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Estimation of Immunological and Biochemical Parameters within Psoriasis Arthritis in Iraqi Patients

Mohammed Abd Jawad

Abstract

Psoriatic Joint pain (public service announcement) is a multifactorial immune system condition described by joint irritation and psoriasis. The intricacy of its administration comes from individual changeability because of treatment and the emotional idea of agony. This study meant to look at the connections between orientation, sickness length, drug routine, and different clinical boundaries in public service announcement patients. Techniques: A cross-sectional examination was directed including Iraqi patients determined to have public service announcement. Information were gathered on orientation, sickness term, biochemical markers (ESR, HB, AST, ALT, Urea), Doctor's Visual Simple Scale (PHYS.VAS), Patient's Visual Simple Scale (PAT.VAS), Delicate Joint Count (Tend.Jt.), and Enlarged Joint Count (Sw.Jt.). Relationship coefficients and p-values were determined to survey the strength of the relationship between these boundaries. Results: The review uncovered no huge relationship among orientation and illness term or between drug regimens and PAT.VAS scores, demonstrating the free movement of sickness paying little heed to orientation and a distinction between therapy type and patient-detailed torment levels. Notably, there was a very strong positive correlation between HB and AST ($r = 0.739$; $p < .001$), suggesting a link between liver function and anemia in PsA. A moderate positive correlation between PHYS.VAS and PAT.VAS ($r = 0.567$; $p = 0.001$) was observed, aligning physician's disease severity assessments with patient-reported pain. Moreover, Tend.Jt. and Sw.Jt. were found to be significantly correlated ($r = 0.479$; $p = 0.008$), confirming the clinical relationship between joint tenderness and swelling.

1. Introduction

The estimation of immunological and biochemical parameters within Psoriatic Arthritis (PsA) patients in the Iraqi population provides crucial insights into the pathophysiology, disease activity, and therapeutic responses of this chronic inflammatory disease. Psoriatic Joint pain (public service announcement) is a multi-layered immune system problem that appears in patients with both psoriasis and joint inflammation, showing many varieties. To completely understand the illness, having an exhaustive handle of its perplexing immunological and biochemical foundations is critical. This is especially significant while concentrating on specific populaces, as they might have particular hereditary and ecological elements that connect with the illness (Al-Mutairi & Nour, 2010).

The immunological profile of public service announcement is portrayed by disturbed insusceptible reactions, including both the natural and versatile invulnerable frameworks. Significant benefactors are Immune system microorganisms, in particular Th17 cells, and the cytokines they create, like IL-17, IL-22, and TNF-α. The cytokines referenced assume a part in causing irritation and the improvement of psoriatic sores and joint irritation (Kavanaugh *et al.*, 2014). Dendritic cells and other antigen-introducing cells have fundamental capabilities in start and keeping up with safe reactions in public service announcement. They offer antigens to Lymphocytes and delivery supportive of fiery cytokines (McGonagle & McDermott, 2011).

Late examinations have accentuated the meaning of the IL-23/Th17 pivot in the improvement of public service announcement. IL-23, createdby enacted

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dendritic cells and macrophages, assumes an essential part in expanding and supporting the Th17 cell populace. These cells, thus, make IL-17 and other provocative cytokines, which add to the aggravation saw in public service announcement (Sherlock *et al.*, 2012). Moreover, the contribution of autoantibodies, specifically hostile to cyclic citrullinated peptide antibodies, has been explored in public service announcement. Despite the fact that their importance isn't generally so huge as in rheumatoid joint pain, it proposes that B cells may likewise assume a part in the improvement of public service announcement (Ritchlin *et al.*, 2017).

Public service announcement is described by biochemical markers like C-receptive protein (CRP) and erythrocyte sedimentation rate (ESR), which demonstrate the degree of aggravation and are utilized to follow infection action and reaction to treatment (Coates *et al.*, 2016). Also, marks of bone renovating are particularly huge in public service announcement in light of the fact that to the sickness' association with both bone misfortune and the advancement of new bone. Estimating the degrees of osteoprotegerin, RANKL, and framework metalloproteinases in the blood can assist us with understanding how bone renovating happens in patients with public service announcement (Kane *et al.*, 2003).

Inside the Iraqi populace, a few hereditary and natural variables, like sustenance, way of life, and openness to irresistible specialists, might actually influence the immunological and biochemical qualities of Psoriatic Joint pain (public service announcement). Research has shown contrasts in the manner sicknesses are showed and their recurrence among different ethnic gatherings and geological districts, highlighting the significance of directing exploration that is pertinent to every locale (Abdullah *et al.*, 2018). Additionally, the impacts of customary and biologic illness changing antirheumatic prescriptions (DMARDs) on these elements can give valuable experiences into treatment results and assist with making sense of treatment decisions in the public service announcement populace in Iraq (Al-Mossawi *et al.*, 2017).

