EJR European Journal of Rheumatology

DOI: 10.5152/eujrheum.2022.20012

Original Article

Multidisciplinary models for pregnancy care in patients with rheumatic diseases: Clinical experiences and experts opinion

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Cite this article as: Pluma A, Alsina L, Baniandrés O, et al. Multidisciplinary models for pregnancy care in patients with rheumatic diseases: Clinical experiences and experts opinion. *Eur J Rheumatol.* 2022;9(4):191-196.

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Abstract

Objectives: To describe different models of multidisciplinary pregnancy care for patients with inflammatory and autoimmune rheumatic diseases, and the steps to follow concerning their implementation.

Methods: A qualitative study was conducted including: (1) a comprehensive literature search in PUBMED focused on multidisciplinary care models; (2) structured interviews with seven rheumatologists from multidisciplinary pregnancy clinics for patients with inflammatory and autoimmune rheumatic diseases. Data were collected related to the hospitals, medical departments, populations cared for, and multidisciplinary care models (type, material, and human resources, professional requirements, objectives, referral criteria, agendas, protocols, responsibilities, decision-making, research and educational activities, multidisciplinary clinical sessions, initiation/start, planning, advantages/disadvantages, and barriers/facilitators for implementation); (3) a nominal meeting group in which the results of searches and interviews were analyzed and the recommendations for the implementation of the multidisciplinary care models defined.

Results: We analyzed seven models of multidisciplinary care in pregnancy, implemented 3-10 years ago, which can all be summarized by two different subtypes: parallel (patients are assessed the same day in the involved medical services) and preferential (patients are assessed on different days in the involved medical services) circuits. The implementation of a specific model results rather from an adaptation to the hospital's and professionals' circumstances. Correct planning and good harmony among professionals are key points to implementing a model.

Conclusion: Different multidisciplinary care models have been implemented for patients with inflammatory and autoimmune rheumatic diseases during pregnancy. They pretend to improve care, system efficiency, and collaboration among specialists and should be carefully implemented.

Keywords: Rheumatic diseases, pregnancy, breastfeeding, multidisciplinary care

Introduction

Inflammatory and autoimmune rheumatic diseases significantly affect women of childbearing age.[1,2] The traditional concept that these conditions are an insuperable obstacle toward pregnancy is now obsolete. Though fertility can be affected by these diseases or their treatments and pregnancy might present complications in these patients, a proper planning and monitoring of pregnancy reduces this risk.[3–5]

However, in routine clinical practice, there is an enormous variability in the management of fertility, pregnancy, and lactation in these patients. Many of them are independently assessed by rheumatologists, gynecologists/obstetricians, and even pediatricians, which means that the care process might not be the optimal for either the patient or the system.

On the other hand, a multidisciplinary approach has been strongly recommended in national and international recommendations,[6,7] as well as groups of experts and patients.[8] In recent years, this has led to the development of different models of multidisciplinary care for these patients.

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Submitted: March 20, 2020
Accepted: October 20, 2021
Available Online Date: February 7, 2022

Main Points

- Multidisciplinary care during pregnancy could improve outcomes and patients satisfaction.
- There are different multidisciplinary care models depending on the organization and resources and two main types: parallel and preferential circuit.
- A climate of understanding and cooperation between specialists is key to implementing these models and guaranteeing their success.

Taking into account all of the aforementioned exposed, the objective of this project was to describe different characteristics of the multidisciplinary care models in our country, as well as the barriers and facilitators to their implementation. This could help as a guide for health professionals who wish to initiate multidisciplinary care for patients with inflammatory and autoimmune rheumatic diseases during their childbearing years, pregnancy, postpartum, and lactation.

Methods

Study design

This was a qualitative study designed to characterize different models of multidisciplinary pregnancy care for patients with rheumatic diseases in Spain. (Figure 1 describes the steps of this project.) More specifically, to describe what an institution does to organize a multidisciplinary care team for pregnant patients. The project was carried out in full conformity with the principles set out in the Declaration of Helsinki concerning medical research involving human subjects and in agreement with the applicable Good Clinical Practice regulations. A methodologist coordinated all the project. This project did not include patient's ethics committee approval and informed consent as they were not necessary due to the study design.

