POS1456-HPR THE SERUM IRON LEVEL MIGHT BE USEFUL IN DETERMINING THE SEVERITY OF MALNUTRITION IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: The Global Leadership Initiative on Malnutrition (GLIM) criteria, the first international criteria for diagnosis of malnutrition, was released in 2018 [1]. Patients with rheumatoid arthritis (RA) are thought to be prone to malnutrition due to decreased food intake and increased muscle catabolism caused by chronic inflammation or pain. However, there has been no report to assess the nutritional status of RA patients in accordance with the GLIM criteria. In addition, commonly used blood nutrient indicators such as albumin might not be appropriate as nutritional indicators for RA because these values are affected by inflammation.

Objectives: This study aims to examine the rates of malnutrition in RA patients according to GLIM criteria, and the relationship between blood nutrient indicators and the severity of malnutrition.

Methods: In this study, we conducted a cross-sectional survey of 135 female RA patients in 2020. According to the GLIM criteria, patients were considered to be malnourished if patients had one of the following phenotypic: (1) low body mass index, (2) non-volitional weight loss, (3) reduced muscle mass, and one of the following etiologic: (1) reduced food intake or assimilation, (2) disease burden/inflammatory condition. Reduced muscle mass was evaluated by measuring calf circumference, and inflammatory condition was evaluated by Disease Activity Score (DAS) 28. In accordance with the GLIM criteria, the severity of malnutrition was judged as three levels: no problem, moderate, and severe malnutrition. Albumin, transthyretin, transferrin, retinol binding protein, zinc, iron, ceruloplasmin, and total cholesterol were assessed as blood nutrition indicators. Also grip strength was assessed. We compared each nutritional indicator among the three groups according to the severity of malnutrition using age-adjusted analysis of covariance, and examined the relationship between each nutritional indicator and the severity of malnutrition using receiver operating characteristic (ROC) analysis.

Results: In RA patients, 20% were classified as severe malnutrition, and 40% were moderate or more. Serum iron levels were significantly lower in the severe malnutrition group compared to the no problem group ($p = 0.001$). In ROC analysis, serum iron, zinc, albumin, and grip strength (area under curve; AUC; 0.680, 0.696, 0.636, 0.790, respectively) were significant parameters for classification of moderate and severe malnutrition. Serum iron and grip strength (AUC for respective parameters were 0.741, 0.747) were significant parameters for classification of severe malnutrition.

Conclusion: Evaluation based on the GLIM criteria showed that about 40% of RA patients were under moderate or severe malnutrition. It was suggested that serum iron and grip strength might be useful to predict the severity of malnutrition.

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POS1457-HPR GASTROINTESTINAL SYMPTOMS AND RHEUMATIC DISEASES: TWO SIDES OF THE SAME COIN

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Background: Patients with Rheumatic Diseases (RD) often show different symptoms besides the osteoarticular ones. Healthcare workers can evaluate the impact of specific symptoms on RD patients' quality of life in order to improve global management.

Objectives: The aim of this study was to assess the presence of gastrointestinal symptoms in RD patients through Patients Reported Outcomes.

Methods: We carried out a cross-sectional study of 101 RD patients compared with 202 healthy volunteers. Healthcare workers invited patients and volunteers to complete questionnaires on gastrointestinal symptoms, through seven domains (belly pain, constipation, diarrhea, disrupted swallowing, gas and bloating, nausea and vomiting, gastroesophageal reflux) of the Patient-Reported Outcomes Measurement Information System (PROMIS®).

Results: Among 101 RD patients, 34 (33.6%) had a diagnosis of Rheumatoid Arthritis, 23 (22.7%) had a diagnosis of Psoriatic Arthritis, 12 (11.8%) had axial spondyloarthritis; 18 (17.8%) had Systemic Sclerosis, 8 (7.9%) were classified as Connectivitis (i.e. Lupus, Sjögren Syndrome), and finally 6 (5.9%) had vasculitis. Median disease duration was 7±5 years and just under half (45.5%) of RD patients had active disease according to specific disease activity index. As shown in Table 1, no significant differences were found between patients and controls with regard to demographic and anthropometric characteristics except for sex, since males were 25.7% ($n=26$) in RD patients and 125 (61.8%) in healthy volunteers. In our study, Patients reported significantly greater gastrointestinal symptoms than healthy controls. More specifically, as shown in Figure 1A, median T score for belly pain, constipation, diarrhea and disrupted swallowing were significantly higher in the RD patients than in healthy controls (50.2 ± 14 vs 41.7 ± 12 $p<0.001$; 51.5 ± 10 vs 42.2 ± 9 $p<0.001$; 45.3 ± 8 vs 42 ± 5 $p<0.001$; 51.1 ± 10 vs 44.6 ± 7 $p<0.001$) respectively. Moreover, also regarding others domains (gas and bloating, nausea and vomiting and gastroesophageal reflux), patients reported a median T score worse than healthy controls (Figure 1B).

