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The Italian Survey on Cardiac Rehabilitation - 2008 (ISYDE-2008). Part 3. National availability and organization of cardiac rehabilitation facilities. Official report of the Italian Association for Cardiovascular Prevention, Rehabilitation and Epidemiology (IACPR-GICR)

La Survey italiana sulla Riabilitazione Cardiaca in Italia - 2008 (ISYDE 2008). Parte 3. Disponibilità ed organizzazione delle strutture nazionali di Cardiologia Riabilitativa. Report ufficiale della Associazione italiana di Cardiologia Preventiva e Riabilitativa (GICR-IACPR)

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ABSTRACT: ***The Italian Survey on Cardiac Rehabilitation - 2008 (ISYDE-2008). Part 3. National availability and organization of cardiac rehabilitation facilities. R. Tramarin, M. Ambrosetti, S. De Feo, M. Piepoli, C. Riccio, R. Griffo on behalf of the ISYDE-2008 Investigators.***

From January 28th to February 10th 2008, the Italian Association for Cardiovascular Prevention, Rehabilitation and Epidemiology (IACPR-GICR) conducted the ISYDE-2008 study, the primary aim of which was to take a detailed snapshot of cardiac rehabilitation (CR) provision in Italy – in terms of number and distribution of facilities, staffing levels, organization and setting – and compare the actual CR provision with the recommendations of national guidelines for CR and secondary prevention. The secondary aim was to describe the patient population currently being referred to CR and the components of the programs offered.

Out of 190 cardiac rehabilitation centers existing in Italy in 2008, 165 (87%) took part in the study.

On a national basis, there is one CR unit every 299,977 inhabitants: in northern Italy there is one CR unit every 263,578 inhabitants, while in central and southern Italy there is one every 384,034 and 434,170 inhabitants, respectively. The majority of CR units are located in public hospitals (59%), the remainder in privately owned health care organizations (41%). Fifty-nine percent are located in hospitals providing both acute and rehabilitation care, 32% are in specifically dedicated rehabilitation structures, while 8% operate in the context of residential long term care for chronic conditions. Almost three-quarters of CR units currently operating are linked to dedicated cardiology divisions (74%), 5% are linked to physical medicine and rehabilitation divisions, 2% to internal medicine, and 19% to cardiac surgery and other divisions. Inhospital care is provided by 62.4% of the centers; outpatient care is provided on a day-hospital basis by 10.9% of facilities and on an ambulatory basis by 20%. The CR units are led in 86% of cases by a cardiologist and in only 14% of cases by specialists in internal medicine, geriatrics, physical medicine and rehabilitation, pneumology or other disciplines. In terms of staffing, each cardiac rehabilitation unit has 4.0±2.7 dedicated physicians (range 1-16, mode 2), 10.1±8.0 nurses, 3.3±2.5 physiotherapists (range 0 – 20; 16% of services have no physiotherapist in the rehabilitation team), 1.5±0.8 psychologists, and a dietitian (present in 62% of CR units). Phase II CR programs are available in 67.9% of cases in residential (inpatient) and in 30.9% of cases in outpatient (day-hospital and ambulatory) settings. Phase III programs are offered by 56.4% of the centers in ambulatory outpatient regime, and on an at home basis by 4.8% with telecare supervision, 7.3% without. Long term secondary prevention follow up programs are provided by 42.4% of CR services.

Keywords: cardiac rehabilitation, organization, staffing, program, provision.

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Introduction

Comprehensive cardiac rehabilitation (CR) and secondary prevention programs are now recognized as a highly effective approach for the treatment of a wide spectrum of cardiovascular conditions aimed at reducing patients' disabilities and improving long-term survival [1]. CR is strongly recommended [2-4] as a main tool in the comprehensive care especially of patients with coronary artery disease and chronic heart failure, and the core components of cardiac rehabilitation/secondary prevention programs [5], including their outcome measures, are well defined [6].

In 2005, the Italian National System for Guidelines (SNLG) with the endorsement of the Italian Agency of Regional Health Systems (ASSR) published the Guidelines on Cardiac Rehabilitation and Secondary Prevention [7]. Although the adherence to guidelines has been shown to be associated with improved outcomes, their current implementation in Italy, as in other European countries, remains sub-optimal. Approximately 55% of patients after cardiac surgery are referred to CR, but only a minority of eligible infarct and angioplasty patients are currently offered this opportunity. Furthermore, disparities among the different regional health policies have led to significant discrepancies regarding the territorial distribution and provision of CR services. Also the institutional inventories of CR units are still unreliable due to the lack of a specific registration code for services and activities of CR, which are aspecifically classified under "general rehabilitation" by the Italian Health Ministry and local healthcare services.

For these reasons in 1996 and in 2001-2002 the IACPR-GICR promoted and carried out a detailed analysis of cardiac rehabilitation programs available in Italy [9,10]. In 2001 the first ISYDE project (Italian SurveY on carDiac rEhabilitation) offered an overview of cardiac rehabilitation services in Italy, illustrating the core components of the existing programs. In 2008 a further ISYDE project was launched with the aim to evaluate whether or not progress had been made in cardiac rehabilitation practice. In this first official report of the ISYDE-2008 study, a detailed picture of the number, distribution, type, staffing levels and organization of CR units in Italy is offered. The second part of the report focused on the profile of patients referred to CR, on diagnostic procedures, exercise and educational programs, and treatments, is scheduled for publication in the next issue of this journal.

Methods

The design of the ISYDE-2008 study has been described in detail elsewhere [11-13]. In summary, the ISYDE-2008 was a multicenter, longitudinal, prospective observational study. The primary purpose of the study was to identify all CR centers existing in Italy in 2008 and describe them in terms of number, distribution, type of facility, staffing, organization, and setting of CR, comparing the actual provision with the recommendations of national guidelines for CR and secondary prevention. The secondary aim was to describe the patient population referred to CR and give a comprehensive and detailed description of the program components.

The enrolment period lasted 2 weeks, from January 28th to February 10th 2008. Data were collected online on an electronic Case Report Form (CFR) divided into two sections. In the first, a detailed description of the CR unit organization and staffing at the time of the first day of the survey (January 28th) was required. In the second part, centers were asked to describe all consecutive patients discharged from CR programs in the two-week study period, providing data on clinical characteristics, diagnostic procedures performed, exercise and educational programs, treatment and the follow-up plans. Data of this second part of the survey are still under analysis and the preliminary results will be presented at the National IACPR-GICR Congress in Ostuni, October 23-25, 2008.

Participating Centers

The survey was designed to be carried out in all the CR centers – residential and ambulatory – throughout Italy that agreed to take part in the survey. All 144 CR units of the 2004 inventory were invited to participate in the survey. In addition, the regional coordinators of IACPR-GICR were asked to update the list of all Italian CR Units, indicating new or potentially active centers. Centers were invited to participate in the survey on a purely voluntary basis, by the executive board of the study and by the regional IACPR-GICR coordinator, who was responsible for interfacing with the investigators in each of the participating centers and overseeing the implementation of the survey protocol. The complete list of participating Centers with names of the director or contact physician is reported in Appendix 2, while the updated directory of all Italian Cardiac Rehabilitation Centers of the IACPR-GICR network is available on the official website of the GICR http://www.gicr.it.

Role of the funding source

No funding sources had any role in the study design, conduct, data collection, analysis, data interpretation, or writing of this report. The IACPR-GICR coordinated the study, managed the data, and undertook all analyses. All members of the scientific board and writing committees had full access to the database and assume final responsibility for the results submitted for publication.

Results

Based on information collected from previous surveys and registries and through an active search of National Health System authorized facilities carried out at regional level, 208 facilities were identified as potential providers of CR programs and were invited to participate in the study. However, 18 centers were found, on contact, to be inactive or still in a pre-operational phase at the time of the study. Twenty-five (13%) out of the remaining 190 Italian CR units were unwilling to take part in the study or were not in a condition to describe precisely their organization and program components. Thus the data analysis here refers to 165 CR units (87% of all invited facilities) (Table 1).

The relative participation of centers was higher in the 7 northern regions (87.6% of all centers operating in the northern macro-area) than in the 5 central (71.8%) and 6 southern regions (58.7%). In 5 regions

Table 1. - Regional distribution and participation rate of cardiac rehabilitation units. The number of patients for each region enrolled during the 2-week survey is reported in the right column.

REGION	CONTACTED CENTERS		VIRTUAL/ NON ACTIVE CENTERS	CARDIAC REHABILITATION CENTERS				SURVEY PATIENTS	
				TOTAL		Participating	Non participating		
	N.		N.	N.		N.		N.	
Abruzzo	3	1%	0	3	2%	3	0	30	1,3%
Basilicata	2	1%	0	2	1%	0	2	0	0,0%
Calabria	10	5%	0	10	5%	10	0	72	3,2%
Campania	13	6%	0	13	7%	13	0	172	7,5%
Emilia Romagna	14	7%	2	12	6%	12	0	227	10,0%
Friuli VG	6	3%	0	6	3%	5	1	43	1,9%
Lazio	12	6%	2	10	5%	7	3	87	3,8%
Liguria	5	2%	0	5	3%	5	0	79	3,5%
Lombardia	47	23%	2	45	24%	39	6	555	24,3%
Marche	3	1%	0	3	2%	3	0	34	1,5%
Molise	3	1%	0	3	2%	2	1	1	0,0%
Piemonte - Valle d'Aosta	13	6%	1	12	6%	12	0	189	8,3%
Puglia	11	5%	4	7	4%	3	4	17	0,7%
Sardegna	2	1%	0	2	1%	1	1	10	0,4%
Sicilia	20	10%	2	18	9%	16	2	172	7,5%
Toscana	12	6%	0	12	6%	8	4	152	6,7%
Trento - Bozen	5	2%	0	5	3%	5	0	143	6,3%
Umbria	6	3%	2	4	2%	3	1	51	2,2%
Veneto	21	10%	3	18	9%	18	0	247	10,8%
TOTAL	208	100%	18	190	100%	165	25	2281	100,0%
						87%	13%		

(Trento-Bozen District, Liguria, Marche, Campania and Calabria), the 100% participation rate allowed a complete description of regional CR activities. According to the information provided by the network of local GICR coordinators providing supervision of rehabilitation facilities at regional level, the 25 non-participating units were equally distributed on a nationwide basis. Of these, 18 (72%) were active in outpatient and 7 (28%) in inpatient treatment. The estimated number of beds in the residential non participating units did not exceed 110.

The change of the regional distribution of CR units and their evolution over the last 12 years, according to previous inquiries carried out in 1996 and 2002 by the GICR, are reported in Figure 1. On an overall national basis, in Italy there is one CR unit every 299,977 inhabitants, with a wide regional variability between the three Italian geographic macro-areas. Indeed, northern regions have a density of one CR unit every 263,578 inhabitants, while the central and southern regions have one every 384,034 and 434,170 inhabitants, respectively. Figure 2 shows the wide variability in CR provision in the different regions: in addition to the north-south gradient observed, there is also a wide variability seen within the same macro-area, that can be explained by differences in local policies of the region-based Italian health system.

The disparity in CR provision between the different regions is reflected in differences in the local offer of intensive coronary care units [14] and distribution of cardiac surgery centers with respect to inhabitants (Figure 3) [15].

Figure 4 shows the trend of growth in the number of CR centers on the basis of the opening date reported in the ISYDE-2008 database. The first CR units opened at the beginning of the ’70s and the rate of new facilities peaked between 1995 and 2004. In the last 8 years the increase of new CR units has been more evident in southern than in central or northern Italy, and parallels the trend of the newly activated coronary care units (CCU), as observed in the 2001 and 2008 national inventories of cardiology activities compiled by the Italian Federation of Cardiology (FIC)[14]. In southern Italy there was a 19% increase in CCU and a 49% increase in CR units; in central Italy this increase was, respectively, 9% and 33% and in northern regions 4% and 24% (Figure 5). In fact, the rate of increase over the last 8 years has been far higher for CR units than for CCU in all 3 macro-regions.