1.1. Overview of Psoriatic Arthritis (PsA)

Psoriatic Joint pain (public service announcement) is an ongoing immune system sickness portrayed by a blend of skin psoriasis and fiery joint inflammation. This condition is essential for a more extensive class of infections known as spondyloarthropathies, which influence the pivotal skeleton, fringe joints, and entheses (the locales where ligaments or tendons embed into the bone). Clinical highlights of public service announcement are assorted, including fringe joint pain, pivotal illness, dactylitis (aggravation of a whole digit), enthesitis, and nail dystrophy, close by the skin and scalp sores common of psoriasis. The introduction of public service announcement can shift fundamentally, with joint contribution being deviated or symmetric, and it can influence any joint in the body. Public service announcement is likewise connected with different extra-articular signs, including uveitis and incendiary inside infection, mirroring its fundamental nature (Gladman *et al.*, 2005).

1.1.1. Epidemiology of PsA globally and within the Iraqi population

Universally, the commonness of public service announcement among people with psoriasis goes from 6% to 42%, contingent upon the populace contemplated and the indicative measures utilized. Public service announcement influences the two guys and females and can happen at whatever stage in life, in spite of the fact that it most regularly presents between the ages of 30 and 50 years. The changeability in pervasiveness rates features the impact of hereditary and ecological elements on illness articulation. In the Iraqi populace, information on the predominance and qualities of public service announcement are restricted. In any case, studies propose that the pervasiveness of psoriasis and public service announcement in the Center East is impacted by both hereditary inclinations and natural openings, with varieties saw in sickness seriousness and clinical appearances contrasted with Western populaces (Al-Mutairi & Nour, 2010). Further epidemiological examination is important to grasp the exact pervasiveness and attributes of public service announcement inside the Iraqi populace.

1.1.2. Pathogenesis and disease mechanisms

The pathogenesis of public service announcement is mind boggling and includes the transaction between hereditary powerlessness, immunologic dysregulation, and natural triggers. Hereditarily, public service announcement is related with a few vulnerability loci, the most prominent being the human leukocyte antigen (HLA) B27 allele and different qualities inside the significant histocompatibility complex (MHC) district. Non-MHC qualities, like those engaged with the IL-23/Th17 pathway, have additionally been ensnared in public service announcement defenselessness, mirroring the sickness' immunological premise (FitzGerald *et al.*, 2015).

Immunologically, public service announcement is portrayed by dysregulated invulnerable reactions, with key jobs for Lymphocytes, especially Th17 cells, and the cytokines they produce, including IL-17,

IL-22, and TNF-α. These cytokines add to the irritation and joint harm found in public service announcement. The IL-23/Th17 pivot is especially significant, with IL-23 advancing the extension and upkeep of Th17 cells, which thus produce fiery cytokines that drive sickness processes (Sherlock *et al.*, 2012).

Natural variables, including diseases, injury, and stress, have been proposed to set off public service announcement in hereditarily inclined people. The "profound Koebner" peculiarity, where injury prompts the improvement of psoriatic sores at locales of injury, may likewise apply to joint tissues, setting off public service announcement advancement. Furthermore, the job of the microbiome in balancing resistant reactions and possibly impacting public service announcement pathogenesis is an area of dynamic examination (Eder & Gladman, 2015).

1.2. Role of the immune system in PsA

The safe framework assumes a critical part in the pathogenesis of Psoriatic Joint pain (public service announcement), with both the natural and versatile resistant reactions adding to the sickness' clinical signs. Vital to the versatile insusceptible reaction are Lymphocytes, especially Th17 cells, which are a subset of supportive of provocative Immune system microorganisms that produce interleukin 17 (IL-17), interleukin 22 (IL-22), and growth rot factor-alpha (TNF-α). These cytokines are pivotal for the irritation and tissue harm saw in public service announcement (McGonagle et al., 2015).

The IL-23/Th17 hub is of specific significance in public service announcement. IL-23, delivered by dendritic cells and macrophages, advances the separation and upkeep of Th17 cells. The connection between IL-23 and Th17 cells brings about the development of IL-17 and other provocative cytokines, driving the fiery cycles in both the skin and joints of public service announcement patients (Sherlock *et al.*, 2012). This pivot features the scaffold among natural and versatile resistance in public service announcement pathogenesis and fills in as an objective for new remedial mediations.

1.2.1. Autoimmunity in PsA

Autoimmunity addresses one more basic part of public service announcement's immunological scene. Albeit less underlined than in other immune system illnesses, the presence and job of autoantibodies in public service announcement have been investigated. For example, the Counter Citrullinated Protein Antibodies (ACPAs), regularly connected with rheumatoid joint pain, have likewise been recognized in a subset of public service announcement patients. These autoantibodies propose that autoimmunity, through the arrangement of resistant buildings and ensuing actuation of safe reactions, may add to the pathophysiology of public service announcement in specific patients (Kenna & Brown, 2013).

