year of £583, the *ESCAPE-knee pain* programme cost £64 per person and participant's healthcare utilisation was £320.

Conclusion: *ESCAPE-knee pain* and Out-Patient Physiotherapy produced sustained physical and psychosocial benefits, but *ESCAPE-knee pain* cost less and was more cost-effective. Greater improvements in beliefs about the role of exercise in the management of knee pain, and their confidence in their abilty to perform exercise that will help their knee pain (exercise self-efficacy), may make *ESCAPE-knee pain* participants more self-reliant and utilise less healthcare resources, thereby accounting for the better cost-effectiveness of *ESCAPE-knee pain*.

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ARHP Concurrent Abstract Session
Programs and Literacy in Patients with Rheumatolgic Diseases
Tuesday, November 13, 2012, 9:00 AM–10:30 AM

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Initiating an Innovative Training Programme to Improve Access to Musculoskeletal Health Care in Kenya. Anthony D. Woolf[1], Jo Erwin[2], Omondi G. Oyoo[3], Lillian Mwaniki[4], Ingrid Cederlund[5], Paul Etau[6] and Katie Edwards[7]. [1]Royal Cornwall Hospital, Truro Cornwall, United Kingdom, [2]Royal Cornwall Hospital, Teliske, United Kingdom, [3]University of Nairobi, Nairobi, Kenya, [4]Association for Arthritis & Rheumatic Diseases of Kenya, Nairobi, Kenya, [5]Reumatikerforbundet, Stockholm, Sweden, [6]University of Nairobi, Nairobi, Kuwait, [7]Royal Cornwall Hospital, Truro, United Kingdom

Background/Purpose: Musculoskeletal conditions (MSC) are common in Kenya yet the training of primary care physicians in MSC is minimal and there are only 2 full time rheumatologists for a population of 41 million. The aim of this project, supported by ILAR, is to enable early access to appropriate health care for MSC in Kenyan communities. In a collaboration between colleagues in Kenya, UK and Sweden an innovative sustainable training programme has been developed to raise the knowledge and skills of health professionals working in the community in the early detection, diagnosis and management of MSC.

Methods: A programme was developed to train a cohort of mid-grade physicians and patients as trainers in musculoskeletal health. These trainers teach health providers that are the first point of contact for patients in the community e.g. clinical officers. The training emphasises history and examination to identify the musculoskeletal syndrome; the use of basic investigations, diagnosis, management and referral. The trainers work as a physician/patient team with the patients playing a key role in teaching history taking and examination skills and in making health providers aware of the impact of MSC on patient's lives.

Results: A train the trainer session was held in March 2012. 10 physicians and 9 patients were trained to become trainers in a 2.5 day session followed by a one-day demonstration training session which was videoed as a resource for the trainers. The trainers have gone on to deliver training to 150 first contact providers in 4 regions across Kenya. The content and delivery of the trainer and health provider courses were rated by participants as very good or excellent. After the first round of health provider training 75% of participants felt they were well prepared to use the skills in MSC diagnosis and 68% felt they were well prepared to use the skills in MSC management in their daily work. A 6 month post training evaluation is to be completed.

Training patients to be educators has started empowering them in advocacy and self-management. The project recognises the need to work with patients to develop an appropriate self management programme for Kenya and plans to address this in the future.

Conclusion: This sustainable programme has developed a system and resources for delivering effective and appropriate musculoskeletal health care training to first contact health providers across Kenya. It has also raised the level of knowledge and competency of mid-grade physicians so they can fill the gap between first contact providers and hospital specialists. Should the project evaluation show it to be effective in changing practice and improving care for MSC this may provide a template for a programme of MSC training which could be implemented in other low income countries globally.

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2438

The Effect of a Systematic, Personalized Computer Workstation Redesign On Musculoskeletal Symptoms. Nancy A. Baker and Krissy Moehling. University of Pittsburgh, Pittsburgh, PA

Background/Purpose: Musculoskeletal symptoms (MSS), such as pain, numbness or cold, are common and distressing occurrences during computer use. One commonly used method to reduce MSS is workstation redesign which aims to "fit the workstation to the worker" and thereby reduce awkward postures. However, recent systematic reviews have reported that this method may not be effective [1]. This pilot study tested if a systematic method of workstation redesign which focused on 19 areas where mismatch could occur combined with active involvement of the worker in the development of the workstation redesign intervention plan (personalized ergonomics) would reduce or eliminate MSS one month after intervention.

Methods: This was a single group pretest/posttest study that examined 26 computer operators with self-reported computer related MSS of at least 2 in one body area (neck/shoulder, arm/wrist, hand) on a scale of 0 to 10 (with 0 being no pain and 10 the worst possible). Workers completed an MSS survey, as well as a self-assessment of their workstation set-up, the Computer Ergonomic Survey (CES), and were photographed in their computer workstations. An expert in workstation redesign used the results of the CES and photographs to identify in which of the 19 areas mismatch occurred. The expert and the computer operator then developed an intervention plan to rectify these mismatches. Workers implemented this plan over a one month period. Workers then completed the MSS survey again. They also rated their satisfaction with the workstation redesign process.

