

# The burden of the rheumatic diseases in the general adult population of Greece: the ESORDIG study

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**Objective.** To estimate the burden of rheumatic diseases in terms of disability and health-care utilization in the Greek general adult population.

**Methods.** The study was conducted on the total adult population of seven communities (8547 subjects), as well as on 2100 out of 5686 randomly selected subjects in an additional two communities. Rheumatologists visited the participants at their homes to assess the prevalence of six morbidity indicators concerning disability and health-care utilization associated with rheumatic diseases or other major disease groups.

**Results.** The participation rate in the study was 82.1%. The prevalence of chronic health problems, long-term disability, short-term disability, physician office visits and prescription or non-prescription drug use due to rheumatic diseases in the total target adult population was 14.3, 4.3, 2.9, 2.8, 7.2 and 2.0%, respectively. Compared with all other major disease groups, rheumatic diseases were the most common cause of chronic health problems (38.7%), long-term disability (47.2%), short-term disability (26.2%) and physician office visits (20.5%), while they ranked second for the use of prescription (24.0%) or non-prescription drugs (17.7%). Rheumatic diseases were the main cause of morbidity in five out of six indicators in subjects aged  $\leq 65$  yr. Logistic regression analysis revealed an association of female gender, age  $\geq 45$  yr and obesity with almost all morbidity indicators related to rheumatic diseases.

**Conclusion.** These findings suggest that rheumatic diseases constitute a major public health problem and should be considered in planning undergraduate and postgraduate medical education, research and health-care services.

KEY WORDS: Rheumatic diseases, Burden, Disability, Health-care utilization, Impact, Musculoskeletal disorders.

Rheumatic diseases constitute a major health problem in the general adult population due to their high prevalence [1–5] and their association with significant morbidity [6–8], therefore making a considerable social and economic impact [8, 9]. The majority of people suffering from rheumatic diseases are elderly and since the age of the population is increasing, the burden related to these diseases is expected to increase in the near future [10]. However, the high prevalence and impact of rheumatic diseases is not reflected in the medical curriculum [11].

Rheumatic diseases are a common cause of long-term disability, representing 46–54% of all persons with activity limitation [6, 8]. It has been reported that the prevalence rate of long-term disability associated with rheumatic diseases in the general adult population ranges from 2.8 to 8.2% [6–8, 12–14]. Several studies have addressed other aspects of morbidity associated with rheumatic diseases, and have shown that rheumatic diseases are a significant cause of short-term disability [6, 8], physician office visits [4, 6, 8, 15, 16] and use of prescription or non-prescription drugs in the general population [6, 17]. However, to the best of our knowledge, only one study has, as yet, exclusively dealt with multiple aspects of long-term and short-term morbidity due to rheumatic diseases

as a whole in the general population in comparison to that caused by other major disease groups [6]. Therefore, this part of a cross-sectional, population-based epidemiological study of rheumatic diseases in Greece (ESORDIG study) [5] aimed at investigating the burden of rheumatic diseases in comparison with all other major disease groups, in urban, suburban and rural general adult populations of Greece, using six morbidity indicators referring to chronic health problems, long-term disability, short-term disability, physician office visits and use of prescription or non-prescription drugs.

## Methods

### Study population and subject evaluation

The ESORDIG study population consisted of the total, non-selected adult population (aged  $\geq 19$  yr) of two urban, one suburban and four rural areas located throughout mainland Greece (8547 subjects), as well as of 2100 out of 5686 randomly selected subjects in one additional rural and one suburban community. In the latter areas every second and third household,

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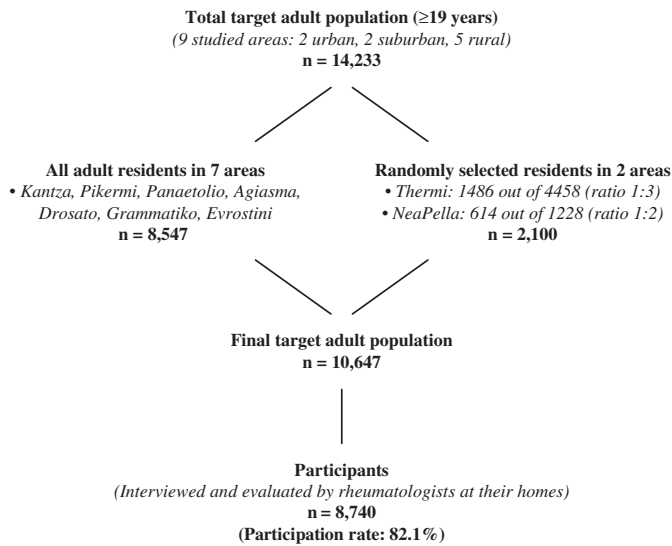


