



UNIVERSITY *of* LIMERICK

OLLSCOIL LUIMNIGH

Louise Larkin

0730149

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A Profile of Irish Physiotherapy Services for Ankylosing Spondylitis (AS)

Louise Larkin

0730149

Supervisor(s): Dr. Norelee Kennedy, Ms. Maria Garrett

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Authors Declaration

I, the undersigned declare that this project which I am submitting is all my own work and that the data presented is authentic.

_____ (Printed Name)

_____ (Signature)

Date / /

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Abstract

Background: Physiotherapy and exercise are main components in the non-pharmacological management of AS (Zochling et al 2006). A minority of the Irish AS population participate in regular exercise (Fitzpatrick et al 2006). No study has explored the physiotherapy services provided to AS patients in the Republic of Ireland (ROI).

Objectives: Identify physiotherapy services provided to Irish AS patients. Ascertain if strategies are utilised to improve motivation to exercise. Determine the correlation between current practice and the available evidence base for AS management.

Methods: Online questionnaire-based survey distributed to the Irish Society of Chartered Physiotherapists Rheumatology clinical interest group (CPR) (n=29), requesting information on assessment, treatment, education, motivation and self-management in AS management.

Results: Response rate of 45% (13/29). 75% (9/12) currently treat AS patients. 88% (7/8) are aware of clinical guidelines for AS management. The most commonly utilised outcome measures are the Bath AS Scores – BASDAI (8/8, 100%), BASFI (7/8, 88%), BASMI and BAS-G (6/8, 75%). The most common treatment methods are home exercise programmes (8/8, 100%), group exercise and advice to undertake regular physical activity (7/8, 88%), and hydrotherapy (6/8, 75%). 100% (8/8) incorporate patient education and promotion of self-management in AS patient management. 75% (6/8) utilise strategies to improve motivation to exercise.

Conclusions: This is the first study to profile Irish physiotherapy services for AS. Patient assessment and education correspond with current guidelines. Exercise programmes are supported by current literature. Other treatment methods are utilised despite limited evidence for efficacy. Strategies are implemented to promote motivation to exercise.

Keywords: Ankylosing Spondylitis; Physiotherapy; Exercise; Motivation; Republic of Ireland

References:

Zochling, J, van der Heijde, D, Burgos-Vargas, R, Collantes, E, Davis Jr, , Dijkmans, B, Dougados, M, Geher, P, Inman, R.D, Khan, M.A, Kvien, T.K, Leirisalo-Repo, M, Olivieri, I, Pavelka, K, Sieper, J, Stucki, G, Sturrock, R.D, van der Linden, S, Wendling, D, Bohm, H. van Royen, B J, Braun, J. (2006). ASAS/EULAR recommendations for the management of Ankylosing Spondylitis. *Annals of the Rheumatic Diseases*. 65(4), 442.
Fitzpatrick, M., Fitzgerald, O., Staines, A., Hurley, D.A. (2006). Quality of life and exercise compliance in patients with Ankylosing Spondylitis: a cross-sectional survey. *Arthritis & Rheumatism*. 54 (9 Supplement), S814-815.

1. Introduction

Ankylosing Spondylitis (AS) is a chronic, progressive, inflammatory disorder primarily affecting the axial skeleton. It causes aseptic inflammation of synovial tissue, spinal ligaments, intervertebral discs and facet joints due to unknown aetiology (Dagfinrud et al 2009). It is characterised clinically by pain and stiffness of the spine and sacroiliac joints (Khan 2002; Sieper 2002), which may result in reduced physical activity, reduced spinal mobility, stiffness, fatigue, sleep disturbances and psychological issues (Karapolat et al 2008). The condition has an insidious onset and typically occurs before the age of thirty (Adams and Hamblen 2001).

The estimated prevalence of AS in European Caucasian populations is 0.1-1.2% (Sieper et al 2006), with a male to female ratio of 2-3:1 (Feldtkeller et al 2003; Keat 2010). An annual incidence rate of 0.5–8.2 per 100 000 population has been reported, with a higher incidence rate in populations with a higher prevalence of the genetic marker HLA-B27 (Sieper et al 2006).

Guidelines for the management of AS advocate a combination of pharmacological and non-pharmacological treatment to optimally control this chronic condition (Zochling et al 2006b) (*Appendix 2*). Physiotherapy and exercise are the primary methods of non-pharmacological management, and are considered important to maintain or improve mobility of the spine and peripheral joints, improve physical fitness, reduce pain and strengthen muscles (Zochling 2006b; Vliet Vlieland and Li 2009). Regular exercise also aims to prevent disease progression (Falkenbach 2003). Levels of participation in physiotherapy and regular exercise in the AS population are significantly lower than recommended (Sundstorm et al 2002; Falkenbach 2003), with a minority of Irish AS patients participating in a therapeutically beneficial regular exercise regime (Fitzpatrick et al 2006).

1.1 Aims

To profile the current physiotherapy services provided to AS patients within the Republic of Ireland (ROI) and investigate if strategies are implemented to improve AS patients' motivation to exercise.

1.2 Objectives

- Identify the physiotherapy services provided to AS patients within the ROI.
- Ascertain if strategies are utilised by physiotherapists in ROI to motivate AS patients to exercise.
- Determine the correlation between current practice and the available evidence base for management of AS patients.

2. Methods

2.1 Ethical Approval

Ethical approval for the survey was received from the University of Limerick Faculty of Education and Health Sciences Research Ethics Committee.

2.2 Sample

Inclusion criterion required that respondents hold membership of the Irish Society of Chartered Physiotherapists Rheumatology clinical interest group (CPR). This group was chosen as a purposive sample, as membership indicates a particular interest in Rheumatology, thus members are most likely to be involved in the management of AS patients.

2.3 Data Collection

The survey was conducted through the SurveyMonkey®™ website (SurveyMonkey.com, LLC, Palo Alto, California, USA), by means of a researcher-designed questionnaire (see *Appendix 1*). Advantages of distributing the survey in this manner include broad geographic distribution, convenience to respondents and guaranteed respondent confidentiality

(Domholdt 2005). The survey required approximately fifteen minutes to complete. Closed and open-ended questions were incorporated in the questionnaire, allowing for extraction of specific information and responses with greater depth and/or breadth as appropriate (Domholdt 2005).

A pilot survey was distributed to the secretary of CPR to ensure that the appropriate aspects of AS physiotherapy services were addressed in the survey. Following minor amendments by the researcher the questionnaire was distributed by the CPR secretary to all members of the group (n=29) via email. The email contained an information sheet about the survey and a hyperlink to the SurveyMonkey®™ website (SurveyMonkey.com, LLC, Palo Alto, California, USA), allowing members access to the online questionnaire. An informed consent sheet was not provided to CPR members because by choosing to respond to the survey respondent consent is implied.

To obtain the highest possible response rate two reminder emails were sent at four-week intervals. Data was collected four weeks after the final reminder email was issued.

2.4 Data Analysis

Inclusion criteria for data analysis were that responses were in English and that a majority of the questions were responded to, in view of the limited sample size. Basic descriptive statistics of percentages and frequency distribution were conducted, using Microsoft Office Excel (2007) software, to analyse data obtained from close-ended questions. Thematic analysis was conducted to evaluate responses to open-ended questions. This inductive process consisted of studying data collected to become familiar with its content, data coding, identification of categories and development of themes (Polgar and Thomas 2008; Carpenter and Suto 2008; Pope et al 2000).

3. Results

A response rate of 45% (13/29) was obtained. Based on colloquial knowledge, obtained through discussion with the Primary Investigator (N.K.), it is estimated that approximately fifteen CPR members who currently manage AS patients were available in clinical practice to participate in the survey. When considered in this context the response rate is much higher, (13/15, 87%), indicating that the results portray an accurate picture of the current physiotherapy services for AS. 42% (12/29) were deemed to be valid responses as 3% (1/29) completed only one question in the questionnaire. The valid responses provide information on the assessment, treatment, educational, motivational and self-management methods utilised by Irish physiotherapists in the management of AS, and additional information on other aspects of AS physiotherapy services. Not all respondents provided responses for each question thus the response rate will be indicated for each section/question where appropriate.

3.1 Respondents

General respondent information is provided in *Table 1*.

Table 1: Responder Profile

Category	Option	n/12	%
Gender	Female	11	92%
	Male	1	8%
Clinical Experience	0-1 year	1	8%
	1-5 years	1	8%
	5-10 years	1	8%
	10+ years	9	76%
Currently Treat AS	Yes	9	75%
	No	3	25%

The majority of respondents (9/12, 69%) work in outpatient (OPD) settings. 8% of respondents (1/12 each) work in inpatient and private practice settings. 15% (2/12) work in other settings, namely rheumatology rehabilitation (1/12, 8%) and education (1/12, 8%). One respondent (1/12, 8%) reported working in both an inpatient and OPD setting.

3.2 Clinical Guidelines and Standards of Practice

88% (7/8) of respondents reported knowledge of clinical guidelines or standards of practice that exist for the management of AS (see *Table 2*).

