

patients who contributed to the wording and the simplification of the questions re: ethnicity.

Questionnaires were offered to all patients attending the CMH Rheumatology Unit. The evaluation was discontinued when a target of 100 was reached ($n=102$). No questionnaires were excluded. And upto 5% of questions were unanswered. Data was analysed on SPSS.

Results: The Number of questionnaires returned for this service evaluation was 102.

- Most respondents (94%) showed compliance with rheumatic medication as prescribed.
- More than half the respondents (66%) agreed or strongly agreed that their arthritis medications are necessary for their health.
- 54% were concerned about potential adverse consequences.
- The overall necessity score (19.32 S.D. 3.17) was higher than the concerns score (13.48; S.D. 3.35; $t=61.57$, $P<0.001$).
- Concerns about the long term effect of rheumatic conditions correlate positively with perceptions of health in the future $P<0.01$ level (2-tailed Pearson).
- No significant correlation was found between compliance and patient's ethnicity/individuals demographics.

Conclusions: Most people with Rheumatic conditions have positive beliefs about the necessity of their medication. However, levels of concern are high, especially towards the long-term effects of the medication. This concurs with asimilar study in Rheumatoid Arthritis.(2). The service evaluation using the Beliefs about Medicines Questionnaire has helped to identify people at risk of poor compliance long term. This illustrates a need to discuss patients beliefs and concerns in targeted drug counseling sessions with specialist nurses. A post study patient focus group recognised the high level of compliance yet recommended a fixed weekly walk in session with a nurse and pharmacist to sustain this high quality outcome. Further methods of continued patient re-education will be explored.

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Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.4738

HPR service developments, innovation and economics in healthcare

AB1242-HPR NUMERICAL PREDICTION OF THE OPTIMUM SHEET METAL THICKNESS IMPLANTED AS THE JOINT CARTILAGE

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Background: The combination of computer-aided-design (CAD), digital image processing techniques and finite element method (FEM) has been successfully employed to create the customized distal condyle implants in human joints during arthroplasty surgery when the manufacturing method is incremental sheet forming (ISF) technique. However, due to the high time of process in the FEM analysing of human joints, finding the optimum material thickness with respect to the joint cartilage has been neglected.

Objectives: To apply a numerical investigation based on the FEM to predict and propose the sheet metal thickness for joint cartilage in the ISF process in a timely method for the human knee as a case study.

Methods: To reduce the expense of experiments and save the time of production, a numerical investigation method based on FEM is designed for the ISF. The user subroutine is employed to navigate the tool motion and material behaviour for reducing the time of simulation in the analysing tool. Hence, the sequence of FEM applied was as follow. 1) Create the solid model of the clamping system and sheet metal. 2) Choosing associated nodes together with Shell elements to increase the accuracy of the simulation and simplify the process. 3) Applying the specifications of every element. 4) Assign and render the material properties for sheet metal. 5) Apply the initial boundary conditions. 6) Assigning the asymmetric boundary conditions using the subroutine for time reduction purpose. 7) Apply the loads related to the complete FEM. Consequently, the proper thickness from MRI based on the previous study is sent to the CAD system for the mechanical and anatomical modification.

Sheet metal thickness and also material selection were based on the joint mechanical properties, shape and size. Therefore, by using the optimum pressure profile, the FEM can be performed to predict the sheet stretch and also shear failure to illuminate the optimum sheet thickness used in customized medical implants.

Results: The result of this study is based on the validation of predicted sheet thickness with the real patient cartilage thickness. This result showed a good agreement with the hospital data (for cartilage thickness of ~2.20mm) and simulation result (~2.23mm for sheet thickness). It was not possible to divide the model into some sections and only analyse one particular part as a sample.

Therefore, the time of calculation was 23 hours for FEM when a high-performance computer was used. Regarding the same issue, the mesh was not uniform distributed so the time of analysing for each particular location was not the similar and predictable. The shear failure happens on the edge of design and also some locations that a turning point existed.

Conclusions: A numerical simulation is required to predict the material thickness replaced with the joint cartilage. Thus, the mathematical solution is investigated to predict the sheet thickness in the customized production process. Therefore, the result showed 98.5% similarity thickness of sheet metal with cartilage.

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Acknowledgements: The authors are thankful to the Ministry of Higher Education, Malaysia (MOHE) for supporting this research via FRGS/1/2014/TK01/UTP/02/8 research grant.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.2046

AB1243-HPR USING INFORMATION-COMMUNICATION TECHNOLOGIES AND OPPORTUNITIES FOR TELEREHABILITATION IN OCCUPATIONAL THERAPY

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Background: The use of information and communication technology (ICT) in occupational therapy should allow management of chronic diseases by providing support programs in education including the use of multimedia services.

Objectives: In order to determine the presence of information and communication technologies use in the options of telerehabilitation, a survey was conducted 224 newly diagnosed patients with rheumatoid arthritis (RA).