Table 1.

	Patients (N= 101)	Healthy (N= 202)	p
Demographic and Anthropometric			
Age (years)	60±13	54.2 ±15	ns
Gender n male (%)	26 (25,7)	125 (61,8)	<0,001
BMI (Kg/m2)	26,4±4	25,5±4	ns
Smoke n (%)	51(50,5)	97(48)	ns
Physical Activity (%)	27(26,7)	62(30,7)	ns
Rheumatoid Arthritis	34(33,6)	-	
Psoriatic Arthritis	23(22,7)	-	
Spondyloarthritis	12(11,8)	-	
Systemic Sclerosis	18(17,8)	-	
Connectivitis	8(7,9)	-	
Vasculitis	6(5,9)	-	
Disease duration (years)	7±5	-	
Disease Activity n yes (%)	46(45,5)	-	
Medications n (% patients)			
NSAID	11(10,9)	-	
Steroids	26(25,7)	-	
Biological Treatment	54(53,5)	-	
Methotrexate	34(33,7)	-	

Continuous variables are shown as mean ± standard deviation. Categorical variables are presented as number and proportion. The overall p-value was calculated by the Mann-Whitney non-parametric test for independent samples and by Chi-square test as appropriate.

Figure 1. Median T Score stratified by study group. Data are shown as mean and standard deviation. The overall p-value was calculated by the Mann-Whitney non-parametric test for independent samples.

Conclusion: Firstly, this study highlights the need to investigate further the association between Rheumatic Diseases and gastrointestinal symptoms as potential patterns of underlying diseases and, secondly, the need to adopt validated questionnaires in clinical practice that can help healthcare professionals to detect underestimated symptoms.

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POS1458-HPR DIGITAL RHEUMATOLOGY IN THE ERA OF COVID-19: RESULTS OF A NATIONAL PATIENT AND PHYSICIAN SURVEY

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Background: Digital health applications (DHAs) are gaining influence and promise great potential for the monitoring and management of rheumatic and musculoskeletal diseases (RMDs).

Objectives: To analyse the impact of the COVID-19 pandemic on RMD patients' and rheumatologists' usage, preferences, and perception of digital health applications (DHAs) in Germany.

Methods: A web-based national survey was developed by the Working Group Young Rheumatology of the German Society for Rheumatology and the German League against Rheumatism. The prospective survey was distributed via social media, QR-code, and email. Descriptive statistics were calculated, and regression analyses were performed to show correlations.

Results: We analysed the responses of 299 patients and 129 rheumatologists. Most patients (74%) and rheumatologists (76%) believed that DHAs are useful in the management of RMDs and felt confident in their own usage thereof (90%; 86%). 38% of patients and 71% of rheumatologists reported that their attitude had changed positively towards DHAs and that their usage had increased due to COVID-19 (29%; 48%).

Usage and recommendation of DHAs for both groups are shown in Figure 1:

Figure 1. Usage or recommendation of digital health applications. Patients and rheumatologists were asked to indicate the specific digital health applications (DHAs) they used or were recommended.

The majority in both groups agreed on implementing virtual visits for follow-up appointments in stable disease conditions. The most reported advantages of DHAs were usage independent of time and place (76.6%; 77.5%). The main barriers were a lack of information on suitable, available DHAs (58.5%; 41.9%), poor usability (42.1% of patients) and a lack of evidence supporting the effectiveness of DHAs (23.2% of rheumatologists) (Table 1).

Table 1. Advantages and Barriers of DHA, n (%).

Advantages	Barriers			
	Patients	Rheumatologists	Patients	Rheumatologists
Location-Independence	229 (76.6)	100 (77.5)	Too little information	175 (58.5)
Time-independence	223 (74.6)	94 (72.9)	Too little evidence of benefits	36 (12.0)
Detailed documentation	97 (32.4)	47 (36.4)	Poor quality of current apps	30 (23.3)
Cost saving	95 (31.8)	37 (28.7)	Concerns about data protection	47 (15.7)
More information	88 (29.4)	38 (29.5)	Lack of usability	29 (22.5)
Independence of doctors*	36 (12.0)	-	Lack of accessibility	52 (17.4)
More flexibility	107 (36.8)	77 (59.7)	High costs	25 (19.4)
Preparation for discussion*	46 (15.4)	-	No suitable equipment	126 (42.1)
No advantages at all	18 (6.0)	1 (0.8)	Lack of user competence	4 (1.3)
			No Need	17 (5.7)
				11 (8.5)
				9 (3.0)
				39 (13.0)
				12 (9.3)

Patients and rheumatologists were asked about the advantages and barriers of DHAs. Multiple answers were allowed. Patients had two additional potential advantages and potential barriers to choose from*.