Results: The 26 computer operators mean age was 46.4 (±10.5). They were primarily female (92%) and used a computer, on average, 6.0 (±1.2)

hours per day. There were significant reductions in MSS for all body areas on both the left and right sides. Reductions in MSS achieved clinically important levels of at least 1 point for the neck/shoulder (left -1.23; right - 1.08), and right hand (1.01). Many subjects reported complete elimination of MSS at follow-up: neck/shoulder – left 35%, right 31%; arm/wrist – left 27%, right 46%; hand – left 27%, right 35%. This change was significant for the left arm/wrist and both hands. The changes reported to have the greatest effect on MSS were: adjusting the chair height to ensure that the feet were well supported (29%), adjusting the monitor height to reduce head tilt (18%), and adjusting the arm support height to support the arm during computer use (18%). Ninety-five percent of subjects reported that they were satisfied with the recommended changes, and 100% reported that they found the process to be helpful and they felt empowered to be able to continue to adjust their workstation to continue reducing MSS.

Conclusion: This study suggests that a systematic method of computer workstation redesign combined with worker involvement lead to significant improvements in computer-related MSS.

Reference

1. Kennedy CA, Amick BC, Dennerlein JT, *et al.* Systematic review of the role of occupational health and safety interventions in the prevention of upper extremity musculoskeletal symptoms, signs, disorders, injuries, claims and lost time. Journal of Occupational Rehabilitation 2010;20:127–62.

Disclosure: N. A. Baker, None; **K. Moehling**, None.

2439

A Brief Exercise and Self Management Programme Improves Upper Limb Disability in People with Early Rheumatoid Arthritis. Lindsay M. Bearne[1], Victoria L. Manning[1], David L. Scott[2], Ernest Choy[3] and Michael V. Hurley[4]. [1]Kings College London, London, United Kingdom, [2]King's College London, London, United Kingdom, [3]Cardiff University School of Medicine, Cardiff, United Kingdom, [4]St George's University of London, London, United Kingdom

Background/Purpose: Upper limb dysfunction occurs early in people with rheumatoid arthritis (RA) and deteriorates as the disease progresses, impacting on independence and work capacity. Exercise is a important component in the management of upper limb disability, however, studies focus on the hand in isolation and do not address potential proximal motor deficits. Individually tailored, home exercise regimens are required to address global upper limb dysfunction which, if completed in the long term, could encourage self management. This study evaluated the efficacy of a gobal, upper limb home exercise programme supplemented with a brief supervised exercise, education and self management (Education and eXercise Training in early Rheumatoid Arthritis (EXTRA)) programme.

Methods: 108 adults with RA of less than 5 years duration (26 males, age mean (SD) 55 (15) years, disease duration 20 (19) months) were randomized to receive either Usual Care (n= 52) or the EXTRA programme (n=56). This progamme is a tailored home exercise regimen, focused on improving upper limb function, which is supplemented with 4 group supervised exercise, education and self management sessions, aimed at improving self efficacy and disease self management (2 sessions per week for the first 2 weeks, each session lasting approximately 1 hour, with 4–6 participants per group). Upper limb disability (Disability of Arm, Shoulder, Hand questionnaire (DASH)), grip strength, function (Grip Ability Test (GAT)), self efficacy (Arthritis Self Efficacy Scale - pain subscale (PSE)) and disease activity (Disease Activity Score (DAS 28)) were assessed at baseline, 3 months (primary end point) and 9 months. Intention to treat analysis using full factorial mixed Analysis of Variance (ANOVA) (treatment, time and treatment × time interaction) adjusted for baseline disease duration, disease activity and disability, and corrected for multiple comparisons, were used to determine between group differences,. Significance was accepted at $P<0.05$.

Results: Compared to a usual care control group, participants who completed the EXTRA programme demonstrated improved disability, function, non dominant grip strength and self efficacy with no adverse effects on disease activity (Table).

Table. Changes in disability, grip strength, function, self efficacy and disease activity following the EXTRA programme or Usual Care

