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TITLE

EULAR recommendations for the generic core competences of Health Professionals in Rheumatology

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ABSTRACT

Background/objectives. To maintain and optimize the quality of care provided by health professionals in rheumatology (HPRs), adequate educational offerings are needed. This task force (TF) aimed to develop evidence-based recommendations for the generic core competences of health professionals in rheumatology, with specific reference to nurses, physical therapists (PTs) and occupational therapists (OTs) to serve as a basis for their postgraduate education.

Methods. The EULAR standardised operating procedures for the development of recommendations were followed. A TF including rheumatologists, nurses, PTs, OTs, patient-representatives, an educationalist, methodologists and researchers from 12 countries met twice. In the first TF meeting, 13 research questions were defined to support a systematic literature review (SLR). In the second meeting, the SLR evidence was discussed and recommendations formulated. Subsequently, level of evidence and strength of recommendation were assigned and level of agreement (LoA) determined (0-10 rating scale).

Results. Three overarching principles were identified and 10 recommendations were developed for the generic core competences of HPRs. The SLR included 79 full-text papers, 20 of which addressed the competences, knowledge, skills, attitudes and/or educational needs of HPRs from multiple professions. The average LoA for each recommendation ranged from 9.42 to 9.79. Consensus was reached both on an education and research agenda.

Conclusion. Evidence and expert opinion informed a set of recommendations providing guidance on the generic core competences of HPRs. Implementation of these recommendations in the postgraduate education of HPRs at the international and national level is advised, considering variation in health care systems and professional roles.

Keywords: competences; educational needs; recommendations; health professionals; rheumatology

INTRODUCTION

Health professionals in rheumatology (HPRs) play an important role in the care of people with rheumatic and musculoskeletal diseases (RMDs). Up-to-date knowledge and relevant skills are essential to provide safe and effective patient care. Although multiple educational offerings have been developed for HPRs at postgraduate level, their availability and content vary largely among countries as well as by profession (1). It is imperative that the definition or development of a curriculum for HPRs, that is harmonized across countries, has international consensus on the core competences needed for the management of people with RMDs.

A set of desirable competences already exists at European level for rheumatologists already (2). For HPRs, relevant work has been done only at national level. In the UK, a Delphi-based study the core competences that non-specialist community-based nurses and allied HPRs should have, were identified (3). Also, the Health Education England, NHS England and Skills for Health recently published the musculoskeletal core capabilities framework for a range of practitioners in rheumatology who act as first point reference (4). Currently, no such sets of generic competences regarding HPRs from multiple professions exist at European level.

To address this unmet need, a EULAR task force (TF) was set up to develop EULAR-endorsed recommendations for generic core competences of HPRs at the postgraduate level. Although it was considered that HPRs represent a broad range of professions, the project focused on nurses, physical therapists (PTs) and occupational therapists (OTs). These professionals were, apart from physicians, considered to be most frequently involved in the care of people with RMDs. The EULAR recommendations for the generic core competences of HPRs are intended for all HPRs and other health care providers in the field of RMDs and are relevant to key stakeholders i.e. patients, as well as their (inter)national organizations; institutions and clinical educators providing education for HPRs. Furthermore, these recommendations could serve as a framework for all relevant stakeholders other than just service providers, including health insurers and policy makers as well as a reference document for generic competences of health professionals in other specialties.

METHODS

The updated EULAR Standardised Operating Procedures (SOPs) for the development of the recommendations were followed (5) after approval of the TF by the EULAR Executive Committee. The multidisciplinary TF comprised of a selection of 9 experts in HPRs' education (3 nurses, 2 PTs, 3 OTs, 1 rheumatologist), 2 EMEUNET members (VS, GF), 3 patient representatives and a steering group managing the process (convenors TVV and AI, methodologists EN and TVV, educationalist CH, fellows LE, and GF). There was broad country representation of the TF from across 12 countries (Netherlands, Italy, United Kingdom, Portugal, Denmark, Norway, Czech Republic, Austria, Croatia, Germany, Russia, Greece).