FIG. 1. Flow chart showing study design.

respectively, was selected from a randomly chosen starting point (systematic sampling) (Fig. 1); this was for practical reasons since there were only two available investigators for the suburban and one for the rural area. Sixteen rheumatologists conducted the study by visiting the target population at their homes. Each visit involved an interview with each participant and was based on a standardized questionnaire aimed at obtaining a variety of information on socio-demographic characteristics, medical history, six morbidity indicators, and on a specific standardized questionnaire aimed at revealing all subjects suffering from rheumatic diseases. The effect of non-selection and random selection of suburban and rural populations on the study results were tested in a logistic regression model, in which the dependent variables were the morbidity indicators and the independent variables were the selected/non-selected populations. As previously described [5], data were obtained from a random sample of non-responders on socio-demographic characteristics, past medical history, previous rheumatic disease diagnosis, and the reasons for non-participation in the study. Details on the ESORDIG study population, subject recruitment and evaluation, rheumatic diseases definitions and diagnosis, as well as on quality control have been reported previously [5].

*Morbidity indicators*

Six morbidity indicators (Table 1), as used by Badley *et al.* [6], were employed to assess the burden of rheumatic diseases, including inflammatory rheumatic diseases, symptomatic peripheral osteoarthritis, back pain, soft tissue rheumatism disorders, and miscellaneous rheumatic disorders, in the general adult population and to compare this burden with that caused by all other major disease groups. Two morbidity indicators, chronic health problems and long-term disability, were used to assess the long-term burden of rheumatic diseases in the general adult population compared with all other major disease groups. The other four indicators were used to assess the burden of rheumatic diseases, in comparison with all other major disease groups, over a 2-week period just prior to interviewing the participants, with respect to short-term disability, physician office visits and the use of prescription or non-prescription drugs.

Information on each of the six morbidity indicators associated with rheumatic diseases or any other disease was given to the rheumatologists by the study participants during the interview, with the use of the following six standardized questions: (i) Do you

TABLE 1. Morbidity indicators

Long-term	Chronic health problem	Any disorder that caused symptoms continuously or intermittently or for which the patient had been taking drugs continuously or intermittently for at least 3 months per year (in both instances)
	Long-term disability	The limitation of occupational or any other activities because of a chronic physical or mental disorder, compared with others in good health, of the same age and sex
2-week time period	Short-term disability	Staying in bed or the restriction of usual physical or occupational activities for one or more days because of any disorder during the 2-week period prior to the interview
	Physician office visits	Visit to a physician for any disorder during the 2-week period prior to the interview
	Prescription drug use	Use of any medically prescribed drug during the 2-week period prior to the interview
	Non-prescription drug use	Use of any non-prescription drug during the 2-week period prior to the interview

have any chronic health problem? (ii) Do you face limitation of your activities (professional, recreational or everyday life) due to any long-term physical or mental disorder, in comparison with other healthy persons of the same sex and age? (iii) During the previous 2 weeks, did you stay in bed or reduce your usual physical or occupational activities for one or more days because of any health problem? (iv) During the previous 2 weeks, did you visit a physician? (v) During the previous 2 weeks, have you taken any medically prescribed drug? (vi) During the previous 2 weeks, have you taken any non-prescription drug? When there was a positive response to any morbidity indicator question, the participant’s reply as to the disorder responsible was further confirmed by reviewing the individual’s medical records or by clinical evaluation by the rheumatologist-interviewer. In this context it should be noted that under the Greek National Health System, all patients have a medical booklet which they keep in their possession and wherein the physicians note the results of consultations. The patient uses this booklet for his/her health insurance claims but it also provides the physician with an up-to-date medical history. Following confirmation of the disorder (which elicited the positive response), its code was noted from a list of diseases classified according to the International Statistical Classification of Diseases, 10th revision [18], with the exception of the rheumatic diseases which were subclassified into six groups as previously described [5]. In cases where more than one disorder was accountable for a positive response to a morbidity indicator question, the interviewed participant was requested to list the disorders in order of diminishing severity. In the present study only the data referring to disorders recorded as the main cause of each morbidity indicator were analysed.

