Rural primary care in Greece: working under limited resources

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Abstract

Objective. Establishing sufficient primary health-care services in rural areas is of high interest in developing health systems. The objective of the present study was to describe the state of rural health services, in terms of personnel and equipment, in rural primary care settings in Greece.

Design. A questionnaire was sent to all Greek rural settings (RS) (practices) twice during 2007. The questionnaire included questions about the number of doctors in the practice, their specialty, presence of a nurse, population served and average distance from the regional Health Center and hospital. It also included questions about the average number of consultations per day, home visits, maintenance of medical records and medical equipment.

Setting. Rural primary care settings in Greece.

Participants. Doctors serving primary care needs during the second half of 2007.

Intervention(s). None.

Main Outcome Measure(s). Data concerning staffing, function and available equipment of the RS have been collected.

Results. Five hundred eighty-two (40.9%) of the rural practitioners replied. Twenty-nine percent of the participants were general practitioners (GPs). Doctors reported average population of responsibility of 2263 citizens and a regular average of 26 consultations per day. A nurse was present in 174 RS (29.5%). Medical records of any form were kept in only 36% of the RS. GPs were more prone to maintain patients files compared with non-specialized doctors. Essential equipment proved to be limited in the majority of the RS.

Conclusions. Rural practices in Greece report shortages of medical staff (GPs), nursing staff and equipment.

Keywords: rural practices, primary health care, medical staff, equipment, quality assurance, Greece

Background/aim

Maintaining both access and quality to primary health-care (PHC) services in rural areas is a challenge well discussed during the past decades [1]. Quality in practice has been connected to guidelines and medical audit. Little has been published about the structural conditions and their importance for medical performance and quality assurance [2, 3]. A shortage of doctors in rural practice is reported across the developed world [4, 5]. The professional and social isolation that accompanies a rural placement is considered unattractive, while the maintenance of professional skills and development is another drawback [4, 6].

In Greece there is some important literature concerning the implementation of electronic technologies and e-health records, as well as a number of publications about educational and structural issues as published to a recent review [7], but little is published concerning the level of medical coverage and the adequacy of equipment of the rural settings (RS) (or rural practices) throughout the country. In addition, since there is no established national medical audit, there is little information about the amplitude and the nature of medical services provided in district health units. Some efforts towards quality assurance and medical audit took place in Crete during a pilot program by the local health authority [8, 9]. The Greek national primary care system is
developed in non-urban areas and consists of 201 health centers and 1,422 rural satellites to the health centers [9, 10]. Health centers are considered as the decentralized health units of regional hospitals and RS are satellite units of the regional Health Center. All health providers (RS, health centers and hospitals) belong administratively to a Regional Health Authority (seven all over the country). The organizational structure of the Greek National Health System (NHS) is depicted in Fig. 1.

Until 1997, RS used to be staffed by young doctors who have just graduated and performed their mandatory 1-year duty in rural areas, when a new law prioritized the employment of general practitioners (GPs) in both health centers and rural practices.

This study aims to evaluate the number of GPs serving in RS and their working conditions in terms of personnel and essential equipment, 10 years after the first legislation in favor of general practice. Since there is no specific governmental framework describing the essential equipment for a rural setting, we tried to evaluate the equipment adequacy and the working conditions in peripheral units according to international standards and recommendations as well as the existing Greek literature [2, 3, 8, 11].

Methods

All the national Health Center directors were informed by mail regarding the aims of the present study. They were also informed that the survey was under the umbrella of the Third Regional Health Authority and the Greek Academy of General Practice, and were encouraged to disseminate the postal questionnaire to all doctors serving at the regional RS of which they were responsible. In order to improve the rate of participation, the directors were also approached through telephone calls twice, on July when the questionnaire was first sent to them and subsequently on October 2007 when the questionnaire was resent with a reminder letter.

Development of the questionnaire

The questionnaire was developed by a consensus between two experienced GPs working for more than 5 consecutive years in RS in two different Greek geographic regions. The development of the questionnaire took into account data from Greek and international literature [2, 3, 7, 8]. The final questionnaire was evaluated and approved by two external independent evaluators: the president of the Greek Association of General Practitioners (ELEGEIA), who is an active GP and a main contributor to the development of general practice in the Greek NHS, and the director of the Third Regional Health Authority.

The final questionnaire consisted of nine questions. Four of them referred to the characteristics of each rural setting and in particular to:

- the number of doctors employed and their specialty,
- the presence of a nurse,
- the population served by each setting and
- the average distance from the regional health center and hospital.

Four questions referred to functional aspects of each rural setting such as:

- the average number of consultations per day,
- the performance of home visits,
- the maintenance of medical records (hard copy or electronic) and
- the availability of a PC and internet access.

The last question referred to the equipment of the RS using a list of the main equipment according to recent local authorities documents. The list of equipment was composed so that the most common equipment used in primary care would be represented (e.g. blood pressure manometer, electrocardiogram (ECG), spirometer, etc).