During the first TF meeting, definitions of competences and a clear definition of HPRs were agreed. Clinically relevant questions on HPRs' education, skills and practice were discussed, and research questions were defined by consensus to form the basis for the subsequent systematic literature review (SLR). The literature was systematically evaluated using multiple electronic databases on the competences, roles, knowledge, attitudes, skills or educational needs of HPRs in general, or specifically for nurses, PTs or OTs and at postgraduate level. National presidents or liaison persons of HPRs' organizations were also contacted to supplement the information retrieved from the SLR. Details of the search strategy, including study selection, data extraction and data synthesis are provided in a separate manuscript (under submission). Studies addressing competencies of multiple HPRs (including nurses and/or PTs and/or OTs) were considered as the most appropriate to answer the research questions, while those addressing only a single profession (nurse, PT or OT) were used to derive more specific information and provide relevant details in support of each recommendation. Methodological quality of each of the studies addressing competences of multiple professions was scored (LE, GF, EN) using appropriate tools (6-8) (see details in supplementary table 1).

The findings of the SLR were presented by the fellow at the second TF meeting and formed the basis of a detailed discussion by the TF that informed the wording of overarching principles (OAP) and recommendations. The OAPs/recommendations were voted upon informally by the TF and if at least 75% approved each OAP and recommendation, these were accepted. If not, discussion was resumed with changes proposed followed by further rounds and was completed if the vote indicated the majority approved the OAP/recommendations. At the second TF meeting, a brief discussion on the educational and research agenda was also commenced, subsequently completed by email communication with all TF members.

After the second meeting, the Level of Evidence (LoE) and Strength of the Recommendation (SoR) were determined by the steering group. The LoE was determined separately for qualitative and quantitative studies using appropriate tools, both rated on a scale from 1-4. For the categorization of the LoE from quantitative papers, the Oxford levels of evidence was used, as described in the EULAR SOP (9). The LoE for qualitative papers was categorized using a modified version of the hierarchy of evidence-for-practice in qualitative research by Daly et al (10), with subcategories (a and b) added at each level to allow for more accurate reflection of grading of the evidence based on studies falling between two levels due to their type and employed methodology. In brief, the hierarchy of evidence in qualitative research-study types suggested by Daly et al (10) proposes a 4-level hierarchy of the quality of evidence for practice. The highest level (Level I) refers to generalizable studies, Level II to conceptual studies, Level III to descriptive studies and Level IV to single case studies. To assign a specific LoE, the number of studies available for each category was taken into account, similar to the Oxford levels of evidence (9). The strength of recommendations (SoR) was determined through a comprehensive process of weighting the LoE in the context of the impact of the paper, evidence for practice, its quality, applicability and validity, as well as the type of study and its determined hierarchical LoE (10).

The final recommendations including the LoE and SoR were then circulated by e-mail to all TF members to provide the Level of Agreement (LoA) independently and anonymously on a 0-10 numeric rating scale (NRS) (0= completely disagree, 10= completely agree). The mean, standard deviation, median and range of the LoA per recommendation, were presented. Moreover, TF members were independently asked for any further input on the research and educational agenda by e-mail. Draft research and educational agendas were circulated based on suggestions from the second TF meeting and revised by the steering group based on the e-mail responses.

RESULTS

At the first TF meeting, competences were defined as 'A set of knowledge, skills and attitudes that concern the consistent and appropriate use of communication, knowledge, skills, clinical reasoning, emotions, values and reflection on practice, for the benefit of people with RMDs and the community.' For HPRs a definition used by EULAR was employed: 'A professional involved in the care of people with RMDs, who is not a registered medical practitioner and is eligible to be a member of the

organization through which a country has become a EULAR HP member'. Furthermore, agreement on 13 main themes, translated into research questions (supplementary table 2) was achieved and subsequently formed the basis of the systematic literature search (see separate manuscript). In total, 79 papers were included; 20 addressed the competences of HPRs of multiple professions (1, 3, 4, 11-27), 43 the competences of nurses (28-70), 12 of PTs (71-82) and 4 of OTs (83-86). From the 20 addressing HPRs from multiple professions, 75% (n=15) had a qualitative design (1, 3, 4, 11, 12, 14, 15, 17-20, 23, 25-27). The rest consisted of two systematic reviews (10, 21), one quantitative study (13), one mixed design study (18) and one opinion paper (19). Quality scoring of each of these papers revealed half of them (n=10) to be of high quality, 5 of medium/moderate quality, 3 of low quality, 1 of critically low quality. One paper was not scored (opinion paper). For all three overarching principles and the recommendations a high LoE was determined (level I or II) (10). Regarding the SoR, 5 recommendations were graded as strength level A, 4 as strength B and 1 as strength B/C. The average LoA for each recommendation ranged from 9.42 to 9.79. Table 1 summarizes the overarching principles and recommendations with their associated LoE, SoR and LoA. Table 2 presents the overarching principles along with the supporting literature.