### Protocol approval

The study was conducted according to the Declaration of Helsinki and written informed consent was obtained from all the study participants, while the protocol was approved by the appropriate committees of the Ministry of Health and the Central Union of Municipalities and Communities of Greece.

### Statistical analysis

All analyses were conducted using SPSS v.12.0 for Windows. The population that participated in the study was weighted in terms of sex and age to the total adult population of the studied areas. This was done via the appropriate SPSS procedure using a post-stratification weighted coefficient which was calculated on the basis of sex and age distribution in each area of both the total adult population and the participant study population [19]. The  $\chi^2$  test was used to compare prevalence and percentages and a probability value of  $P < 0.05$  was considered significant; 95% confidence intervals (CI) were given where relevant. A variety of factors, shown by  $\chi^2$  automatic interaction detection [20] to be associated with any of the morbidity indicators related to rheumatic diseases, were included in a forward logistic regression model for further analysis. Such factors were sex, age, residence in urban, suburban or rural areas, body mass index (BMI), level of education, occupation, cigarette smoking (pack-years), alcohol consumption and socio-economic status. Concerning BMI, cut-off points of  $\geq 30 \text{ kg/m}^2$  for obesity and  $< 30 \text{ kg/m}^2$  for non-obesity were used [21]. The level of education was defined as low or high on the basis of school attendance up to 9 yr and  $> 9$  yr, respectively.

### Results

Of the final target population of 10 647 subjects, 8740 (4269 men and 4471 women) took part in the study (participation rate 82.1%) (Fig. 1). As reported previously [5], using Pearson correlation coefficients we found significant similarities in terms of age and sex distribution between the study participants, the total target adult population and the total adult population of Greece, even when the data were analysed separately for urban, suburban and rural populations. Logistic regression showed no effect of non-selection and random selection of suburban and rural populations on the study results. Moreover, no significant difference was found between non-responders and responders in age, sex and prevalence of rheumatic symptoms or disease. The reasons for non-participation were unrelated to the presence or not of rheumatic or any other disease.

### Prevalence of the six morbidity indicators

The overall prevalence of chronic health problems, long-term disability, short-term disability, physician office visits and use of prescription or non-prescription drugs associated with all disease groups in the total target adult general population was 37.0% (95% CI 36.2–37.8), 9.2% (95% CI 8.7–9.7), 10.8% (95% CI 10.3–11.3), 13.6% (95% CI 13.0–14.2), 29.8% (95% CI 29.0–31.6) and 11.1% (95% CI 10.6–11.6), respectively.

The prevalence of all morbidity indicators associated with rheumatic diseases in the total target general adult population is shown in Table 2 and was significantly higher among women than men, while increasing significantly with age. The prevalence of morbidity indicators associated with the six groups of rheumatic diseases, as classified in the ESORDIG study [5], is shown in Table 3. More than half (52.7%, 95% CI 51.1–54.3) and almost one-sixth (16.1%, 95% CI 14.9–17.3) of the patients suffering from rheumatic diseases reported chronic health problems and

TABLE 2. Prevalence (%) of the six morbidity indicators associated with rheumatic diseases in the total target adult population

Morbidity indicators	Prevalence (%)					
	Total (95% CI)	Sex		Age group		
		Male	Female	19–44 yr	45–65 yr	$\geq 66$ yr
Long-term Chronic health problem	14.3 (13.7–14.9)	9.2	19.2 <sup>a</sup>	5.6	20.2	28.4 <sup>b</sup>
Long-term disability	4.3 (4.0–4.6)	2.8	5.9 <sup>a</sup>	1.2	5.9	10.6 <sup>b</sup>
2-week time period						
Short-term disability	2.9 (2.6–3.2)	2.1	3.6 <sup>a</sup>	1.6	4.1 <sup>b</sup>	3.7
Physician office visits	2.8 (2.5–3.1)	2.3	3.3 <sup>a</sup>	1.2	4.0	4.9 <sup>b</sup>
Prescription drug use	7.2 (6.8–7.6)	4.8	9.4 <sup>a</sup>	3.0	10.3	13.1 <sup>b</sup>
Non-prescription drug use	2.0 (1.8–2.2)	1.4	2.5 <sup>a</sup>	0.9	2.6	3.7 <sup>b</sup>

<sup>a</sup>Significantly higher prevalence among women than men ( $P < 0.0005$ ).