Selection of experts and review of literature

The first step was to select a group of health professionals with expertise and interested in the multidisciplinary management of patients with inflammatory and autoimmune rheumatic diseases in areas that include reproductive health, pregnancy, breastfeeding, and follow-up of the children of women affected by these diseases. Seven rheumatologists, three gynecologists, one dermatologist, and one pediatrician were included. We defined expert as a health professional with clinical experience $\geq$8 years and/or $\geq$5 publications in the field. At the same time, a narrative literature search in PUBMED focused on (but not limited to) multidisciplinary care models in pregnancy was carried out. Other aspects like unmet needs, pregnancy outcomes, and patients opinions were also evaluated. We used Mesh terms like "Pregnancy" or "Interdisciplinary Studies" but also text word terms. One reviewer selected articles and collected data.

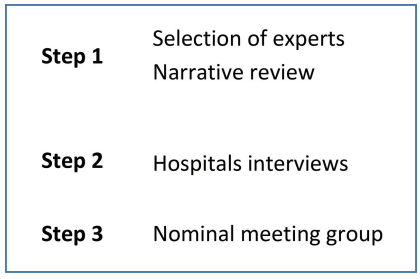

Figure 1. Project steps.

Interviews and collected variables

With the information obtained from the literature review, a specific case report form was designed to collect data on the different multidisciplinary care models developed in Spain. Through several teleconferences, the rheumatologists in charge of multidisciplinary care during pregnancy were contacted by the methodologists and interviewed. We only interviewed the rheumatologist to simplify this phase. They are the coordinators of the units and, therefore, can properly describe their characteristics. However, during the nominal group meeting, all of these data were presented, discussed, and completed if considered necessary. The following variables were collected: (a) those related to the work hospital, including hospital level, city, reference population, distribution of population served (% urban and % rural), and computerization level; (b) those related to the medical department, such as organizational structure, care for patients with rheumatic diseases (hospital, ambulatory, or both), and the number of doctors on staff; (c) those related to the types of multidisciplinary care models, including material resources (consultation, equipment, etc.), human resources (specialists, nursing, etc.), professional requirements (training, interest of those involved, etc.), objectives, referral criteria, agendas, clinical protocols, assessment of patients outcomes, responsibilities, decision-making, research and teaching activities, joint clinical sessions, start of the model (health needs and resources, contacts between specialties, information/dissemination of the model across the medical departments, and specific training), implementation issues (barriers, facilitators, and strategies), leadership, planning, incentives, advantages, and disadvantages of the models.

Nominal meeting group and publication

The results of the literature searches and interviews were presented and analyzed in a face-to-face nominal group meeting in which all of the selected experts (seven rheumatologists, three gynecologists, one dermatologist, and one pediatrician) were participated. Their age varied from 40 to 62 years, seven were women, and the years of clinical experience varied from 16 to almost 30. All but one of the experts work in reference hospitals. Then, through guided discussions with a methodologist, all aspects related to the characteristics of the care models health system features and steps/recommendations/points to consider in

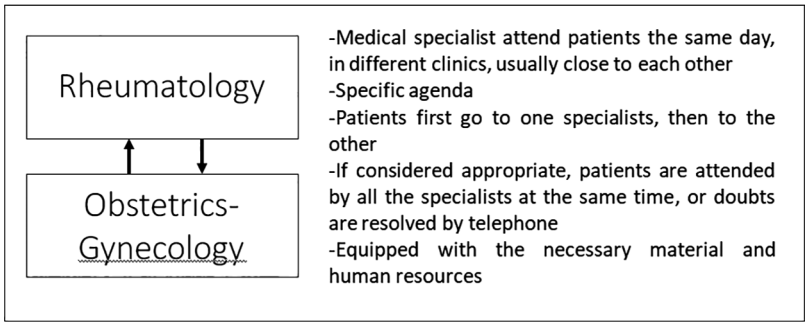

Figure 2. Features of the parallel care model.