Recommendation 1: HPRs should have knowledge of the aetiology, pathophysiology, epidemiology, clinical features and diagnostic procedures of common RMDs, including their impact on all aspects of life.

HPRs should have updated knowledge of the normal structure and function and the pathophysiology of the MSK system; common pathophysiological processes to support diagnosis and management of RMDs; and the epidemiology, clinical features and diagnostic procedures of common RMDs (1, 3, 4, 18, 23). This knowledge should include the prognosis and progression of RMDs (23). It is stressed in particular that HPRs should be able to understand and distinguish between inflammatory arthritis (IA) and osteoarthritis (OA) (15). These findings are confirmed in literature regarding nurses (29, 32, 33, 41, 46, 51, 57, 65, 68) and PTs (82) specifically. Finally, evidence supports that HPRs should have knowledge on the impact of RMDs on all aspects of life i.e. all components of the International Classification of Functioning, Disability and Health (ICF) (18, 23).

Recommendation 2: Using a structured assessment, HPRs should identify aspects that may influence individuals with RMDs and their families, including: a. clinical characteristics, risks, red

flags and comorbidities, b. limits to their activity and participation and c. personal and environmental factors.

There is substantial evidence on HPRs' competences regarding the performance of a structured and comprehensive assessment (1, 3, 4, 13, 15, 16, 18, 20-23, 25). The literature presents evidence that HPRs should be able to perform a structured, comprehensive assessment to understand the impact of the RMD on the individual; not only on his or her physical or mental health but also on relationships with family and friends, and on societal participation (3, 4, 15, 18). The structured assessment includes an exploration of the individuals' perceptions, concerns, ideas or beliefs about their symptoms and condition, as these may act as a driver or form a barrier to recovery or a return to usual activity or work (4, 20). Some literature, in particular on nurses' competences, underlines that sexual health may be affected by e.g. pain, fatigue, decreased joint mobility and physical capacity (36, 48, 65, 75), with adequate communication skills being required to appropriately address this topic. Particularly in IA, the assessment should address specific elements related to the cardiovascular risk, as described in the EULAR recommendations for cardiovascular disease risk management in patients with RA and other forms of IA (53). Nurse practitioners' literature also addresses the importance of an appropriate assessment of nutritional and dietary status (66).

Recommendation 3: HPRs should communicate effectively: to make contributions to other health care providers and stakeholders in RMD care and to collaborate with other health care providers, signpost or refer where appropriate to optimise the interdisciplinary care of people with RMDs.

Collaboration in the multidisciplinary team is important to optimise care for people with RMDs and to make appropriate referrals according to the HPR literature (3, 4, 15, 22, 26). For this purpose, HPRs must understand, respect and draw on each other's roles and competences (3, 4, 21). The literature highlights that effective communication includes being able to serve as a patient advocate: explain and advise people with RMDs about the importance of relevant health care professionals and organisations such as patient organisations (18, 20, 23, 37, 71). In particular, the literature on rheumatology nurses' competences stresses that HPRs should be aware of the limits and boundaries of their role and know when to reach out to other members of the multi-disciplinary team. Some studies on rheumatology nurses' competences conclude that the coordination of care should be part of the role of HPRs (31, 37, 56, 57, 65, 68).

Recommendation 4: HPRs should have an understanding of common pharmacological and surgical therapies in RMDs, including their anticipated benefits, side-effects and risks, and use this knowledge to advise or refer as appropriate.

HPRs should have a broad knowledge and understanding on how to give advice on the use of drug treatment in RMDs (1, 3, 4, 15, 18, 23). This includes simple analgesics, non-steroidal anti-inflammatory drugs (NSAIDs), glucocorticoids; disease-modifying antirheumatic drugs (DMARDs) and other drugs -including biologics- used in treating patients with IA and other RMDs and in the management of persistent pain. Responses to medication should be reviewed regularly with the patient, taking into account patients' fears, beliefs and concerns, in order to recognise differences in the balance of risks and benefits (4). For joint injections, HPRs should understand the role of joint injections in the management of RMDs, and, how to advice on the expected benefits and limitations, and, refer as appropriate (4). Additionally, HPRs are expected to have knowledge about common surgical interventions in musculoskeletal conditions like OA and IA. They should be able to discuss with patients their fears and concerns, and able to provide advice about potential risks and benefits to support patient education (3, 4).