<sup>b</sup>Significant increase of prevalence with age ( $P < 0.0005$ ).

TABLE 3. Prevalence (%) of the six morbidity indicators associated with inflammatory rheumatic diseases (IRD), symptomatic peripheral osteoarthritis (SPOA), low back pain (LBP), neck disorders (ND), soft tissue rheumatism disorders (STRD) and miscellaneous rheumatic disorders (MRD) in the total target adult population

Morbidity indicators	IRD	SPOA	LBP	ND	STRD	MRD
Long-term						
Chronic health problem	1.5	4.5	4.3	1.5	0.8	1.7
Long-term disability	0.7	1.6	1.5	0.3	0.1	0.1
2-week time period						
Short-term disability	0.3	0.4	1.3	0.4	0.4	0.1
Physician office visits	0.4	0.4	1.1	0.3	0.4	0.2
Prescription drug use	1.1	1.1	2.2	0.7	0.8	1.3
Non-prescription drug use	0.1	0.4	0.8	0.3	0.3	0.1

long-term disability, respectively, associated with their disease. During the 2-week period prior to the interview, short-term disability, physician office visits and use of prescription or non-prescription drugs due to rheumatic diseases was reported by 10.5% (95% CI 9.5–11.5), 10.4%, (95% CI 9.4–11.4), 26.4% (95% CI 25.0–27.8) and 7.2% (95% CI 6.4–8.0) of patients with rheumatic diseases, respectively.

### Rheumatic diseases as a cause of the six morbidity indicators

Rheumatic diseases were the most common cause of chronic health problems in the total target adult population (Fig. 2) and in women (Fig. 3), as well in the three age groups (Table 4), differing significantly from the second most common cause in all instances except that in the group aged  $\geq 66$  yr. In men, rheumatic diseases were the second most common cause of chronic health problems, not differing significantly from the first most common cause.

Rheumatic diseases were the most common cause of long-term disability in the total target adult population (Fig. 2), in both men and women (Fig. 3) and in the three age groups (Table 4),

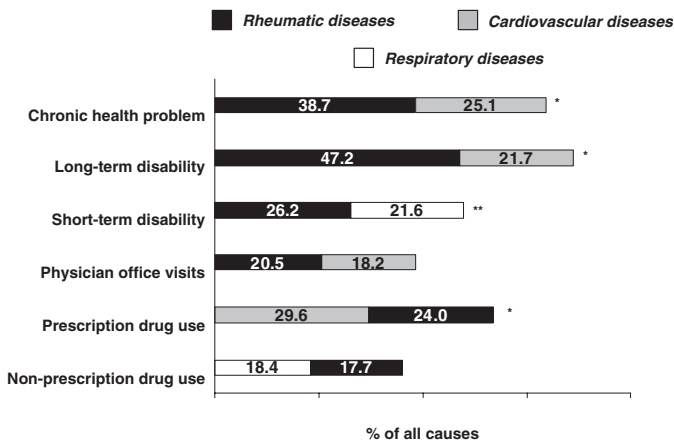


FIG. 2. The two most common causes of morbidity indicators in the total target general adult population. \* $P < 0.0005$ , \*\* $P < 0.014$ , comparing first with second most common causes.