Table 2: Clinical Guidelines and Standards of Practice Identified

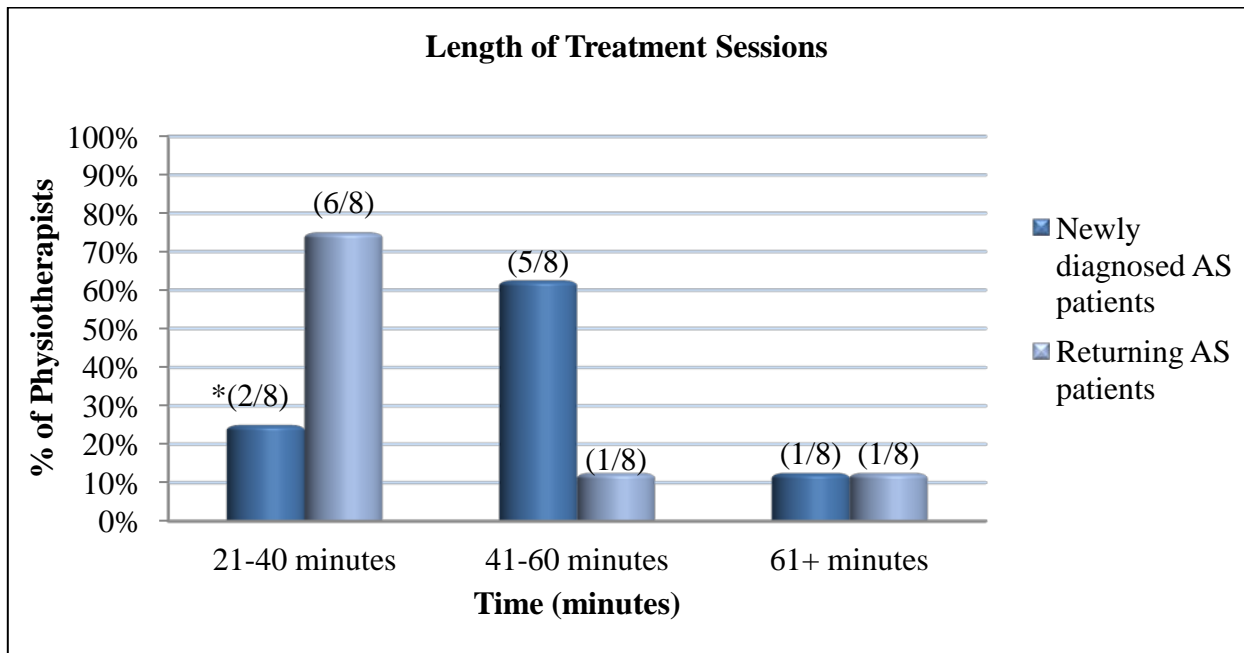
Guideline/ Standard of Practice	n/7	%
ASAS*/EULAR** recommendations for the management of ankylosing spondylitis (Zochling et al 2006b)	5	71%
Adalimumab, etanercept and infliximab for ankylosing spondylitis (NICE*** 2008)	3	43%
ASAS* Handbook: a guide to assess spondyloarthritis (Sieper et al 2009)	2	29%
Bath Scores (BASFI, BASDAI, BASMI, BAS-G) [†]	1	14%
<p>*ASAS = Assessment of SpondyloArthritis International Society **EULAR = The European League Against Rheumatism ***NICE = National Institute for Health and Clinical Excellence [†] BASFI = Bath Ankylosing Spondylitis Functional Index BASDAI = Bath Ankylosing Spondylitis Disease Activity Index BASMI = Bath Ankylosing Spondylitis Metrology Index BAS-G = Bath Ankylosing Spondylitis Patient Global Score</p>		

3.3 Physiotherapy Services

75% (6/8) reported that AS patients account for 0-10% of their patient caseload. 12.5% (1/8) reported that AS patients account for 51-75% of their patient caseload, with the remaining 12.5% (1/8) reporting 11-25% of caseload.

Regular review services are provided by 57% (4/7) of the seven respondents to this question, with five (5/7, 71%) providing further detail. 20% (1/5) reported not providing a regular review service but reviews patients upon receiving a referral from the consultant rheumatologist. Regular review services are provided primarily on an annual basis (4/5, 80%). Other reasons cited for regularly reviewing patients include anti-TNF treatment (1/5, 20%) and monitoring disease status (1/5, 20%). Information on length of treatment sessions was provided by 100% (8/8) respondents (see *Figure 1*).

Figure 1: Length of Treatment Sessions for AS Patients



*Note (x/n): (x) denotes the number of respondents providing this answer; (n) denotes the total number of respondents to the question, e.g. (3/8)

3.4 Assessment and Treatment Methods

The most commonly used outcome measures are the Bath AS Disease Activity Index (BASDAI) (8/8, 100%) and Bath AS Functional Index (BASFI) (7/8, 88%). The Bath AS Metrology Index (BASMI) and Bath AS Patient Global Score (BAS-G) are used by 75% (6/8) of respondents. The AS Quality of Life (ASQoL) is utilised by 38% (3/8). Other outcome measures used by respondents include the Visual Analogue Scale (VAS), Verbal Rating Scale (VRS), Numerical Rating Scale (NRS), Multidimensional Assessment of Fatigue (MAF), Chest Expansion and the Six-Minute Walk Test (SMWT) (1/8, 13% each). The Dougados Functional Index (DFI), AS-Arthritis Impact Measurement Scale 2 (AS-AIMS2), Short Form (36) Health Survey (SF-36) or Health-Related Quality of Life (HRQoL) are not utilised as outcome measures by the physiotherapists surveyed.

88% (7/8) of respondents reported assessing patients three months prior to commencement of anti-TNF treatment. Six respondents (6/7, 86%) who assess patients prior to anti-TNF treatment provided information on their use of outcome measures, with the BASDAI (6/6, 100%), BASFI (5/6, 83%), BASMI (5/6, 83%), BAS-G (3/6, 50%) and ASQoL (1/6, 17%) being utilised.

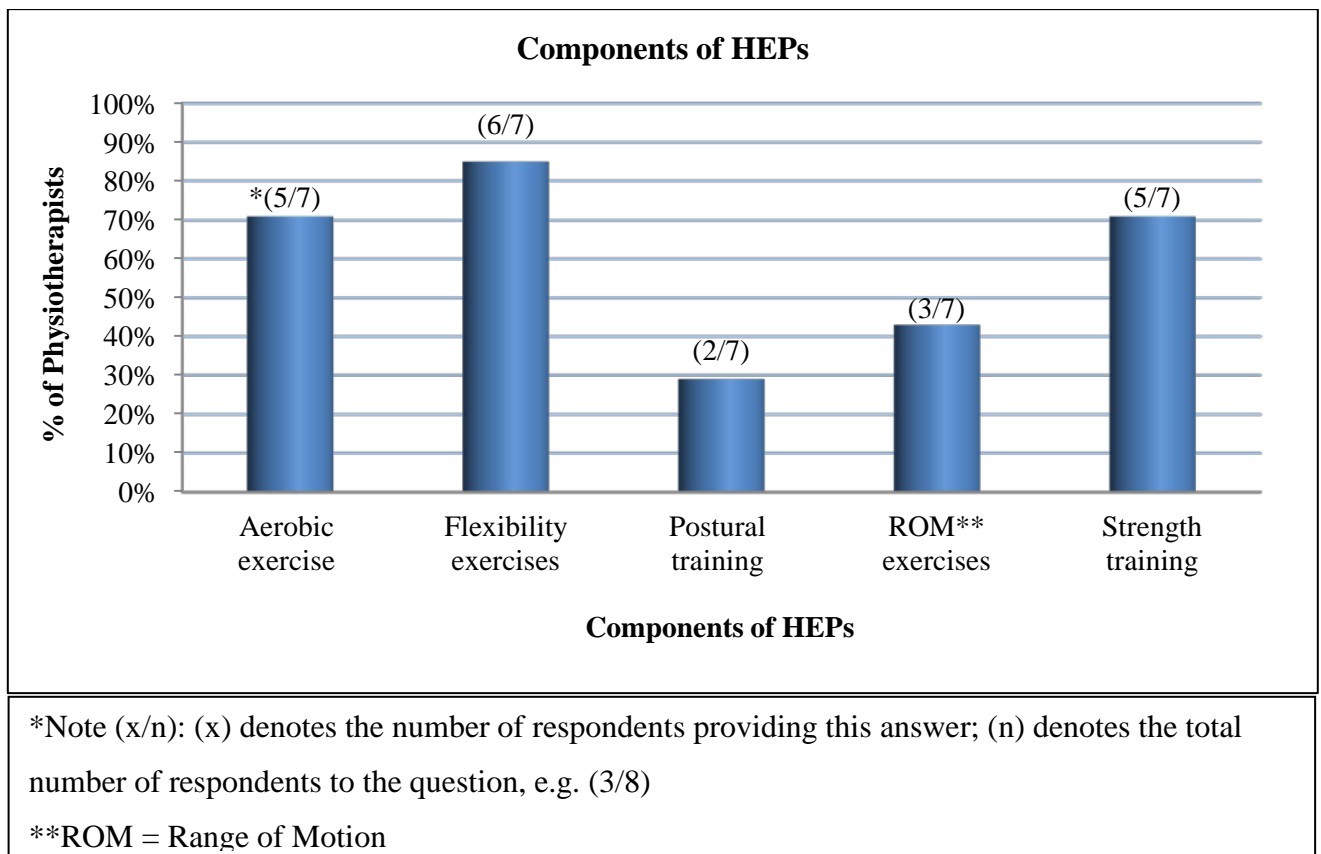
50% (4/8) reported assessing patients three months post anti-TNF treatment, showing the BASDAI (4/4, 100%), BASFI (3/4, 75%), BASMI (3/4, 75%), BAS-G (3/6, 50%) and ASQoL (1/4, 25%) as the utilised outcome measures. One respondent (1/8, 13%) reported utilising Chest Expansion, SMWT and NRS for pain as outcome measures in both pre- and post- anti-TNF treatment assessments.