Recommendation 5: HPRs should provide advice on non-pharmacological interventions, treat or refer as appropriate, based on the evidence, expected benefits, limitations and risks for people with RMDs.

There is evidence suggesting that HPRs should understand the role of and provide advice on non-pharmacological interventions, treat or refer as appropriate, based on the evidence, expected benefits, limitations and risks for people with RMDs (1, 3, 4, 15, 18, 23, 28). Planning and implementation of non-pharmacological treatment should be done in collaboration with the individual and the multidisciplinary team (see also recommendation 3). In the literature addressing competences of nurses specifically, expert clinical reasoning and decision-making skills were recognized as competences in the management of people with RMDs and in developing treatment protocols to improve patient outcomes (60, 62). Furthermore, HPRs should work with patients to alleviate their concerns about treatment, with an understanding that some people with RMDs (e.g. with mental health conditions, multi-morbidity, fatigue or frailty) might need additional support during rehabilitation and that their trajectory of recovery or increased independence may be slower than others (4, 37, 54). Addressing fitness to work in people with RMDs was also highlighted in the literature (4).

Recommendation 6: HPRs should assess the educational needs of people with RMDs and their carers to provide tailored education using appropriate modes of delivery, relevant resources and evaluate their effectiveness.

HPRs should be able to assess the educational needs of patients and provide a tailored education based on the patient's individual needs and characteristics (22, 27). The provision of tailored education for patients with RMDs and their carers should be based on a theoretical framework (24) and include the use of appropriate modes of delivery (e.g. face-to-face individual or group, through websites, e-mail or social media), relevant resources and evaluation of its effectiveness (3, 11, 15, 18, 20, 23, 26, 27). HPRs should be able to signpost to sources of education and information (3, 15, 20), including the members of the multidisciplinary team (see 'recommendation 3'). Regarding the content of the education, this should be carefully checked for its evidence-base (24). Moreover, the importance of the promotion of a healthy lifestyle, in particular physical activity education was underlined in multiple papers (4, 12, 18, 19). The literature on rheumatology nurses' competences confirms the aforementioned findings, while highlighting the importance of the customization of educational materials and reiteration of information (37, 43, 47). The evaluation of the outcomes of educational interventions could include e.g. an assessment of adherence to biological therapy, exercise, smoking cessation and/or an evaluation of patient satisfaction (35)

Recommendation 7: HPRs should take responsibility for their continuous learning and ongoing professional development to remain up-to-date with the clinical guidelines and/or recommendations on the management of RMDs.

HPRs should continuously undertake professional development and remain up-to-date with the best available evidence (4, 18, 26, 27). This can be achieved through organised and accredited educational courses, implementation of clinical guidelines, research findings and/or recommendations on the management of RMDs (4, 18, 26). Continuous education should be accessible and undertaken by rheumatology nurses to improve and maintain their knowledge and skills and they should provide care that is based on protocols and guidelines according to national and local contexts (67).

Regarding professional development, one of the studies concludes that HPRs should be minimally able to critically evaluate research evidence (e.g scientific papers), apply results from research into daily practice, and, identify and formulate relevant research questions (18). In addition HPRs should enable and participate (leading or contributing, as appropriate) in research to advance the

development of knowledge on RMDs and practice (4, 18). The need for communication with other health care professionals via academic conferences and events, peer-reviewed journals, online forums or e-mail communication is reported in a paper addressing nurses' competences (55).

Recommendation 8: HPRs should support people with RMDs in goal setting and shared decision making about their care (e.g. identify, prioritize, address their needs and preferences and explain in lay terms).

Evidence for required HPRs' competences to support people with RMDs in goal setting and shared decision making to facilitate the delivery of patient-centred care is noteworthy (4, 14, 18, 20). The need for those competences was confirmed in the literature addressing the competences of nurses (35, 37, 39, 40, 44, 50, 53, 55-57, 62, 63), PTs (71, 80) or OTs (83) specifically. Empowering people with RMDs in decision making might improve adherence to treatment and enhance quality of life (35, 50, 57, 86). Education about treatment alternatives (37), the distribution of decision aids (53, 55, 79), involvement of family in all aspects of care planning and implementation (57) are also addressed in literature, but referring to only one profession.