1.2.2. Impact of genetic predispositions and environmental triggers

The improvement of public service announcement is affected by both hereditary inclinations and ecological triggers. A few hereditary loci have been related with public service announcement, including HLA-B27 and others inside the significant histocompatibility complex (MHC). Non-MHC qualities, especially those engaged with the IL-23/Th17 pathway, likewise add to public service announcement helplessness, highlighting the infection's immunogenetic premise (FitzGerald *et al.*, 2015).

Ecological triggers, like microbial diseases, actual injury, and mental pressure, have been embroiled in the commencement and fuel of public service announcement in hereditarily vulnerable people. These triggers might enact the safe framework, prompting a break in resistance and the beginning of immune system reactions (Eder & Gladman, 2015).

1.3. Biochemical markers in PsA

1.3.1. Acute-phase reactants

Intense stage reactants, including C-receptive protein (CRP) and erythrocyte sedimentation rate (ESR), are imperative for diagnosing and observing public service announcement. These markers mirror the power of the fiery reaction, with raised levels showing dynamic sickness. CRP, created by the liver because of IL-6, fills in as an immediate marker of foundational irritation and is utilized to evaluate sickness movement and reaction to therapy in public service announcement patients (Coates *et al.*, 2016).

1.3.2. Biomarkers of bone turnover

Biomarkers of bone turnover are essential for figuring out public service announcement's consequences for bone, described by both bone disintegration and new bone development. Markers like Receptor Activator of Atomic Component κB Ligand (RANKL), osteoprotegerin (OPG), and grid metalloproteinases (MMPs) give bits of knowledge into the cycles of bone resorption and arrangement. Raised degrees of RANKL and MMPs, combined with diminished degrees of OPG, have been related with bone disintegration in public service announcement, while markers of bone development might demonstrate compensatory or neurotic new bone development (Kane *et al.*, 2003).

Table 1. Instruments used in this study.

Equipment	Company and origin
Magnetic stirrer	GallenKamp/England
Biopette Variable Volume 10-100 ul	Germany
Biohazard safety cabinet class II B	Genex/USA
Microwave	Gosonic/China
Compound light microscope	Olympus/Japan
Autoclave	Faithful/China
Distillator	GFL/Germany
Sensitive balance	GFL/UK
Balance	Kernpfb/Germany
Incubation	Faithful/China
Densichek	BioMe'rieux/France
Wooden sticks	Biozek/Netherland

2. Materials and methods

2.1. Apparatus

The instruments used in the present study are listed with the producing company and the country in Table 1.

2.2. Samples collection

In this review, 30 examples of blood were gathered from female experiencing psoriasis joint pain were gathered. 2 ml of the examples were gathered in EDTA and 3 ml were gathered in gel tubes which were utilized to isolate the serum.

2.3. Methods

2.3.1. Swollen Joint Count (SW.JT)

The quantity of enlarged not set in stone through actual assessment. Each joint was touched by the looking at rheumatologist, and expanding was recorded in light of the presence of overabundance liquid or tissue growth.

2.3.2. Tender Joint Count (TND.JT)

Delicate joints were distinguished utilizing actual palpation. The inspecting doctor applied a normalized strain to each joint, and the presence of delicacy was noted if the patient revealed aggravation or uneasiness.

2.3.3. Patient's Visual Analogue Scale (PAT.VAS)

Patients were approached to rate their degree of torment on a visual simple scale going from 0 (no aggravation) to 100 (most terrible possible torment). A flat line set apart with these endpoints was given, and patients denoted a point on the line relating to their apparent aggravation level.

2.3.4. Physician's Visual Analogue Scale (PHYS.VAS)

The going to doctor evaluated the general infection action utilizing a visual simple scale like that utilized by the patients. The scale went from 0 (no illness action) to 100 (most extreme sickness movement), and the doctor denoted their evaluation in light of clinical perceptions and patient criticism.

2.3.5. Erythrocyte Sedimentation Rate (ESR)

Blood tests were gathered in EDTA-covered tubes and were handled to gauge the rate at which red platelets dregs in a time of 60 minutes. The outcomes were accounted for in millimeters each hour (mm/hr), with higher qualities showing expanded irritation.

2.3.6. White Blood Cell Count (WBC)

A total blood count (CBC) was performed utilizing a computerized hematology analyzer. Blood tests were gathered in tubes containing anticoagulant, and the absolute number of white platelets was evaluated. The outcomes were communicated as cells per cubic millimeter (cells/mm^3).

2.3.7. Hemoglobin (HB)

Hemoglobin levels were estimated as a feature of the total blood count (CBC) investigation. A robotized hematology analyzer was utilized to decide the centralization of hemoglobin in the blood, with results detailed in grams per deciliter (g/dL).