Home exercise programmes (HEPs) (8/8, 100%) are the most utilised treatment method, with 88% (7/8) providing information on the type of HEP prescribed (see *Figure 2*). Advice to undertake regular physical activity is disseminated by 88% (7/8) of respondents. Group-based exercise is utilised with varying frequency; frequently (4/8, 50%), occasionally (3/8, 38%), never (1/8, 12%). Hydrotherapy is used by 75% (6/8) of respondents, with its frequency of use also varying; always (2/8, 25%), frequently (3/8, 38%), occasionally (1/8, 12%). Less popular treatment methods, used occasionally, include manual therapy (MT)

(8/8, 100%), thermotherapy (7/8, 88%) and electrotherapy (3/8, 38%). Electrotherapy is the least used treatment modality with 63% (5/8) of respondents never incorporating it in the treatment of AS patients.

Further detail on MT was provided by 88% (7/8) of respondents, with passive accessory mobilisations (PAIVMs) being utilised for 0-25% of a treatment session (7/7, 100%) and passive physiological mobilisations (PPIVMs) being utilised for 0-25% (6/7, 86%) or 26-50% (1/7, 14%) of a single treatment session respectively. Other MT techniques used include muscle energy techniques (1/7, 14%), positional release therapy (1/7, 14%) and other soft tissue techniques (2/7, 28%).

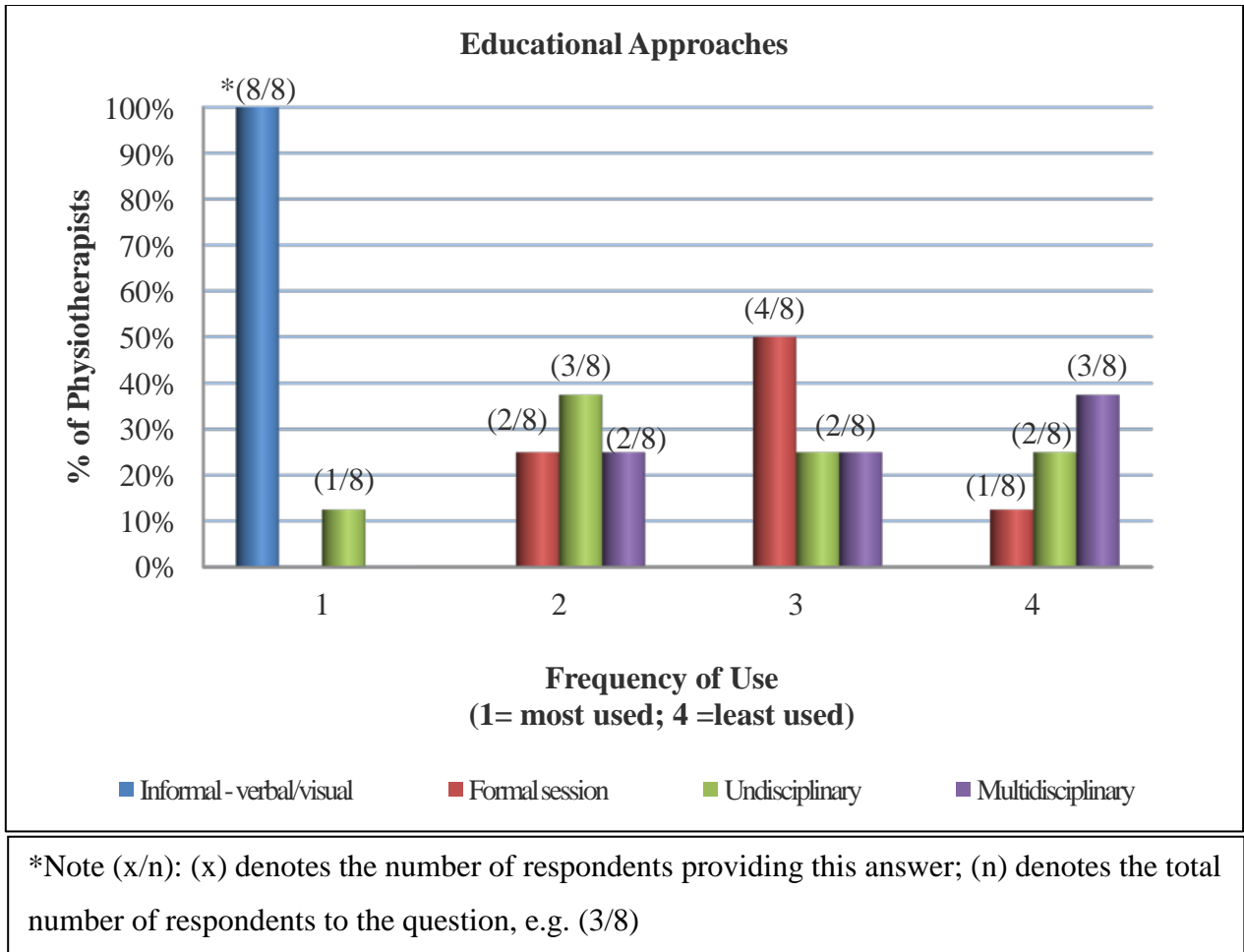
Figure 2: Components of Home Exercise Programmes (HEPs) for AS Patients



3.5 Patient Education

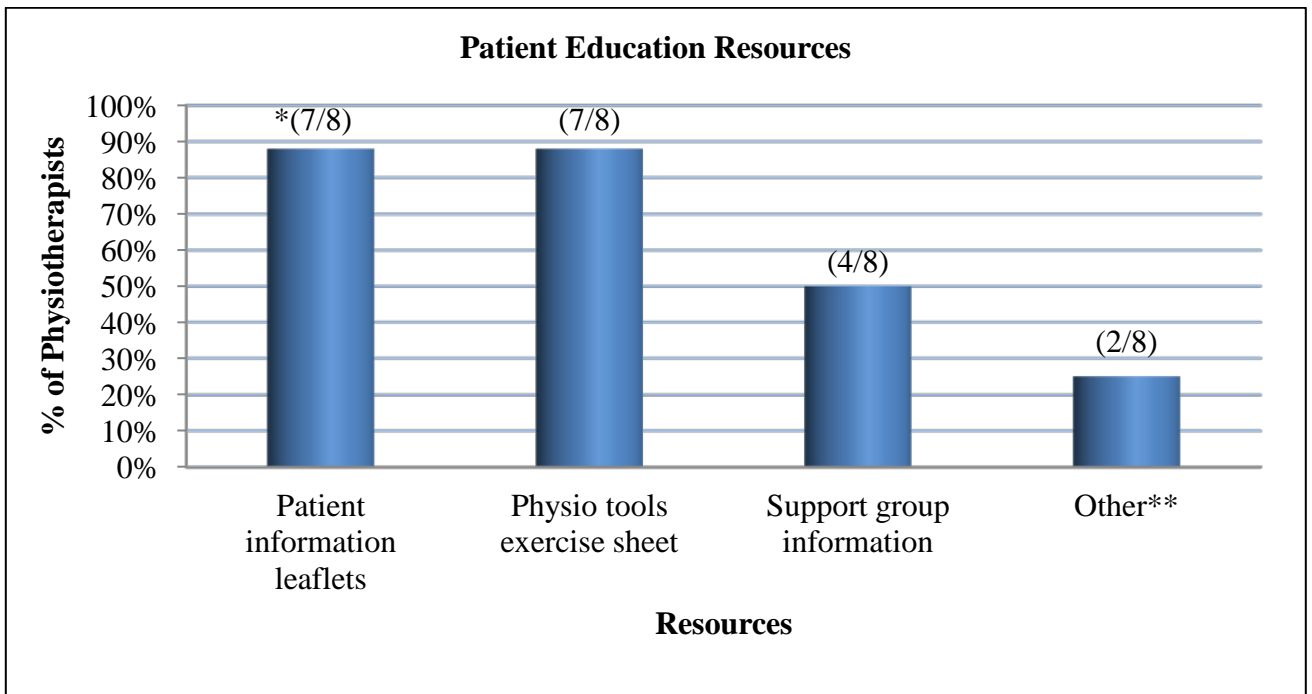
100% (8/8) of respondents reported incorporating patient education in their management of AS patients. The educational approaches utilised are outlined in *Figure 3*.