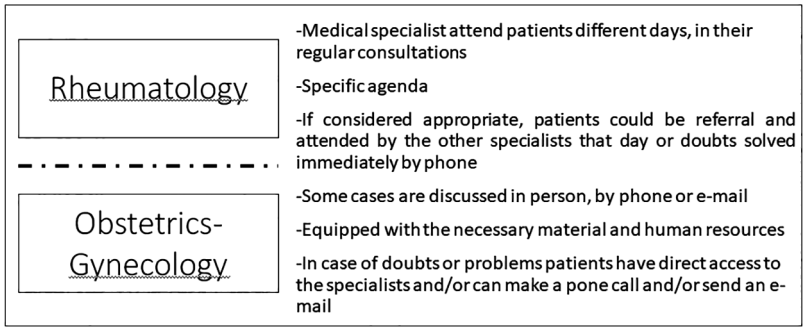

Figure 3. Features of the preferential care model.

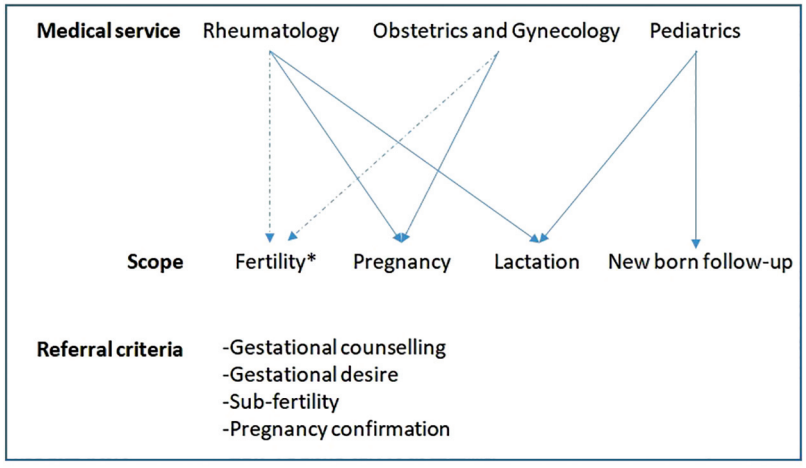

Figure 4. Structure, scope, and referral criteria of the multidisciplinary care for patients with rheumatic inflammatory diseases.

order to establish a model were defined and agreed. For this purpose, in a first step, the methodologist proposed different topics like the structure and human resources of these models or the specialists training, in order to define the key pints of the models. Then, as an exercise, the methodologist guided the experts, based on their own experience, through the steps to follow in the implementation of any of these models. All of the statements and recommendations were in situ agreed orally. After the meeting and following the experts' specifications, the final document was generated. The document circulated among the experts for final assessment and comments.

Statistical analysis

As this is a qualitative study, we did not perform any statistical analysis.

Results

Literature review and general characteristics of the multidisciplinary care models

The search strategy retrieved more than 300 articles; none of them described a multidisciplinary care model for patients with rheumatic diseases during pregnancy.

On the other hand, the interviews identified a total of seven multidisciplinary care models–one for each hospital that were classified into two different main types: five of them presented a parallel model (Figure 2) and two a preferential circuit (Figure 3). All of them share many of the features described below (objectives, training, or responsibilities) but present differences, for example, regarding the number and type implication of medical departments or the referral criteria.

These models were implemented 3-10 years ago, and two of them started a preferential circuit but then changed to a parallel model. All of them have been adapted to the characteristics of the hospital, health professionals, and available resources. The leadership was mostly shared among the specialists, with a good acceptance and involvement of the remaining colleagues of the medical departments.

In relation to the hospitals, they present different structures and resources, including attending populations ranging from 150 000 to almost 500 000 (most of them urban population), with a very high level of health information technology.

Structure, scope, objectives, and referral criteria

Depending on the hospital, the medical departments involved varied. In addition to rheumatology and obstetrics/gynecology departments (generally through high-risk pregnancy units and sometimes units specializing in fertility and assisted reproduction), others, such as hematology (three hospitals) or pediatrics (two hospitals), were similarly involved (Figure 4).