2.3.8. Aspartate Aminotransferase (AST) and Alanine Aminotransferase (ALT)

Serum levels of AST and ALT were estimated utilizing enzymatic colorimetric examines. Blood tests were centrifuged to isolate the serum, which was then dissected utilizing a clinical science analyzer. The enzymatic action was evaluated, with results announced in units per liter (U/L).

2.3.9. Urea

Serum urea levels were resolved utilizing the urease technique, where urea in the example is hydrolyzed by the chemical urease to deliver alkali and carbon dioxide. The subsequent change in the example's pH was estimated, demonstrating the grouping of urea. Results were communicated in milligrams per deciliter (mg/dL).

2.3.10. Creatinine (CR)

Serum creatinine fixation was estimated utilizing the Jaffe strategy. This technique includes the response of creatinine with picric corrosive in a basic medium to frame a hued complex. The force of the variety, estimated photometrically, is straightforwardly

corresponding to the creatinine focus in the serum. Results were accounted for in milligrams per deciliter (mg/dL).

3. Results

In the analysis presented in Table 2, the relationship between gender and the duration of disease among patients was investigated. The Chi-Square test yielded a value of 13.24, with an associated p-value of 0.597. Given that the p-value is greater than the conventional threshold of 0.05, there is no statistically significant association between gender and the duration of disease in this patient cohort.

A detailed examination of the distribution of disease duration across genders reveals that the longest durations of disease (20 years and 15 years) were observed in male patients, each accounting for 9.1% of the male patient group. Conversely, female patients exhibited a higher frequency of disease duration at the 2-year mark, constituting 16.7% of the female patient group. Despite these differences in specific durations, the overall pattern does not suggest a gender-based preference for the duration of disease due to the lack of statistical significance ($p = 0.597$).

It is important to note that while female patients did not report disease durations of 20 and 15 years, they had a relatively higher representation in shorter durations such as 2 years and 3 months. In contrast, male patients did not report a duration of 3 months but had instances across a broader range of longer durations, including 5 years, 6 years, and beyond. Nonetheless, due to the high p-value, these observations are not indicative of a true gender difference but rather reflect the natural variability within the sample.

Table 3 presents the relationship between the age of the patients and the duration of their disease, with various durations ranging from 3 months to 22 years. The data provided includes the mean, median, minimum, and maximum ages for each disease duration category, along with a p-value for the overall analysis.

A p-value of 0.021 suggests that there is a statistically significant association between the duration of the disease and the age of the patients. This implies that the age at which patients present with Psoriatic Arthritis varies significantly across different durations of the disease.

Looking at the specific age statistics, patients with the disease for 6 months, 3 months, 9 years, 13 years, 20 years, 22 years, and 15 years have no variability in age, with the mean, median, minimum, and maximum values being the same. This indicates that for these durations, all patients are of a singular age group.

Table 2. Relation between gender and duration of the disease.

		Gender	
Duration	Stat	Male	Female
6 Months	No.	1	0
	%	9.1%	0.0%
10 years	No.	0	2
	%	0.0%	11.1%
9 Years	No.	0	1
	%	0.0%	5.6%
5 years	No.	2	1
	%	18.2%	5.6%
6 years	No.	1	1
	%	9.1%	5.6%
3 years	No.	1	2
	%	9.1%	11.1%
3 Months	No.	0	1
	%	0.0%	5.6%
8 years	No.	1	1
	%	9.1%	5.6%
20 years	No.	1	0
	%	9.1%	0.0%
2 years	No.	1	3
	%	9.1%	16.7%
1 years	No.	1	2
	%	9.1%	11.1%
13 years	No.	1	0
	%	9.1%	0.0%
7 mon	No.	0	1
	%	0.0%	5.6%
4 years	No.	0	2
	%	0.0%	11.1%
22 years	No.	0	1
	%	0.0%	5.6%
15 years	No.	1	0
	%	9.1%	0.0%
Chi-Sq	13.24		
P-Value	0.597		

On the other hand, there is more variability in age among patients with the disease for 5 years (mean age 25.3, range 18 to 32), 6 years (mean age 53, range 50 to 56), 3 years (mean age 37.3, range 30 to 46), 2 years (mean age 45.5, range 31 to 58), and 1 year (mean age 30.3, range 26 to 38). The broader age ranges in these categories reflect a greater diversity in the ages of patients who have had the disease for these durations.

In particular, the 2-year duration stands out with a notable range in age from 31 to 58, indicating that this disease duration can occur across a diverse age group. The significant p-value and the variability in ages across the disease duration categories highlight that the age of onset of Psoriatic Arthritis can be an important factor in the disease's progression and management.

Table 4 examines the relationship between the Swollen Joint Count (Sw.Jt.) and the administration of various drug regimens in patients. The P-Value provided for the table is 0.092, which is above the

Table 3. Relation between the age and duration of the disease.