According to organization status, 59% of CR units are located in public hospitals: of these, 31% are district general hospitals, 22% regional general hospitals, 2% university hospitals and 1% public care and research institutes. Forty-one percent of CR units are located in privately owned health care organizations: 25% in private hospitals, 9% in private care and research institutes, 3% in religious hospitals and 4% in other medical centers (Figure 6). Basically, all public and private organizations operate according to the regional public health accreditation and funding systems; only 1 single CR program was not covered by the Italian public healthcare funding system.

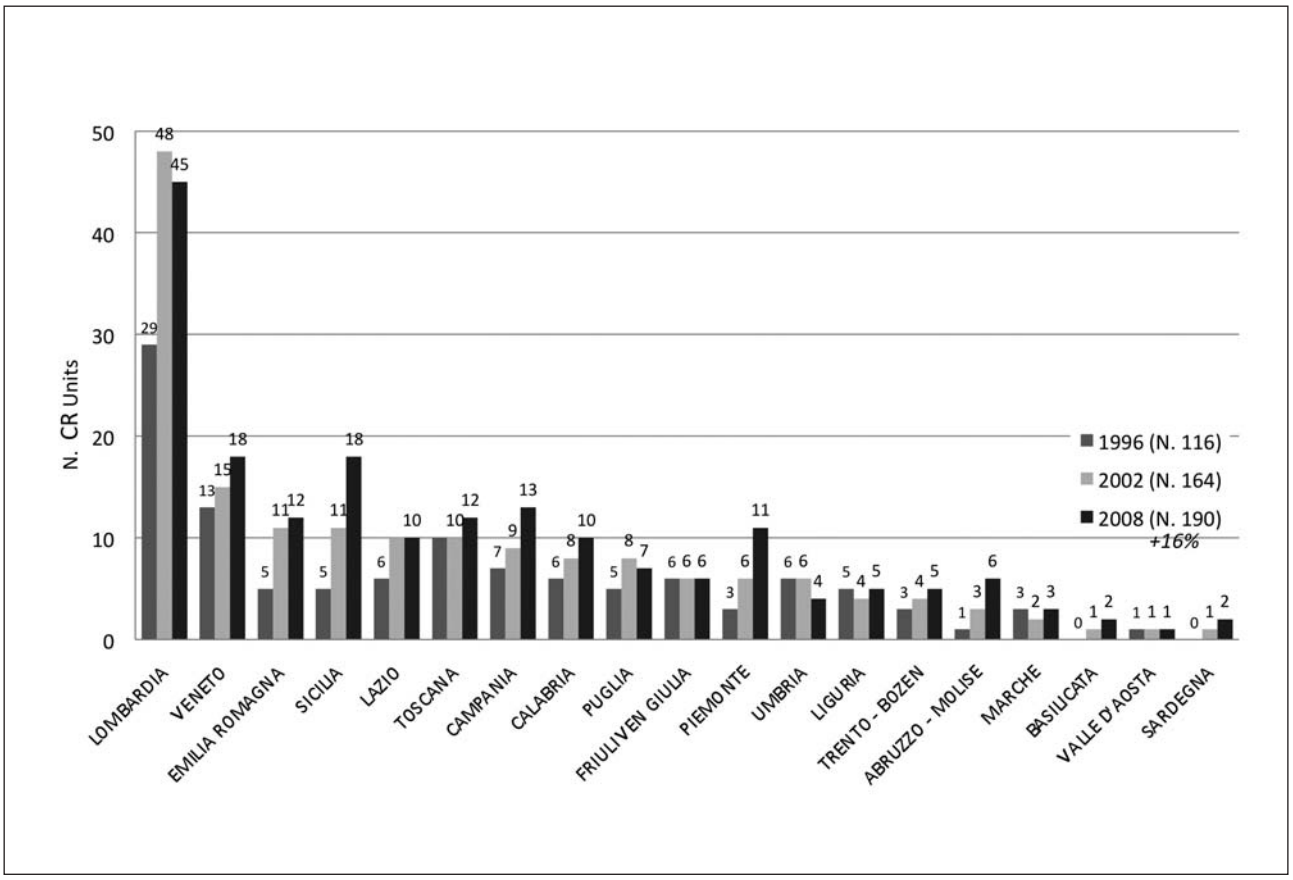

Figure 1. - Regional distribution of Italian cardiac rehabilitation (CR) units. Evolution over the last 12 years; since the last inventory compiled in 2001 by the GICR there has been a 16% increase in CR units.

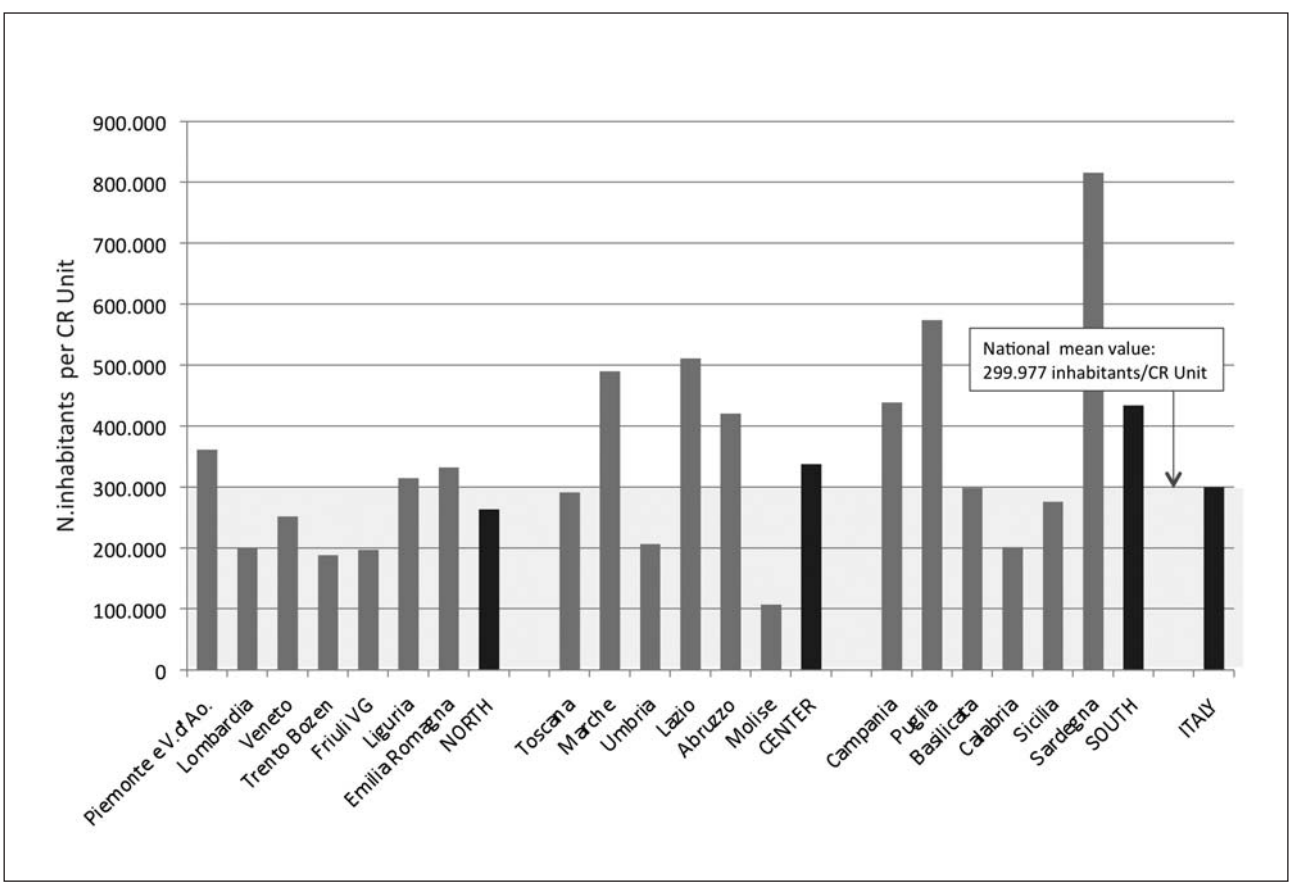

Figure 2. - Number of inhabitants per CR unit in the different Italian regions. The dark columns show the mean value in the northern, central and southern macro-areas, while the shadowed area outlines the national mean value.

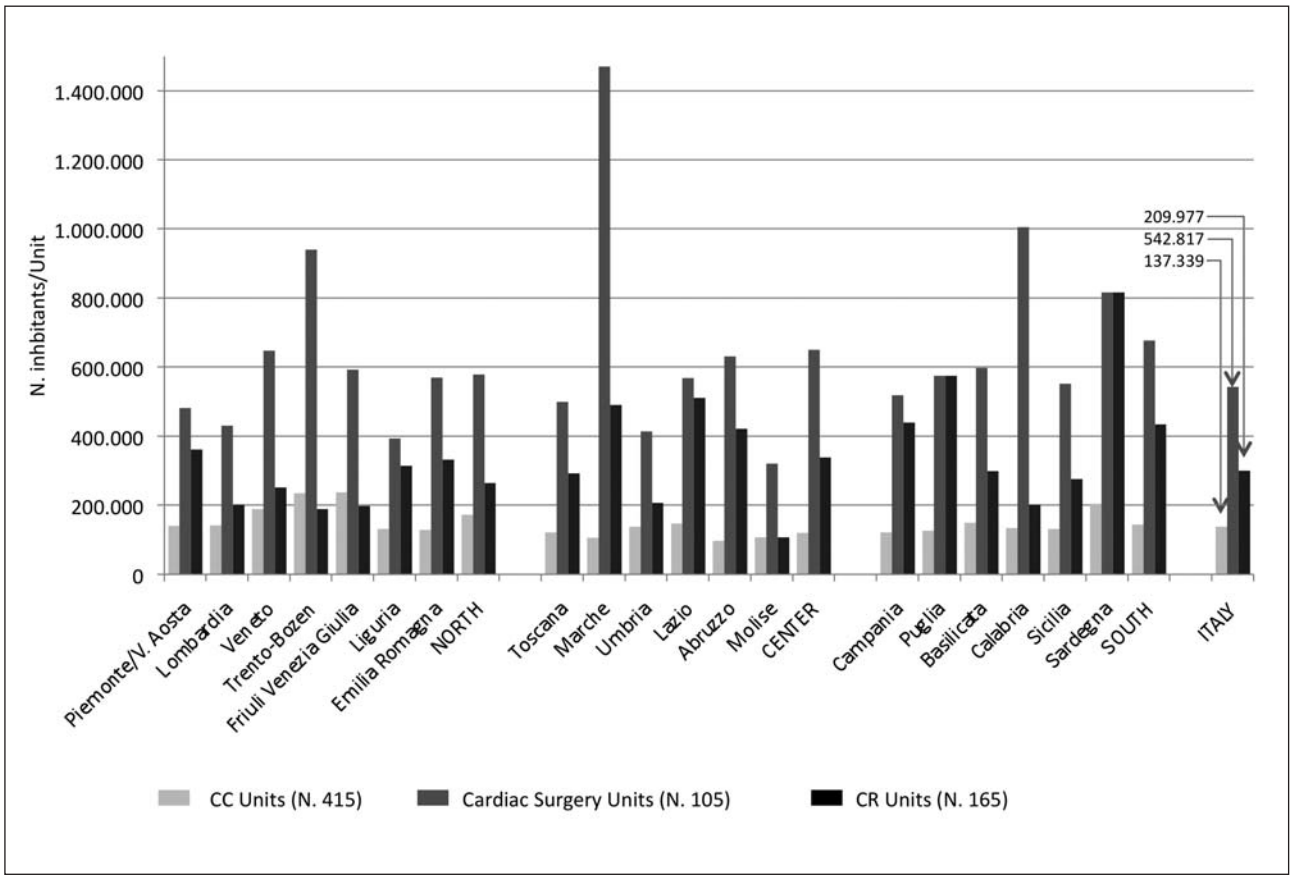

Figure 3. - Number of inhabitants per coronary care unit, cardiac surgery and cardiac rehabilitation units; national mean values are reported on the right of the diagram.