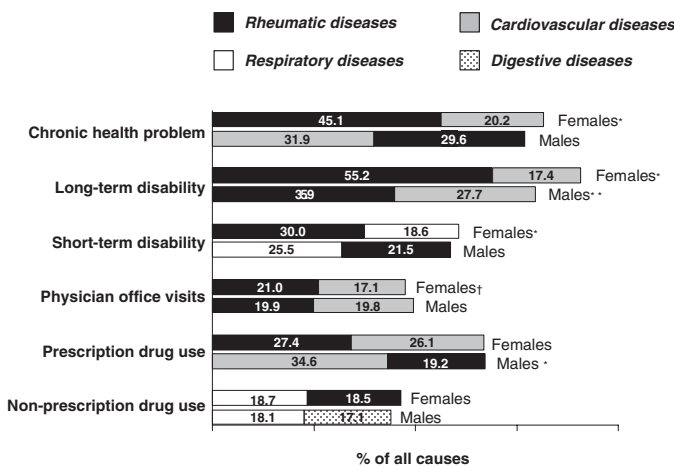


FIG. 3. The two most common causes of morbidity indicators among males and females. \* $P < 0.0005$ , \*\* $P < 0.011$ , † $P < 0.031$ , comparing first with second most common causes.

differing significantly from the second most common cause in all instances.

Rheumatic diseases were the most common cause of short-term disability in the total target adult population (Fig. 2) and in women (Fig. 3) as well as in the first two age groups (Table 4), differing significantly from the second most common cause in all instances except that in the group aged 19–44 yr. On the contrary, among men rheumatic diseases were the second most common cause of short-term disability (Fig. 3), while in the group aged  $\geq 66$  yr rheumatic diseases were the third most common cause (17.7%).

The most common cause of physician office visits in the total target adult population (Fig. 2), in both men and women (Fig. 3) and in the first two age groups (Table 4), was rheumatic diseases. In the group aged  $\geq 66$  yr rheumatic diseases were the second most common cause of physician office visits.

Regarding drug use, rheumatic diseases were the second most common cause of prescription drug use in the total target adult population (Fig. 2) and in men (Fig. 3), as well as in the last two age groups (Table 4). However, among women (Fig. 3) as well as in the 19–44 yr age group (Table 4), rheumatic diseases were the most common cause of prescription drug use. Rheumatic diseases were

also the second most common cause of non-prescription drug use in the total target adult population (Fig. 2), in women (Fig. 3) and in the last age group (Table 4). On the contrary, among men and in the 19–44 yr age group rheumatic diseases were the third most common cause of non-prescription drug use (16.3% of all causes in men and 13.1% of all causes in the 18–44 yr age group) (data not shown).

*Risk factors associated with morbidity indicators*

Multivariate logistic regression analysis showed that female gender, age  $\geq 45$  yr and obesity independently conferred increased risk for morbidity due to rheumatic diseases in all six indicators, with the exception of use of non-prescription drugs which was not associated with obesity. Moreover, a significant positive association of a low level of education with chronic health problems, long-term disability and use of prescription drugs was also found (Table 5).

**Discussion**

This part of the ESORDIG study assessed the burden of the rheumatic diseases in the general adult population of Greece in comparison with that caused by all other major disease groups. We found that 14.3 and 4.3% of the population had chronic health problems and long-term disability due to rheumatic diseases, respectively, whereas the prevalence of short-term disability, physician office visits and use of prescription or non-prescription drugs due to rheumatic diseases was 2.9, 2.8, 7.2 and 2.0%, in that order. Low back pain and symptomatic peripheral osteoarthritis contributed the most to the morbidity caused by rheumatic diseases. Rheumatic diseases were the most common cause of chronic health problems, long-term disability, short-term disability and physician office visits, while they ranked second for the use of prescription or non-prescription drugs. Rheumatic diseases were the main cause of morbidity in five out of six indicators in the working-age population. Female gender, age  $\geq 45$  yr and obesity were associated with morbidity due to rheumatic diseases in almost all indicators.

In general, our findings on the prevalence of morbidity associated with rheumatic diseases in the general adult population are in agreement with those of other research groups. Thus, Badley *et al.* [6] reported a similar prevalence of long-term (4.6%) and short-term (3.2%) disability and of prescription drug use (6.4%) and a slightly higher prevalence of non-prescription drug use (3.2%) due to rheumatic diseases in the general adult population of Canada. The prevalence of long-term disability from rheumatic diseases in adults varies between 2.8 and 8.2% [6–8, 12–14], mainly due to differences in study methods and design. The rate of physician office visits for rheumatic diseases in our study population approximates that (3.1%) found in Sweden over a 3-month period [22] and lies between those reported in Canada (4.7%) [6] and Finland (1.5%) [16].