Recommendation 9: HPRs should support people with RMDs in self-management of their condition. This encompasses selecting and applying the appropriate behavioural approaches and techniques to optimize their health and well-being (e.g. engagement in physical activity, pain and fatigue management).

There are many studies providing evidence for HPRs' competences to support people with RMDs in self-management of their condition (3, 4, 12, 14, 17-20, 23-25). This support encompasses selecting and applying the appropriate cognitive and behavioural approaches and techniques to optimize their health and well-being (e.g. engagement in physical activity, pain and fatigue management). The literature suggests that different techniques can be used, like motivational interviewing, cognitive or behavioural approaches or other techniques (4, 14, 19, 23). Twenty-five studies addressing the competences of rheumatology nurses (29, 33, 36, 37, 42, 44, 46, 49, 50, 53, 54, 56, 57, 60, 63, 65, 67, 68, 70-72, 83), PTs (71, 72, 79) or OTs (83, 84, 86) specifically confirmed these findings. In the nurses' literature, taking the role of counsellor (37) and managing fatigue (54, 85) is advocated. HPRs should also have an understanding of the impact of different communication styles and different perspectives of self-management between the nurse and the patient and teach patients with RMDs to effectively communicate with the health care team (44, 48). In the literature specifically for PT's,

competences to use wearable technologies as a means of motivating patients and monitoring compliance were mentioned (79).

Recommendation 10: HPRs should be able to select and apply outcome measures for people with RMDs, as appropriate, to evaluate the effectiveness of their interventions.

HPRs should have the ability to select and apply outcome measures for people with RMDs, as appropriate and to evaluate the effectiveness of their interventions (3, 4, 18, 27). Outcome measures should reflect the objectives of the patient education programme and other interventions (18, 27). The evidence for this recommendation was supported by studies for the competences of HPRs from one specific profession. The literature on nurses' competences concluded that nurses should be able to regularly revise the treatment plan, and plan and conduct follow-up visits accordingly to monitor patients through a systematic clinical evaluation including measurements and metrological parameters or questionnaires, and, consult referrers when necessary (31, 35, 62). In the literature for PTs' competences, the ability to use wearable technologies for the evaluation of interventions was advocated (79). Moreover, ongoing monitoring of disease activity and severity was mentioned (73).

Research and educational agendas

The TF group proposed a research agenda (Box 1) reflecting potential topics for future research and an educational agenda (Box 2) to identify gaps in education for HPRs.

DISCUSSION

These are the first EULAR recommendations for the generic core competences of HPRs. Three overarching principles and ten recommendations were formulated and provide a basis for harmonising core competences of HPRs across countries. Ultimately, their implementation is expected to lead to improved patient care.

Sets of required competences for HPRs have been developed at the national level (3, 4, 18), with one set specifically for HPRs who act as a first point of contact (4). However, a set of core competences for HPRs from multiple professions was lacking at a European level, representing an unmet need. Following the European harmonization of the competences of rheumatologists (26) an international approach to HPRs' competences is important to reduce the variation in the quality of care for people

with RMDS across countries. The proposed recommendations are relevant and with strong potential application. Firstly, they can inform the content of an international curriculum for HPRs. Using the identified set of recommended competences, currently available educational offerings can be optimized, and extended where needed. In addition, the set of recommended competences can also be used in the development and/or optimization of national postgraduate educational offerings for HPRs. Of note, as part of the dissemination phase, the recommendations will be shared with a larger group of HPRs, clinicians, patients and service providers, for wider consensus and external validation.

The contents of the set of competences is largely in line with that of recently developed sets from the UK (3, 4) and set from the Netherlands (18). Differences are that the UK set was specifically developed for health professionals with a role as first point of contact for adults presenting with undiagnosed musculoskeletal conditions (4), whereas the Dutch set aimed to describe discipline-specific rather than common competencies (18). Overall, the EULAR recommendations are less detailed than both the UK and Dutch sets, warranting the need for further elaboration. This should be done in close collaboration with national organizations to take into account the different roles and responsibilities of HPRs in different countries.