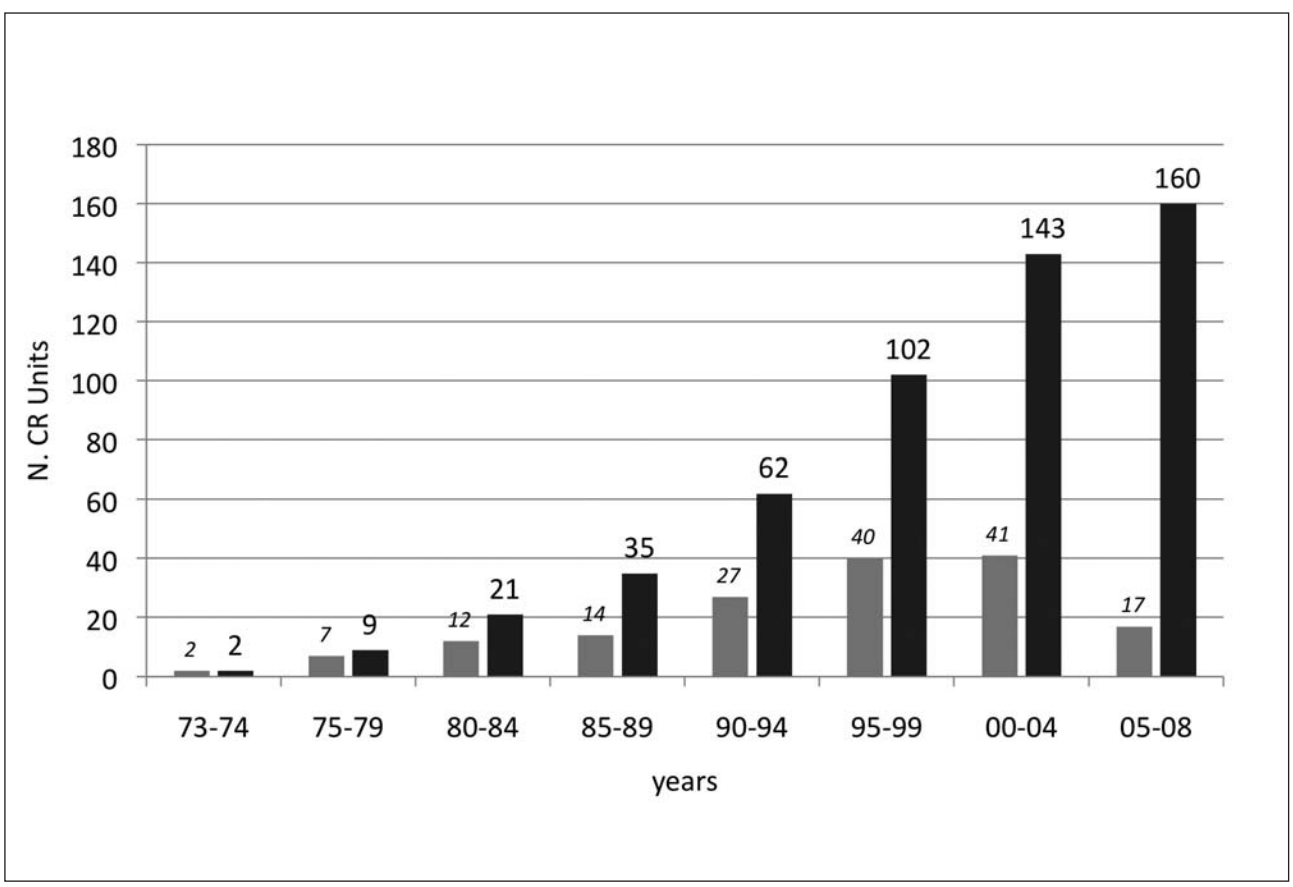

Figure 4. - Evolution of CR provision in Italy from '70s. Black columns show the number of active CR units and gray columns the number of newly activated units in the same period of time. For 5 units the start-up date was not available.

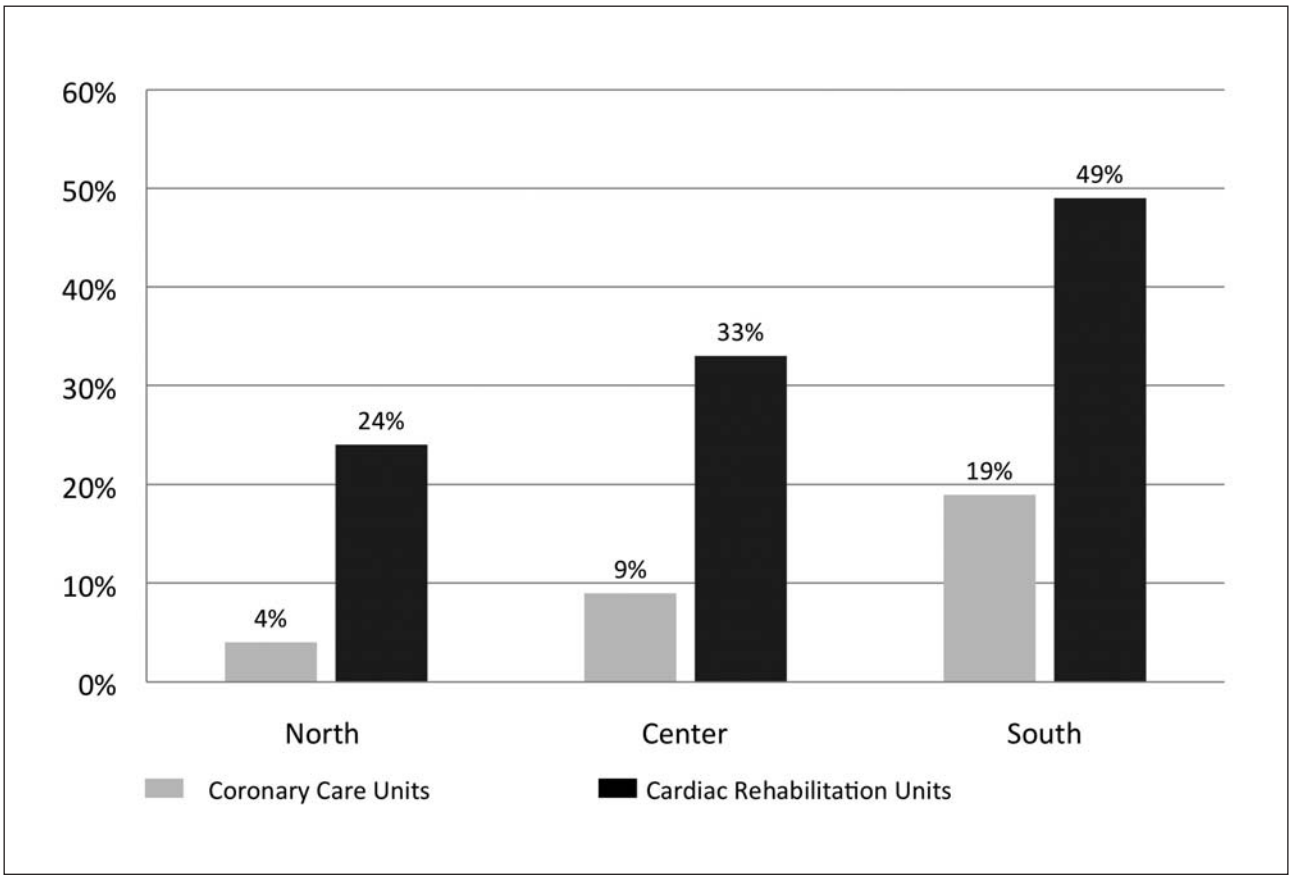

Figure 5. - Rate of increase of coronary care units and cardiac rehabilitation units in Italian macro-areas between 2001 and 2008. (Sources: ANMCO directories 2001 and 2002, ISYDE directory 2001 and ISYDE-2008 [10, 14].

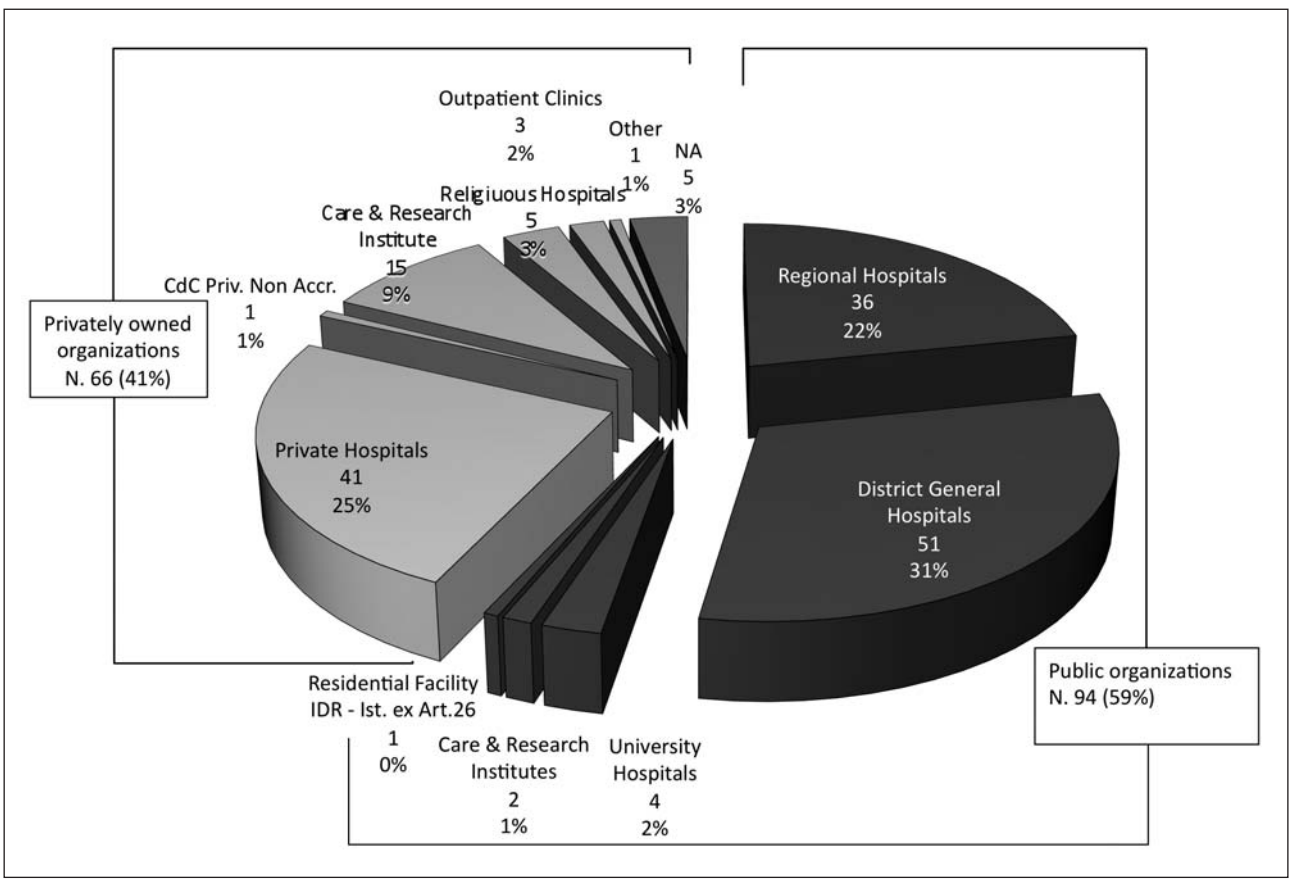

Figure 6. - Organizational status of Italian cardiac rehabilitation units.

Concerning the organization of the facilities providing CR programs, 59% of CR units are located in hospitals providing both acute and rehabilitation care, 32% in dedicated rehabilitation structures, and the remaining 8% operate in the context of residential long term care for chronic conditions (Figure 7).