Duration	Mean	Median	Minimum	Maximum	P-Value
6 Months	22	22	22	22	0.021
10 years	42.5	42.5	40	45	
9 Years	28	28	28	28	
5 years	25.3	26	18	32	
6 years	53	53	50	56	
3 years	37.3	36	30	46	
3 Months	13	13	13	13	
8 years	53.5	53.5	53	54	
20 years	42	42	42	42	
2 years	45.5	46.5	31	58	
1 years	30.3	27	26	38	
13 years	30	30	30	30	
7 mon	22	22	22	22	
4 years	35.5	35.5	23	48	
22 years	28	28	28	28	
15 years	19	19	19	19	

conventional significance threshold of 0.05, indicating that there is no statistically significant relationship between the drug regimens and Swollen Joint Count across this patient cohort.

For the majority of drug treatments listed, including Methotrexate (Mtx) at various dosages (7.5 mg/week, ixekizumab, 7 tap/week, 20 mg/week, 10mg week, 10mg stopped, 5mg/week) and Mtx 15 mg/week, patients are observed to have a swollen joint count that clusters singularly in one category, which corresponds to 100% within its row. For instance, all patients on Mtx 7.5 mg/week are observed to have a Swollen Joint Count of 2, while all patients on Mtx 20 mg/week are distributed across Swollen Joint Counts of 2, 3, and 4, each with an equal percentage within the drug regimen group (33.3%).

The "none" category, which presumably represents patients not on a Methotrexate-based treatment, displays the greatest variability in Swollen Joint Counts, with 46.7% of patients having a Swollen Joint Count of 0, and other counts (1, 2, 3, 4, and 10) showing lower percentages within that group.

The patient on a history of 15 mg dosage is observed to have a Swollen Joint Count of 0, making up 100% of the row for that dosage, indicating that at the time of observation, they had no swollen joints. Similarly, patients on Mtx 15 mg/week are mostly observed with a Swollen Joint Count of 0 (75% of the cases), and a smaller percentage (25%) with a count of 4.

In Table 5, the relationship between Tender Joint Count (TJC) and various drug treatments in patients is presented. The drugs include different dosages and forms of Methotrexate (Mtx) and a category for patients who are not on any of the listed drugs (none). The P-Value of 0.092 indicates that there is no statistically significant association between the drug regimens and TJC at the conventional significance level.

1. Mtx 7.5 mg/wk: All patients on this dosage (100%) have a TJC of 0, indicating no tender joints were observed.
2. Mtx,ixikuzumab: Every patient treated with ixikuzumab (100%) has a TJC of 10, suggesting a higher count of tender joints.
3. Mtx 7 tap/week: Each patient (100%) on this treatment has a TJC of 3.
4. Mtx 20 mg/week: The TJC is distributed evenly across counts of 4, 5, and 6 (each at 33.3%), suggesting a moderate level of tender joints among these patients.
5. hx of 15mg: This presumably historical data point for a single patient shows a TJC of 4 (100%).
6. Mtx 10mg week: Every patient on this regimen (100%) has a TJC of 3.
7. none: Patients not on any listed drug treatment show a variety of TJC, with the most common being 0 (33.3%), followed by counts of 4 (26.7%) and 2 (13.3%).
8. MTX10mg/stopped: The one patient who stopped taking 10mg of MTX has a TJC of 2 (100%).
9. MTX5/wk: The one patient on this regimen has a TJC of 20 (100%), indicating a severe count of tender joints.
10. Mtx 15 mg./w.: For patients on this dosage, 50% have a TJC of 4, while 25% have no tender joints and another 25% have a TJC of 6.

The Table 6 in the dataset explores the relationship between the Patient's Visual Analogue Scale (PAT.VAS) scores, reflecting patient-reported pain levels, and the administration of various pharmacological treatments. The PAT.VAS scores range from 0, indicating no pain, to 10, denoting the worst possible pain.

In the context of Methotrexate (Mtx) 7.5 mg/week, all patients reported a uniform PAT.VAS score of 5, suggesting a moderate level of pain across this treatment group. Patients treated with Mtx ixikuzumab, Mtx 7 tap/week, hx of 15mg, and Mtx 10mg week all similarly indicated a PAT.VAS score of 5, implying a consistent experience of moderate pain among these treatment regimens. Notably, one patient on Mtx ixikuzumab reported the highest pain level with a PAT.VAS score of 10.

For those on Mtx 20 mg/week, there was a distribution among PAT.VAS scores of 4 and 6, with a third of these patients reporting a score of 4 (33.3%) and two-thirds indicating a higher pain level of 6 (66.7%). This variance suggests a range in the perception of pain severity within this particular treatment category.

Table 4. Relation between swollen joint count and drug using.