Doctors were asked if they had the listed facilities at their disposal. The response category for the items describing availability of certain equipment was ‘yes’ or ‘no’. All questionnaires were answered voluntarily by doctors who were working in RS at the time. This survey was approved by the scientific committee of the Third Regional Health Authority, which provided ethics oversight for the survey. One Regional Health Authority (Fourth) did not respond to our request that they encourage the survey. A regression analysis was performed in order to evaluate the factors related to equipment availability. All answers were collected and analyzed using SPSS 14.0.

Results

Five hundred eighty-two (40.9%) out of 1422 respondents in the RS answered the survey, 553 (38.8%) of which replied to the question about the equipment.

One Regional Health Authority (Fourth) did not encourage the survey and did not identify the reasons for disapproval. No differences were found between the response rate from mainland practices and island practices.

In our sample, 171 doctors (29%) were GPs, and 411 doctors (70.6%) performed their mandatory 1 year rural
service, after graduation from medical school. Eight settings (1.3%) were vacant. An assistant nurse was present in 174 settings (29.8%).

The average population of each RS catchments area amounted to 2263 citizens. The average distance of the RS from the regional health center was 24 km and from the local hospital 35 km, respectively. Approximately 26 consultations were reported on average per day, with GPs reporting more consultations as compared with the non-specialized doctors (27.7 and 23.7, respectively). The majority (87.9%) of the rural doctors reported that they perform home visits.

The survey revealed that only 212 settings (36%) keep medical records in any form (hard copy or electronic). GPs tended to keep medical records more often than non-specialized doctors (85.4 and 16%, respectively, odds ratio: 30.52, \( P < 0.001 \)). Only 71 of the practices (12%) were equipped with a computer and 43 of them (7.4%) had internet access. It seems that there is a greater possibility that a GP would have a PC and internet access rather than non-specialized doctors (odds ratio: 2.19, \( P = 0.02 \), odds ratio: 3.74, \( P < 0.001 \), respectively). Table 1 illustrates the equipment available in the participating RS.

### Table 1: The equipment available in the participating RS (\( n = 582 \))

<table>
<thead>
<tr>
<th>Equipment</th>
<th>All rural respondents</th>
<th>Non-specialized rural doctors</th>
<th>GPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean patients seen per day</td>
<td>25.7</td>
<td>23.7</td>
<td>27.7</td>
</tr>
<tr>
<td>Mean patients home visit per day</td>
<td>1.3</td>
<td>1.31</td>
<td>1.28</td>
</tr>
<tr>
<td>Maintenance of medical record (%)</td>
<td>36.4</td>
<td>16.1</td>
<td>85.4</td>
</tr>
<tr>
<td>PC (%)</td>
<td>12.2</td>
<td>9.5</td>
<td>18.7</td>
</tr>
<tr>
<td>Internet access (%)</td>
<td>7.4</td>
<td>4.7</td>
<td>14.6</td>
</tr>
<tr>
<td>Blood pressure manometer</td>
<td>89.1</td>
<td>82.3</td>
<td>88.9</td>
</tr>
<tr>
<td>ECG (( n = 350 ))</td>
<td>63.3</td>
<td>58.4</td>
<td>64.3</td>
</tr>
<tr>
<td>Glucometer (( n = 443 ))</td>
<td>80.1</td>
<td>76.4</td>
<td>75.4</td>
</tr>
<tr>
<td>Oxygen supply (( n = 427 ))</td>
<td>77.2</td>
<td>73.9</td>
<td>71.9</td>
</tr>
<tr>
<td>Stitching set (( n = 408 ))</td>
<td>73.8</td>
<td>68.8</td>
<td>73.1</td>
</tr>
<tr>
<td>Peak flow meter (( n = 146 ))</td>
<td>26.4</td>
<td>24.8</td>
<td>25.7</td>
</tr>
<tr>
<td>Spirometer (( n = 27 ))</td>
<td>4.6</td>
<td>4.7</td>
<td>4.1</td>
</tr>
<tr>
<td>Defibrillator (( n = 80 ))</td>
<td>14.5</td>
<td>14.6</td>
<td>11.7</td>
</tr>
<tr>
<td>Intubation set/bag mask</td>
<td>28.9</td>
<td>27.9</td>
<td>30.9</td>
</tr>
</tbody>
</table>

### Discussion

Primary health care in Greece has been strangling for many years through unfavorable legislation and a lack of trained GPs. In the past decade, the number of qualified doctors has increased. Quality control has been introduced by the ELEGEIA during the past few years. The Quality Control Group has issued requirements such as quality assurance and medical audit.