Seventy-four percent of CR units are currently linked to a dedicated cardiology division, 41% with provision solely for comprehensive cardiac rehabilitation care and 33% as a section of a cardiology division. The remaining 26% of CR services are linked to physical medicine and rehabilitation (5%), internal medicine (2%), cardiac surgery and other (19%) divisions (Figure 8).

Since operational integration and functional efficiency are frequently related to organization, it is interesting to observe that more than one third of CR units operate outside a department framework (i.e. a structured coordination of different divisions, e.g. cardiology, intensive care, interventional cardiology, cardiac surgery, cardiac rehabilitation). Almost one third of CR units are part of a department of cardiology, 19% are part of a department of internal medicine and 17% are part of a department of general rehabilitation. In a minority of cases the CR units are incorporated in a department of cardiac or cardiothoracic surgery (Figure 9).

From the analysis of all invited CR centers (including the 25 non participating units), 58% and 34% of 190 Italian CR facilities provide inpatient and outpatient care respectively. Focusing on the 165 participating centers, outpatient care is actually delivered on a day-hospital and ambulatory basis in 10.9% and 20% of facilities respectively. Of the 103 (62.4%) inpatient units approximately one quarter offers also day-hospital and outpatient programs, 21% just inpatient programs, and 25% combined inpatient and day-hospital, or outpatient programs. Twenty percent of CR-units operate only in an ambulatory outpatient capacity and 11% in day-hospital regime (Figure 10).

According to our data the Italian cardiac rehabilitation hospitals account for at least 2,421 beds (Table 2). Every inpatient CR unit has a mean of 23.5±17.3 beds (range 2-95, mode value 20): of these, 202 (8.3%) are sub-intensive beds fully equipped for ECG, respiratory and non-invasive and/or invasive hemodynamic monitoring. Sub-intensive beds are available in in 45(44%) of 103 CR inpatient units: in these the mean number of sub-intensive beds is 4.5. Day-hospital CR services are usually smaller: 79 day-hospital units have on average 4.4 beds, but the mode value is just 2.

As far as out-patient CR services are concerned, the hours of operation range from 3 to 48 hours per week (mean 20.7±12.9, mode 30 hours) (Table 2).

The last inventories of cardiac and cardiac surgery units compiled by the Italian Federation of Cardiology (FIC) in 2005 [14] and by the Italian Society of Cardiac Surgery (SICCH) in 2003 [15] and data from the Statistics Department of the Italian Health Ministry [16] permit an estimation of the relative size of CR in-hospital provision in Italy. Based on these figures, CR beds represent 19% of all beds available in the inpatient cardiology area, including coronary care units, interventional clinical care units and cardiac surgery

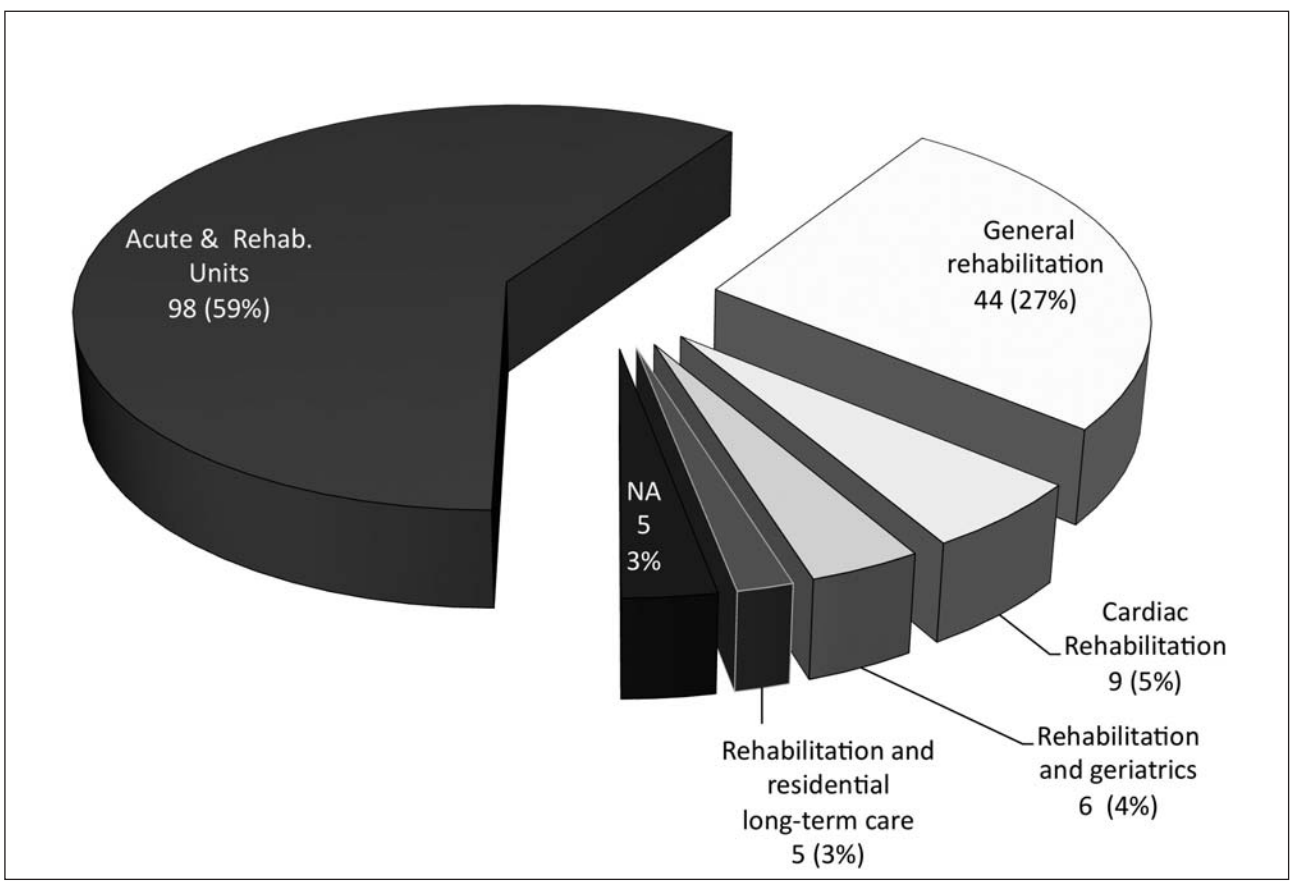

Figure 7. - Organizational status of facilities providing CR programs in the health system with respect to the targeted healthcare domains.

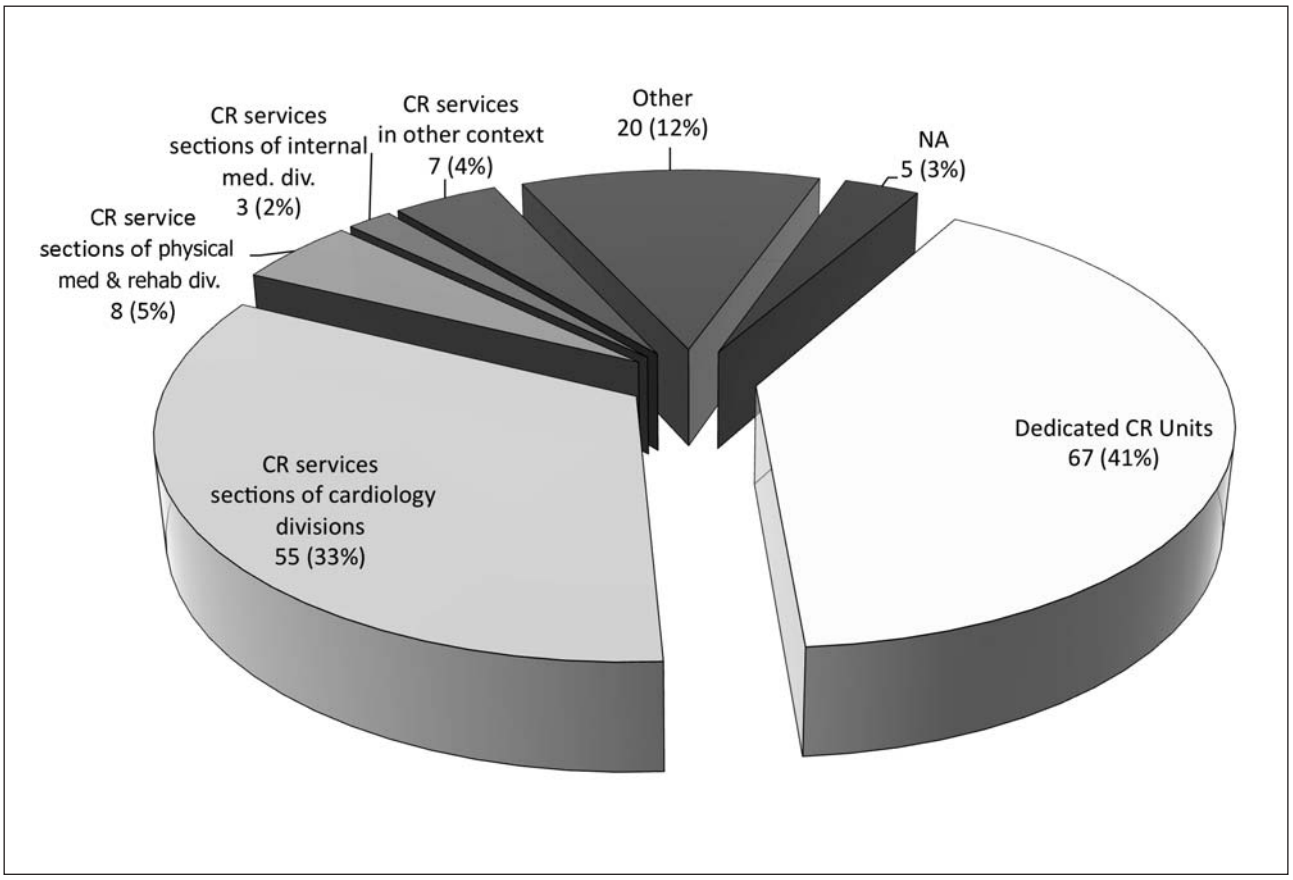

Figure 8. - Operating framework of cardiac rehabilitation units within the structures providing cardiac rehabilitation programs.