Methods: The quantitative research approach was used with the newly created detected patients with RA treated on Department of Rheumatology at the University Medical Centre Ljubljana. The questionnaire included basic demographic information and questions about the use extent and possibilities for using ICT. The population also accounted for patients with RA diagnosed between 1 January 2014 and 31 December 2015. The data obtained was statistically analysed with the SPSS program IMB 20. The total of 64 survey questionnaires were completed, which represents 28% of the selected population.

Results: 23.4% RA patients don't use internet. 48.4% RA patients use personal computers (PC), and 51.6% patients use smart phones. 35.3% of patients that use PC use it for e-mailing, searching health information (35.4%), video calls (13.3%) and sending messages (15%). Patients who use smart phones use them for calls (31.9%), texting and calls (26.7%), e-mailing (25%), searching health information (12.9%), and video calls (3.4%). There is a positive correlation between the use of modern ICT and the opinion that the interviewed patients would use telerehabilitation services during their rehabilitation. Pearson correlation coefficients are statistically significant with all the ICT. With using a PC ($r=0.602$) and smart phones ($r=0.542$) there is a medium strong positive correlation. Positive coefficients indicate that the surveyed patients who are increasingly using ICT think they could help themselves with telerehabilitation. Increased frequency of ICT usage is associated with potentially greater possibility of using telerehabilitation.

Conclusions: The need for rapid access and exchange of information is the main reason for the use of information and communication technologies in healthcare, and is conditional for the development of e-health. Research provided answers questions about the possibilities of using information and communication technology and rehabilitation services at a distance – telerehabilitation in occupational therapy.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.3728

AB1244-HPR GUIDED SELF-MANAGEMENT FOR PATIENTS WITH RHEUMATIC INFLAMMATORY DISEASES AND FATIGUE – A PILOT PROJECT

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Background: Fatigue is reported to be a common symptom in people with inflammatory rheumatic diseases. It is a complex symptom, characterized by an individual interplay of biopsychosocial factors that has been associated with factors like inflammation, deconditioning, sleep problems, decreased function, pain and psychosocial factors like depression.

Objectives: The main objective was to contribute to improved coping and quality of life in people with inflammatory rheumatic disease and fatigue. Cognitive therapy is one of the common psychological interventions used in the rehabilitation

of people with rheumatic diseases and fatigue. The current intervention was developed as a supplement to medical treatment to strengthen coping and quality of life, and reducing fatigue, depression and pain.

Methods: People with inflammatory rheumatic diseases and fatigue were recruited for 6–9 sessions of cognitive therapy sessions, in addition to treatment as usual at a rheumatology outpatient clinic in Norway. The intervention aimed at reducing fatigue, depression and pain, consisted of four main elements; understanding fatigue, assessment and activity planning, mental and cognitive self-help skills. The project was developed, and data collected at the rheumatology outpatient clinic at Diakonhjemmet Hospital in 2014–2016.

Results: This pilot project recruited 40 people with inflammatory rheumatic disease from a rheumatologic outpatient clinic in Norway. Participants had a disease duration of mean 14 years, they were mainly women (n=36) with a mean age of 45 (Standard Deviation =10) years (Table 1). Repeated ANOVA analyses and Paired t-tests showed promising statistically significant changes on a group level for fatigue and depression, not for pain (Table 2).

Table 1. Demographic data of included patients (n=40)

N=40	Mean values
Age (SD)	45 (10)
Women (men)	36 (4)
Disease duration (years)	14 (11)

Conclusions: This pilot project supports the idea of conducting a trial on the effectiveness of a brief cognitive therapy intervention for people with inflammatory rheumatic diseases and fatigue. ANOVA analyses and Paired t-tests showed promising statistically significant changes on a group level for fatigue and depression, but not for pain, whether these changes are clinically meaningful, and if there is a difference, compared to treatment as usual remains to be explored.

Acknowledgements: This project would not have been possible without the support from the national patient organization, through a grant from the Norwegian ExtraFoundation for Health and Rehabilitation. We acknowledge patients who contributed to this project and the staff at the rheumatological outpatient clinic at Diakonhjemmet Hospital.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.6096

AB1245-HPR NEW HEALTH TECHNOLOGIES AND LIFESTYLE MANAGEMENT FOR PATIENTS WITH OSTEOARTHRITIS

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Background: Osteoarthritis (OA) is one of the most common chronic diseases of the elderly worldwide. It represents significant impairments in terms of quality of life [1]. It notably affects self-care-tasks, body-image, self-esteem, well-being, social-activities and relationships. A wide-ranged field of therapy concepts exist. Medication is often one part, but it cannot solve other existing problems due to OA [2]. The demographic trends combined with the growth of mobile devices among the older population suggest that using digital devices, as a platform for interventions in health, may be a viable way forward and open new opportunities in healthcare [2].

Objectives: To (A) analyse the literature to assistive devices and applications for OA patients and (B) to evaluate existing health applications.