The competent HPRs are expected to function in close collaboration with competent rheumatologists in order to provide appropriate healthcare for patients with musculoskeletal conditions as well as joint professional and educational developments. The competence based training requirements for specialty of rheumatology, oriented towards the professional behaviour within the rheumatologist's competences have been proposed on the European level (2, 87). The main connection between the rheumatologists' and HPRs' competences exist in the area of working and communicating in the multidisciplinary team (recommendation 3).

The work of this TF identified a potential challenge in formulating recommendations which are based primarily on qualitative research. Qualitative research is often underestimated, but of high relevance and importance in the study of specific topics. However, the lack of explicit frameworks or guidelines on how to best use qualitative evidence, including the formulation of recommendations, represents a challenge. Uncertainties around the empirical and theoretical basis for appraising and synthesising evidence from qualitative studies in a standard manner, remain. As part of this work, we have identified a four-level hierarchy of evidence-for-practice in qualitative research studies (10), which

along with a meticulous assessment of the quality of papers identified from the SLR, provided good ground and informed decisions on the assignment of LoE and SoR for each recommendation. Work is currently underway by the TF methodologists, to further inform the process and provide a guide on the use of appropriate tools for the assignment of LoE and SoR for recommendations stemming primarily from qualitative research. We trust that this will standardize as well as encourage the appropriate use of qualitative research to inform EULAR recommendations in the future.

In conclusion, these recommendations aim to provide a framework for the generic core competences of nurses, PTs and OTs for postgraduate education at international and national level. It is advised that variation in health care systems and professions across countries is considered for the appropriateness and feasibility of implementation of these recommendations. Efforts will be made towards their implementation through dissemination across national societies, relevant websites and presentation of this work at key international and national conferences.

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Contributions

LE was the research fellow of the project, undertaking the SLR and organizing the TF meeting. LE was supervised by the steering group consisting of TVV (convenor/senior methodologist), AI (convenor), EN (junior methodologist) and GF (EMEUNET member). TVV and EN supervised the process of the SLR, with input from GF and VS. TVV and EN chaired the TFM. LE drafted the manuscript with advice from TVV, AI, and EN and detailed input and contribution to the writing by TVV, GF and EN. GF and EN have deepened in assessing the LoE and SoR for qualitative research. LE, TVV, GF, EN and CH discussed and reached consensus about the LoE and SoR. All authors have contributed to the

recommendations by participating in the TF meeting, during discussion and agreement on the OAPs and recommendations, revising and approving the manuscript for publication.

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Competing interests

LE: none

EN: none

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MB: none

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NC: none

MN: none

JP: none

YP: none

PP: none

VR: none

VS: none

HM: none

MT: none

DW: none

TVV: none

Box 1. Research agenda

- To further evaluate the patient perspective on HPRs' competences.
- To refine HPRs' competences regarding the monitoring and improvement of the quality of their practice.
- To define the requirements for HPRs to improve and maintain their competences and explore the existence of human and financial resources to accomplish continuous education.
- To explore the desired competences of HPRs regarding the understanding and evaluation of the economic aspects of care for people with RMDs.
- To define, in addition to generic core competences, discipline-specific competences, related to each of the HPRs' unique role in the multidisciplinary team.
- To explore the role of HPRs in communities of practice for the delivery of seamless, integrated, patient-centered care for people with RMDs across Europe.
- To evaluate the involvement of HPRs in rheumatology research across countries and identify potential barriers and facilitators to research contribution.

Box 2. Educational agenda

- To evaluate barriers and facilitators for the implementation of the generic core competences in various European countries, taking into account cultural, social and other differences.
- To review the current learning aims and curricula of HPR-specific or interprofessional education at the postgraduate level across countries and use the formulated competences to enhance or create postgraduate education for HPRs, where appropriate.

- To confirm the validity and feasibility of the proposed set of generic competences for HPRs other than nurses, PTs or OTs.
- To explore, enhance and promote the recognition of HPRs' specialist skills across countries.
- To develop educational offerings to increase HPRs' competences to support people with RMDs regarding self-management of pain, fatigue and the achievement or maintenance of a healthy lifestyle.