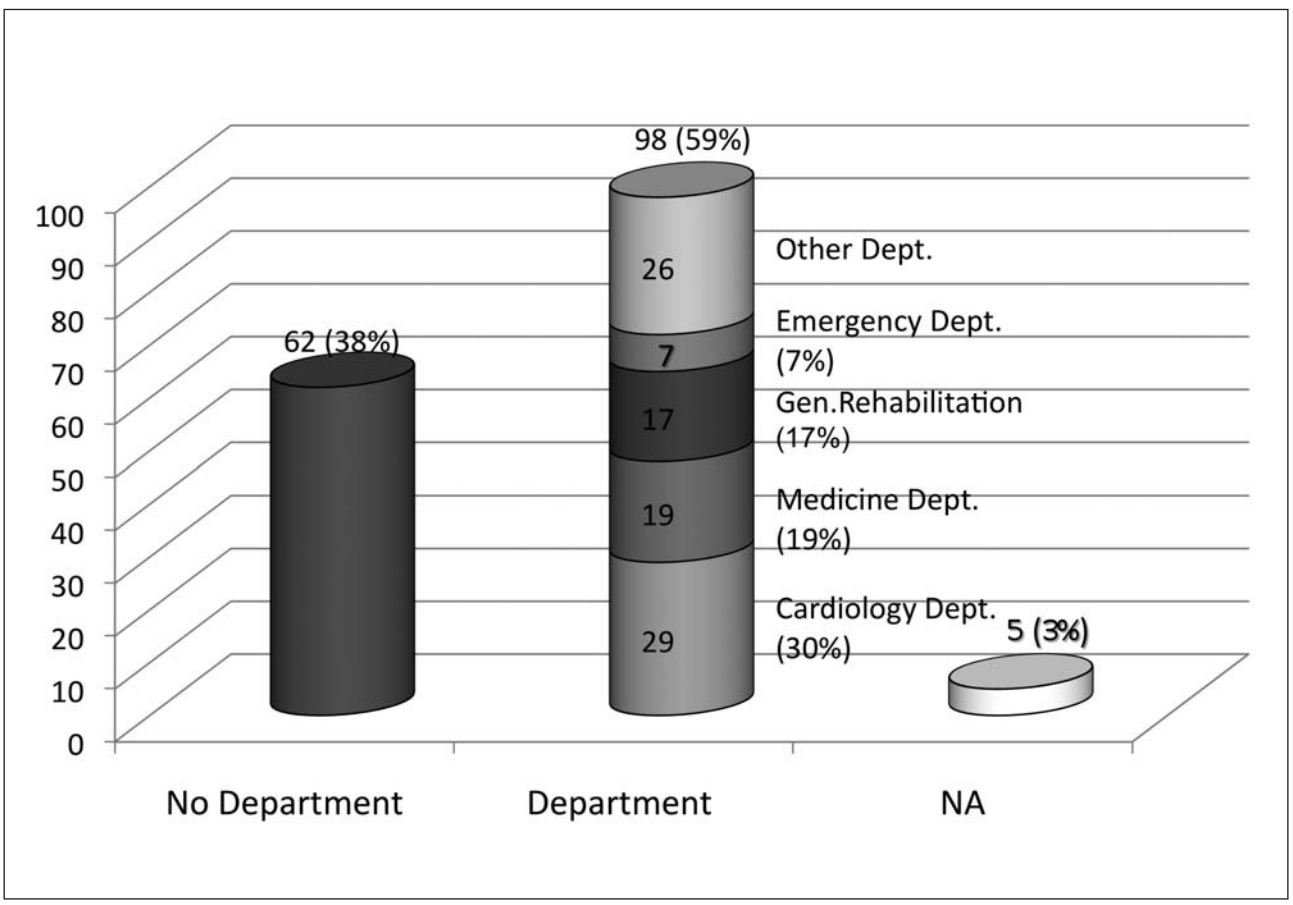

Figure 9. - Departmental framework of Italian cardiac rehabilitation units.

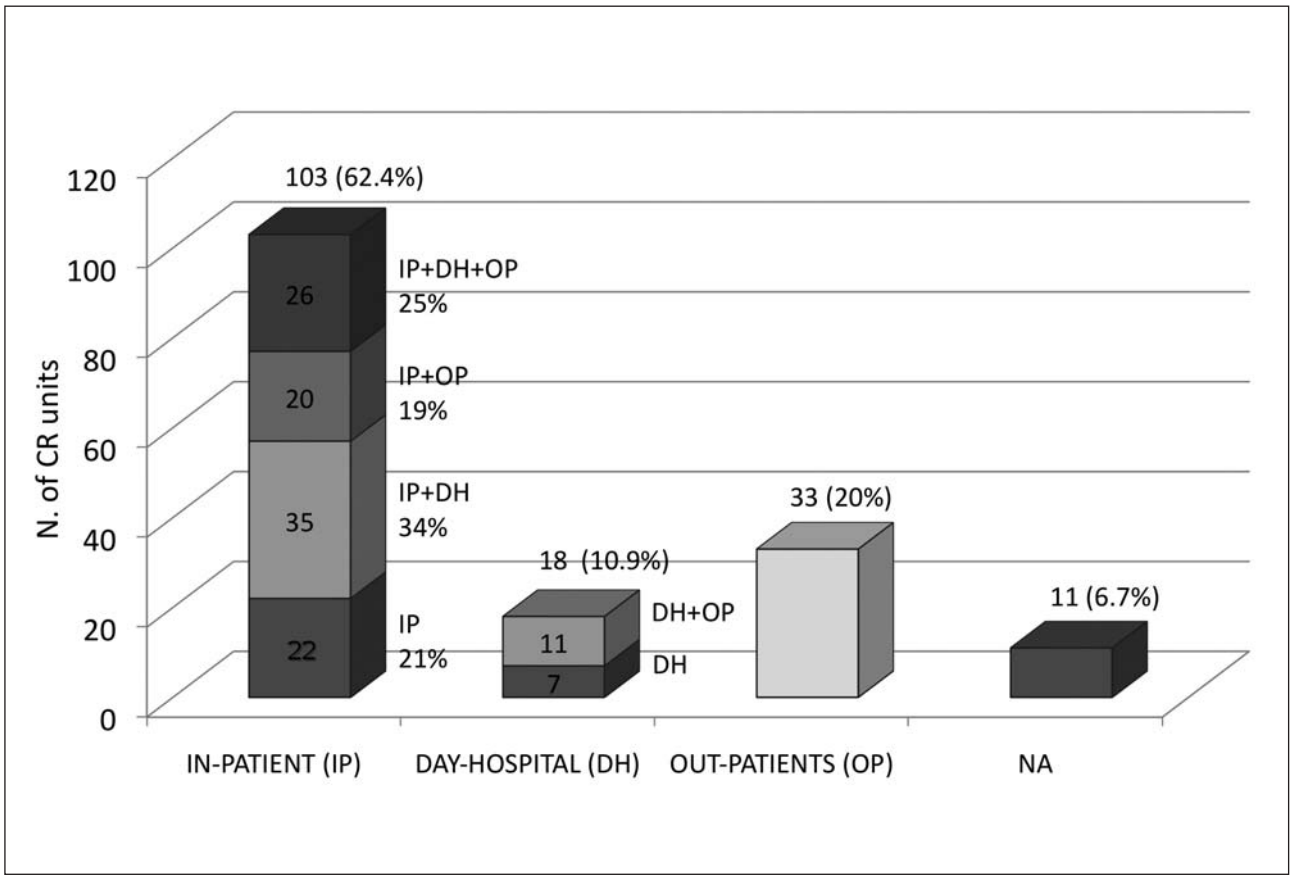

Figure 10. - Setting of cardiac rehabilitation units.
NA = not available

Table 2. - Dimensions of Italian cardiac rehabilitation activities in residential inhospital and outpatient ambulatory programs. Data refer to 165 surveyed cardiac rehabilitation units.
Outpatient activity is reported as weekly open hours.

CR settings	**CR programs**	**Active Beds**			
	N.	N.	Mean±SD	Range	Mode
IN-PATIENT	103	2421	23.5±17.3	2-95	20
IN-PATIENTS SUB-INTENSIVE	45	202 *8.3%*	4.5±3.8	1-20	4
DAY-HOSPITAL	79	352	4.4±5.6	1-34	2
		Hours/week			
	N.		Mean±SD	Range	Mode
OUT-PATIENT (Ambulatory)	90		20.7± 12.9	3-48	30

divisions. Concerning the non-surgical cardiology area, more than 1 bed in 5 (23%) is dedicated to cardiac rehabilitation. Moreover CR accounts for 33% of all cardiology day-hospital beds (Figure 11).

At the moment in Italy there are 4.2 CR beds per 100,000 inhabitants. Figure 12 shows a regional breakdown of the number of CR beds per 100,000 inhabitants. Similarly to what has been previously observed for the distribution of CR facilities, there is a huge regional variability: in Umbria, Basilicata and Sardegna, there is not a single bed for inpatient CR programs. Also for inpatient CR activity a striking north-south gradient can be observed (Figure 13). In four regions the number of CR beds exceeds

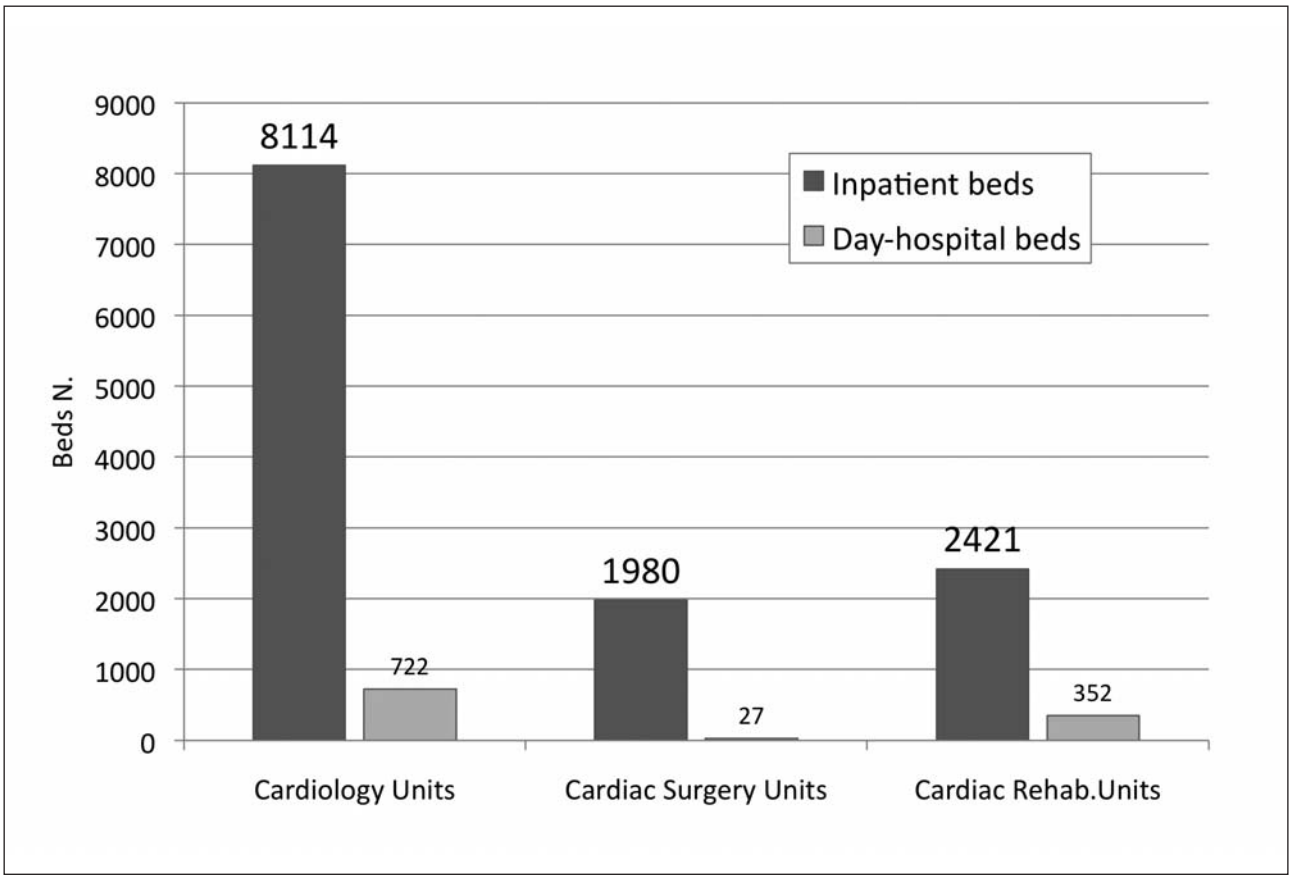

Figure 11. - Number of inpatient and day-hospital beds in cardiology (including CCU and invasive cardiology units), cardiac surgery and cardiac rehabilitation units in Italy. Data from 2008 FIC directory [14], Cardiac Surgery Italian Society Directory [15], and ISYDE-2008.