The most important findings of this study arise from the comparison of the burden of rheumatic diseases in the general adult population with that caused by all other disease groups. Rheumatic diseases were the most common cause of four out of the six morbidity indicators examined, while they ranked second for the other two. Interestingly, a Canadian study using the same morbidity indices consistently placed rheumatic diseases within the leading causes of morbidity among the general adult population [6]. The high percentages of rheumatic diseases as a cause of chronic health problems and long-term disability found in our study are comparable to data from Canada [6] and the USA [8]. Rheumatic diseases accounted for one fourth of all short-term disability found in our study and in Canada [6], but for 38.3% of that estimated in the USA [8]. Our finding that one out of five physician office visits was made for rheumatic diseases is similar to

TABLE 4. Percentages and ranking of the two most common causes of the six morbidity indicators in the total target adult population by age group

Morbidity indicators	Rank (% of all causes) Age 19–44 yr		Age 45–65 yr		Age ≥ 66 years	
	1	2	1	2	1	2
Long-term						
Chronic health problem	RD (36.5)*	EMD (14.8)	RD (40.2)*	CVD (26.3)	RD (37.6)	CVD (36.4)
Long-term disability	RD (39.4)*	MBD (15.3)	RD (55.9)*	CVD (20.1)	RD (41.8)*	CVD (31.1)
2-week time period						
Short-term disability	RD (27.3)	ReD (21.2)	RD (33.3)***	ReD (22.7)	CVD (32.7)***	ReD (20.6)
Physician office visits	RD (17.7)	ReD (17.3)	RD (24.9)****	CVD (18.5)	CVD (31.5)*	RD (17.8)
Prescription drug use	RD (25.7)*	EMD (14.8)	CVD (30.5)****	RD (25.5)	CVD (43.6)*	RD (20.8)
Non-prescription drug use	ND (22.4)**	ReD (14.2)	RD (19.4)	ReD (18.8)	ReD (23.1)	RD (20.5)

RD, rheumatic diseases; EMD, endocrine–metabolic diseases; CVD, cardiovascular diseases; MBD, mental and behavioural diseases; ReD, respiratory diseases; ND, neurological diseases.

\* $P < 0.0005$ , \*\* $P < 0.002$ , \*\*\* $P < 0.001$ , \*\*\*\* $P < 0.011$ , comparing first with second most common causes.

TABLE 5. Estimated adjusted effects of independent risk factors (OR with 95% CI) on the prevalence of morbidity indicators associated with rheumatic diseases in the total target adult population

Morbidity indicators	OR (95% CI)			
	Age ≥ 45 yr	Female gender	Low education level	Obesity
Long-term				
Chronic health problem	3.7 (3.2–4.2)	2.3 (2.1–2.5)	1.8 (1.6–2.0)	1.5 (1.3–1.7)
Long-term disability	5.1 (3.9–6.5)	2.0 (1.7–2.4)	1.5 (1.2–1.8)	1.5 (1.2–1.9)
2-week time period				
Short-term disability	2.4 (2.0–3.0)	1.7 (1.4–2.1)	NA	1.5 (1.1–1.9)
Physician office visits	3.0 (2.2–3.9)	1.4 (1.1–1.7)	NA	1.6 (1.3–2.1)
Prescription drug use	3.4 (2.8–4.0)	2.0 (1.7–2.3)	1.4 (1.2–1.6)	1.3 (1.1–1.6)
Non-prescription drug use	2.5 (1.9–3.2)	1.8 (1.4–2.3)	NA	NA

NA, not associated.

that (18.6%) reported in Canada [6], but lower than that (27%) found over a 2-week period in Finland [16], or that (29.7%) observed over a 1-yr period in the USA [8]. Finally, we found that rheumatic diseases accounted for one fourth of all prescription drug use, as opposed to 18.3% in Canada [6]. Taken together, these data reflect the high burden of rheumatic diseases in different populations, irrespective of ethnic, racial or environmental background.