Figure 3: Educational Approaches Utilised for AS Patients



Eight respondents (8/8, 100%) described the resources they use in patient education (see *Figure 4*).

Figure 4: Resources Always Used in AS Patient Education



*Note (x/n): (x) denotes the number of respondents providing this answer; (n) denotes the total number of respondents to the question, e.g. (3/8)

**Other: Powerpoint education (1/8, 13%); Patient Specific Exercise Cardex (1/8, 13%)

3.6 Patient Motivation

Respondents were asked to explain their understanding of the terms ‘compliance’, ‘adherence’ and ‘motivation’, with 63% (5/8) of respondents providing information. The responses demonstrate that the physiotherapists surveyed understand ‘compliance’ to mean that a patient undertakes treatment “as advised/asked” (2/5, 40%), as “prescribed” (2/5, 40%) or “obeys” set instructions (1/5, 20%). ‘Adherence’ is perceived to be similar to compliance, but on a long-term basis (4/5, 80%) and with more active participation of the patient in their treatment (1/5, 20%). ‘Motivation’ was described as incorporating “desire/drive” (3/5, 60%), “enthusiasm” (1/5, 20%) and “discipline” (1/5, 20%) to undertake an action or pursue change.

100% (8/8) of respondents reported on their communication with patients. 50% (4/8) report that their only contact with patients is within treatment sessions. Other communication with patients is primarily by telephone (4/8, 50%), with 13% (1/8) utilising a letter to offer annual reviews to AS patients. Other forms of communication, e.g. email or newsletter, are not utilised by the physiotherapists surveyed.

Strategies and tools used to maintain or improve patient motivation to exercise were explored. 75% (6/8) employ strategies to maintain or improve AS patients’ motivation to exercise. Certain strategies and tools, with varying content, are common to both newly diagnosed and returning AS patients (see *Table 3*).

Table 3: Strategies/Tools Used to Maintain/Improve Motivation to Exercise in AS

Strategies/Tools	n/13*	Newly Diagnosed AS Patients	n/7*	Returning AS Patients	n/6*
Education	10	About AS	1	3 Week AS-specific programme	1
		Purpose/benefits of exercise	2	Re-iterate self-management principles	1
		3 Week AS-specific programme	1	Reinterpretation of beliefs	1
		Importance of exercise	1	Purpose of exercise	1
		MDT group education	2		
		Self-management principles	1		
		Reinterpretation of beliefs	1		
Information	5	Support group details	1	How to join AS Society	1
		Hydrotherapy facility details	1		
		Leaflets on AS	2		
		Group classes	1		
Encouragement	3	Persuasion to exercise	1	To join AS Society	1
				Participate in Arthritis Ireland meetings on AS in community	1
				To join in community groups, e.g. yoga/pilates/gym	1
				Persuasion to exercise	1
Other	11	Exercise diary	2	Annual review:	5
		Written Materials (HEP leaflet/cardex)	3	- Outline previous outcome measure scores and how they may be changed	2
		Action planning	1	- Explain how exercise/medications have helped	1
		Relate exercise to outcome measures from assessment	1	- Review/progress HEP	2
				- Update of HEP leaflet/cardex	2
				Action planning	1

*Number of responses which included information on the individual strategy/tool section

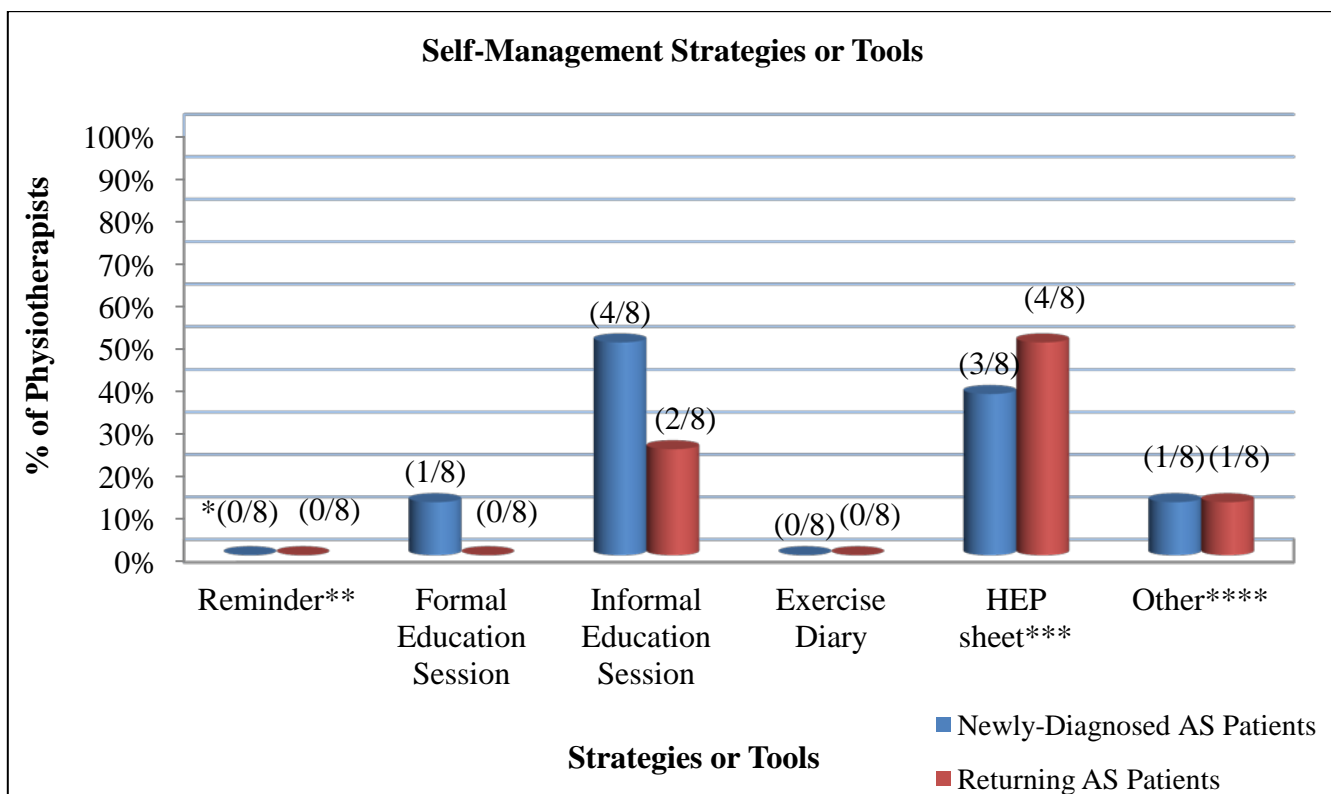
3.7 Patient Self-Management

Respondents were asked to explain their interpretation of the term ‘self-management’. The responses (8/8, 100%) incorporated several key concepts; the patient must have an understanding (1/8, 13%) of the condition, have the “skills” (1/8, 13%) to manage their condition, the confidence (2/8, 25%) to collate understanding and skills to achieve “active” (4/8, 50%), “independent” (3/8, 38%) management of their AS and symptoms (7/8, 88%).

100% (8/8) of respondents employ strategies to promote AS patients’ self-management (see *Figure 5*). Rationale for the use of such strategies was provided for newly diagnosed AS patients (5/8, 63%) and returning AS patients (3/8, 38%). Education is a vital component for newly diagnosed AS patients (4/5, 80%), with one respondent (1/5, 20%) highlighting it as a key component in patient empowerment to achieve self-management. Exercise diaries are used to help motivation with HEPs for newly diagnosed patients (1/5, 20%). For returning AS patients the main issue highlighted is reduced compliance (2/3, 67%). Strategies for returning patients are aimed at reinforcing the importance of exercise and supplying tools (2/3, 67%), e.g. HEP sheet, to aid such reinforcement. Where compliance is not an issue monitoring and suitable progression of exercise is implemented (1/3, 33%). Ensuring that patients have an adequate insight into their condition is also viewed to be important (1/3, 33%) in the promotion of self-management in returning AS patients.

Conflicting views on individual versus group strategies were identified for promoting self-management in newly diagnosed AS patients. One respondent (1/5, 20%) reported that patient compliance increases when strategies are provided on a one-to-one basis, whilst another respondent (1/5, 20%) reported that group-based MDT education may aid reinforcement of ideas. The benefit of a HEP over group-based programmes was also highlighted in this section (1/5, 20%), as it is not always convenient for patients to attend group classes.

Figure 5: Most Utilised Strategies/Tools to Promote AS Self-Management



*Note (x/n): (x) denotes the number of respondents providing this answer; (n) denotes the total number of respondents to the question, e.g. (3/8)

**Reminder via email or text message

*** HEP sheet: Home Exercise Programme sheet

**** Others reported: offer patient 6 week AS class

4. Discussion

4.1 Clinical Guidelines and Standards of Practice

The majority of physiotherapists indicated that they were aware of the current clinical guidelines or standards of practice for the management of AS, namely the ASAS/EULAR management guidelines (Zochling et al 2006b), NICE pharmacological management (NICE 2008) and ASAS guidelines for assessment of AS (Sieper et al 2009). Awareness of such guidelines indicates that current management of AS is evidence-based. One respondent cited the Bath AS scores, and whilst they are neither an individual clinical guideline nor standard of practice, the Bath AS outcome measures (BASFI, BASDAI, BASMI, BAS-G) are the assessment tools of choice in AS (Sieper et al 2009).