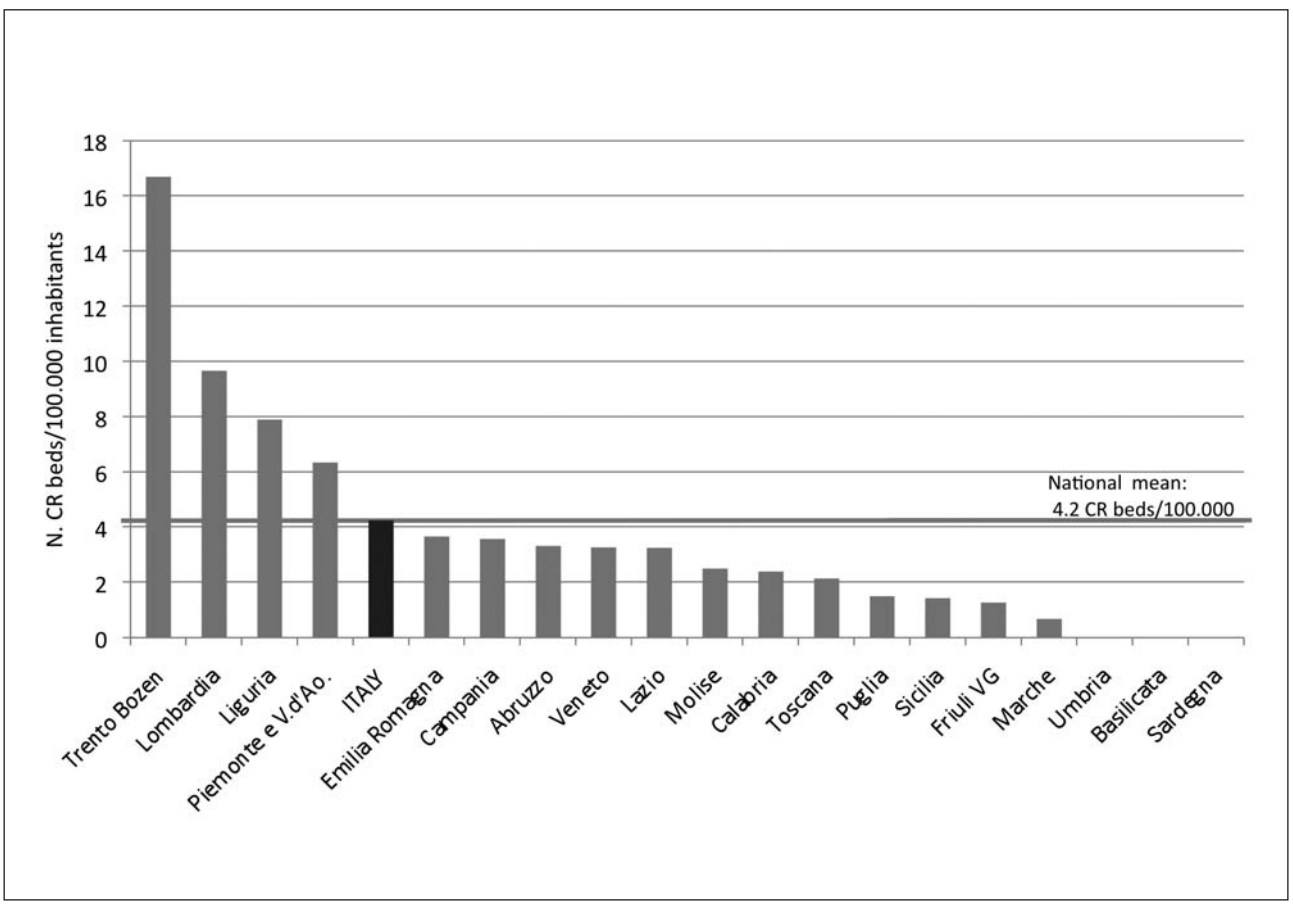

Figure 12. - Regional distribution of beds for inhospital cardiac rehabilitation programs per 100,000 inhabitants.

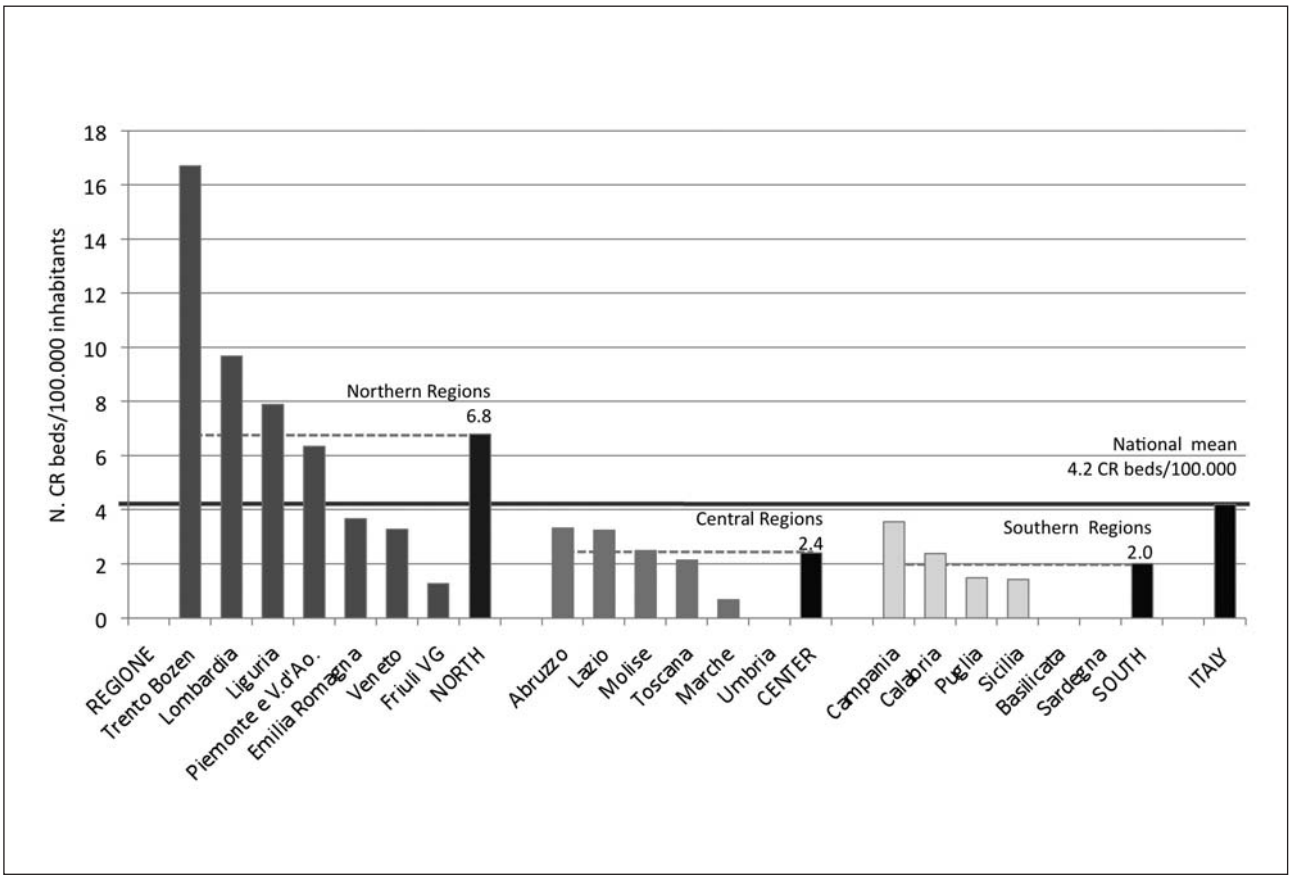

Figure 13. - Regional distribution of beds for inhospital cardiac rehabilitation programs per 100,000 inhabitants in the 3 Italian geographic macro-areas. The dark line shows the national and the dotted lines the macro-area mean values.

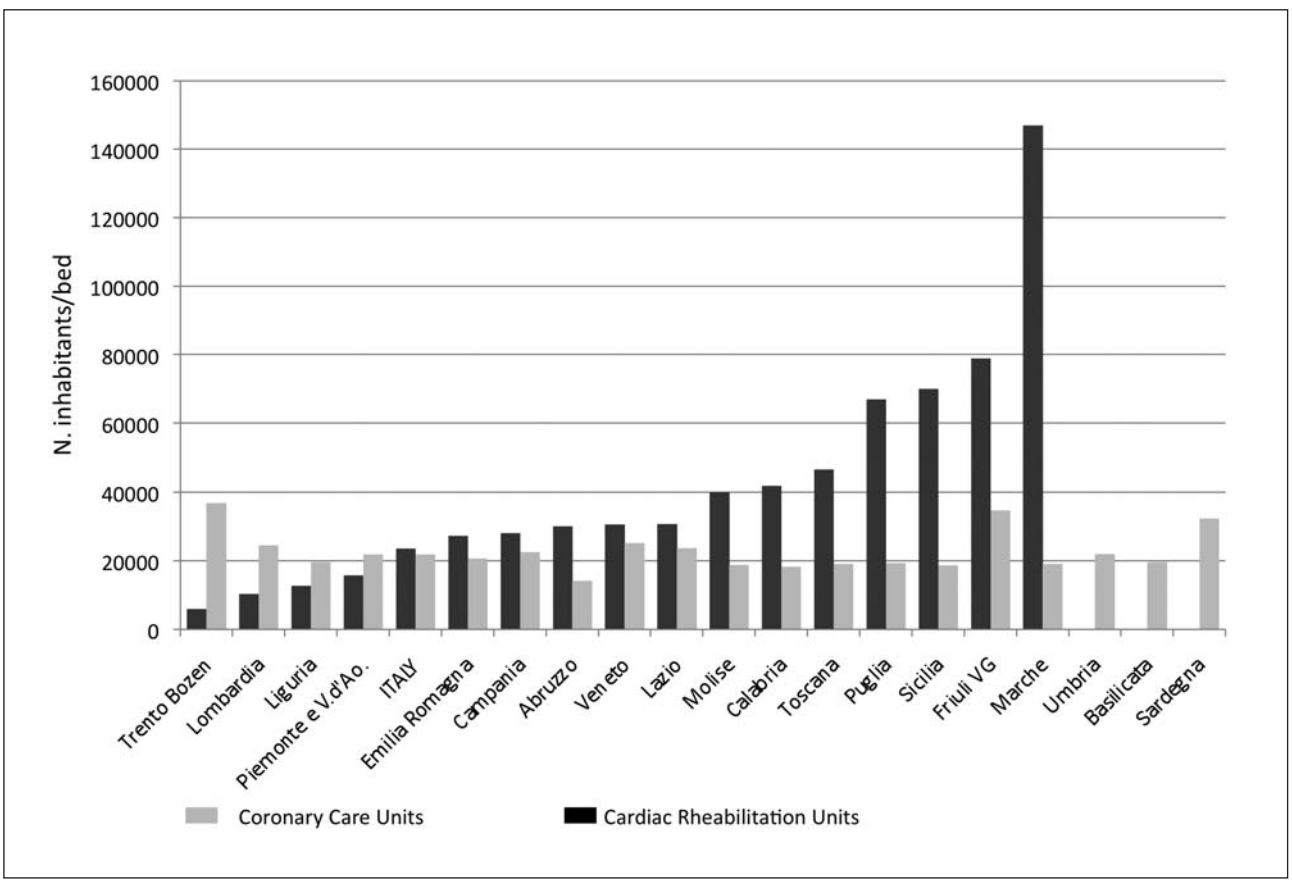

Figure 14. - Comparison of the number of inhabitants per cardiac rehabilitation bed (dark columns) and coronary care bed (gray columns) in the different regions.