In all of these seven models, the health professionals are experts in this field, being one rheumatologist the main coordinator of the multidisciplinary care. All of them have performed specific courses and training. They also have the necessary equipment to provide an optimal care related to patients rheumatologic and gynecologic needs. However, they have neither another referral rheumatologist nor as specialized nurse.

Concerning the scope of these multidisciplinary models, they are all mainly (or

Table 1. General Steps to Follow When Implementing a Multidisciplinary Pregnancy Care Model for Patients with Inflammatory Rheumatic Diseases

Preimplantation Steps
1. Selection of specialists with experience, interest, and good understanding
2. Communication among the heads of the involved departments
3. Analysis of the health/care needs of the attended population
4. Find out if the proposal must be submitted to the hospital director/officer
5. Agreement on
• Most appropriate type of model according to the features of the center/professionals
• Patients referral criteria
• Agendas
• Frequency of visits and number of patients/visits
• Ways of communication including the phone, mail, in person, etc.
• Place(s) where the multidisciplinary consultation will take place
• Materials resources needed (computer, chairs, etc.)
• If applicable, protocols and guidelines to be followed
• Level of responsibility/implication in the patient treatment and follow-up
• List of objectives
• Evaluation of the clinical activity (what, who, where, etc.)
• Measures (related to the disease, pregnancy, etc.)
6. Presentation of the project to the involved clinical departments

exclusively) focused on the care of women with inflammatory and autoimmune rheumatic diseases during pregnancy. In six of the hospitals, there are additional areas of interest like fertility or the follow-up of certain newborns. The specific issues depending on the model include sexuality, fertility, and associated problems (in five hospitals), assisted reproduction (in two hospitals), contraception, preconceptional counseling, pregnancy planning, pregnancy and childbirth, postpartum and lactation, and care for newborns.

The main objective of these models is to improve the care of patients with inflammatory and autoimmune rheumatic diseases in this field, but they are also oriented to increase health system efficiency and specialist's relationships. The referral criteria are clear but also those who define the return of patients to their responsible doctors.

The referral criteria might varied depending on the model. In some of them, patients are referred when they express a desire to become pregnant and/or have problems to become pregnant and/or need preconceptional counseling, and in others, once the pregnancy is confirmed. But in all cases, it is the rheumatologist coordinator of the model who attend the patients and define further actions according to predefined protocols and actions. The same way the rheumatologist is responsible for referring back again patients to their doctors. For example, in the case of a pregnant women, a final visit in this multidisciplinary care is usually scheduled 3 or 4 weeks after childbirth, in which pregnancy and disease outcomes are assessed, and if there are no related clinical problems, the patient is referred to their usual rheumatologic care.

Finally, three of these hospitals are considered as reference hospitals for multidisciplinary care during pregnancy, and therefore attend patients from other hospitals.

Clinical processes

In parallel models, patients are attended on the same day by all of the involved specialists, being the rheumatologist usually the last one. In preferential circuits, patients are assessed on different days. However, if considered appropriate (e.g., when relevant treatment changes are necessary or in cases of pregnancy complications), the patient can also be either referred to another specialist on the same day or the situation solved by telephone. In addition, regardless of the model, all patients can attend both rheumatology and high-risk pregnancy consultations, make phone calls, or even consult by email in the case of doubts or problems.

The visits schedule during pregnancy vary across hospitals, generally ranging from one to four consultations per month, the most common being one per month, depending on patients and protocols characteristics. Especially at the end of pregnancy, this frequency might increase in complex cases, such as for patients with high disease activity or severity. The number of patients attended in each visit along with the visit duration is also variable, ranging from 20 to 40 minutes per patient. All patients are given a specific report at each consultation's end.

On the other hand, the clinicians of these models follow the recommendations of the national and international consensus and guidelines, along with their own experience, adapting everything to the characteristics of the hospital and available resources. Moreover, based on all of this, in some of these models, specific and holistic protocols have been designed. For example, in patients with systemic lupus, once the pregnancy is confirmed, the assessment of disease activity including renal function parameters and serological markers (serum C3/C4, anti-dsDNA titers) is evaluated.

