To the Editor:

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Epidemiology of Rheumatic Diseases in Greece

environmental and genetic factors remains uncertain. There is scarce infor­
esting data concerning the prevalence of rheumatic diseases in the Greek
to present significant variations among different populations. Ethnic, racial.
areas of the world is of interest, as the occurrence of these diseases seems
the descriptive epidemiology of rheumatic diseases in several countries and
oratory evaluation of participants (ESORDIG Study).

because of the possible role of environmental and lifestyle factors charac­
European and Mediterranean countries. The investigation of the epidemio­
population'. The study was carried out in a sample of 8740 Greek adults.

0.67%. respectively. For psoriatic arthritis (PsA) the respectiv'e prevalence
in the sample of the ESORDIG study. However, for rheumatoid arthritis
rates were

from this point of view the anicle by Andrianakos, et 0/
Our study group has implemented a systemic recording system of
Specifically, the age-adjusted prevalence rate for systemic lupus ery­
the prevalence rate of RA high­

(2) Another possible explanation could be related to different application of
diagnostic criteria. This is more probable for PsA and AS, as definition cri­
teria are not clear enough for these diseases. Misclassification of cases
could partly explain the differences observed. (3) The sample investigated
in the ESORDIG study could not be considered as representative of the
general Greek population, since it does not include any area of northwest
Greece or other departments of Greece (central midland area or the islands
area). However, it is unlikely that the areas included in this study represent
a population characterized by such a higher prevalence of rheumatic
disease.

On the other hand, the systematic recording system implemented in
northwest Greece could partly underestimate the prevalence of these dis­
seases, as it is based on diagnosed cases. In our studies on the epidemiolo­
gy of autoimmune rheumatic diseases in this area we estimated that only a
small number of mild cases could escape the recording system, as it is rel­
atively complete, using multiple sources of retrieval6.7.

Comparing the findings of the Greek studies to international data, we
could say that the ESORDIG study estimated a prevalence rate of RA higher
than those found in other southern European countries, and prevalence rates
for PsA and AS higher than those found even in northern European
countries or in the United States. In contrast, the prevalence estimated for
SLE was lower than in other countries. The prevalence rates estimated by
our group were about half those found in northern European countries or
areas of the USA, for all these diseases. We also found a milder expression
of the diseases in our study population. Studies from other southern
European countries also indicated a relatively low frequency and milder
expression for autoimmune rheumatic diseases, and these findings may be
related to environmental and lifestyle factors characterizing these areas6.7.
We consider that the ESORDIG study overestimates the prevalence of
autoimmune rheumatic diseases in the Greek population, especially the
prevalence of AS. A more complete investigation is needed in order to
describe the epidemiological profile of these diseases in the whole country.
This includes a representative sample of the general population, and study
of the incidence and severity (and not only the prevalence) of cases for each
disease, as well as their distribution by sex, age, and socioeconomic groups.

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Dr. Andrianakos, et al reply

To the Editor:

We thank Dr. Alamanos and coworkers for their comments and their interest in our article. In comparing the results of our cross-sectional population based epidemiological study of rheumatic diseases in Greece (ESORDIG study) to the results of their studies based on diagnosed cases in 2 hospitals and private rheumatologists' offices in northwest Greece, Alamanos, et al. comment on the prevalence rates of some inflammatory rheumatic diseases. Their estimated prevalence rates for rheumatoid arthritis (RA), psoriatic arthritis (PsA), and ankylosing spondylitis (AS) at 0.33%, 0.06%, and 0.33% respectively, were indeed very low, compared to those we found (0.67%, 0.17%, and 0.24%). We agree that differences in the prevalence rates could be attributed either to a possible overestimation in our study or to underestimation in the northwest Greece studies.

Regarding an overestimation on our part: In stating that the participation rate in our study was 61.4%, leading to a possible selection bias effect, Dr. Alamanos and coworkers are mistaken: the participation rate was 82.1%, as we reported. A more cautious reading of our article reveals that the ESORDIG study population consisted of the total, nonselected adult population (> 19 years old) of 2 urban, 1 suburban, and 4 rural areas located throughout mainland Greece (8547 subjects), as well as 2100 out of 5068 randomly selected subjects in one additional rural and one suburban community in which every second and third household, respectively, was selected from a randomly chosen starting point (systematic sampling). Thus, the total (before selection) and the final (after selection) target population of the study was 14,233 and 10,647 adults, respectively. Of the final target population of 10,647 subjects who were visited at their homes by the participating rheumatologists, 8740 took part in the study. Therefore, the participation rate in our study was 82.1%, not 61.4%, as mistakenly perceived by Dr. Alamanos, et al. It follows that with such a high participation rate in a population based study, a selection bias is indeed only a very remote possibility. Moreover, analysis of the data of a random sample of nonresponders showed no significant difference from that of responders with respect to age, sex, and prevalence of rheumatic symptoms or diseases. It is also of interest that logistic regression analysis showed that there was no population selection or nonselection effect on the prevalence rates of the rheumatic diseases in general, and of RA, PsA, and AS in particular.