LIST OF ABBREVIATIONS

Abbreviation	Fully written
<i>AS</i>	Ankylosing spondylitis
<i>CNS</i>	Clinical Nurse Specialist
<i>DMARD</i>	Disease-modifying antirheumatic drug
<i>EULAR</i>	European League Against Rheumatism
<i>EMEUNET</i>	Emerging EULAR NETWORK
<i>GRADE system</i>	Grading of Recommendations Assessment, Development and Evaluation
<i>HP</i>	Health Professional
<i>HPR</i>	Health Professional in Rheumatology
<i>IA</i>	Inflammatory arthritis
<i>LUMC</i>	Leids Universitair Medisch Centrum
<i>MS(K)</i>	Musculoskeletal
<i>NACNS</i>	National Association of Clinical Nurse Specialists
<i>NHS</i>	National Health Services

<i>NRS</i>	Numeric Rating Scale
<i>NSAID</i>	Non-steroidal anti-inflammatory drug
<i>OA</i>	Osteoarthritis
<i>OT</i>	Occupational therapist
<i>PARE</i>	People with Arthritis/Rheumatism in Europe
<i>PT</i>	Physical therapist
<i>RA</i>	Rheumatoid arthritis
RMDs	Rheumatic and musculoskeletal diseases
SLR	Systematic literature review
SOPs	Standardised Operating Procedures
SOR	School of Rheumatology
<i>UEMS</i>	European Union of Medical Specialists

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Table 1

	Level of evidence¹	Strength of recommendation	Level of Agreement Mean (SD) Median (Range)
Overarching principles			
A. Effective communication skills and a biopsychosocial approach in the assessment, treatment and care of people with RMDs are of paramount importance for HPRs	QLIb	NA	9.79 (0.71) 10 (7-10)
B. Person-centred care and patient advocacy are fundamental in the care delivered by HPRs for people with RMDs	QLIa	NA	9.74 (0.65) 10 (8-10)
C. An evidence-based approach, ethical conduct and reflective practice are essential for HPRs	QLIIb	NA	9.68 (0.75) 10 (7-10)
Recommendations			
1. HPRs should have knowledge of the aetiology, pathophysiology, epidemiology, clinical features and diagnostic procedures of common RMDs, including their impact on all aspects of life.	QLIb	A	9.42 (1.07) 10 (7-10)
2. Using a structured assessment, HPRs should identify aspects that may influence individuals with RMDs and their families, including: · clinical characteristics, risks, red flags and comorbidities · limits to their activity and	QLIIa	B	9.68 (0.58) 10 (8-10)

participation · personal and environmental factors			
3. HPRs should communicate effectively: · to make contributions to other health care providers and stakeholders in RMD care · to collaborate with other health care providers, signpost or refer where appropriate to optimise the interdisciplinary care of people with RMDs.	QLIa	B/C	9.74 (0.73) 10 (7-10)
4. HPRs should have an understanding of common pharmacological and surgical therapies in RMDs, including their anticipated benefits, side-effects and risks, and use this knowledge to advise or refer as appropriate.	QLIb	B	9.47 (0.84) 10 (8-10)
5. HPRs should provide advice on non-pharmacological interventions, treat or refer as appropriate, based on the evidence, expected benefits, limitations and risks for people with RMDs.	QLIb	B	9.53 (0.90) 10 (7-10)
6. HPRs should assess the educational needs of people with RMDs and their carers to provide tailored education using appropriate modes of delivery, relevant resources and evaluate their effectiveness.	QLIb	A	9.42 (1.02) 10 (6-10)

7. HPRs should take responsibility for their continuous learning and ongoing professional development to remain up-to-date with the clinical guidelines and/or recommendations on the management of RMDs.	q _L 1b	A	9.79 (0.71) 10 (7-10)
8. HPRs should support people with RMDs in goal setting and shared decision making about their care (e.g. identify, prioritize, address their needs and preferences and explain in lay terms).	q _L 11a	B	9.42 (1.07) 10 (6-10)
9. HPRs should support people with RMDs in self-management of their condition. This encompasses selecting and applying the appropriate behavioural approaches and techniques to optimize their health and well-being (e.g. engagement in physical activity, pain and fatigue management).	q _L 1b	A	9.74 (0.81) 10 (7-10)
10. HPRs should be able to select and apply outcome measures for people with RMDs, as appropriate, to evaluate the effectiveness of their interventions.	q _L 1b	A	9.74 (0.73) 10 (7-10)

Table 1. Overarching principles and recommendations for the generic core competences of Health Care Providers in Rheumatology (HPRs). SD: Standard Deviation, RMDs: Rheumatic and Musculoskeletal Diseases NA: Not Applicable.

