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Reproductive Health Experiences and Unmet Needs among Male Patients with Rheumatic Diseases: A Cross-Sectional Study from Kuwait

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Abstract

Introduction: Reproductive health in rheumatic diseases has been predominantly studied in women, leaving a critical gap in understanding the needs of male patients. Data on reproductive counseling, patient knowledge, and barriers to care among men with rheumatic diseases remain limited, particularly in the Middle East. This study aimed to evaluate patient-reported reproductive health experiences, counseling practices, and perceived barriers among male patients with rheumatic diseases in Kuwait. **Methods:** We conducted a cross-sectional, web-based survey of male patients with rheumatic diseases attending outpatient rheumatology clinics at government hospitals in Kuwait between October 2024 and December 2025. Eligible participants were adults aged 18 years or older with a confirmed diagnosis of a rheumatic disease. A structured 22-item questionnaire assessed demographic and clinical characteristics, reproductive intentions, knowledge of disease- and treatment-related risks, and experiences with reproductive health counseling. Descriptive analyses were performed to evaluate differences in counseling experiences across patient subgroups. **Results:** Among 170 participants (mean age 43.9 years ± 11.5 years), most were married (79.4%), employed (71.2%), and had children (93.7%). The mean disease duration was 9.6 years ± 8.2 years, and inflammatory arthritis was the predominant disease category (76.5%). Despite high prior fatherhood, 52.4% of participants expressed a desire for future paternity. Substantial knowledge gaps were identified, with concerns regarding disease transmission to offspring (24.7%), the impact of disease and medications on parenting ability (24.7% and 27.2%, respectively), and potential disease- and treatment-related risks of birth defects (22.2% and 17.3%, respectively). Reproductive health counseling was infrequent. Only 26.5% and 25.3% of participants reported discussing the impact of disease and medications on reproductive health with their rheumatologist, respectively, and 17.1% reported physician-initiated family planning discussions. In contrast, patient-initiated discussions occurred in 30.0% of participants. Key barriers to communication included discomfort discussing reproductive health (34.1%), perceived lack of physician engagement (24.7%), and cultural constraints (8.8%). **Conclusion:** Male patients with rheumatic diseases in Kuwait experience substantial unmet reproductive health needs, characterized by limited counseling, knowledge gaps, and communication barriers. These findings highlight a critical gap in rheumatology care and strongly support the integration of structured, culturally sensitive reproductive health counseling into routine clinical practice.

Keywords

Rheumatic Diseases, Male Reproductive Health, Fertility Counseling, Family Planning, Patient-Physician Communication

1. Introduction

Rheumatic diseases frequently affect individuals during their reproductive years and may have important implications for fertility, family planning, and long-term health outcomes [1] [2]. Over the past decade, reproductive health has become an increasingly recognized component of rheumatology care, particularly with the development of evidence-based guidance addressing pregnancy and maternal outcomes [3] [4]. However, this progress has largely focused on female patients, resulting in a relative underrepresentation of male reproductive health in both research and clinical practice [5]-[8].

Emerging evidence suggests that rheumatic diseases and their treatments may adversely affect male reproductive health through multiple mechanisms, including systemic inflammation, hormonal dysregulation, and the effects of immunosuppressive therapies on spermatogenesis [5] [9]-[13]. These mechanisms may contribute to impairments in sexual function, fertility potential, and reproductive outcomes, yet awareness among patients and clinicians remains limited [6] [14].

Furthermore, existing studies have predominantly originated from Western populations, with limited data addressing patient perspectives in different cultural and healthcare contexts [6] [15]-[17]. Within the Middle East and North Africa (MENA) region, data on male reproductive health in rheumatic disease remain extremely scarce. While recent regional efforts have focused on integrating reproductive care for female patients, male-specific perspectives remain underexplored with little published data addressing patient experiences, counseling practices, or cultural barriers in this context [2] [18].

Communication barriers and sociocultural influences may further limit the integration of reproductive health into routine care for male patients. Studies suggest that discussions surrounding fertility and reproductive concerns are often infrequent, patient-initiated, or avoided altogether, particularly in settings where cultural norms may restrict open dialogue on sensitive topics [15] [16].