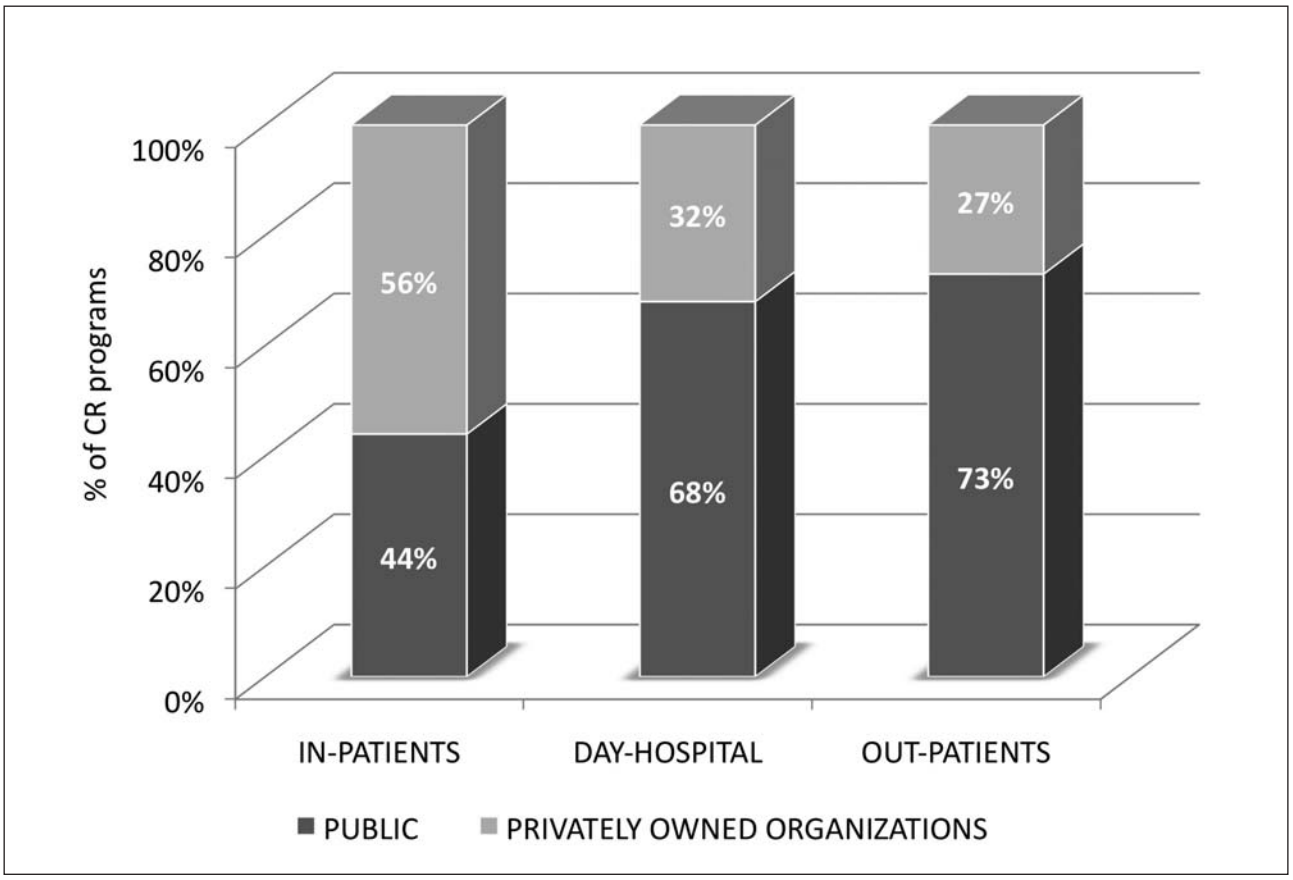

Figure 15. - Distribution of cardiac rehabilitation settings between public and privately owned organizations.

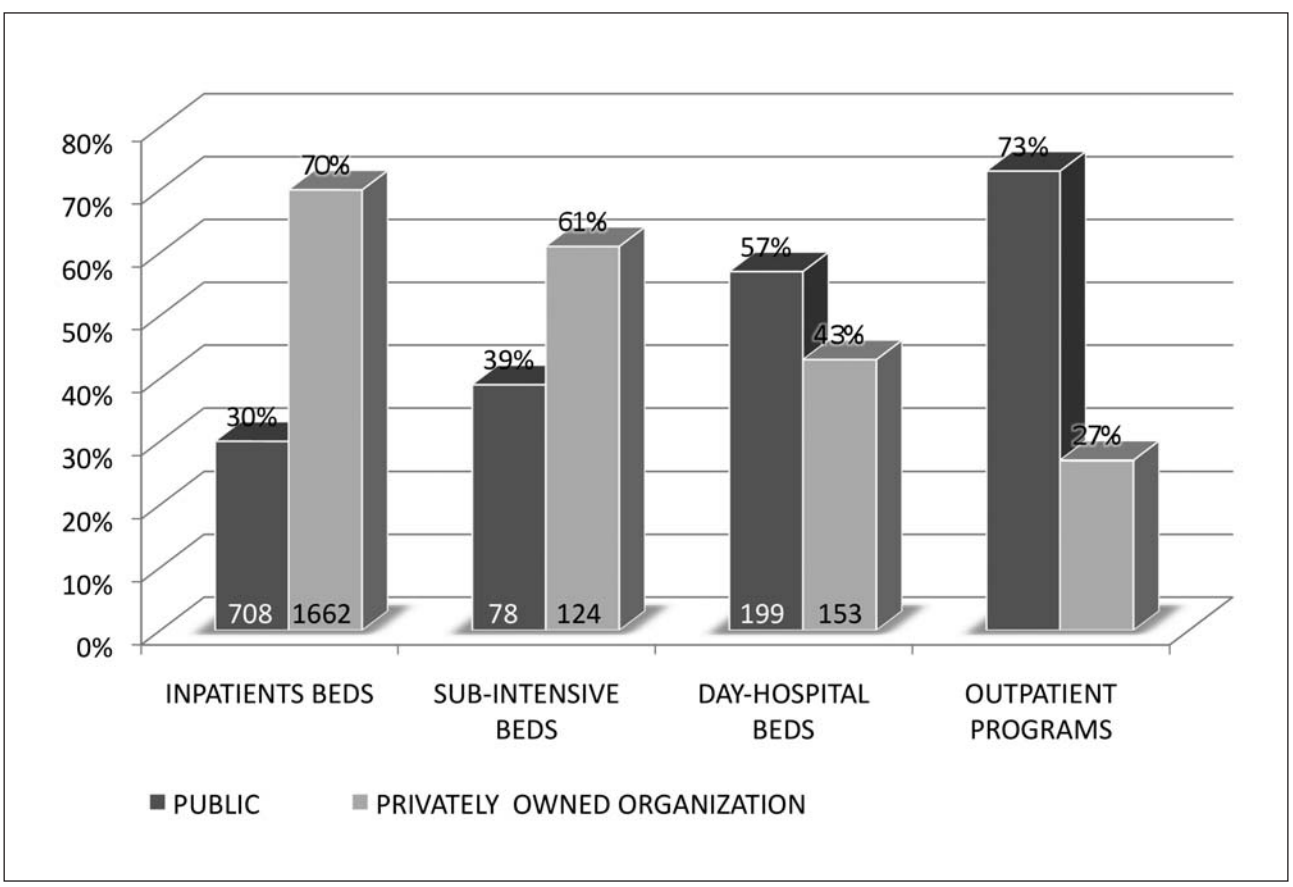

Figure 16. - Percentage distributions of inpatient, sub-intensive, day-hospital beds and outpatient programs in public and privately-owned organizations. At the base of the columns is reported the number of beds.

significantly the national average: noteworthy are the Trento-Bozen district, Lombardia and Liguria regions, where the number of CR beds normalized for the population exceeds the number of beds in coronary care units (Figure 14).

Fifty-six percent of inpatient CR beds are in privately owned organizations while public healthcare organizations seem more oriented towards outpatient services in either day-hospital or ambulatory regime (Figure 15). Remarkably two thirds (61%) of sub-intensive beds are located in privately owned centers, contradicting the general conception, at least in Italy, of a roughly prevailing interest of private facilities for lower levels of clinical management complexity (Figure 16).

Staffing

The CR units are headed in the vast majority of cases (86%) by a cardiologist; only in 14% of cases are they led by specialists in internal medicine, geriatrics, physical medicine and rehabilitation, pneumology or other disciplines. Also for CR services operating in the framework of a different division most of the program coordinators (13/15) are cardiologists (Figure 17).

Italian CR units employ globally 656 dedicated physicians. All CR units have at least one physician as a core member of the team. The mean number of physicians per CR unit is 4.0±2.7, ranging from 1 to 16 (mode 2) (Figure 18). Most dedicated physicians are employed full-time (93.4%) and only 2.9% operate as non-dedicated sessional consultants (Figure 19). As for the medical specialization, 79% of physicians engaged in CR teams are cardiologists, 7% are specialists in internal medicine, 3% in pneumology, 3% in geriatrics, 2% in physical medicine and rehabilitation; 5.6% have other specializations including cardiac surgery, sports medicine, and vascular surgery; only 26% of physicians working in CR units have no specialization (Figure 20).

Twenty (13%) of the 165 CR units are attended by 42 training fellows from postgraduate schools: of cardiology (60%), geriatrics (17%), physical medicine and rehabilitation (7%) and internal medicine (2%) (Figure 21).

In two thirds of inhospital CR programs the medical duty services are covered round the clock by the cardiologists of the CR unit team (30.4%) or of the cardiology division to whom the unit belongs (29.6%). In 8.8% of cases the duty medical service is covered 24 hrs by other specialists, in 6.4% by free-lance doctors and in 0.8% by the emergency care staff. Only in a small portion of CR units (4.08%) are night-, weekend- and holiday duties covered by an on-call doctor whose presence in the unit is not mandatory (Figure 22).

In 90% of CR units nurses are present: the mean number is 10.1±8.0, range 1-41 (Figure 23). In most cases (32%) the number of nurses in the rehabilitation team ranges from 1 to 5. In 10% of CR units, mostly outpatient facilities, nurses are not part of the team. As for physicians, also nurses are generally dedicated to the CR service (91.3%) (Figure 24).

The mean number of physiotherapists for the CR teams is 3.3±2.5, range 0-20. The national distribution of the number of physiotherapists in CR programs is reported in Figure 25. Surprisingly, in 16% of services physiotherapists are not present at all in the rehabilitation team: in these cases they are usually surrogated by nurses or other healthcare technicians. Only 18% of physiotherapists are non-dedicated, but belong to physical medicine and rehabilitation or other divisions (Figure 26).

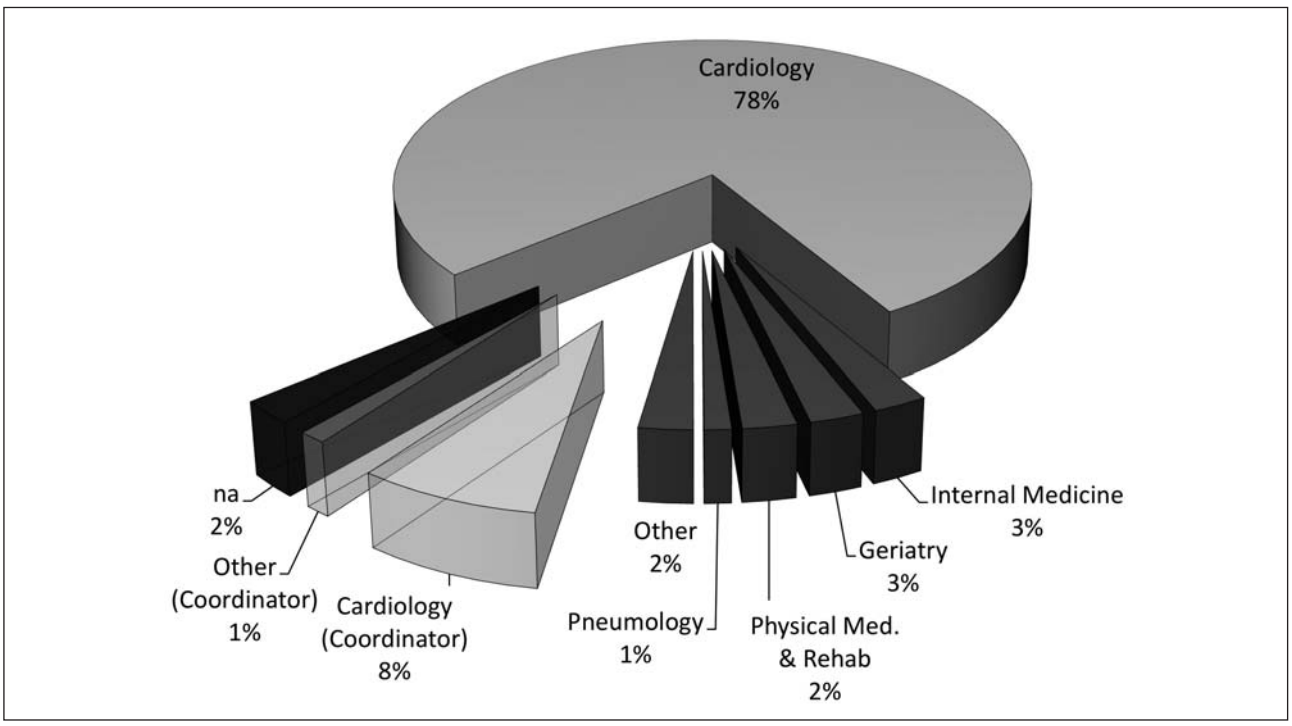

Figure 17. - Medical specialization of physicians leading the CR units. Transparent slices refer to the specialization of coordinators of CR services operating in the framework of different divisions. NA = not available.