Our study provides a snapshot of the rural primary care settings of Greece 10 years after the main legislation changes in favor of general practice in the Greek Primary Health Care System and 24 years after the establishment of the latter. The study revealed shortages in personnel (GPs and nurses) and equipment within the primary care practices both in the mainland and the small islands. Other countries, including Australia and New Zealand, have reported shortage of GPs in rural areas [5, 12]. In many countries, general practice is not considered very popular as a career choice and this tends to become an exacerbating problem in the provision of health care [13]. Our results suggest that in Greece the legislative changes in favor of general practice have not been as effective as expected and further measures should be taken in order to avoid rural medical shortages in the future. The lack of community nurses is another drawback of the Greek rural primary health-care system. Previous research has identified that skilled nurses working in rural and remote locations are crucial for the provision of medical care to rural patients [12, 14].

A cascade of adverse effects on society is revealed through the shortages in rural health [15, 16]. Taking into account the aging of the rural population, and its increased health needs, more attention has to be given to adequate rural primary care. In order to avoid the exacerbation of the existing shortages of GPs and nurses in the Greek rural areas, one solution might be a modification of the pre-graduate education in medical and nursing schools to include preliminary exposure to rural areas. Studies have shown an increase of students’ willingness to work in rural areas when the school curriculum includes training in rural primary care services [17–19].

Another important issue revealed by this survey is the lack of medical record documentation in the majority of RS, raising issues of the continuity of health care as well as safety concerns. The number of GPs keeping medical records was four times higher than that of non-specialized doctors. Maintenance of medical records is a prerequisite in all developed countries [20] and a fundamental responsibility of the rural doctors in Greece as well. A filing system has been introduced by the Greek health authorities involving the use of books of registration. The benefits of medical records in the evaluation of medical services, health cost reduction, estimation of the state of the population’s health and planning actions for primary or secondary prevention and intervention accordingly, is well documented [21, 22]. Nevertheless, the development of an organized hard copy or electronic database is not compulsory. One of the changes following the
establishment of general practice and the staffing of rural practices with GPs has been the use of some sort of medical records. The use of a common electronic health file system all over Greece could help in improving the national statistics about morbidity and the presentation, and management of diseases in the future. Attempts towards an integrated e-health file system have been publicized mainly from the region of Crete [23, 24].

In rural areas, where health access is usually limited [21, 22], the absence of essential medical equipment raises issues of both safety and quality of care. Our survey did not reveal any differentiation regarding equipment supply between RS covered by GPs or non-specialized doctors. However, shortages of essential equipment such as ECG machines, spirometry machines or, in extreme situations, a sphygmomanometer, restrict the role of the rural doctor. In particular, the availability and state of readiness of cardiovascular diagnostic and monitoring equipment in rural distant general practices seems to be variable in other countries too [25–28].

According to Donabedian [2], structural preconditions are equally important for the assurance of quality of care, but the topic in rural practices is seldom highlighted. Although improvement of equipment alone cannot guarantee the quality of health services, it may provide an important step towards promoting them. The essential primary care equipment and skills that GPs should have are established in most European Countries [2, 3]. In Greece there is a clear curriculum within the specialization period established both by national law and the GP College. However, there is no clear legislation regarding the allowed medical action that a fully qualified GP could perform. Aspects such as performance of spirometry and the use of other medical laboratory devices are not clear in the current laws. A national standard for equipment, reflecting the range of common primary care services that should be provided by GPs, taking into account population characteristics and the special geographic distribution to reduce differences in the availability of resources was suggested in a recently published review article [7].

Whether the structure of the Greek National Health Service is primarily responsible for the current rural health deficiency is a topic of debate. Nevertheless, the fact that RS and health centers depend scientifically, educationally and economically on the regional hospital, could easily lead to the observed limitations of rural primary health care in Greece. Separating health centers and RS from the regional hospitals and linking them directly to local municipal governments could be a promising future direction.

The study is subject to some limitations. The majority of the RS that participated in this survey are administered under the Third Regional Health Authority (Central Macedonia, Greece). Whether the sample is representative of Greek Rural Primary Care overall is uncertain, but comparison of results across Greek regions revealed no differences. Our response rate was comparable to another questionnaire study of randomly selected samples of GPs in six European countries including Greece [29].

While the questionnaire was composed with the contribution of four doctors (two GPs and two external evaluators), we did not conduct an additional validation study in developing the questionnaire. The demographic characteristics (age, gender) of the participating respondents were omitted in this study. We had no information on practices that did not respond to the survey especially from the greater region of the Fourth Regional Health Authority and therefore we are unable to determine how they might differ from those that did participate. The lack of regional differences in our results, suggests that our results are fairly representative of the Greek rural health settings.

Conclusions

This study highlighted the shortages of rural practices regarding staff and equipment. Primary Health Care in Greece is in need of significant steps to be taken for its amelioration. While we did not study the quality of the provided medical practice, at a time when Greek researchers are advocating for the development of integrated primary care in Greece [7], the lack of personnel and proper medical equipment may be an important barrier to the development of a modern primary health care. Addressing this lack of basic resources will be important before committing new resources to the expansion of primary care, especially while Greece is experiencing an unprecedented economic crisis.

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References


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