Methods: We performed a systematic literature review on this topic and explored existing mobile and web-based apps. The app findings were classified into those categories of the Activities of Daily Living Model, which were related to the impairments of OA.

Results: We identified 6 studies, which contained relevant information. The main results showed, that there is interest and willingness to utilize mobile Health solutions [3]; a positive impact of web-based interventions; the benefit of online social support regarding the level of patient empowerment [4], self-management, lifestyle, physical activity [5] and self-efficacy [6].

The app exploration results in 16 web-based, 15 iOS and 9 Android applications. The areas most commonly found were disease- and treatment information (n=23),

forum, report, self-help groups (n=16), self- and disease-management (n=11), as well as nutrition tips (n=8).

Conclusions: The recent years have seen a dramatic growth of digital applications. Also, the scientific interest has grown and numerous studies emphasise the power of these solutions to support OA patient in all areas of lifestyle management. Further research is necessary, to investigate the benefit of web-based or mobile applications for persons with OA.

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Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.6652

AB1246-HPR INTRA ARTICULAR OZONE OR HYALURONIC ACID INJECTION: WHICH ONE IS SUPERIOR IN PATIENTS WITH KNEE OSTEOARTHRITIS? A 6-MONTH RANDOMIZED CLINICAL TRIAL

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Background: Knee osteoarthritis (OA) is a common disease with great burden through pain and decreased function (1). Except for knee replacement surgery as a definite treatment (2), there are many other therapeutic modalities including non-pharmacologic choices and some heterogeneous drugs like oral, topical and intra articular ones (3). Recent studies have showed promising results of ozone application in OA (2,4–5).

Objectives: The aim of this study was to compare the effects of ozone therapy versus hyaluronic acid (HA) intra articular injection in patients with knee OA.

Methods: This prospective RCT studied 174 patients in two random groups: ozone and HA. We performed three weekly injections of Hyalgan® versus 10 ml of ozone solution in moderate knee OA patients. Participants were primarily evaluated and 6 months after injection using pain, stiffness and function questionnaires.

Results: No major adverse events were noted in the study. Total WOMAC score decreased in the ozone group from 40.8±9.8 to 20.4±4.9 (p<0.05) and in the HA group from 38.5±7.9 to 17.1±4.2 (p<0.05). A similar trend was observed in pain improvement according to VAS (table 1). Pain, stiffness and function significantly improved in both groups but no differences were found between groups.

Conclusions: Although both ozone and HA can be effectively used for improving function and reducing pain in selected patients with knee OA, neither of the two showed no superiority at 6 months follow up.

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Abstract AB1244-HPR – Table 2. Self-reported fatigue and depression at baseline, after treatment and at 6 months follow-up

Scale	Mean (SD) t1	Mean (SD) t2	Mean (SD) t3	P-value diff ANOVA	Paired t-test T1–3
BRAF fatigue [§]	13.89 (5.4)	10.85 (4.9)	9.46 (5.8)	p>0.001	Diff 4.57 (CI: 2.2/7.0) (p>0.001)**
PHQ [#]	25.13 (5.9)	20.67 (6.8)	18.25 (7.1)	p>0.001	Diff 6.44 (CI: 4.0/8.9) (p>0.001)**
VAS pain [†]	45.54 (24.4)	39.08 (21.1)	36.9 (23.0)	p>0.241	Diff 7.64 (CI: -1.4/16.7) (p>0.096)

[§]BRAF (Bristol Rheumatoid Arthritis Fatigue Multi-Dimensional questionnaire) fatigue global score (0–30), [#]PHQ-9 (Patient Health Questionnaire) depression score (0–70), [†]VAS pain (0–100).

Abstract AB1246-HPR – Table 1

Measure	Ozone Therapy (Mean ± SD)		Raw Mean Difference (SE) [95% CI]	HA Therapy (Mean ± SD)		Raw Mean Difference (SE) [95% CI]
	Before	After		Before	After	
VAS	7.6±2.8	2.6±2.0	-5.0 (0.2) [4.6–5.4]	7.1±3.2	3.0±2.4	-4.1 (0.15) [3.8–4.4]
WOMAC Pain	9.3±4.4	3.2±1.6	-6.1 (0.2) [5.7–6.5]	8.8±4.0	2.9±1.6	-5.9 (0.2) [5.5–6.3]
WOMAC Stiffness	2.3±2.4	1.1±1.6	-1.2 (0.05) [1.1–1.3]	2.1±1.6	1.1±0.8	-1.0 (0.05) [0.9–1.1]
WOMAC Function	29.2±7.0	16.1±4.2	-13.1 (0.15) [12.8–13.4]	27.6±6.6	13.1±3.2	-14.5 (0.3) [13.9–15.1]
WOMAC Total	40.8±9.0	20.4±5.0	-20.4 (0.2) [20.0–20.8]	38.5±8.0	17.1±4.2	-21.4 (0.2) [21.0–21.8]