Further, as we clearly stated, the diagnosis of RA was based on the American College of Rheumatology (formerly the American Rheumatism Association) criteria, while that of seronegative spondyloarthropathies was based on the European Spondylarthropathy Study Group criteria. More specifically, the diagnosis of AS was made on the basis of the modified New York criteria. Moreover, in every single case, the diagnosis of rheumatic diseases was made by an experienced rheumatologist who, prior to the start of the study, had attended a training course on standardizing the use of the rheumatic disease classification criteria. As shown by logistic regression, it is noteworthy that in diagnosing rheumatic diseases, there was no significant variation among the participating rheumatologists.

As well, the ESORDIG study was conducted in urban, suburban, and rural areas located in northern, central, and southern mainland Greece as shown in Figure 1 in our article. Using Pearson correlation coefficients, we found a significant similarity in the age distribution between the study participants, the total target adult population, and the total adult population of Greece, even when the data were analyzed separately for each sex in the participating urban, suburban, and rural populations and compared to the respective analysis by sex of the total adult Greek urban, suburban, and rural populations. It follows, therefore, that the ESORDIG study population was representative of the total Greek general adult population in terms of age and sex distribution. It is true that areas from northwest Greece or the islands were not included in our study, although 4% of the study participants were of island descent. However, as Dr. Alamanos and colleagues also state, the population of Greece is a relatively homogeneous Caucasian one without important socioeconomic, environmental, or other differences between the geographic departments of the country. In this respect, it should be emphasized that there were no significant differences in the prevalence of rheumatic diseases, including RA, PsA, and AS, between the studied northern, central, and southern areas of the country.

Based on the above findings, it does appear to be unlikely that the northwest region of Greece could be characterized by a lower prevalence of RA, PsA, and AS than that found by the ESORDIG study in so many other areas of the country.

Regarding an underestimation on the part of Alamanos, et al., the prevalence rates of RA, PsA, and AS in the northwest Greece studies may be underestimated due to the methodology used. The National Health System of Greece is characterized by the absence of systematic patient referral to specialized centers: patients have the freedom to choose their personal physician and can move from one area to another seeking what is, in their opinion, better health care. Therefore, patients with severe forms of RA, PsA, or AS could feasibly have moved and sought health care in areas outside northwest Greece, and mild cases may have been under the care of other medical specialties and thus not recorded. In connection with the latter, it should be taken into account that in our ESORDIG study findings, only 10.5% of AS patients had visited a rheumatologist as a first visit, while during the course of their disease (mean disease duration ± SD 18.03 ± 10.93 years) 32% of AS patients had never visited a rheumatologist (unpublished data).

In referring to international data, most of the prevalence studies for RA, PsA, and AS, in other European countries, have reported prevalence rates for these diseases which are very close to or even higher than those found in the ESORDIG study. Sarau, et al. from France have recently reported prevalence rates for RA and seronegative spondyloarthropathies at the level of 0.62% and 0.47% of adults, respectively, which are almost identical to those of the ESORDIG study (0.67% and 0.49%, respectively). In a study from Spain, Carmona, et al. found an RA prevalence of 0.5%. The prevalence rates for AS and PsA estimated by Braun, et al. in Berlin were at the level of 0.86% and 0.29%, respectively. On the other hand, studies in the USA have reported a prevalence rate for RA of approximately 1% and for PsA of 0.1%, although the latter has been considered to be underestimated. It is quite clear that methodological differences exist between our population based cross-sectional epidemiological study and the studies by Dr. Alamanos and Drosos and coworkers, which were based on diagnosed cases in 2 hospitals and private rheumatologists' offices and then extrapolated to the population of northwestern Greece. It is our strong belief that methodological differences are the most likely explanation for discrepancies in RA, PsA, and AS prevalences between the northwest Greece studies and our ESORDIG study.

To our knowledge, the ESORDIG study is the first population based cross-sectional epidemiological study that has simultaneously assessed the prevalence of all rheumatic diseases in the general adult population.
study, based on a standardized questionnaire as well as on clinical evaluation and laboratory investigation of the participants, was carried out in both phases exclusively by experienced rheumatologists who visited a representative sample of the Greek general adult population at their homes. Therefore, the estimated age and sex adjusted prevalence of all rheumatic diseases, including RA, PsA, and AS, can be considered to be representative of the prevalence of these diseases in the general adult population of Greece.

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Correction
Saunders D. Coping with chronic pain: what can we learn from pain self-efficacy beliefs. J Rheumatol 2004;31:1032-4. The author’s correct E-mail address is “douglas.saunders@utoronto.ca” We regret the error.