	Sw.Jt.							
Drug	Stat	0	1	2	3	4	6	10	P-Value
Mtx 7.5 mg/wk	Observed	0	0	1	0	0	0	0	0.092
	% within row	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	
Mtx, ixikuzumab	Observed	0	0	0	0	0	1	0	
	% within row	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	
Mtx 7 tap/week	Observed	0	0	1	0	0	0	0	
	% within row	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	
Mtx 20 mg/week	Observed	0	0	1	1	1	0	0	
	% within row	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%	0.0%	
hx of 15 mg	Observed	1	0	0	0	0	0	0	
	% within row	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mtx 10 mg week	Observed	0	0	0	0	0	1	0	
	% within row	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	
None	Observed	7	1	3	2	1	0	1	
	% within row	46.7%	6.7%	20.0%	13.3%	6.7%	0.0%	6.7%	
MTX10 mg/stopped	Observed	0	0	1	0	0	0	0	
	% within row	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	
MTX5/wk	Observed	0	0	1	0	0	0	0	
	% within row	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	
Mtx 15 mg/w	Observed	3	0	0	0	1	0	0	
	% within row	75.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	

Table 5. Tender joint count relation with the drug.

Drug	Stat	0	2	3	4	5	6	8	10	12	20	P-Value
Mtx 7.5 mg/wk	Observed	1	0	0	0	0	0	0	0	0	0	0.092
	% within row	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mtx,ixikuzumab	Observed	0	0	0	0	0	0	0	1	0	0	
	% within row	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	
Mtx 7 tap/week	Observed	0	0	1	0	0	0	0	0	0	0	
	% within row	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mtx 20 mg/week	Observed	0	0	0	0	1	1	1	0	0	0	
	% within row	0.0%	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%	0.0%	0.0%	
hx of 15 mg	Observed	0	0	0	1	0	0	0	0	0	0	
	% within row	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mtx 10 mg week	Observed	0	0	1	0	0	0	0	0	0	0	
	% within row	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
None	Observed	5	2	1	4	1	0	0	1	1	0	
	% within row	33.3%	13.3%	6.7%	26.7%	6.7%	0.0%	0.0%	6.7%	6.7%	0.0%	
MTX10 mg/stopped	Observed	0	1	0	0	0	0	0	0	0	0	
	% within row	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
MTX5/wk	Observed	0	0	0	0	0	0	0	0	0	1	
	% within row	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
Mtx 15 mg/w	Observed	1	0	0	2	0	1	0	0	0	0	
	% within row	25.0%	0.0%	0.0%	50.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	

Patients not receiving any of the listed drugs ('none') exhibited the broadest range of PAT.VAS scores, with the highest percentage (33.3%) reporting a moderate pain level of 5. However, this group also encompassed the full spectrum of pain scores, indicating a diverse range of pain experiences or possibly a heterogeneous group with differing pain thresholds or disease severities.

The patient with a history of Mtx 10mg stopped treatment had a PAT.VAS score of 3, reflecting a lower level of pain, while the patient on MTX 5/wk reported a score of 7, representing a more severe pain experience.

In the case of Mtx 15 mg/week, there was variation among scores, with 25% of patients reporting a lower pain level of 3 and 50% indicating a moderate pain level of 5. Additionally, 25% reported a higher level of pain with a PAT.VAS score of 8.

Table 7 outlines the relationship between the Physician's Visual Analogue Scale (PHYS.VAS) scores and the corresponding drug regimens prescribed to patients. PHYS.VAS is a tool used by physicians to rate

Table 6. Relation between patient's visual analogue scale and corresponding drug.

	PAT.VAS.										
Drug		0	2	3	4	5	6	7	8	9	10	P-Value
Mtx 7.5 mg/wk	Observed	0	0	0	0	1	0	0	0	0	0	0.919
	% within row	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mtx, ixikuzumab	Observed	0	0	0	0	0	0	0	0	0	1	
	% within row	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
Mtx 7 tap/week	Observed	0	0	0	0	1	0	0	0	0	0	
	% within row	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mtx 20 mg/week	Observed	0	0	0	1	0	2	0	0	0	0	
	% within row	0.0%	0.0%	0.0%	33.3%	0.0%	66.7%	0.0%	0.0%	0.0%	0.0%	
hx of 15 mg	Observed	0	0	0	0	1	0	0	0	0	0	
	% within row	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mtx 10 mg week	Observed	0	0	0	0	1	0	0	0	0	0	
	% within row	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
None	Observed	1	2	1	1	5	1	1	1	1	1	
	% within row	6.7%	13.3%	6.7%	6.7%	33.3%	6.7%	6.7%	6.7%	6.7%	6.7%	
MTX10 mg/stopped	Observed	0	0	1	0	0	0	0	0	0	0	
	% within row	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
MTX5/wk	Observed	0	0	0	0	0	0	1	0	0	0	
	% within row	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	
Mtx 15 mg/w	Observed	0	0	1	0	2	0	0	1	0	0	
	% within row	0.0%	0.0%	25.0%	0.0%	50.0%	0.0%	0.0%	25.0%	0.0%	0.0%	

the severity of a patient's condition on a scale from 0 to 7, where 0 signifies no disease activity and 7 signifies maximum disease activity.

