The clinical and economic burden of fibromyalgia compared with diabetes mellitus and hypertension among Bedouin women in the Negev

Yariv Dorona, Roni Pelega,b, Aya Pelegc, Lily Neumann and Dan Buskila


**Background.** Fibromyalgia (FM) is a common idiopathic chronic, widespread pain syndrome with tenderness in anatomically defined tender points.

**Objectives.** The purpose of the present study was to describe and characterize the economic and daily work burden of FM compared with diabetes mellitus and hypertension.

**Methods.** A retrospective study was conducted in 2001 in a primary care clinic, the Kuseife clinic of the Clalit Health Services. Data for the three study groups were obtained from the computerized database of the Kuseife clinic and the Negev District, Israel. The study group included 102 FM patients. The control groups included 102 diabetes patients and 103 patients with hypertension.

**Results.** Hospitalization and hospital day care services were the main expenses incurred by patients in this study. There were no differences among the study groups in any cost parameter examined except for the cost of diagnostic tests ($P < 0.01$), which was less for FM patients. FM patients were referred to specialists and diagnostic procedures more frequently than the control groups. No statistical difference was found in the total number of clinic visits, but FM patients visited physicians more frequently and visited nurses less frequently than patients in the other two groups ($P < 0.05$).

**Conclusions.** FM patients consume health care resources to a similar extent to patients with other chronic diseases such as diabetes mellitus and hypertension, but the latter usually receive much more attention from the health care system. Greater awareness of this disorder can improve management and facilitate planning of health care resources, thus improving quality of care.

**Keywords.** Bedouins, cost, diabetes mellitus, fibromyalgia, hypertension, medical resources.

**Introduction**

Fibromyalgia (FM) is a chronic disorder of diffuse aching pain, or stiffness in the muscles or joints, accompanied by tenderness on examination at specific, predictable anatomic sites known as tender points (TPs).1–3 The prevalence of FM in the general population has been estimated at 2%, with >90% of the patients female.4,5 A constellation of ancillary symptoms may be present, including headache, fatigue, sleep disturbances, paraesthesias, irritable bowel syndrome, subjective joint swelling and other manifestations.1 The currently accepted diagnostic criteria for FM are the 1990 American College of Rheumatology (ACR) criteria6 that include the presence of widespread pain in combination with tenderness of 11 or more of 18 specific TPs. Despite intensive research, major gaps in the understanding of the pathogenesis of FM remain. Physician awareness of FM is relatively low despite the prevalence of the syndrome. Thus, it is not uncommon to see patients who have gone from doctor to doctor and
who underwent multiple diagnostic tests, with a differential diagnosis that includes lupus erythematosus, rheumatoid arthritis, somatization and malingering.7

FM can be found in all ethnic groups, especially low socio-economic groups. It is prevalent in all countries, unrelated to the level of industrialization and local culture. In primary rheumatology clinics, referrals for FM comprise 14–20% of new visits,5 making FM the second to third most common reason for appointments. A study in the USA1 showed that FM patients make 10 primary care appointments per year and are hospitalized on average once every 3 years (primarily for indications related to FM). The mean annual cost per patient in 1996 was US$2274. The cost of management of FM in primary care clinics is high because of the work-up and treatment, although the treatment outcomes are usually disappointing.4

To date, there have been no reports of the characteristics of FM among Bedouin women in the Negev region of southern Israel. The Bedouins make up 11.9% of the Negev population8 and are considered a low socio-economic group. As a group, they suffer from under-diagnosis of disease, and data on prevalence and incidence of diseases are scant. There are no data on the prevalence of FM in this population or its cost in terms of health care resources.

In a study of family physicians in the Negev area, there was evidence of low awareness of the diagnostic criteria for FM leading to under-diagnosis and under-treatment of the disorder.9 Since FM is a common disorder, under-diagnosis causes excessive testing and inappropriate treatment. The delay in diagnosis causes an economic burden on the health care system and frustration for patients and their families.

In the present study, we assessed the economic resources consumed by female FM patients and the daily work burden involved in their care, in comparison with other chronic diseases such as diabetes mellitus and hypertension, in the setting of a primary care clinic in the Bedouin community in the Negev.

**Methods**

**Clinical setting**

Israel has had a compulsory national health insurance system since 1995 in which the entire population receives health care through non-profit health maintenance organizations known as health services or sick funds. The Clalit (General) Health Services serves ~60% of Israel’s population.

The study was conducted at the Kuseife clinic of the Clalit Health Services in the southern district of Israel. The clinic provides services for 8600 registered patients, ~50% comprised of residents of Kuseife village and the rest from the surrounding settlements. The clinic population is of low socio-economic status. Many live in small stone houses, wooden or tin huts, or even tents. Many are supported by welfare and social security. Most have a limited formal education and many of those over the age of 40 have no formal education at all. The clinic population has an annual rate of natural increase of 5.3%, among the highest in the world. This is a homogeneous population of women who live together in a well-defined and densely populated living area in an expanded family structure with second-degree and further removed intra-family marriage ties.

The Kuseife clinic has three paediatric and three adult medical units. Adolescents from the age of 17 are treated in the adult clinic. All clinic visits and laboratory and ancillary test results are kept in the clinic’s computerized database.

**Subjects**

The study population consisted of 102 women above the age of 17 years with FM. These patients were identified and diagnosed as part of a larger trial conducted at the same time. All subjects fulfilled the diagnostic criteria of the ACR for FM.9 All the participants completed a quality of life questionnaire in the clinic, underwent a full medical examination and were followed by a clinic doctor.