4.2 Physiotherapy Services

AS patients make up the minority of patient caseload of the physiotherapists surveyed, reflecting the estimated small AS population in ROI of 44 000 (AS Association of Ireland via email). Disease monitoring is an important component of AS management due to the progressive nature of the disease (Dagfinrud et al 2009), with review services being provided on a regular basis by over half of physiotherapists surveyed. Monitoring of patients should be decided on an individual basis, dependent on symptoms, severity and drug treatment (Zochling et al 2006b), with a recommendation of 3-monthly reviews for active AS disease and annual reviews for stable AS disease being advocated to detect clinically meaningful changes (Kain et al 2008). The survey results reflect that reviews are conducted primarily on an annual basis, thus it is questionable that reviews are determined and conducted on a patient individual basis. However, as the survey did not request respondents to differentiate between active and stable disease status of patients no further conclusions may be drawn.

4.3 Assessment Methods

The physiotherapy assessment of patients with AS, as advocated by ASAS and ASAS/EULAR (Sieper et al 2009; Zochling et al 2006b) should include tools to assess several core domains; patient global assessment, spinal pain, spinal stiffness, physical function, and fatigue (van der Heidje et al 1999, cited in Sieper et al 2009) (see *Appendix 3*). Notably the Bath assessment tools for AS are recommended; BASFAI for function, BASMI for spinal mobility, BASDAI for fatigue, with the VAS/NRS being advocated in the measurement of pain, stiffness and patient global assessment (Sieper et al 2009). Results reflect that the physiotherapists surveyed utilise clinical assessment tools which are supported by current guidelines (Sieper et al 2009; Zochling et al 2006b), with the Bath assessment tools (BASDAI, BASFI, BASMI) being most commonly used. Interestingly, the VAS/NRS/VRS are less commonly used (1/8, 12.5% each) despite their ease of use. A viable alternative to the VAS/NRS in global patient assessment is the BAS-G (Zochling and Braun 2005), which is widely used by respondents. The measurement of global disease activity with the BAS-G may be preferable, as it requires two scores, one referring to the past week and one referring to the patient's average well-being over the prior six months (Zochling and Braun 2005).

A minority of physiotherapists utilise alternative assessment tools, including the MAF, Chest Expansion and SMWT. The MAF has been found to have significant correlation with the BASFI (Turan et al 2007). In spinal mobility assessment the measurement of chest expansion, Modified Schober, Occiput-to-wall, cervical rotation and lateral spinal flexion are advocated (Sieper et al 2009), however results indicate chest expansion is utilised by a minority, with the remaining outcome measures not being employed by respondents. Interestingly, the DFI, AS-AIMS2, SF-36 or HRQoL were not reported as utilised outcome measures, despite their popularity of use in published literature (Zochling and Braun 2005; Cagliyan et al 2007).

Less than half of respondents reported using the ASQoL as an assessment tool, despite the evident implications of AS on life quality (Hamilton-West and Quine 2009; Ward 1999). Other outcome measures, outside of the ASAS core set (van der Heidje et al

1999, cited in Zochling and Braun 2005), may beneficially contribute to the management of an individual patient, with disease-related QoL being worthy of consideration, as it incorporates all three components of disease, i.e. activity, function and damage (Zochling and Braun 2005). The International Classification of Functioning, Health and Disability (ICF) for AS has recently been developed (ASAS/WHO 2010) and may be advantageous in the assessment of patient function in the AS population.

The introduction of TNF blockers has been the most substantial development in the treatment of AS (Braun and Sieper 2007) in targeting spinal pain, function and peripheral joint disease (Zochling et al 2006b). ASAS/EULAR guidelines (Zochling et al 2006b) recommend that evaluation of response to anti-TNF treatment occur between six-twelve weeks after commencement of anti-TNF treatment. The survey found that assessment three months prior to anti-TNF treatment is prevalent, but assessment three months post anti-TNF treatment is undertaken by fewer physiotherapists. The outcome measure advocated for assessment of response to anti-TNF treatment is the BASDAI (Zochling et al 2006b). However the results reflect that the respondents undertake a more comprehensive assessment through the incorporation of the BASFI, BASMI, BAS-G and ASQoL, with a minority utilising Chest Expansion, SMWT and NRS for pain as outcome measures in both pre- and post-anti TNF treatment assessments.

4.4 Treatment Methods

Physiotherapy is an essential part of AS patient management (Mazen and Muhammad Asim 2008; Zochling et al 2006b). Different types of exercise-based interventions can impact on disease outcomes (Zochling et al 2006a), however the frequency and intensity of exercises most beneficial for AS remain undetermined and it is still unclear what treatment protocol (group physiotherapy, HEPs, or a combination) should be recommended (Dagfinrud et al 2009; Sangala et al 2008).

HEPs are the primary component of AS physiotherapy management according to results of this survey. The HEPs prescribed incorporate aerobic exercise, strengthening and flexibility components, and less commonly, range of motion (ROM) exercises and postural

training. Aerobic exercise is widely incorporated and may be a pivotal element in the management of AS patients, who may have a higher risk of cardiovascular disease due to the condition (Peters et al 2010). Strengthening and flexibility/stretching exercises are incorporated by a majority of respondents in HEPs. Recent literature has shown that an exercise regime incorporating strengthening and stretching/ROM improves spinal mobility and function in the AS population (Fernández-de-las-Peñas et al 2005; Fernández-de-las-Peñas et al 2006). The reported multimodal nature of HEPs has some support, with multimodal interventions incorporating aerobic, strengthening, stretching and mobilising exercises improving stiffness, spinal mobility, aerobic capacity and chest expansion (Ince et al 2006; Analay et al 2003). In addition advice to undertake regular physical activity is incorporated by a majority of physiotherapists, which is important given the reported low levels of exercise in the Irish AS population (Fitzpatrick et al 2006).

Individual HEPs are the most common setting for exercise, with half of physiotherapists implementing group-based exercise. The current ASAS/EULAR clinical guidelines do not support one setting over another, and merely advocate physiotherapy on either a group or individual basis (Zochling et al 2006b). Dagfinrud et al (2009) states that supervised, group-based programmes are marginally better than individual based programmes for AS patients, with improvements in spinal ROM, spinal mobility, functional status, global patient assessment, depression and QoL being demonstrated (Analay et al 2003; Cagliyan et al 2007; Dagfinrud et al 2009). Such improvements are also attributed to the contribution of non-physical factors, for example mutual encouragement, increased motivation and exchange of experiences with fellow AS patients (Dagfinrud et al 2009). Group exercise can also maintain long-term compliance (Kain et al 2008). In contrast individual-based HEPs have some beneficial effects when compared with no intervention (Dagfinrud et al 2009) and when incorporated into the daily activities of AS patients, are desirable to maintain spinal mobility and posture (Kain et al 2008). Karapolat et al (2008) demonstrated that a HEP has the same benefits as a supervised, group-based intervention in terms of disease activity, spinal mobility, and some aspects of QoL. HEPs may be preferable in the management of AS because they are time-efficient, more

economical and convenient (Karapolat et al 2008; Wang et al 2009) and often may be more suitable to the individual patient, as highlighted by a small percentage of survey respondents.

Hydrotherapy is commonly used in AS management according to results of this survey. The evidence base is extremely limited, with no study to date investigating the impact of hydrotherapy alone on AS patients. Multimodal interventions incorporating hydrotherapy have found decreased pain intensity, improved spinal mobility and chest expansion (Helliwel et al 1996; Hidding et al 1993) but it is not possible to determine if these results may be attributed to the effects of hydrotherapy alone.

Further research is required for physiotherapy interventions apart from exercise in the management of AS (Dagfinrud et al 2009), with MT being one type of intervention in which an opportunity for further research presents. MT is extensively employed, indicating that an evidence-based approach is not consistently implemented. The limited literature available indicates that a MT intervention of active and passive mobility exercises, soft tissue massage and manual stretching can improve chest expansion, posture and spine mobility in the AS population (Widberg et al 2009).

Thermotherapy is a less frequently used treatment technique, correlating with the limited evidence base for its efficacy. One small observational study indicates that infra-red sauna improves pain, stiffness and fatigue without enhancing disease activity (Oosterveld et al 2009). This conflicts with earlier research finding that thermotherapy negatively affects spinal function (Samborski et al 1992, cited in Vliet Vlieland and Li 2009). Concurring with the lack of evidence for electrotherapy in AS treatment (Vliet Vlieland and Li 2009) the results of this survey reflect that electrotherapy is occasionally used by a minority of Irish physiotherapists in the management of AS.