Mean (95% Confidence intervals)	EXTRA programme	Usual Care	Between Group Differences	Effect size (95% CI)(P value)
Disability (DASH)				
Baseline	44.6 (37.2,52.0)	40.8 (33.6,48.0)	3.8 (-6.6,14.1)	
change at 3 months	-5.3 (-10.4,-0.2)†	1.5 (-3.5, 6.5)	-6.8 (-12.6,-1.0)†	0.5 (-2.3,3.3) **(0.022)†**
change at 6 months	-2.7 (-9.5,4.2)	-1.4 (-8.0,5.3)	-1.3 (-9.1,6.5)	0.1 (-3.7,3.9) **(0.730)**
Dominant Grip Strength (N)				
Baseline	183.3 (150.2,216.5)	220.5 (188.5,252.4)	-37.2 (-83.2,8.9)	
change at 3 months	23.1 (0.8,45.4)	0.3 (-21.2,21.8)	22.9 (-2.4,48.1)	0.35 (-12.0,12.7) **(0.140)**
change at 6 months	16.0 (-14.3,46.2)	-3.0 (-32.1,26.2)	18.9 (-15.3,53.2)	0.21 (-16.5,17.0) **(0.480)**
Non Dominant Grip strength (N)				
Baseline	171.7 (139.9,203.6)	214.2 (183.5,244.9)	-42.5 (-86.7,1.8)	
change at 3 months	17.5 (-1.9,36.9)†	-6.8 (-25.5,11.9)	24.3 (2.3,46.3)†	0.43 (-10.3,11.2) **(0.037)†**
change at 6 months	6.1 (-22.7,34.9)	-8.4 (-36.1,19.4)	14.5 (-18.2,47.1)	0.17 (-15.8, 16.1) **(0.648)**
Function (GAT seconds)				
Baseline	23.1 (19.3,26.8)	21.9 (18.3,25.5)	1.1 (-4.0,6.3)	
change at 3 months	-1.8 (-5.1,1.5)‡	1.5 (-1.6,4.7)	-3.3 (-7.0,0.4)†	0.4 (-1.4,2.2) **(0.010)†**
change at 6 months	-0.8 (-4.7,3.0)‡	-0.5 (-4.2,3.2)	-0.4 (-4.7,4.0)	0.0 (-2.1,2.1) **(0.130)**
Self efficacy (PSE)				
Baseline	57.5 (50.7,64.2)	59.2 (52.9,65.6)	-1.7 (-11.0,7.5)	
Change at 3 months	4.8 (-3.1,12.8)	-5.7 (-13.2,1.8)	10.5 (1.6,19.5)†	0.53 (-3.8,4.9) **(0.020)†**
Change at 6 months	6.6 (-0.8,14.0)	-1.8 (-8.8,5.2)	8.4 (0.1,16.7)†	0.45 (-3.6,4.5) **(0.047)†**
Disease Activity (DAS28)				
Baseline	5.3 (4.7,5.9)	4.9 (4.4,5.5)	0.4 (-0.4,1.2)	
change at 3months	-0.8 (-1.4,-0.2)‡	-0.1 (-0.7,0.4)	-0.7 (-1.4,0.0)†	0.55 (0.2,0.9) **(0.048)†**
change at 6 months	-0.8 (-1.4,-0.1)†	-0.2 (-0.8,0.4)	-0.5 (-1.2,0.1)	0.43 (0.1,0.8) **(0.120)**

‡ $P<0.01$
† P0.05

Conclusion: The EXTRA programme improves upper limb disability, grip strength, self efficacy and function in people with early RA, with no detrimental effects on disease activity. This brief intervention may be easily implemented into clinical practice.

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Decisional Conflict Among Vulnerable Patient Populations with Rheumatoid Arthritis Is Associated with Limited Health Literacy and Non-English Language. Laura Trupin, Jennifer Barton, Gina Evans-Young, John B. Imboden, Andrew J. Gross. Dean Schillinger and Edward H. Yelin, UCSF, San Francisco, CA

Background/Purpose: Suboptimal communication in shared decision-making among vulnerable populations has been reported in rheumatoid arthritis (RA). National and international recommendations for quality health care highlight the importance of patient-centered care and involvement of patients in decision-making. The concept of decisional conflict captures the extent to which patients lack adequate information and support to make an informed health care decision. The objective of this study was to identify patient-level factors associated with high decisional conflict in RA treatment decisions among vulnerable populations who are at highest risk for poor health outcomes.

Methods: Data derive from a subset of participants in the RA Cohort Study, which enrolls adult RA patients from university-affiliated rheumatology clinics at an urban county hospital and a tertiary care facility. Enrollment for the present study occurred from September 2011 to May 2012; eligibility included having moderate to high disease activity, defined as a RAPID-3 score >6, and being a member of a vulnerable population based on the following criteria: immigrant, ethnic/racial minority, non-English speaker, age >65, or limited health literacy. Eligible patients completed a questionnaire in English, Spanish, or Chinese immediately after their clinic appointment. The questionnaire included a screening measure of health literacy, a series of true-false questions about RA and its treatments, and a low-literacy version of the 10-item Decisional Conflict Scale (DCS), given to patients who reported discussing a medication change with their doctor. DCS scores were compared by gender, race/ethnicity, age, and language using non-parametric ANOVA (Kruskal-Wallis) tests. Correlations among DCS, RA knowledge, and health literacy were assessed with Spearman correlation coefficients.

Results: Of 163 cohort members screened, 97 had active disease according to their RAPID-3 score and were enrolled in the study; 48 of those patients reported receiving a new prescription or discussing a medication change and were included in this analysis. Mean age was 59 (±12), 75% were women, 58% immigrants, 82% ethnic minorities, 35% Spanish or Chinese speakers, 61% had limited health literacy. DCS scores ranged from 0 to 80 (higher scores indicate more decisional conflict). Scores were significantly higher ($p<0.01$) among Chinese (45±7) and Spanish speakers (23±6) compared with African Americans (14±7) and Whites (12±8), but did not

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AMERICAN COLLEGE OF RHEUMATOLOGY
EDUCATION • TREATMENT • RESEARCH

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ABSTRACT SUPPLEMENT

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