Addressing these gaps is essential for delivering comprehensive, patient-centered rheumatology care. This study aimed to address this critical knowledge gap by evaluating reproductive health counseling provided to male patients with rheumatic diseases in Kuwait from the patients' perspective. Secondary objectives included identifying perceived barriers to addressing male reproductive health needs, assessing patient knowledge regarding the impact of rheumatic diseases and disease-modifying therapies, and exploring reproductive intentions.

2. Methods

2.1. Study Design and Participants

We conducted a cross-sectional, web-based survey of male patients with rheumatic diseases attending outpatient rheumatology clinics at government hospitals in Kuwait. A survey-based design was selected to capture patient-reported experiences, knowledge, and perceptions regarding reproductive health counseling.

Eligible participants were adult men (≥18 years) with a rheumatologist-confirmed diagnosis of a rheumatic disease. Eligibility for participation was determined through screening questions at the beginning of the survey. Only participants who met the eligibility criteria were allowed to proceed. To minimize duplicate responses, the survey platform restricted multiple submissions from the same device/IP address. Patients with known primary or secondary infertility were excluded to minimize confounding from established reproductive pathology, as pre-existing infertility may independently influence reproductive health perceptions and counseling experiences.

2.2. Survey Development and Data Collection

Data were collected using an anonymized electronic survey comprising 22 items. The survey was structured into three domains: 1) demographic and baseline clinical characteristics, 2) current and future reproductive planning, and 3) experiences with healthcare services related to male reproductive health counseling.

The survey included Likert-scale items to quantify patient perceptions and experiences, as well as open-ended questions to capture qualitative insights. The survey items were developed based on a review of relevant literature and refined through expert input from rheumatologists to ensure content validity and clinical relevance. The survey was reviewed by rheumatology experts for internal consistency and clinical applicability prior to dissemination. Although the instrument was not formally pilot-tested or externally validated, efforts were made to ensure clarity, applicability, and relevance to the target population. This approach was considered appropriate given the exploratory nature of the study and the absence of previously validated instruments specific to male reproductive health in rheumatic diseases within this context. The survey was administered electronically using a secure platform, ensuring anonymity and confidentiality of responses.

The primary outcome of the study was the frequency of reproductive health counseling, defined as physician-initiated discussions regarding the impact of disease or medications on fertility and reproductive health. Family planning discussions were defined as any conversation related to future paternity intentions. "Adequate consideration of reproductive concerns", referred to the patient's perception that their rheumatologist sufficiently addressed reproductive health issues during the clinical interview.

2.3. Recruitment and Study Duration

Participants were recruited through the distribution of a QR code linked to the electronic survey in rheumatology clinics at government hospitals in Kuwait and via social media platforms affiliated with rheumatology groups and patient support communities. This dual recruitment strategy was employed to enhance accessibility and capture a broader representation of patients across different healthcare settings. Participation was voluntary, and informed consent was obtained electronically prior to survey completion.

The study was conducted between 29 October 2024 and 16 December 2025. Of approximately 700 individuals who accessed the survey link (as recorded in the survey platform export), 170 completed the survey and were included in the final analysis (response rate ≈ 24%). The survey did not capture the recruitment source (clinic vs. social media) at the individual respondent level.

2.4. Statistical Analysis

Descriptive statistics were used to summarize demographic characteristics and survey responses. Categorical variables were presented as frequencies and percentages, while continuous variables were summarized using means with standard deviations or medians with interquartile ranges, as appropriate. Given the exploratory nature of the study, analyses were primarily descriptive, and no formal subgroup comparisons or inferential statistical tests were performed. No adjustments for multiple comparisons were performed, given the exploratory nature of the study. All analyses were performed using IBM SPSS Statistics for Windows, version 28. No formal sample size calculation was performed; however, the sample size was considered adequate for descriptive analysis of patient-reported outcomes. Missing data were handled using a complete-case approach, whereby analyses for each variable were based on available responses. The extent of missing data is reported for each variable where applicable, and percentages are calculated using variable-specific denominators rather than the total sample size when responses were incomplete.

Open-ended responses were reviewed descriptively by the study investigators to identify general patterns and provide contextual insights. Given the limited number and variability of responses, no consistent additional themes were identified; therefore, no formal qualitative analytical framework was applied.