Electronic data collection is carried out in all hospitals, but there is a great variability concerning the type of data collected. There are also hospitals in which a common history/process is available for the same patient, but in others, there is one for the rheumatologic visit and a different one for the obstetric evaluation.

All medical specialists are co-responsible for patient care including the treatment decision-making, and they discuss each case if necessary during the consultation and/or by telephone, e-mail, etc.

Finally, many of these units are taking part in different research projects, and educational activities with rheumatology and/or family residents. However, multidisciplinary clinical sessions are yet not common, only two hospitals perform them.

Experience and recommendations for implementing a multidisciplinary care model

During the face-to-face meeting, all of the statements and recommendations exposed below were agreed by all of the participants.

According to these model participants, a climate of understanding and cooperation between specialists is key to implementing these models and guaranteeing their success. Along with this, they also agree on the importance of involving healthcare professionals with interest and expertise in this field.

When considering the implementation of a multidisciplinary care model, the project's participants clearly stated that it is vital to carefully plan the whole process, recommending a series of steps (see Table 1).

It was first recommended to perform a comprehensive analysis of the attending population and hospital features in order to define the needs, along with the available resources. This primarily consists in estimating the number of women of reproductive age with

autoimmune/inflammatory diseases. For this purpose, epidemiological data on the characteristics of the population prove highly useful. Regarding the analysis of the resources in the rheumatology, gynecology-obstetrics, and other departments involved, the panel considers very important not only to define what will be used and needed but also to make an effort in order to optimize all of them. In the case of rheumatology, gynecology-obstetrics might be clear, but not for others. For example, regarding pediatric care, in one of the models, there is a pediatrician with knowledge and expertise in clinical immunology who is guiding patients (who have been exposed to biologic therapies during pregnancy) regarding vaccination, breastfeeding, or the risk of infections.

But, in principle, this type of care would not need anything more than what is already provided in the routine care.

Real communication and agreement among the medical departments involved in the multidisciplinary care model are mandatory as well. This comprises the selection of the care model, scope of collaboration (e.g., only pregnancy or also others related to reproductive health), selection of the clinician/s, definition of the referral criteria, generation of specific protocols (if applicable), agenda and visits schedule, data to be collected, etc.

Once these parameters are stablished, it is recommended to present the model to the rest of clinicians of the medical departments. This is another critical point; it is very important that everybody shares and agrees with the objectives, criteria, and procedures of the model.

Finally, when the model is already implemented, the experts recommend to evaluate the model outcomes and process every 3-6 months over the first 2 years in order to make appropriate changes and adjustments.

On the other hand, all of the experts were very satisfied with these care models, and all of them agreed that compared with usual care, patient's outcomes were better with this special care irrespectively of the model. Besides, in their opinion, patients' adherence to these models is also very high.

Discussion

In this article, we have described different care models that provide multidisciplinary care for patients with inflammatory and autoimmune rheumatic diseases during (but not restricted) pregnancy, along with the experiences collected during their implementation. Besides, we have shown, based on these models, how organize and start a multidisciplinary care team. Although these models may differ in terms of both structure and organization, they are all focused on the improvement of patient care and health system efficiency. In addition, all these models promote collaboration among specialties.

Inflammatory and autoimmune rheumatic diseases and their treatments might have a relevant impact not only on patients during childbearing age but also on the other way, for example, the pregnancy on the disease activity.[3–5] Therefore, in clinical practice, different issues might arise concerning family planning, pregnancy, and early parenting[1,2,8,9] that many times can only be answered and managed by different health professionals.

For these reasons, a number of healthcare professionals have recommended to develop a multidisciplinary approach in this context.[6,7] Different surveys and other types of qualitative studies have shown that patients consider absolutely vital this approach. However, it should be mentioned that most of them also describe a lack of well-coordinated multidisciplinary care not only between clinical departments but also with primary care.[8] Interestingly, in the literature, there are studies in which a multidisciplinary care is provided during pregnancy planning and pregnancy. Therefore, it seems that this type of care is a reality and is considered optimal in order to achieve the best outcomes for women and children.[8,10] However, there is a remarkable lack of publications focused on multidisciplinary care models, with a detailed description of their objectives, structure, and procedures. This information is very important in order to implement a multidisciplinary care model.