There were two control groups, each with the same number of participants. The first was comprised of patients with diabetes mellitus, and the second of patients with hypertension. Both groups included Bedouin women over the age of 17 who were seen in the Kuseife clinic. Patients in the two groups were followed in the clinic.

Demographic data were collected in the larger study. The two control groups were selected randomly from the patient register of the clinic, using the database software ‘Clicks’ in use throughout the Clalit Health Services. Only one woman with FM was included in the hypertension groups and four women with FM were included in the diabetes group. The control groups were comprised of patients with hypertension without diabetes or diabetes without hypertension, so there was no overlap between the groups.

**Health care utilization**

The number of clinic visits by the study participants over the course of 2001 was determined from the clinic database. The number of appointments with the nurse was obtained from the nurse diaries, which record visits for blood pressure measurements, glucose testing and for prescriptions for chronic medications.

The cost of treatment to the Clalit Health Services was determined on the basis of five items: (i) the cost of hospitalization; (ii) the cost of ambulatory day care in the hospital; (iii) the cost of consultations in the hospital and in specialist clinics; (iv) the cost of diagnostic tests such as computed tomography (CT), magnetic
resonance imaging (MRI) and laboratory tests; and (v) the cost of visits to the emergency room.

These data were collected from the existing database of the economic unit of Clalit Health Services, southern district. A detailed computer output was obtained for each participating patient for each of these five items. The cost of health care in the public sector in Israel is: hospitalization US$333/day, in-hospital ambulatory day care US$184/day, emergency room visit US$104, medicine consultation in the out-patient department US$38, MRI US$469, abdominal CT US$252, and abdominal sonogram US$93.

Demographic data including age, gender and clinic affiliation were verified by cross-matching the clinic data with the central database of the Clalit Health Services to avoid mistakes in the study and control groups.

The study data were organized with Excel software and were transferred to Stata software for statistical analyses. Multivariate analyses were done by analysis of variance (ANOVA). Since there was a significant difference in age between the study group and the control groups, the analysis of covariance (ANCOVA) test was used to control for this variable. Since the distribution of the variables related to cost were not normally distributed, a non-parametric test, Kruskal–Wallis, was used to compare costs across the three groups. Statistical significance was set at $P < 0.05$.

The Helsinki Committee of the Soroka Medical Center in Beer-Sheva, Israel approved the study.

### Results

There were 102 patients in the FM and diabetes groups and 103 patients in the hypertension group. The mean ages ($\pm SD$) were $44.5 \pm 13.8$, $56.9 \pm 11.5$ and $56.0 \pm 14.3$, respectively. Table 1 presents the mean annual costs associated with each of the groups. The major cost items for all groups were hospitalization and hospital day care. The other three items had relatively lower costs. The only item in which there was a statistically significant difference between the FM group and the control groups was for diagnostic testing, in which the FM group cost significantly less ($P < 0.01$).

Figure 1 presents a comparison of clinic and emergency room visits, tests, consultations and hospitalizations for the three groups. FM patients are referred more to specialists and undergo more tests than the other two groups.

Table 2 presents data on clinic visits in general and doctor and nurse appointments specifically. After controlling for age, no difference was found in the absolute number of clinic visits among the groups. However, FM patients made significantly more appointments with doctors ($P < 0.05$), while diabetes and hypertension patients made significantly more visits with nurses ($P < 0.05$).

### Discussion

FM is a common disorder with a monthly incidence that has been shown to reach 9–10% in the general population. Clinical studies of FM patients indicate that it is a complex medical condition with chronic symptoms that is often refractory to treatment. Although FM is a common disorder, data on its daily work burden and economic cost in primary practice are scarce.

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**Table 1**  Mean annual cost, per patient, for health services, by study group (US$)

<table>
<thead>
<tr>
<th></th>
<th>Fibromyalgia</th>
<th>Diabetes</th>
<th>Hypertension</th>
<th>$P^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitalization</td>
<td>926.80</td>
<td>1244.70</td>
<td>918.50</td>
<td>0.3</td>
</tr>
<tr>
<td>Hospital day care</td>
<td>532.80</td>
<td>839.70</td>
<td>1497.70</td>
<td>0.2</td>
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<tr>
<td>Specialist consultations</td>
<td>35.70</td>
<td>32.90</td>
<td>39.00</td>
<td>0.3</td>
</tr>
<tr>
<td>Diagnostic tests</td>
<td>26.20</td>
<td>42.40</td>
<td>33.20</td>
<td>0.006</td>
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<tr>
<td>Emergency room visits</td>
<td>121.50</td>
<td>159.50</td>
<td>110.10</td>
<td>0.86</td>
</tr>
</tbody>
</table>

$^a$ US$1 = 4.3 NIS (New Israeli Shekels).

$^b$ Kruskal–Wallis test.
with the diagnostic criteria for FM, although 96% of Israel9 demonstrated that physicians are not familiar the health service and include social costs such as economic consequences of these conditions go beyond awareness. Only health care costs were considered. The tension, of which primary care doctors are much more chronic diseases such as diabetes mellitus and hyper-

the extent of health care use is similar to that of common findings to Jewish clinics. Other comparative studies should be conducted on different and larger populations to characterize the burden of this disorder further. The results of such a comprehensive research effort should be of value to both the clinical and administrative staffs of the health care services.

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References