2.5. Ethical Considerations

This study was conducted in accordance with the principles of the Declaration of Helsinki. The Ministry of Health in Kuwait's Ethical Approval Committee approved the study protocol (Approval Number: 2024/2670). Participation was voluntary, and informed consent was obtained electronically prior to survey initiation. All responses were collected anonymously, and data confidentiality was maintained throughout the study.

3. Results

3.1. Participant Characteristics

A total of 170 male patients with rheumatic diseases were included in the analysis. The mean age was 43.9 (±11.5) years. Most participants were married (79.4%), employed (71.2%), and had attained at least a college-level education (54.7%). A substantial proportion were current smokers (41.8%).

The majority of participants (93.7%) reported having children, with a median of 4 (IQR 3). A history of pregnancy loss in partners was reported by 26.8%. Baseline demographic characteristics are summarized in Table 1.

Table 1. Baseline demographic and clinical characteristics of study participants.

Variable	Overall (N = 170)
Age Mean (SD)	43.9 (11.5)
Nationality	
Kuwaiti	116 (68.2%)
Non-Kuwaiti	54 (31.8%)
Educational Level	
<College	77 (45.3%)
≥College	93 (54.7%)
Marital Status	
Married	135 (79.4%)
Single	28 (16.5%)
Divorced/Widowed	7 (4.1%)
Employment Status	
Employed	121 (71.2%)
Unemployed	44 (25.9%)
Student	5 (2.9%)
Smoking Status	
Current	71 (41.8%)
Ex-Smoker	37 (21.8%)
Never	62 (36.5%)

Values are presented as n (%) unless otherwise indicated. Continuous variables are expressed as mean (SD) or median (IQR), as appropriate.

3.2. Disease and Treatment Characteristics

Inflammatory arthritis, comprising rheumatoid arthritis (RA), psoriatic arthritis (PsA), and axial spondyloarthritis (axSpA), was the predominant disease category, affecting 76.5% of participants. This was followed by connective tissue diseases, including systemic lupus erythematosus (SLE), Sjögren's disease (SjD), idiopathic inflammatory myopathies (IIM), and systemic sclerosis (SSc) (11.2%), and other rheumatic diseases, such as Behçet's disease, vasculitis, and gout (12.3%). The mean disease duration was 9.6 (±8.2) years (Table 2).

Regarding treatment exposure, 44.1% of participants had used conventional synthetic disease-modifying antirheumatic drugs (csDMARDs), 48.8% had been treated with biologic therapies, 6.5% had been exposed to Janus kinase inhibitors (JAKi), and 15.9% had received combination therapy (Table 2). Methotrexate was the most commonly used csDMARD (25.9%), followed by hydroxychloroquine (11.8%) and mycophenolate (7.1%). Among biologic agents, adalimumab (10.6%) and secukinumab (7.1%) were the most frequently reported. Disease characteristics and treatment exposure are summarized in Table 2.

Table 2. Disease characteristics and treatment exposure among study participants.

Variable	Overall (N = 170)
Disease Category	
Inflammatory arthritis	130 (76.5%)
Connective tissue disease	19 (11.2%)
Other rheumatic diseases	21 (12.3%)
Disease Duration (Years), Mean (SD)	9.6 (8.2%)
Treatment Exposure	
csDMARDs	75 (44.1%)
Biologics	83 (48.8%)
JAKi	11 (6.5%)
Combination therapy (csDMARD + biologic or csDMARD + JAKi)	27 (15.9%)
Other therapies	1 (0.6%)

Inflammatory arthritis comprises rheumatoid arthritis, psoriatic arthritis, and axial spondyloarthritis; connective tissue diseases comprise systemic lupus erythematosus, Sjögren's disease, idiopathic inflammatory myopathies, and systemic sclerosis; other rheumatic diseases include Behçet's disease, vasculitis, and gout. Values are presented as numbers (percentages) unless otherwise indicated; continuous variables are expressed as mean ± standard deviation. Participants may have received more than one therapy; therefore, percentages may exceed 100%. csDMARDs: conventional synthetic disease-modifying antirheumatic drugs; JAKi: Janus kinase inhibitors.

3.3. Reproductive History, Intentions, and Concerns

Despite a high prevalence of prior fatherhood (93.7%), more than half of participants (52.4%) reported a desire for future paternity (Table 3).