Recently, a report has depicted some promising outcomes of a multidisciplinary approach for patients with systemic lupus erythematosus and nephritis. This model involved gynecologists, nephrologists, and rheumatologists who followed a predefined and agreed prophylactic treatment protocol.[11] Other similar experiences have been published, with good results for patients diagnosed of other inflammatory and autoimmune rheumatic diseases.[12–16]

For this project, we have analyzed seven different models of multidisciplinary care with different characteristics in terms of organization and structure, though they could roughly be grouped together into two model types: parallel attention and preferential circuits.

In addition to rheumatology specialists, gynecology-obstetrics also participated in these models and, depending on the hospital, other specialties. At the start of this collaboration, many models focus their attention only on pregnant women, but then, progressively, extended their focus toward preconceptional counseling, fertility, and even, in several instances, the follow-up of some newborns.

One major advantage of these two models (parallel attention and preferential circuits), compared with the traditional face-to-face pattern (units) in which several specialists consult the patient in the same time at the same place is that not all patients need two specialists to take care of the same issues or to be discussed. What is actually important is to be coordinated with the other/s specialists and to be properly informed (in terms of the variables that can lead to a specific decision). As a consequence, in these proposed models, patients are first evaluated by one of the specialists who solve doubts or questions and make related decisions along with the collection of relevant variables for the multidisciplinary care on the electronic medical record. Then, the other specialist carries out a quick consultation, which can save time. The same way when the patient comes back to the first specialists, it is easy to track and evaluate the other specialist evaluation and decisions. But, in all of them, if considered necessary, patients can be evaluated at the same time or some decisions be discussed all together. This is the reason why these models could be implemented in most hospitals, even the smallest ones, with fewer resources. Regardless of the above, there is no doubt that the choice of one model over another depends on the specific needs of the health hospital/area, as well as the available resources, both material and human.

On the other hand, in terms of implementation, good process planning can greatly favor its success. In this sense, it is crucial that the members of these multidisciplinary consultations have enough interest and professional experience, and a good understanding.

However, we would also like to highlight some of the limitations of this study. First, this is a descriptive and qualitative study. Therefore, we cannot demonstrate the efficacy of the implementation of these care models. More research is needed in this context. Besides, only the care models of seven hospitals were included. Although there could be another type of care models, the experts were not aware of any of them, and there was not more information in the literature. Finally, as mentioned before, the implementation of any of the care models might be influenced by different barriers like the lack of resources or specialists training.

Though we currently need more data on the efficiency of these multidisciplinary care models, it is quite clear that the management of these patients can still greatly be improved, as well as the results of the health system, by encouraging collaboration among different medical specialties.

Ethics Committee Approval: N/A.

Informed Consent: N/A.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - A.P.; Design - A.P.; Supervision - A.P., L.A., O.B., R.C., M.C., D.G., J.A.M.L., E.P.P., A.P., J.M.P.R., E.T., P.V.; Materials - A.P., L.A., O.B., R.C., M.C., D.G., J.A.M.L., E.P.P., A.P., J.M.P.R., E.T., P.V.; Data Collection and/or Processing - A.P., L.A., O.B., R.C., M.C., D.G., J.A.M.L., E.P.P., A.P., J.M.P.R., E.T., P.V.; Analysis and/or Interpretation - A.P., L.A., O.B., R.C., M.C., D.G., J.A.M.L., E.P.P., A.P., J.M.P.R., E.T., P.V.; Literature Search - A.P.; Writing Manuscript - A.P.; Critical Review - A.P., L.A., O.B., R.C., M.C., D.G., J.A.M.L., E.P.P., A.P., J.M.P.R., E.T., P.V.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: The project was supported by UCB Pharma.

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