4.5 Patient Education

Clinical guidelines for the management of AS advocate patient education, and also propose that patient associations may be of benefit (Zochling et al 2006b). Importantly 100% of physiotherapists surveyed incorporate patient education in their management of AS

patients, with half providing patients with support group information. Patient education programmes should provide AS patients with an increased capacity to manage their disease (Ramos-Remus et al 2000), and can significantly improve self-efficacy and motivation in AS patients (Barlow and Barefoot 1996). AS patient education is most commonly provided on an informal basis, with a multidisciplinary approach being least utilised. Interestingly multidisciplinary approaches have shown positive effects, particularly in patients in the early stages of disease or with considerable disease activity (Ehlebrach-Konig and Bonisch 2008, cited in Vliet Vlieland and Li 2009).

The education resources in use by respondents correlate with tools described in current literature for patient education (Barlow et al 2002). Whilst the setting of patient education was not directly investigated it is reasonable to assume that physiotherapists surveyed provide it in their regular work setting, the majority being OPD. Dougados et al (2002) found that patient education can be helpful when provided in an inpatient or outpatient setting, and reinforced with information leaflets. This corresponds with survey results showing that information leaflets are utilised by a majority of respondents in patient education.

4.6 Patient Motivation

Given the relatively early age of onset of AS, exercising regularly for the remainder of a patient's life is a daunting prospect for even the most motivated of individuals (Barlow and Barefoot 1996). The greatest challenge to the success of a HEP is a decline in motivation (loss of compliance or adherence) to exercise (Wang et al 2009). The physiotherapists who participated in this survey displayed an understanding of the concepts of compliance, adherence and motivation, which is important given the low levels of exercise reported in the Irish AS population (Fitzpatrick et al 2006).

The opportunity for ongoing follow-up and verbal support is proposed to be successful in the promotion of physical activity, thus maintaining communication between patients and therapists may be important (Rhodes and Fiala 2009). Half of respondents

reported that they do not maintain communication with AS patients outside of treatment sessions. This may have implications for compliance of patients to HEPs.

A majority of respondents implement strategies to maintain or improve AS patients' motivation to exercise, primarily utilising education and written materials. Patient education may be one means of promoting arthritis self-efficacy in AS, thus enhancing performance of health behaviours, e.g. exercise (Barlow and Barefoot 1996; Newman and Mulligan 2000). Written materials and patient education have also been found to improve self-efficacy for exercise, with written materials being implicated in successfully promoting physical activity (Sweeney et al 2002).

Respondents differentiated between strategies they utilise for newly diagnosed and returning AS patients. In the ongoing management of AS patients continuation of provision of education is important because AS patients report wanting more information, despite receiving high levels of information (Kjeken et al 2006), with current management practices corresponding with this. Consideration of disease severity is important as it can affect motivation to exercise. Those with a greater degree of perceived disease severity are more likely to adhere to an exercise intervention (Barlow and Barefoot 1996), whilst those with less disability exercise less (Falkebach 2003). Disease progression is also implicated in loss of motivation to exercise (Wang et al 2008). Motivation to exercise is affected by barriers (Sundstrom et al 2002) and those reported specifically by the Irish AS population include lack of time and motivation, fatigue and fear of symptom provocation (Fitzpatrick et al 2006). Thus the issue of motivation should be a fundamental consideration in the Irish physiotherapy management of the AS population.

4.7 Patient Self-Management

Responses received from physiotherapists indicate that their understanding of self-management corresponds with descriptions in the literature (Ramos-Remus et al 2000; Barlow et al 2002) and correlates closely with the meaning of self-efficacy in rheumatologic conditions, i.e. the perceived ability to manage symptoms and physical functioning on a daily basis (Barlow and Barefoot 1996).

Promotion of self-management is a salient issue for the AS population (Barlow and Barefoot 1996), and aims to improve patients' behaviours, increase their self-efficacy, and improve long-term outcome (Ramos-Remus et al 2000). Positively, all respondents use strategies to promote self-management. Barlow and Barefoot (1996) demonstrated that a self-management programme improved depression, self-efficacy for general and symptom management, physical function, and frequency of home exercises (Barlow and Barefoot 1996). A self-management programme for AS and other rheumatologic conditions also found positive results in undertaking regular exercise, improved communication with healthcare professionals and enjoyment of receiving peer support (Turner et al 2002).

The tools utilised to promote self-management rely heavily on education and HEP sheets, which have been advocated in the promotion of physical activity (Schneiders et al 1998, cited in Rhodes and Fiala 2009). The results highlighted conflicting views on individual versus group-based strategies. Benefits of a group self-management programme include social support, sharing of experiences and exchanging coping strategies (Barlow and Barefoot 1996). Evidence for promotion of self-management in the wider rheumatologic community has demonstrated that a disease-specific, group-based educational programme, can enhance coping skills and promote behavioural change, e.g. exercise participation (Turner et al 2002). A further consideration is that one-to-one programmes are more costly (Barlow et al 2002).

5. Limitations

Sample size may be considered as a limitation to the survey. Colloquial evidence indicates that not all members of the CPR were available to participate in survey. It is also possible that physiotherapists who do not hold CPR membership may be involved in the management of AS patients.

Questionnaire design may be considered as a limitation. It could be argued that some questions were insufficiently probing, with terminology in some questions being open to the interpretation of the individual respondent.

The evidence base for the physiotherapy management of AS is restricted and must be considered as a limitation to this paper. Several articles which may have been of relevance were in the German language and were not utilised by the author, which may have limited comparison of results with the current literature base in AS.

6. Conclusion

This is the first study to explore the physiotherapy services provided to AS patients in ROI. The study demonstrates that the physiotherapy services provided largely correspond with current AS management guidelines (Sieper et al 2009; Zochling et al 2006b) in the areas of assessment and education. In the absence of physiotherapy specific guidelines the study demonstrates that the use of exercise therapy in AS physiotherapy treatment corresponds with the available literature, whilst other treatment techniques such as MT, hydrotherapy and thermotherapy are utilised despite a lack of evidence to support their use in the AS population. The ideal setting for exercise regimes conflicts both in the literature and survey results and requires further research to resolve this dispute. Strategies are utilised to promote motivation to exercise and self-management, however strategies used for such purposes require further investigation to determine the most efficacious for AS patients.

Further considerations for future AS physiotherapy management include consistent incorporation of QoL outcome measures in patient assessment, multidisciplinary approaches to patient education, consideration of factors which may impact on strategies to improve motivation to exercise, maintenance of communication with patients outside of treatment sessions and the wider provision of group-based self-management programmes. Further research is also required to determine the most efficacious physiotherapy treatment modalities for the Irish AS population.

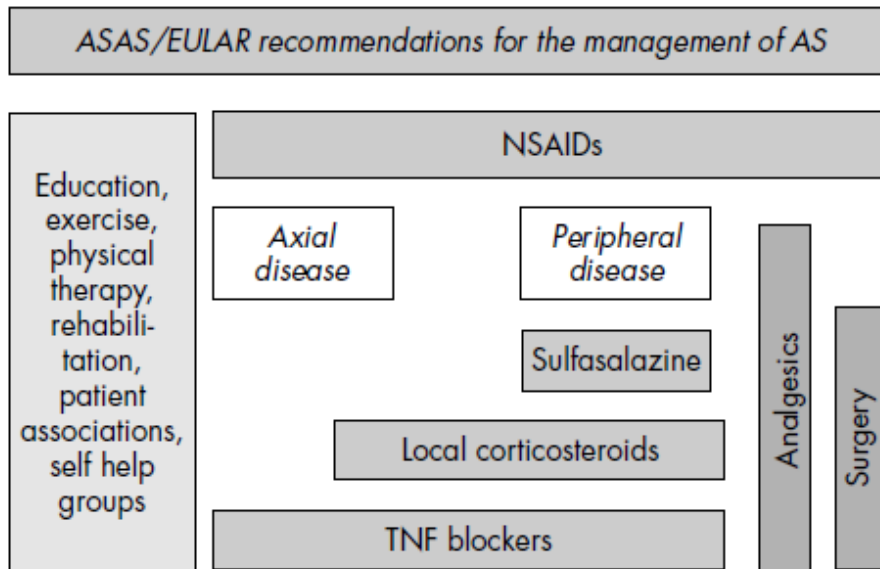
7. Appendices

7.1 Appendix 1: Researcher-Designed Questionnaire

Section	Questions
1. Background Information	<ol style="list-style-type: none"> 1. Gender 2. How many years clinical experience do you have? 3. Please specify the type of physiotherapy service you work in. 4. Do you treat patients with AS?
2. Management Guidelines/ Standards of Practice	<ol style="list-style-type: none"> 1. Are you aware of any standards of practice or clinical guidelines that exist for the management of people with AS? 2. Please name the clinical guidelines(s) or standard(s) of practice that you are aware of.
3. Patient Caseload and Physiotherapy Services	<ol style="list-style-type: none"> 1. Please specify the percentage of your caseload that involves management of patients with AS. 2. Do you offer a regular review service to AS patients? 3. If yes, please specify how often patients are reviewed. 4. What is the average length, in minutes, of a treatment session?
4. Assessment and Treatment	<ol style="list-style-type: none"> 1. What outcome measures do you use to assess AS patients? 2. Do you assess patients prior to anti-TNF drug treatment? 3. If yes, please specify what you assess. 4. Do you assess patients 3 months post anti-TNF drug treatment? 5. If yes, please specify what you assess. 6. Please rank the treatment methods (Manual therapy, Home Exercise Programme, Group-based Exercise, Advice re: regular physical activity, Thermotherapy, Electrotherapy, Hydrotherapy) you use in the overall AS patient care episode (1 = most used, 7 = least used). 7. Please specify the regularity of use for each treatment (Always, Frequently, Occasionally, Never). 8. If you use Manual Therapy as a treatment method please specify the type and frequency of use in your treatment sessions. 9. If you prescribe home exercise programmes for patients with AS,