Reproductive concerns were common and diverse. Among the 81 respondents who completed these questions, the most frequently reported concern was financial burden related to disease (65.4%), followed by concerns regarding medication effects on parenting ability (56.8%) and disease transmission to offspring (51.9 %). Concerns related to disease impact on parenting ability (51.8%) and potential birth defects (46.9.%) were also prevalent. Less frequently reported concerns included medication-related teratogenicity (35.8%) and fertility impairment (30.9%). Reproductive history, concerns, and future intentions are summarized in Table 3.

Table 3. Reproductive history, intentions, and concerns among study participants.

Variable	Overall
Parental Status (N = 142*)	
Has children	133 (93.7%)
No children	9 (6.3%)
Number of Children (N = 132)**	
Mean (SD)	3.7 (1.8)
Median (IQR)	4 (3)
History of Pregnancy Loss (Partner) (N = 142*)	
Yes	38 (26.8%)
No	104 (73.2%)
Future Reproductive Intention (N = 170)	
Plans for future paternity	89 (52.4%)
No plans or uncertain	81 (47.6%)
Family Planning Concerns (N = 81*)**	
Disease transmission to offspring	42 (51.9%)
Disease causing birth defects	38 (46.9%)
Medication-related birth defects	29 (35.8%)
Fertility impairment	25 (30.9%)
Disease affecting parenting ability	42 (51.8%)
Medication affecting parenting ability	46 (56.8%)
Financial concerns	53 (65.4%)

Values are presented as numbers (percentages) unless otherwise indicated. Percentages are calculated based on available responses within each subgroup. Analyses of parental status and history of pregnancy loss exclude missing responses*. The number of children was assessed among participants reporting having children**. Family planning concerns were assessed among participants reporting future reproductive intention***.

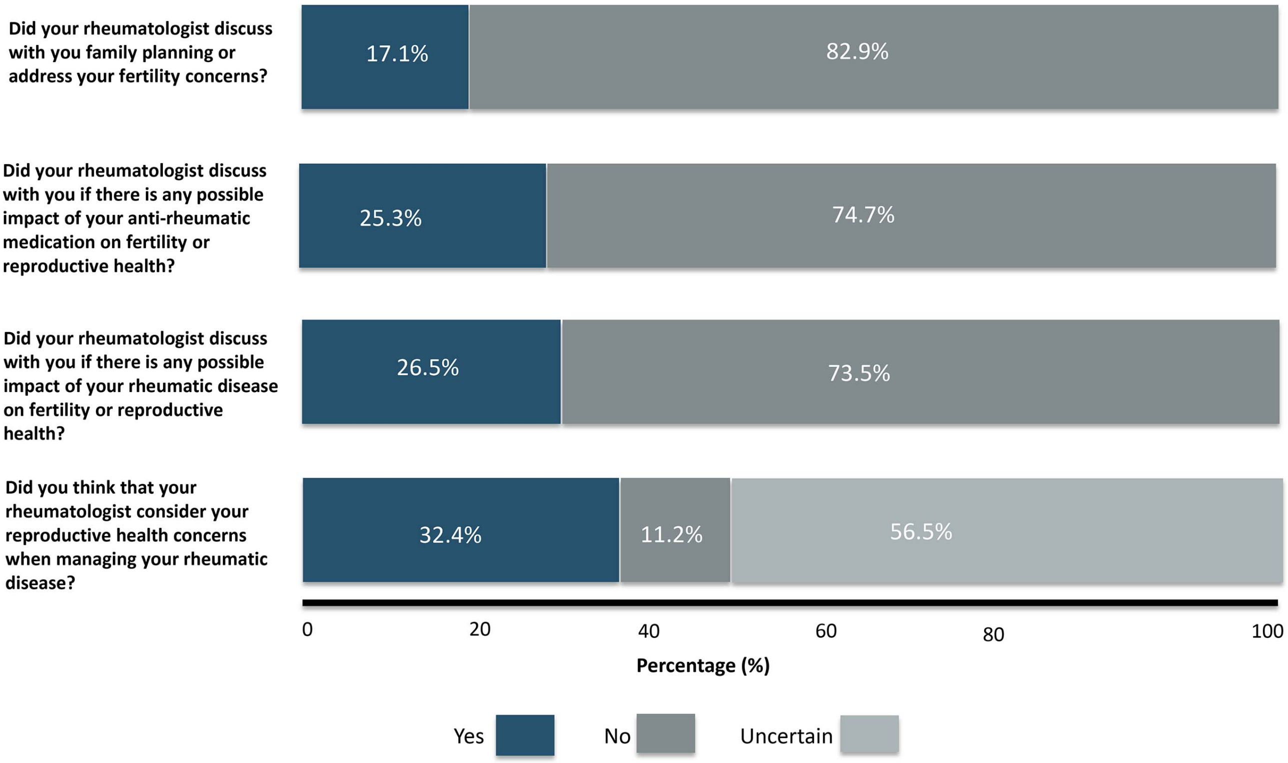
3.4. Experience with Healthcare Regarding Family Planning