¹ Level of evidence from qualitative studies indicated for OAPs and recommendations for completeness.
q_L Indicates a LoE based on studies that used primarily qualitative methods.

Suppl. Table 1

Supplementary Table 1: Quality scoring of the studies concerning multiple professions (nurses, physiotherapists, ...) formulation of the overarching principles OAPs) and the recommendations.

Overarching Principles	Supportive evidence	Quality score of qualitative studies*
<i>Overarching Principle I</i>	(3, 4, 15, 18, 23, 24)	Low: n= 1 ⁽¹⁸⁾ Medium: n= 2 ^(15, 23) High n= 2 ^(3, 4)
<i>Overarching Principle II</i>	(3, 4, 18)	Medium: n= 1 ⁽¹⁸⁾ High n= 2 ^(3, 4)
<i>Overarching Principle III</i>	(1, 3, 18, 20, 21, 26)	Low: n= 3 ^(18, 20, 26) High n= 2 ^(1, 3)
Recommendations	Supportive evidence	Quality score of qualitative papers*

Recommendation 1	(1, 3, 4, 15, 18, 23)	Low: n= 1 ⁽¹⁸⁾ Medium: n= 2 ^(15, 23) High n= 3 ^(1, 3, 4)
Recommendation 2	(1, 3, 4, 13, 15, 16, 18, 20-23, 25)	Low: n= 2 ^(18, 20) Medium: n= 2 ^(15, 23) High: n= 4 ^(1, 3, 4, 25)
Recommendation 3	(3, 4, 15, 18, 20, 21, 23, 26)	Low: n=3 ^(18, 20, 26) Medium: n=2 ^(15, 23) High: n=2 ^(3, 4)
Recommendation 4	(1, 3, 4, 15, 18, 23)	Low: n=1 ⁽¹⁸⁾ Medium: n=2 ^(15,23) High: n=3 ^(1,3,4)
Recommendation 5	(1, 3, 4, 15, 18, 23)	Low: n=1 ⁽¹⁸⁾ Medium: n=2 ^(15, 23) High: n=3 ^(1, 3, 4)
Recommendation 6	(3, 4, 11, 12, 15, 16, 18-20, 22, 23, 26, 27)	Low: n=3 ^(18, 20, 26) Medium: n=3 ^(11, 15, 23) High: n=5 ^(3, 4, 12, 19, 27)

Recommendation 7	(3, 18, 26, 27)	Low: n=2 ^(18, 26) Medium: n=0 High: n=2 ^(3, 27)
Recommendation 8	(3, 14, 18, 20)	Low: n=2 ^(18, 20) Medium: n=0 High: n=2 ^(3, 14)
Recommendation 9	(3, 4, 12, 14, 17-20, 23-25)	Low: n=2 ^(18, 20) Medium: n=1 ⁽²³⁾ High: n=7 ^(3, 4, 12, 14, 17, 19, 25)
Recommendation 10	(3, 4, 18, 27)	Low: n=1 ⁽¹⁸⁾ Medium: n=0 High: n=3 ^(3, 4, 27)

Column refers to additional papers used, the methodology design of which was not purely qualitative (reviews, quantitative studies, mixed-methods studies).

OAP: Overarching principle, R: Recommendation, NA: not applicable, n: number

Note:

*The methodological quality of studies addressing multiple professions of HPRs was defined using appropriate tools depending on the type of study. In detail, quality was assessed using a modified version of the 12 criteria reported by Harden et al. (6), performed by a task force member (GF), the fellow (LE) and the methodologist (EN). Each item was scored as not present (0) or present (1). The sum of the 12 item scores constituted the final methodological quality score, stratified as low, medium or high quality. For systematic literature reviews, the AMSTAR (A MeaSurement Tool to Assess systematic Reviews) criteria were used, with assigned scores being critically low, low, moderate or high quality (8). For quantitative studies or for studies using mixed methods, methodological quality was assessed using the Mixed Methods Appraisal Tool (MMAT) score, with the final score expressed as a percentage (7). The methodological quality of opinion paper (22) was not assessed. Agreement in rating between blinded assessors was over 90%. Any differences were discussed, also with the rest of the steering group and consensus reached.