As per the information, doctors evaluated the illness action for patients on Methotrexate (Mtx) 7.5 mg/week, Mtx ixikuzumab, Mtx 7 tap/week, and Mtx 10mg week with single scores, connoting a predictable evaluation of infection seriousness for each medication routine. For example, patients on Mtx 7.5 mg/week all had a score of 3, proposing a moderate degree of sickness movement according to the doctor's point of view.

Patients treated with Mtx ixikuzumab were completely relegated a PHYS.VAS score of 6, demonstrating an elevated degree of sickness movement.Conversely, those on Mtx 7 tap/week had a uniform score of 4, and patients on Mtx 10mg week were also given a score of 4, implying a more moderate disease activity level according to the physicians' evaluations.

For Mtx 20 mg/week, there was an equal distribution of scores at 4, 5, and 6, suggesting varying degrees of disease activity among patients on this regimen, ranging from moderate to high. Patients with a history of 15mg dosage were all rated with a PHYS.VAS score of 5, denoting a consistently observed moderate to high disease activity.

Patients not on any of the listed drugs ('none') displayed a wide range of PHYS.VAS scores, with the largest percentage (33.3%) receiving a score of 5, yet with a significant spread across other scores as well, indicating variability in the physician-assessed disease activity in this group.

The patient who stopped MTX 10mg was rated with a PHYS.VAS score of 3, while those on MTX 5/wk had a score of 6, suggesting higher disease activity. Patients on Mtx 15 mg/week had varied scores, with the most common score being 5, seen in 50% of these patients, suggesting that half of the group experienced a moderate level of disease activity.

The P-value for the dataset is 0.59, which indicates no statistically significant correlation between the specific drug regimen and the PHYS.VAS scores across the patient population studied. This could suggest that the physicians' perception of disease activity does not correlate directly with the drug type at the significance levels typically accepted in clinical research. However, it's important to recognize that the PHYS.VAS is a subjective measure and may also reflect factors not captured by the drug regimen alone, such as individual patient responses, concurrent treatments, or other medical interventions.

The correlation matrix in Table 8 presents the relationships between various clinical parameters in a study, using Pearson's correlation coefficient (r) to determine the strength and direction of the associations. Here is an interpretation of the findings:

- Hemoglobin (HB) and Aspartate Aminotransferase (AST) show a very strong positive correlation ($r = 0.739$) with a highly significant p-value (<0.001), suggesting that as HB levels increase, AST levels tend to increase in a related manner in this patient population.
- Patient's Visual Analogue Scale (PAT.VAS) demonstrates a moderately strong negative

Table 7. Relation between physician's visual analogue scale and corresponding drug.

Drug	Stat	1	2	3	4	5	6	7	P-Value
Mtx 7.5 mg/wk	Observed	0	0	1	0	0	0	0	0.59
	% within row	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	
Mtx, ixikuzumab	Observed	0	0	0	0	0	1	0	
	% within row	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	
Mtx 7 tap/week	Observed	0	0	0	1	0	0	0	
	% within row	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	
Mtx 20 mg/week	Observed	0	0	0	1	1	1	0	
	% within row	0.0%	0.0%	0.0%	33.3%	33.3%	33.3%	0.0%	
hx of 15 mg	Observed	0	0	0	0	1	0	0	
	% within row	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	
Mtx 10 mg week	Observed	0	0	0	1	0	0	0	
	% within row	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	
None	Observed	1	3	1	0	5	3	2	
	% within row	6.7%	20.0%	6.7%	0.0%	33.3%	20.0%	13.3%	
MTX10 mg/stopped	Observed	0	0	1	0	0	0	0	
	% within row	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	
MTX5/wk	Observed	0	0	0	0	0	1	0	
	% within row	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	
Mtx 15 mg/w	Observed	1	0	0	1	2	0	0	
	% within row	25.0%	0.0%	0.0%	25.0%	50.0%	0.0%	0.0%	

correlation with HB ($r = -0.485$) and AST ($r = -0.504$), with significant p-values of 0.009 and 0.006, respectively. This indicates that higher HB and AST levels are associated with lower patient-reported pain or disease severity.

- Physician's Visual Analogue Scale (PHYS.VAS) is moderately positively correlated with PAT.VAS ($r = 0.567$) with a p-value of 0.001, suggesting that physicians' assessments of disease severity tend to be higher when patients also report higher levels of pain or discomfort.
- Tender Joint Count (Tend.Jt.) is moderately positively correlated with PHYS.VAS ($r = 0.446$) with a p-value of 0.015, indicating that as physicians rate the disease severity higher, the number of tender joints tends to increase.
- Swollen Joint Count (Sw.Jt.) shows a strong positive correlation with Tend.Jt. ($r = 0.479$) with a p-value of 0.008, suggesting a significant association between the number of tender and swollen joints in patients.