3.4.1. Physician-Initiated Reproductive Health Discussions

Engagement in physician-initiated reproductive health discussions was limited.

Only 26.5% (n = 45) of the 170 participants reported that their rheumatologist had discussed the potential impact of disease on fertility or reproductive health, and 25.3% (n = 43) reported discussions regarding medication-related reproductive risks.

Notably, despite 52.4% (n = 89) of participants expressing a desire for future paternity, family planning discussions were initiated by physicians in only 17.1% (n = 29) of cases. Furthermore, only 32.4% (n = 55) of participants perceived that their rheumatologist adequately considered reproductive health concerns, while 56.5% (n = 96) remained uncertain (**Figure 1**).



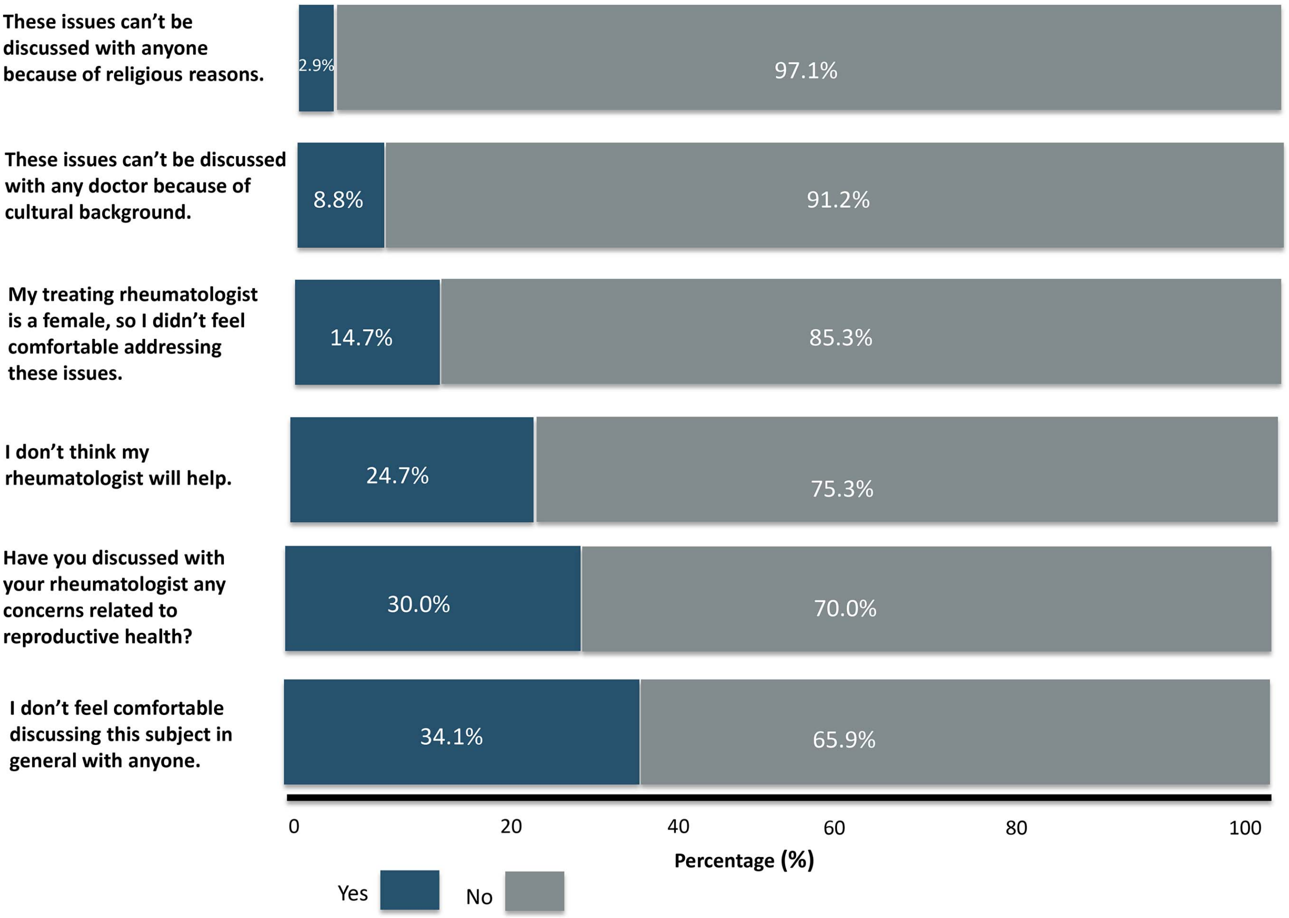
Proportion of participants reporting physician-initiated discussions regarding the impact of disease and medications on reproductive health. Percentages are calculated based on available responses.

