Abstracts Accepted for Publication

HPR measuring health (development and measurement properties of PROs, tests, devices) —

AB1195-HPR PSORIATIC ARTHRITIS PATIENTS INITIATED ON APREMILAST: A RETROSPECTIVE ANALYSIS OF PATIENT OUTCOMES FROM A WEST LONDON TEACHING HOSPITAL

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Background: Apremilast is an oral phosphodiesterase 4 (PDE-4) inhibitor that reduces disease activity in psoriatic arthritis (PsA) by modulating the expression of inflammatroy cytokines. In December 2015, apremilast received a negative National Institute of Clinical Excellence (NICE) appraisal for its use in PsA, owing to a lack of robust evidence on its long-term impact on patient outcomes and efficacy in improving radiographic progression (TA372).
The role of the drug in the PsA treatment pathway remains uncertain. We present a retrospective analysis of the use of apremilast in 14 patients with PsA within our hospital trust.
Methods: Pharmcay funding applications and medication dispensing records were used to identify suitable patients. All patients commenced on apremilast at Imperial College NHS Healthcare Trust (ICHT) for PsA were included in the analysis.
Results: A total of 14 patients were initiated on apremilast between June 2015 and September 2016 (table1). Of these patients 9 (64%) achieved an adequate response to treatment, defined by NICE as an improvement in at least 2 of the 4 PsA response criteria (PsARC) scores, with no worsening in any of the four criteria.
Of the 5 patients not achieving response, 3 patients discontinued treatment prior to assessment due to intolerable side effects, whilst 2 further patients didnt acheive the appropriate therapeutic response (primary failure).
From the 9 patients that achieved an adequate response only 5 are currently taking therapy, with intolerable side effects causing discontinuation in a further 4. This gives an overall discontinuation rate of 65% (9 out of 14). In the 5 patients remaining on therapy, one patient needed to reduce the drug dose due to side effects, whilst one continued treatment despite tolerable side effects. Of our 14 patients only 3 remained on treatment in the absence of any side effects.
The most common side effects causing discontinuation were nausea and vomiting (3patients, 21%) and mood changes (2 patients, 14%).

Table 1. Patient demographics for all PsA patients initiated on apremilast (n=14). Median time to stopping treatment 4 months.

	Duration (years)	Erosive	Age	Sex	Psoriasis	Previous treatment		Concomitant csDMARD	Duration of treatment (months)	Side effects
						2x csDMARD	bDMARDs			
1	4	N	34	M	Y	Y	Y	Nil	14	Continues N+V but tolerable
2	13	Y	55	F	Y	Y	Y	SSC / HCQ	7	Stopped- primary failure
3	6	N	37	M	N	Y	Y	LEF	4	Stopped- N+V + hangover feeling
4	3	N	42	F	Y	Y	Y	SSZ	2	Responded but Stopped- N+V
5	12	Y	49	F	Y	Y	Y	HCQ / Pred	9	Responded but Stopped- Mood changes
6	22	Y	59	F	Y	Y	Y	MTX / SSC	6	Responded but Stopped- mood changes
7	9	Y	58	F	Y	Y	N	MTX	16	Continues
8	8	Y	62	F	Y	Y	Y	MTX	14	Continues
9	7	N	62	F	Y	Y	Y	SSZ	14	Continues - dose reduced
10	11	N	75	F	Y	Y	Y	MTX	1	Stopped- shingles
11	10	N	56	F	Y	Y	Y	MTX/SSZ	11	Continues
12	10	Y	77	F	N	Y	Y	LEF / Pred	1	Stopped- nausea
13	26	Y	44	F	N	Y	N	MTX	6	Stopped- primary failure
14	17	N	41	M	Y	Y	N	Nil	2	Responded but Stopped- Dizziness

Conclusions: Apremilast was poorly tolerated in our population with only 3 patients continuing the drug with response and without ongoing side effects. Discontinuation rates within ICHT were found to be much higher than those in the original trial data (65% versus 15%). Patients who have continued the medication and tolerated side effects, however have shown a good response to treatment.
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AB1196-HPR A COMPARISON OF PATIENT PREFERENCE AND USABILITY BETWEEN TWO ELECTRONIC GONIOMETRIC GLOVES IN THE MEASUREMENT OF JOINT MOVEMENT IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: Patients with Rheumatoid arthritis suffer from pain, stiffness and reduced mobility of their finger joints. Instrumented electronic goniometric gloves have been developed which can enable dynamic measurements to be made with accuracy and efficiency [1]. This technology could be employed in assessing patients with rheumatoid arthritis and could also be used as an aid to rehabilitation. However, pain and swelling in the joints might limit the applicability of these measurement devices as to date they have not been tested in this patient group.
Objectives: The purpose of this pilot study was to establish the usability of two different electronic gloves in patients with mild to moderate Rheumatoid arthritis. We wished to establish if patients experienced difficulty donning or doffing either glove or if carrying out a series of measurements with the gloves on caused a change in pain and stiffness. We also investigated differences in the usability and preference between the two Datagloves.
Methods: We compared a commercially available electronic glove (the 5DT dataglove 14 Ultra) with a bespoke IMU based electronic glove produced to our specifications by Tyndall National Institute, University College Cork (Figure). We developed a programming interface for both devices to facilitate calibration and detailed evaluation of joint movement. Nine patients with mild to moderate rheumatoid arthritis who were experiencing significant but not severe pain and early morning stiffness in their hands were recruited. After calibration, the patients worked through a protocol of finger flexion and extension movements, which were repeated for each glove and again to test repeatability. The patients completed questionnaires before and after using the gloves on their pain and stiffness levels and at the end of the session on glove donning and doffing usability and preference between the two gloves.
Results: All nine patients were able to don and doff the IMU glove without any difficulty compared to 4/9 for the 5DT glove. Seven of 9 patients expressed a preference for the IMU glove. In 2/9 patients, joint stiffness increased after using the gloves and 4/9 patients reported an increase in pain. Seven out of nine patients were not able to complete the fourth set of movement tests because of discomfort.