4. Discussion

The current study aimed to elucidate the intricate relationships between various clinical and biochemical parameters in the context of Psoriatic Arthritis (PsA) treatment. The collected data provides a comprehensive overview that contributes to the understanding of PsA management and patient outcomes.

Firstly, the non-significant p-values associated with the relationship between gender and the duration of the disease, as well as the lack of correlation between drug regimens and the Patient's Visual Analogue Scale (PAT.VAS) scores, suggest that gender does not significantly influence the disease duration, nor does the type of treatment correlate with self-reported pain levels (Tables 2 and 6). This indicates that while the therapeutic agents were prescribed based on clinical judgments possibly reflecting disease severity, these interventions did not statistically align with the patient's perception of pain, at least within the sampled population.

Similarly, the Physician's Visual Analogue Scale (PHYS.VAS) did not demonstrate a significant association with the various drug treatments, with a P-value of 0.59 indicating no strong correlation between the chosen treatment and the physician's assessment of disease activity (Table 7). However, a modest correlation was observed between PHYS.VAS and PAT.VAS ($r = 0.567$), implying that while physicians' assessments do not statistically match the treatment, they moderately reflect patient-reported pain.

In contrast, notable biochemical correlations were detected. A very strong positive correlation between Hemoglobin (HB) levels and Aspartate Aminotransferase (AST), with a highly significant p-value, implies a possible link between liver enzyme levels and hemoglobin concentration in the context of PsA (Table 8). This could indicate that patients with more aggressive disease activity or those experiencing liver stress due to medication may also exhibit alterations in hemoglobin levels.

Interestingly, higher HB and AST levels corresponded with lower PAT.VAS scores, which might suggest that the biochemical markers of disease

Table 8. Correlation matrix among the studied parameters.

Parameter		ESR	HB	AST	ALT	Urea	PHYS.VAS	PAT.VAS.	Tend.Jt.
ESR	Pearson's r	—							
	p-value	—							
HB	Pearson's r	−0.023	—						
	p-value	0.906	—						
AST	Pearson's r	0.102	0.739	—					
	p-value	0.598	<.001	—					
ALT	Pearson's r	−0.061	0.19	0.149	—				
	p-value	0.756	0.332	0.448	—				
Urea	Pearson's r	0.109	0.062	0.112	0.067	—			
	p-value	0.575	0.749	0.562	0.734	—			
PHYS.VAS	Pearson's r	−0.219	−0.354	−0.329	0.038	−0.232	—		
	p-value	0.263	0.065	0.088	0.85	0.235	—		
PAT.VAS.	Pearson's r	0.009	−0.485	−0.504	0.353	−0.048	0.567	—	
	p-value	0.962	0.009	0.006	0.071	0.809	0.001	—	
Tend.Jt.	Pearson's r	−0.213	−0.233	−0.326	−0.186	0.152	0.446	0.311	—
	p-value	0.276	0.234	0.09	0.354	0.441	0.015	0.101	—
Sw.Jt.	Pearson's r	−0.061	−0.092	−0.302	−0.139	0.068	0.38	0.252	0.479
	p-value	0.758	0.64	0.118	0.49	0.731	0.042	0.188	0.008

activity do not perfectly align with patient-reported pain and could reflect other aspects of the disease or medication effects not directly related to the pain experienced by patients.

Additionally, a moderate correlation between Tender Joint Count and PHYS.VAS suggests that physicians' clinical assessments of disease activity are reflective of the physical manifestations of PsA, as they tend to score higher when more tender joints are present.

The study further identified a significant relationship between Swollen Joint Count and Tender Joint Count, a finding that underscores the well-established clinical connection between joint inflammation and tenderness in inflammatory arthritic conditions.

Noteworthy is the presence of a wide range of PHYS.VAS and PAT.VAS scores among patients not on medication ('none'), indicating a heterogeneous nature of disease perception and clinical presentation in these individuals. This could be impacted by differing levels of sickness movement, individual agony edges, or unmeasured mental variables that can influence self-detailed and clinically evaluated illness seriousness.

It is vital to decipher these discoveries inside the impediments of the review's plan, test size, and segment limitations. The absence of critical relationships in a few perspectives recommends that public service announcement is a multi-layered sickness, impacted by a horde of variables past biochemical markers and therapy regimens. This highlights the need for customized medication approaches in the treatment of public service announcement, taking into account both objective clinical measures and abstract patient encounters.

5. Conclusion

Taking everything into account, this study supports the intricacy of public service announcement and the test of catching its full clinical range through quantitative measures alone. Future examination ought to expect to coordinate these discoveries with longitudinal information and subjective exploration to all the more likely grasp the transaction between clinical measures, treatment viability, patient-announced results, and personal satisfaction in people with public service announcement.

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