Figure 1. Frequency of physician-initiated discussions on disease- and medication-related reproductive health.

3.4.2. Patient-Initiated Discussions and Reported Barriers

Among the 170 respondents, only 30.0% (n = 51) reported initiating discussions regarding reproductive health with their rheumatologist.

Barriers to communication were frequently reported. The most common barrier was general discomfort in discussing reproductive health (34.1%, n = 58), followed by perceived lack of physician engagement (24.7%, n = 42). Physician gender-related discomfort was reported by 14.7% (n = 25) of participants, while cultural (8.8%, n = 15) and religious (2.9%, n = 5) barriers were less frequently cited (**Figure 2**).



Patient-reported barriers to initiating reproductive health discussions, including personal, physician-related, and sociocultural factors. Percentages are calculated based on available responses.

Figure 2. Patient-initiated reproductive health discussions and reported barriers to communication.

4. Discussion

This study provides important insights into the unmet reproductive health needs among male patients with rheumatic diseases in Kuwait. The findings demonstrate a consistent pattern of limited counseling, significant knowledge gaps, and persistent communication barriers, reinforcing concerns raised in the literature regarding the under-recognition of male reproductive health in rheumatology care [5]-[8].

A key finding of this study is the marked discordance between high reproductive intention and low rates of physician-initiated counseling. Despite more than half of participants expressing a desire for future paternity, only a minority reported that reproductive health discussions were initiated by their rheumatologist. This mismatch indicates that reproductive health is not systematically integrated into routine care pathways for male patients. These findings align with prior studies demonstrating that reproductive health discussions in male patients with rheumatic diseases are often infrequent and predominantly patient-initiated rather than proactively addressed in clinical practice [6] [17].

Our findings also highlight substantial patient-level knowledge deficits. The knowledge gaps identified in this cohort, particularly regarding disease transmission, medication-related risks, and fertility implications, mirror observations reported in international populations. Prior studies have shown that male patients with rheumatic diseases often have limited awareness of the potential impact of disease and treatment on reproductive outcomes, despite expressing substantial concern about these issues [6] [17]. This persistent gap highlights a broader limitation in knowledge translation within routine rheumatology care.

Communication barriers further contribute to this gap. General discomfort in discussing reproductive health and perceived lack of physician engagement were the most frequently reported barriers, mirroring findings from studies in Europe and North America [15]-[17]. These observations suggest a bidirectional communication failure, whereby both patient-related factors (e.g., discomfort or hesitation) and clinician-related factors (e.g., lack of initiation) contribute to the under-discussion of reproductive health.

Within the regional context, sociocultural factors may also influence communication patterns. Although cultural and religious barriers were reported less frequently than general discomfort, their presence is in keeping with findings from culturally diverse settings**,** where social norms and sensitivity surrounding reproductive health can influence patient-physician interactions [2]. This highlights the importance of considering contextual factors when interpreting patient.