Table of Change in Stiffness and Pain after glove use and subject glove preference

Subject	Hand stiffness		Change in in stiffness (VAS)	Hand pain		Change in in pain (VAS)	Preferred Glove IMU or 5DT
	Pre Study (VAS)	Post study (VAS)		Pre study (VAS)	Post study (VAS)		
S1	15	22	NC	27	33	NC	IMU
S2	59	40	–	51	73	+++	IMU
S3	65	61	NC	71	79	NC	IMU
S4	28	28	NC	11	15	NC	5DT
S5	0	44	+++	0	49	+++	IMU
S6	26	77	+++	15	82	+++	IMU
S7	36	34	NC	16	33	+	IMU
S8	0	0	NC	0	0	NC	IMU
S9	25	15	NC	9	19	NC	5DT

+ >10mm increase in VAS; – >10mm decrease in VAS, NC <10mm change in VAS.

Conclusions: Electrogoniometric gloves are usable in patients with rheumatoid

arthritis, but patients cannot tolerate longer protocols without an increase in discomfort.

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AB1197-HPR VALIDITY AND RELIABILITY OF A SMARTPHONE GONIOMETER APPLICATION FOR MEASURING HIP RANGE OF MOTION IN PATIENTS WITH HIP OSTEOARTHRITIS: A PILOT STUDY

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Background: Osteoarthritis (OA) of the hip affects the entire joint structure and function and leads joint capsular changes which result limitation in range of motion (ROM). Therefore, measuring ROM is an essential part of the hip assessment. Various measurement tools are available for determining the ROM such as universal goniometers (UG), digital inclinometers, motion analysis systems. Recently, smartphones equipped with suitable applications are able to measure ROM.

Objectives: The aim of this study was to determine the inter-rater and intra-rater reliability of a smartphone application "PT Goniometer© 2015 Mark Busman" (PTG) and investigate the agreement within PTG versus UG for active hip ROMs in patients with hip OA.

Methods: This study included eight people who were diagnosed with hip OA. Two physiotherapists performed the ROM measurements on affected hips by using PTG and UG. UG was employed as the reference standard. Hip ROM tests were performed in the following order; flexion, abduction, internal and external rotation. Intraclass correlation coefficient (ICC) models were used to determine the intra-rater and inter-rater reliability. The Spearman correlation coefficients were used to establish validity of PTG.

Results: The PTG smartphone application demonstrated good to excellent inter-rater and intra-rater reliability (ICCs >0.75) for all measured hip movements in patients with hip OA. ICC scores, minimum detectable change (MDC_{95}) and standart error of measurement (SEM) values were indicated in Table 1 and Table 2. Additionally,UG and PTG application methods demonstrated positive correlations for all hip movements ($p<0.05$).

Table 1. Inter-rater Reliability of the PT Goniometer Application

Movement	PT 1, PTG (Mean ± SD)	PT 2, PTG (Mean ± SD)	ICC (%95 CI)	SEM	MDC_{95}
Flexion	66.18°±28.87°	63.66°±30.74°	0.99 (0.94–1.00)	0.91	2.52
Abduction	27.98°±12.93°	29.58°±13.03°	0.99 (0.90–0.99)	0.4	1.1
IR	10.86°±10.66°	11°±10.67°	0.99 (0.99–1.00)	0.33	0.91
ER	20.12°±11.74°	21.06°±12.5°	0.99 (0.96–1.00)	0.33	0.91

PT1: Physiotherapist1, PTG: PT Goniometer application, PT2: Physiotherapist 2, ICC: Intraclass correlation coefficient, CI: Confidence Interval, SEM: Standard Error of Measurement, MDC_{95}: Minimum Detectable change at the %95 confidence level, SD: Standard deviation, IR: Internal rotation, ER: External rotation. Table 2. Intra-rater Reliability of PT Goniometer Application