	detail the typical nature of these home exercises.
5. Patient Education	<ol style="list-style-type: none"> 1. Does patient education form part of your management of AS patients? 2. If yes, which of the following educational approaches (Informal – verbal/visual, Formal, Unidisciplinary, Multidisciplinary) do you use (please rank according to frequency of use, 1 = most frequent, 4 = least frequent). 3. What education resources do you use in treating AS patients?
6. Patient Motivation	<ol style="list-style-type: none"> 1. What do you understand by the terms: <ol style="list-style-type: none"> (i) Compliance (ii) Adherence (iii) Motivation 2. Apart from treatment sessions, what other forms of patient contact do you use in relation to AS patients? 3. Do you use any strategies to maintain or improve AS patients' motivation to exercise? 4. If yes, please specify the strategies and/or tools you use for: <ol style="list-style-type: none"> (i) Newly Diagnosed AS Patients (ii) Returning AS Patients
7. Patient Self-Management	<ol style="list-style-type: none"> 1. What do you understand by the term 'self-management'? 2. Do you use any strategies to promote AS patient self-management? 3. Which of the following tools/strategies (Reminder text message/email/letter, Formal Education Session, Informal Education Session, Exercise Diary, Written Materials) do you use to promote self-management in: <ol style="list-style-type: none"> (i) Newly Diagnosed AS patients (ii) Returning AS Patients <p>(rank according to frequency of use: 1 = most frequent, 5 = least frequent):</p> <ol style="list-style-type: none"> 4. Please comment on your reason(s) for using the top 2 tool(s)/strategies with newly diagnosed AS patients. 5. Please comment on your reason(s) for using the top 2 tool(s)/strategies with returning AS patients.

7.2 Appendix 2: ASAS/EULAR Recommendations for the Management of AS



(Zochling et al 2006b)

2. How many years of clinical experience have you?		
Answer Options	Response Percent	Response Count
0-1 year	8.3%	1
1-5 years	8.3%	1
5-10 years	8.3%	1
10+ years	75.0%	9
<i>answered question</i>		12
<i>skipped question</i>		1

3. Please specify the type of physiotherapy service(s) you work in:		
Answer Options	Response Percent	Response Count
OPD	90.0%	9
Inpatient	10.0%	1
Private Practice	10.0%	1
Primary, Continuing and Community Care	0.0%	0
Other (please specify)		2
<i>answered question</i>		10
<i>skipped question</i>		3

Number	Other (please specify)
1	Education
2	Rheumatology Rehabilitation

4. Do you currently treat patients with Ankylosing Spondylitis (AS)?		
Answer Options	Response Percent	Response Count
Yes	75.0%	9
No	25.0%	3
<i>answered question</i>		12
<i>skipped question</i>		1

5. Are you aware of any standards of practice or clinical guidelines that exist for the management of people with Ankylosing Spondylitis (AS)?		
Answer Options	Response Percent	Response Count
Yes	87.5%	7
No	12.5%	1
<i>answered question</i>		8
<i>skipped question</i>		5

6. Please name the clinical guidelines(s) or standard(s) of practice that you are aware of.		
Answer Options		Response Count
		8
<i>answered question</i>		8
<i>skipped question</i>		5
Number	Response Text	
1	NICE Guidelines on prescribing some medications	
2	ASAS/EULAR practice recommendations	
3	B ATHS Scores	
4	ASAS & EULAR guidelines management AS	
5	EULAR/ASAS recommendations for the management of AS NICE guidelines (medication)	
6	ASAS guidelines EULAR guidelines	
7	ASAS 2009 guidelines Nice	
8	ASAS/Eular recommendations for management of AS	

7. Please specify the percentage of your caseload that involves management of patients with Ankylosing Spondylitis (AS):		
Answer Options	Response Percent	Response Count
0-10%	75.0%	6
11-25%	12.5%	1
26-50%	0.0%	0
51-75%	12.5%	1
76-100%	0.0%	0
<i>answered question</i>		8
<i>skipped question</i>		5

8. Do you offer a regular review service to AS patients?		
Answer Options	Response Percent	Response Count
Yes	57.1%	4
No	42.9%	3
<i>answered question</i>		7
<i>skipped question</i>		6

9. If yes, please specify how often patients are reviewed:		
Answer Options	Response Percent	Response Count
Monthly	0.0%	0
Bi-annually	0.0%	0
Annually	80.0%	4
Other (please specify)	60.0%	3
<i>answered question</i>		5
<i>skipped question</i>		8
Number	Other (please specify)	
1	Reviewed when R/F by Consultant until independent self mgt	
2	Pre and post anti - TNF commencement	
3	depends on disease status, but all pts annual	

10. What is the average length, in minutes, of a treatment session?					
Answer Options	0-20 minutes	21-40 minutes	41-60 minutes	61+ minutes	Response Count
Newly diagnosed AS patients:	0	2	5	1	8
Returning AS patients:	0	6	1	1	8
<i>answered question</i>					8
<i>skipped question</i>					5

11. What outcome measures do you use to assess Ankylosing Spondylitis (AS) patients?			
Answer Options	Every Visit	Annual Review	Response Count
Bath Ankylosing Spondylitis Disease Activity Index (BASDAI)	2	6	8
Bath Ankylosing Spondylitis Metrology Index (BASMI)	2	4	6
Bath Ankylosing Spondylitis Functional Index (BASFI)	2	5	7
Bath Ankylosing Spondylitis Patient Global Score (BAS-G)	2	4	6
Dougados Functional Index	0	0	0
Ankylosing Spondylitis Quality of Life (ASQoL)	1	2	3
Ankylosing Spondylitis - Arthritis Impact Measurement Scale 2 (AS-AIMS2)	0	0	0
Short Form (36) Health Survey (SF-36)	0	0	0
Health-Related Quality of Life (HRQoL)	0	0	0
<i>answered question</i>			8
<i>skipped question</i>			5

12. If you use other outcome measures please specify their names and frequency of use:	
Answer Options	Response Count
	3
<i>answered question</i>	3
<i>skipped question</i>	10
Number	Response Text
1	VAS/VRS
2	Multidimensional Assessment of Fatigue
3	chest expansion/6 minute walk test/nrs pain night and day scores

13. Do you assess patients prior to Anti-TNF drug treatment?		
Answer Options	Response Percent	Response Count
Yes	87.5%	7
No	12.5%	1
<i>answered question</i>		8
<i>skipped question</i>		5

14. If yes, please specify what you assess:		
Answer Options		Response Count
		6
<i>answered question</i>		6
<i>skipped question</i>		7
Number	Response Text	Categories
1	BASDI BASMI BASFI	
2	All of the above	
3	BASMI, BASFI, BASDAI	
4	Patients are sent from clinic for BASDAI scoring prior to commencing treatment	
5	above outcome measures	
6	as above	

15. Do you assess patients 3 months post Anti-TNF drug treatment?		
Answer Options	Response Percent	Response Count
Yes	50.0%	4
No	50.0%	4
<i>answered question</i>		8
<i>skipped question</i>		5

16. If yes, please specify what you assess:	
Answer Options	Response Count
	4
<i>answered question</i>	4
<i>skipped question</i>	9
Number	Response Text
1	All of the above
2	BASDAI
3	above outcome measures
4	as above

17. Please rank the treatment methods you use in the overall AS patient care episode (1 = most used, 7 = least used).									
Answer Options	1	2	3	4	5	6	7	Response Count	
Manual Therapy	0	0	1	2	2	2	1	8	
Home Exercise Programme (HEP)	7	0	1	0	0	0	0	8	
Group-Based Exercise	0	3	2	2	0	0	1	8	
Advice re: Regular Physical Activity (e.g. 30' per day)	3	4	1	0	0	0	0	8	
Thermotherapy	0	0	0	1	4	0	2	7	
Electrotherapy	0	0	0	0	1	3	3	7	
Hydrotherapy	1	0	3	1	1	0	1	7	
								Question Totals	
								<i>answered question</i>	8
								<i>skipped question</i>	5

18. Please specify the regularity of use for each treatment:					
Answer Options	Always	Frequently	Occasionally	Never	Response Count
Manual Therapy	0	0	8	0	8
Home Exercise Programme (HEP)	8	0	0	0	8
Group-Based Exercise	0	4	3	1	8
Advice re: Regular Physical Activity (e.g. 30' per day)	7	1	0	0	8
Thermotherapy	0	1	7	0	8
Electrotherapy	0	0	3	5	8
Hydrotherapy	2	3	1	2	8
<i>answered question</i>					8
<i>skipped question</i>					5