Notably, data from the MENA region remains limited. To our knowledge, this study is among the first to examine patient-reported reproductive health experiences in men with rheumatic diseases in this regional context. This is particularly important given the distinct sociocultural environment, where fertility-related discussions may be influenced by cultural norms, stigma, and communication dynamics. Our findings, therefore, provide context-specific insights that may not be fully captured in Western populations and support the need for regionally tailored models of care.

Taken together, these findings indicate that male reproductive health remains an underrecognized aspect of rheumatology care, both regionally and internationally. The consistency of these observations across different settings suggests that this gap is not limited to a single healthcare system but reflects a broader challenge in integrating male reproductive health into routine clinical practice.

5. Strengths, Limitations, and Future Directions

This study has several strengths, including its focus on an underrepresented patient population, multicenter recruitment across Kuwait, and the use of patient-reported data to capture real-world experiences. It also addresses a critical evidence gap by providing primary data on male reproductive health in rheumatic diseases from the MENA region, a setting that has been previously underrepresented in the literature.

However, several limitations should be acknowledged. The cross-sectional design precludes causal inference, and reliance on self-reported data introduces the potential for recall and social desirability biases, particularly given the sensitive nature of reproductive health discussions.

The modest sample size (n = 170) may have limited statistical power and the ability to detect meaningful subgroup differences.

Selection bias cannot be excluded, as recruitment through outpatient clinics and social media platforms may have preferentially included individuals more engaged with healthcare services or more willing to report reproductive concerns. In addition, although approximately 700 individuals were approached, only 170 participated, raising the possibility of non-response bias, whereby respondents may differ systematically from non-respondents in ways that could influence the findings.

The exclusion of patients with known primary or secondary infertility may have led to an underestimation of the overall burden of reproductive health concerns in this population, as these individuals may have distinct and potentially greater unmet needs.

Furthermore, as the study was conducted within a single national healthcare system, the findings likely reflect context-specific clinical practices and sociocultural factors, which may limit external generalizability to other regions.

The survey instrument was not formally pilot-tested or externally validated, which may affect measurement reliability and comparability. Additionally, the absence of physician perspectives and detailed objective clinical data, including disease activity measures and precise medication exposure timing, limits a comprehensive evaluation of reproductive health care gaps and their relationship to disease severity, treatment factors, and patient-reported concerns.

Future research should focus on adequately powered, multicenter, and longitudinal studies to better define the relationship between disease characteristics, treatment exposures, and reproductive health outcomes. There is also a need to develop and validate standardized, culturally sensitive tools for assessing male reproductive health in rheumatic diseases.

Incorporating both patient and physician perspectives through multidisciplinary, mixed-methods approaches will be important to better understand communication barriers and care gaps. Interventional studies evaluating structured reproductive health counseling strategies, including integration into clinical workflows and guideline-informed practices, are also warranted.

Such efforts will be essential to inform scalable approaches that enhance patient engagement, shared decision-making, and reproductive health outcomes in this underrecognized population.

6. Conclusions

Male patients with rheumatic diseases in Kuwait experience substantial unmet needs in reproductive health, characterized by limited knowledge, low rates of physician-initiated counseling, and persistent patient-physician communication barriers. Despite a high proportion expressing future reproductive intentions, discussions regarding fertility, disease-related risks, and treatment implications remain insufficient in routine clinical practice.

These findings highlight a critical and underrecognized gap in rheumatology care and emphasize the need for systematic integration of male reproductive health into routine clinical assessment and management. Incorporating structured, proactive, and culturally sensitive counseling, supported by communication frameworks and guideline-informed care pathways, may facilitate more consistent and effective patient engagement.

Addressing this gap is essential to advancing more comprehensive, patient-centered, and anticipatory care in rheumatology, with the potential to improve shared decision-making and reproductive health outcomes in this underrecognized population.

Authors' Contributions

All authors contributed equally to formulating the survey questions, analyzing the survey results, conducting the literature review, and preparing this manuscript.

Agreement to Conditions

All authors have read and agreed to the manuscript's content and are accountable for its accuracy and integrity. The submitted article is an original work that has not been considered or reviewed by any other publication and has not been published elsewhere in the same or similar form.

Ethical Approval

This study was conducted in accordance with the principles of the Declaration of Helsinki. The Ministry of Health in Kuwait's Ethical Approval Committee approved the study protocol (Approval Number: 2024/2670).

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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