The findings of our study on the association of morbidity due to rheumatic diseases with female sex are consistent with those of previous reports [7, 12, 23] and might be explained in part by the higher prevalence of rheumatic diseases among women [1, 4, 5]. In accordance with previously reported data [6, 12, 24], the prevalence of morbidity indicators associated with rheumatic diseases increased with age in our study. To some extent, this could be attributed to the fact that the prevalence of rheumatic diseases increases with age [1, 4, 5, 22]. Interestingly, however, the proportion of rheumatic diseases in all causes of morbidity indicators did not increase with age; in subjects aged ≤ 65 yr this proportion was similar to or higher than that in the group aged 66 and over. These findings could be explained by the fact that morbidity associated with cardiovascular diseases increased with age at an even more rapid rate than that related to rheumatic diseases. Hence, rheumatic diseases were the most common cause of five out of six morbidity indicators among subjects aged ≤ 65 yr and of only two morbidity indicators in the group aged 66 yr and over. Therefore, although rheumatic diseases are generally considered to be a problem of the elderly, in fact they also constitute the major source of morbidity in the younger age groups, thus representing a major burden in the population of working age. Similar findings on the high impact of rheumatic diseases on the

workforce have been reported in Canada [6], while rheumatic diseases are the most common cause of activity limitation among men and women aged 45–69 yr in the USA [25].

Although obesity has been reported to be a risk factor for disability associated with rheumatic diseases [26], to our knowledge this study is the first to demonstrate that obesity also correlates with other aspects of morbidity due to rheumatic diseases, with the exception of non-prescription drug use. This may be partly explained by the known association of obesity or a high BMI with the prevalence of certain rheumatic disorders in the general population, such as symptomatic peripheral osteoarthritis [5, 27], low back pain [5, 28] and soft tissue rheumatism [5]. Our finding that a low level of education was an independent risk factor for disability associated with rheumatic diseases concurs with that of previous studies [23, 24, 26]. The underlying mechanism is unclear, but it may be related to the known association of a low level of education with the prevalence of symptomatic peripheral osteoarthritis [5] and low back pain [5, 29], and to a lack of awareness of preventive and therapeutic measures for rheumatic diseases.

This population-based study attained a large sample size and high participation rate. It is the first study of this kind performed in Greece and used morbidity indices similar to those applied in several previous studies, allowing valid comparisons. Additionally, the data were derived from face-to-face interviews of study participants with rheumatologists, and a comparison of morbidity due to rheumatic diseases with that of other disease groups was made.

Population-based studies entail a risk of selection bias. The participation rate in our study was high (82.1%) and therefore selection bias is only a very remote possibility. Moreover, analysis

of data of a random sample of non-responders showed no significant difference from responders with respect to age, sex and prevalence of rheumatic symptoms or diseases. Logistic regression revealed that there was no effect of non-selection and random selection of suburban and rural populations on the prevalence of morbidity indicators associated with rheumatic diseases or any other disease group.

Information bias is another disadvantage of questionnaire-based studies [4]. Our data derived from face-to-face interviews of participants with rheumatologists, avoiding possible biases from erroneous self-perception of disease or from lower levels of literacy. On the other hand, this certainly entails some risk of information bias in favour of rheumatic diseases. However, confirming the disorder responsible for any morbidity indicator by reviewing the individual's medical records or by clinical evaluation by the rheumatologist increased the accuracy of the information obtained.

The Greek population is a highly homogeneous Caucasian (98.3%) one [30]; the studied regions were located in northern, central and southern mainland Greece and their adult population was representative of the total Greek adult population in terms of age and sex distribution. Therefore, the burden of rheumatic diseases in the total target general adult population of this study could reasonably be considered as representative of the burden of rheumatic diseases in the general adult population of Greece.

In conclusion, the findings of this study demonstrate that rheumatic diseases constitute a major public health problem. In comparison with all other major disease groups, rheumatic diseases rank first as a cause of chronic health problems, long- and short-term disability and physician office visits, and second for prescription or non-prescription drug use in the general adult population. Therefore, rheumatic diseases should be seriously considered in planning undergraduate and postgraduate medical education, research and health-care services.

<i>Rheumatology</i>	Key messages
	<ul style="list-style-type: none"> <li>● Rheumatic diseases are a leading cause of disability and health-care utilization in the general adult population.</li> <li>● Rheumatic diseases constitute a major public health problem.</li> <li>● Rheumatic diseases should be considered in planning medical training, research and health-care services.</li> </ul>

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