19. If you use Manual Therapy as a treatment method please specify the type and frequency of use in your treatment sessions:					
Answer Options	0-25%	26-50%	51-75%	76-100%	Response Count
Passive Accessory Intervertebral Mobilisations (PAIVMS)	7	0	0	0	7
Passive Physiological Intervertebral Mobilisations (PPIVMS)	6	1	0	0	7
Other (please specify method and frequency of use)					4
<i>answered question</i>					7
<i>skipped question</i>					6
Number	Other (please specify method and frequency of use)				
1	Soft tissue work				
2	Muscle energy techniques Positional release therapy				
3	shoulder joint and hip joint mobilisations when disease not active				
4	soft tissue release				

20. If you prescribe home exercise programmes for patients with AS, detail the typical nature of these home exercises.	
Answer Options	Response Count
	7
<i>answered question</i>	7
<i>skipped question</i>	6
Number	Response Text
1	Combination of strengthening, endurance, flexibility and aerobic exercise.
2	ROM/strength training and cardiovascular
3	Stretching and R.O.M. Exs
4	Posture, Flexibility (stretches), aerobic and strengthening
5	30 minute stretching programme. Strengthening work - core work, hip strengthening. Advice re swimming and aerobic exercise. Group exercise is offered
6	Flexibility exercises always spinal + any other joints, stretching focused on postural muscles of Pects, hip flexors, Any other area from assessment. Specific isometric progressive strengthening programme, depending on joint affected. Graded aerobic programme
7	rom exercises and stretches based on findings assessment, written hep provided

21. Does patient education form part of your management of AS patients?		
Answer Options	Response Percent	Response Count
Yes	100.0%	8
No	0.0%	0
<i>answered question</i>		8
<i>skipped question</i>		5

22. If yes, which of the following educational approaches do you use (please rank according to frequency of use, 1 = most frequent, 4 = least frequent).					
Answer Options	1	2	3	4	Response Count
Informal - verbal/visual	8	0	0	0	8
Formal session	0	2	4	1	7
Unidisciplinary	1	3	2	2	8
Multidisciplinary	0	2	2	3	7
					Question Totals
<i>answered question</i>					8
<i>skipped question</i>					5

23. What education resources do you use in treating AS patients?					
Answer Options	0-25%	26-50%	51-75%	76-100%	Response Count
Patient information leaflets	0	0	1	7	8
Physio tools exercise sheet	0	0	0	7	7
Information dvd/video	5	0	1	0	6
Support group information	1	0	2	4	7
If you use other forms of resources in treating AS patients, please specify the type and frequency of use.					2
<i>answered question</i>					8
<i>skipped question</i>					5
Number	If you use other forms of resources in treating AS patients, please specify the type and frequency of use.				
1	Powerpoint education				
2	Specifically designed exercise cardex , which is tailored for each patient and laminated exercise sheets				

24. What do you understand by the terms: (i) Compliance (ii) Adherence (iii) Motivation		
Answer Options		Response Count
		5
<i>answered question</i>		5
<i>skipped question</i>		8
Number	Response Text	
1	Compliance: patient doing a programme prescribed for them Adherence: More active involvement, long term but in Motivation: Driving force behind change	
2	compliance - obeying set orders adherence - sticking to jointly set negotiated goals with view to promoting long term behavioral change motivation - discipline within self to pursue an action	
3	i - undertaking treatment as prescribed ii- continuing treatment frequency as recommended/ongoing iii - having the willingness/desire to (eg) exercise	
4	1. patient doing what is asked of them 2.patient continues to do what they are asked 3.patient is enthusiastic to do what is asked	
5	both first two terms- patients do as advised motivation is patients own drive or desire	

25. Apart from treatment sessions, what other forms of patient contact do you use in relation to Ankylosing Spondylitis (AS) patients?		
Answer Options	Response Percent	Response Count
Phone	50.0%	4
Email	0.0%	0
Newsletter	0.0%	0
None	50.0%	4
Other (please specify)		1
<i>answered question</i>		8
<i>skipped question</i>		5
Number	Other (please specify)	
1	annual review offered by post	

26. Do you use any strategies to maintain or improve AS patients' motivation to exercise?		
Answer Options	Response Percent	Response Count
Yes	75.0%	6
No	25.0%	2
<i>answered question</i>		8
<i>skipped question</i>		5

27. Please specify what strategies and/or tools you use for: (i) Recently diagnosed AS patients	
Answer Options	Response Count
	7
<i>answered question</i>	7
<i>skipped question</i>	6
Number	Response Text
1	Education tools, information leaflets.
2	persuasion, reinterpretation of beliefs, action planning
3	Information Leaflets, Physio Tools. Advice on importance of excs. Offer group classes
4	Education/advice self-management principles HEP support group details details re hydrotherapy facilities
5	Review AS programme which runs over 3 weeks Use of AS diary to follow exercise compliance over 12 weeks post programme
6	Assessment and explanation to patients of problems and reason to exercise. MDT group education and classes Cardex with pictures, individually designed Home diary patient has to fill in and is checked
7	explain purpose of each exercise, relate back to movement measures done in assessment group classes offered review to check exercise program

28. Please specify what strategies and/or tools you use for: (i) Returning AS patients	
Answer Options	Response Count
	6
<i>answered question</i>	6
<i>skipped question</i>	7
Number	Response Text
1	persuasion, reinterpretation of beliefs, action planning
2	Outline to them their scores and how they can be improved or how exs and meds have helped
3	re-iterating self-management principles, serial measurement, review/progress exercise programme
4	Annual review, AS programme and class A/A
5	Annual review, with update on cardex Encouraged to join AS society which has frequent newsletters Speaking at Arthritis Ireland meetings on AS in the community Try to get patients to join groups in the community eg pilates, yoga, Gym
6	compare measures to previous year, and as for q 4

29. What do you understand by the term 'self-management'?	
Answer Options	Response Count
	8
<i>answered question</i>	8
<i>skipped question</i>	5
Number	Response Text
1	Patient being enabled/empowered to manage their own condition
2	Linked heavily with self-efficacy - the patient has not only the skills to manage their condition but also has the confidence to make judgement calls on best ways to manage.
3	The patient takes responsibility for his exs and fitness and as much as possible pain control
4	Understands own condition & signs & symptoms of same & independent with own management of these & participating regular appropriate exercise
5	in-built ability to monitor/manage a chronic condition
6	Independent in daily management of condition. Confident in dealing with flares
7	patient is able to manage their condition independently
8	in relation to physio patient plays leading role in own care rather than relying on passive treatment

30. Do you use any strategies to promote Ankylosing Spondylitis (AS) patient self-management?		
Answer Options	Response Percent	Response Count
Yes	100.0%	8
No	0.0%	0
<i>answered question</i>		8
<i>skipped question</i>		5

31. Which of the following tools/strategies do you use to promote self-management with recently diagnosed AS patients (Please rank according to frequency of use: 1 = most frequent, 5 = least frequent):						
Answer Options	1	2	3	4	5	Response Count
Reminder Email/Text message/Letter	0	0	1	0	4	5
Formal Education Session	1	2	0	2	1	6
Informal Education Session	4	1	2	0	0	7
Exercise Diary	0	3	3	1	1	8
Home Exercise Programme sheet	3	3	0	2	0	8
						Question Totals
Other (please specify and rank)						1
<i>answered question</i>						8
<i>skipped question</i>						5
Number	Other (please specify and rank)					
1	6 week group as exercise classes info leaflets					

32. Please comment on your reason(s) for using the top 2 tool(s)/strategies with recently diagnosed AS patients.	
Answer Options	Response Count
	5
<i>answered question</i>	5
<i>skipped question</i>	8
Number	Response Text
1	Tradition! find that education based on self-efficacy theory (model of education) that I use appears to have good patient outcomes
2	HEP as not always convenient for patient to attend for a group of classes. One to one also increases patient compliance
3	Education is key in empowerment/self-mgt Ongoing exercise is vital
4	Education is the most important at early diagnosis
5	Patients get MDT education. Re-inforced by all team members and in a group setting Diaries help motivate home ex programme

33. Which of the following tools/strategies do you use to promote self-management with returning AS patients (Please rank according to frequency of use: 1 = most frequent, 4 = least frequent):						
Answer Options	1	2	3	4	5	Response Count
Reminder Email/Text message/Letter	0	0	0	0	4	4
Formal Education Session	0	1	0	3	0	4
Informal Education Session	2	2	1	1	0	6
Exercise Diary	0	2	2	0	1	5
Home Exercise Programme sheet	4	1	1	0	0	6
						Question Totals
Other (please specify and rank)						1
<i>answered question</i>						6
<i>skipped question</i>						7
Number	Other (please specify and rank)					
1	offer 6 week as class					

34. Please comment on your reason(s) for using the top 2 tool(s)/strategies with returning AS patients.	
Answer Options	Response Count
	3
<i>answered question</i>	3
<i>skipped question</i>	10
Number	Response Text
1	From experience main reason patients cease HEP is due to 'forgetting'. HEP sheet and exercise diary helps prevent this and also motivates the patient.
2	ongoing exercise monitoring / progression essential ensure adequate insight into condition
3	Compliance with exercises has often fallen off

8. References

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