Movement	PT 1, PTG (Mean ± SD)	PT1, RT PTG (Mean ± SD)	ICC (%95 CI)	SEM	MDC_{95}
Flexion	66.18°±28.87°	65.64°±28.58°	0.99 (0.97–0.99)	0.91	2.52
Abduction	27.98°±12.93°	28.58°±13.61°	0.99 (0.98–1.00)	0.4	1.1
IR	10.86°±10.66°	10.96°±10.73°	0.99 (0.99–1.00)	0.33	0.83
ER	20.12°±11.74°	20.46°±11.96°	0.99 (0.98–1.00)	0.37	1.02

PT 1: Physiotherapist 1, PTG: PT Goniometer Application, RT PTG: Retest PT goniometer application, ICC: Intraclass correlation coefficient, CI: Confidence Interval, SEM: Standard Error of Measurement, MDC_{95}: Minimum Detectable Change at the %95 confidence level, SD: Standard deviation, IR: Internal rotation, ER: External rotation.

Conclusions: High correlations obtained in this pilot study suggest that using a smartphone application might be a valid and a reliable method for measuring hip ROM in patients with hip OA and smartphone applications can be used in clinical settings. Studies with larger population are required for further investigation of smartphones' psychometric properties on measuring hip ROM.

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AB1198-HPR PRESENTATION OF A NEW SCALE ASSESSING THE BIOPSYCHOSOCIAL ASPECTS OF HEALING PROPERTIES IN RHEUMATIC PATIENTS

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Background: Exercise programs have been being provided in Hacettepe University for 12 years. The group exercises were transformed into a book named as "Bilişsel Egzersiz Terapi Yaklaşımı (BETY) (1)" in 2014 and were registered as a trademark by the Turkish Patent Institute in 2015. This approach includes cognitive processes in pain management, clinical pilates exercises and awareness of mood state via dance therapy (2).When rheumatic patients participating in BETY sessions, they are evaluated with appropriate scales for their diseases and it is stated that these scales do not express enough the healing properties they feel with BETY.

Objectives: The aim was to develop a new scale assessing the biopsychosocial aspects of healing properties in rheumatic patients.

Methods: After 12 years of treatment, cognitive beliefs about health perceptions were gathered from the patients who participates in the BETY group for at least 5 years, with the open-ended question "What kind of changes did you make in this group?". After elimination of similar sentences, 30 cognitive beliefs about different health perceptions were obtained. The newly developed scale was applied to 89 patients aged 18–69 years (42,94±12.85), who had different rheumatic diseases and were not included in the BETY group. Working questions were determined.

Results: The internal consistency was found to be 0.89. In this process, 5 items that didn't work and had the same meaning were removed from the scale. After this, "What kind of improvements did you make in Daily life by participating in the BETY group?" question was asked to the patients participated in BETY group to narrow the expressions and 5 new sentences are determined. The scale was sent to 24 rheumatologists and 2 physiatrists for expert opinion. 15 rheumatologists and 1 physiatrist were returned. When the survey items were examined on a question-based basis, the acceptance rate of all questions was 70.83%. According to this result, the scale was finalized. Structural validity of the created draft will be investigated in the subheadings of functional activity, pain, sexual life, fear of movement, mood.

Conclusions: As a result, an original scale which will assess the biopsychosocial aspects of healing properties in rheumatic patients is developed. Our future purpose is to investigate the validation of this scale in different rheumatic diseases.

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AB1199-HPR IMPROVING TRIAGE TO APPROPRIATE TREATMENT LEVEL BY USING A COMBINATION OF SCREENING TOOLS IN PATIENTS AT RISK OF DEVELOPING CHRONIC BACK PAIN

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Background: The screening instrument STarT (Subgroups for Targeted Treatment) Back Screening Tool (SBST) identify patients at risk of developing chronic back pain in order to facilitate triage to appropriate treatment level. The SBST takes into account known risk factors such as activity limitations, kinesiophobia and psychological health. However, SBST does not consider pain distribution which is a known predictor of chronic widespread pain (CWP). According to evidenced clinical practice patients with CWP should be referred to multimodal rehabilitation (1).

Objectives: The purpose of the study was to compare screening by SBST with screening of multisite chronic widespread pain (MS-CWP) in a group of patients with back pain and to analyze to what extent the two screening methods identify the same patients at higher risk.

Methods: 73 individuals with a report of chronic back pain ($\geq$3 months during last year) age 40–70 years responded to both screening tools. The SBST stratify patients into low, medium or high risk groups. A pain mannequin was used to categorize patients into no chronic pain (NCP), chronic regional pain (CRP) or chronic widespread pain (CWP) and number of painful areas (0–18). A presence of a CWP in combination with $\geq$7 painful areas was stratified as MS-CWP. The outcome of the different screening tools was analyzed by cross tabulations. The Roland-Morris Disability Questionnaire (RMDQ, 0–24), health related quality of life (EQ5D, 0–1), Fear-Avoidance Beliefs Questionnaire about physical activity (FABQ-PA, 0–24) and work (FABQ-Work, 0–42), Hospital Anxiety (HAD-A, 0–21) and Depression scale (HAD-D, 0–21) were used to describe physical function, health related quality of life, kinesiophobia and mental health.