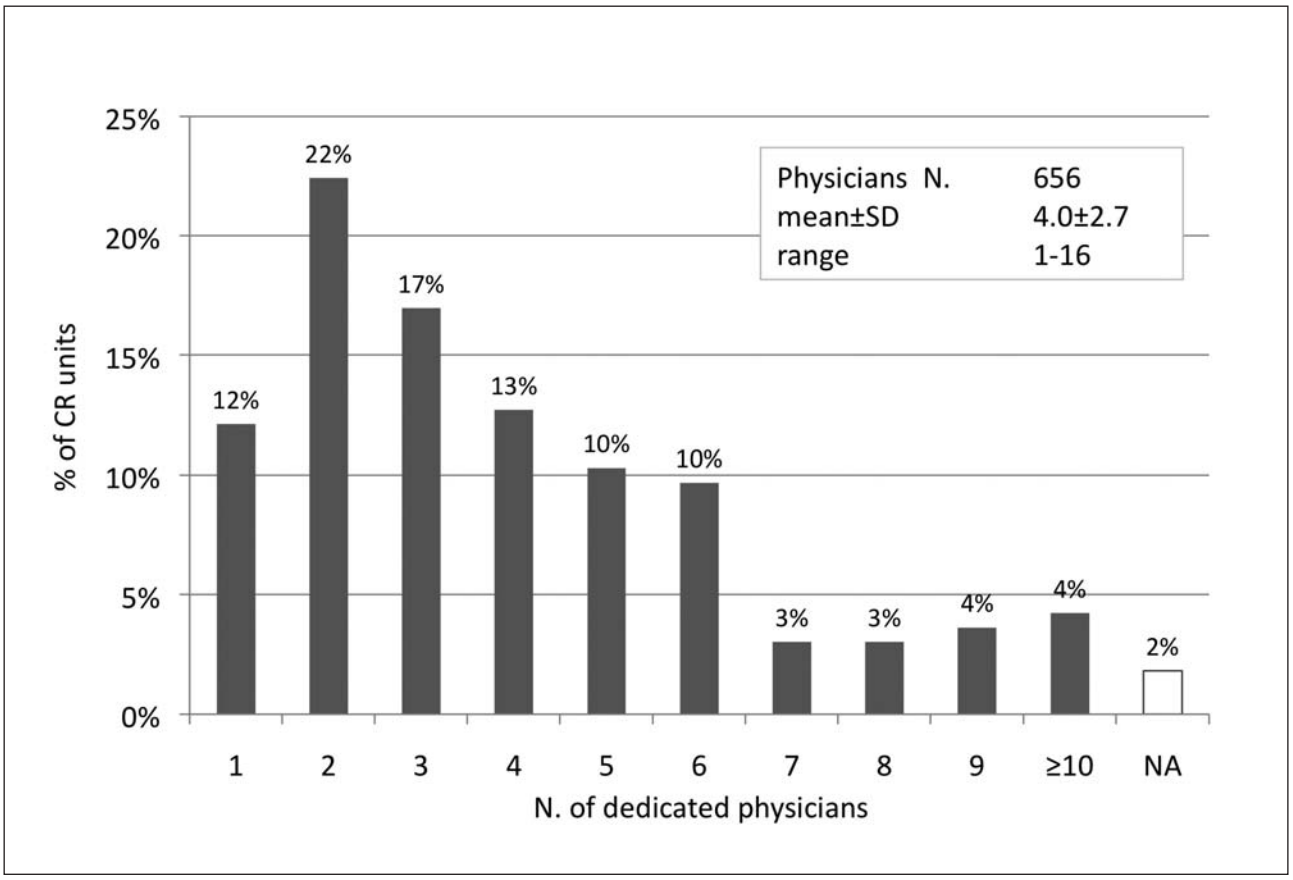

Figure 18. - Distribution of dedicated physicians in cardiac rehabilitation units.

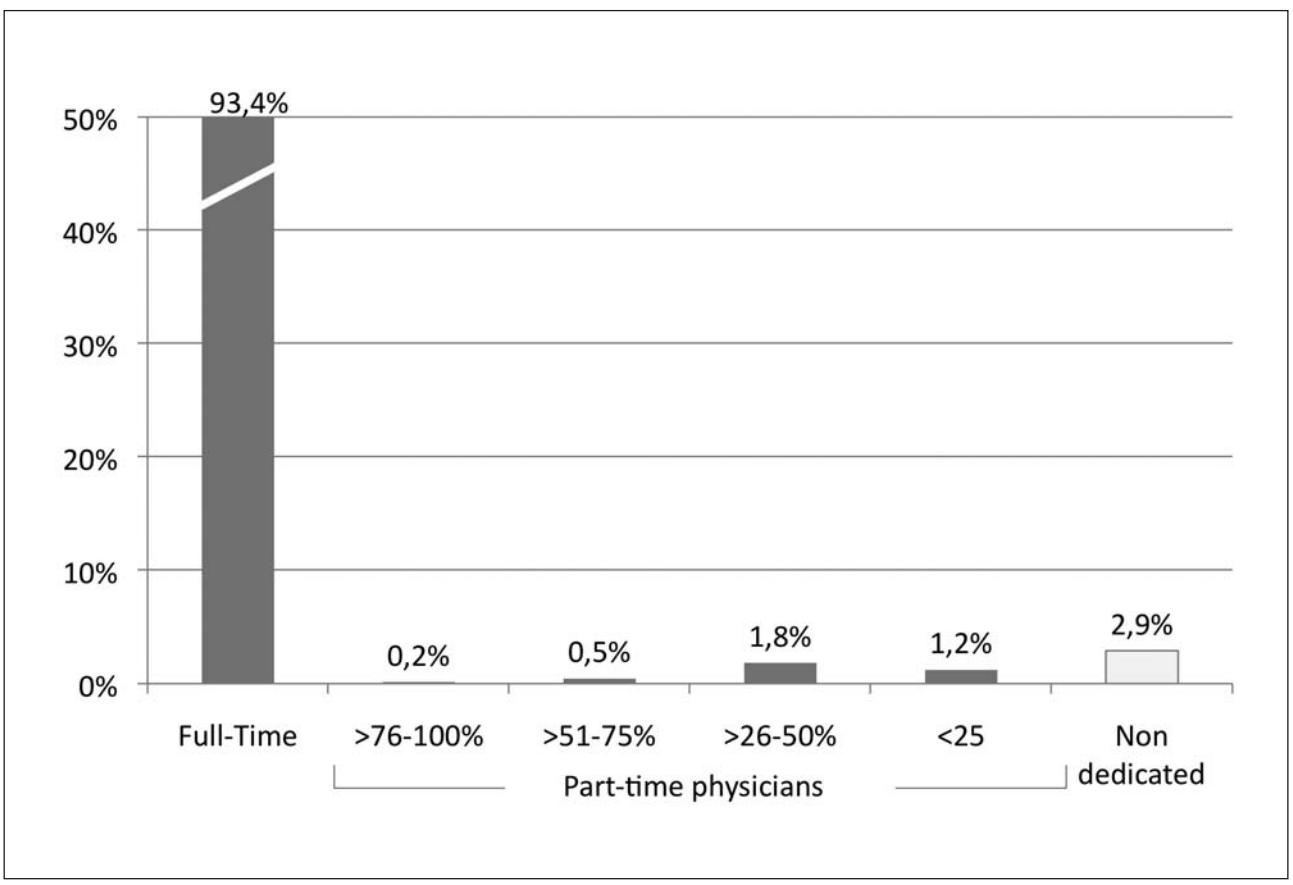

Figure 19. - Distribution of physicians in cardiac rehabilitation units according to their professional labor contract.

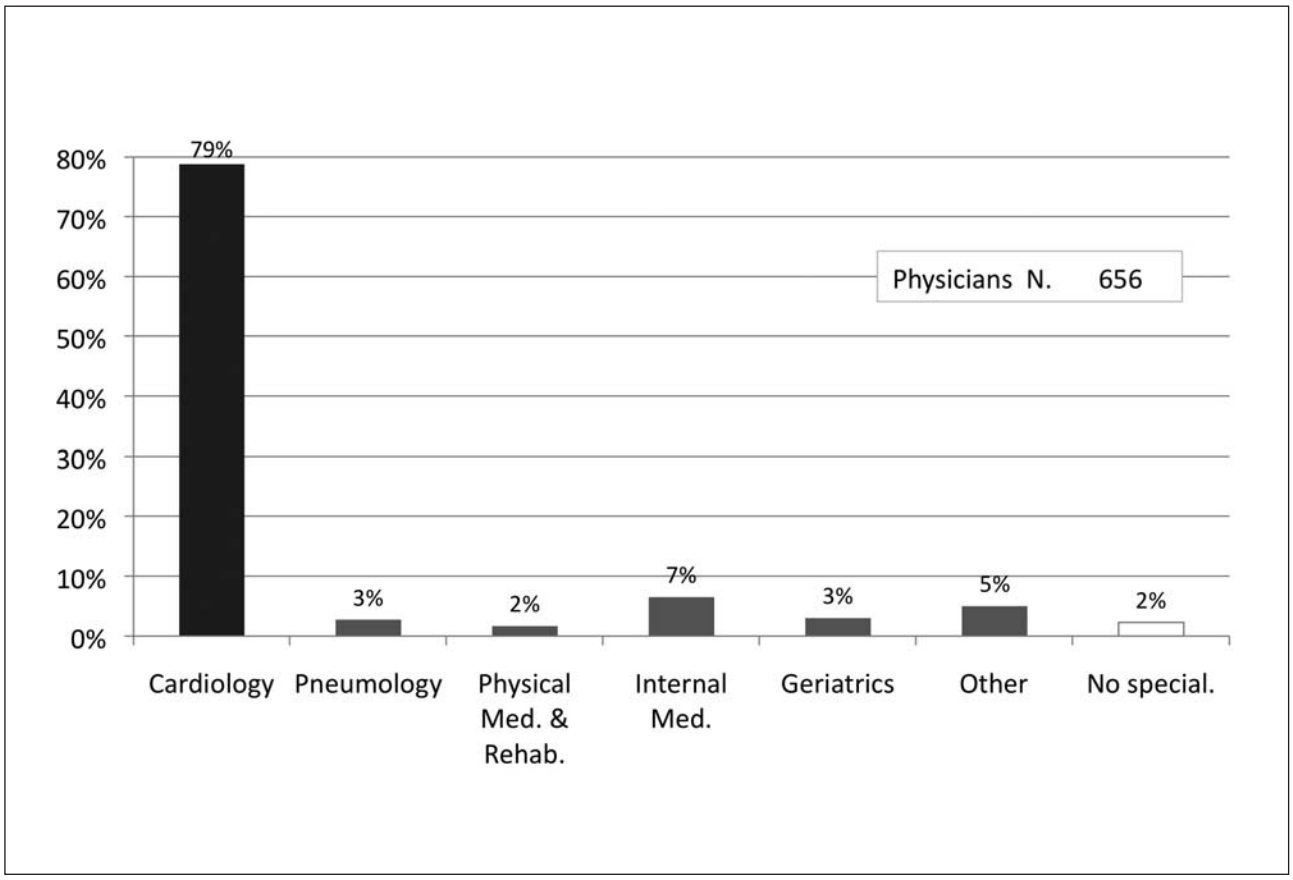

Figure 20. - Medical specializations of physicians engaged in cardiac rehabilitation teams.

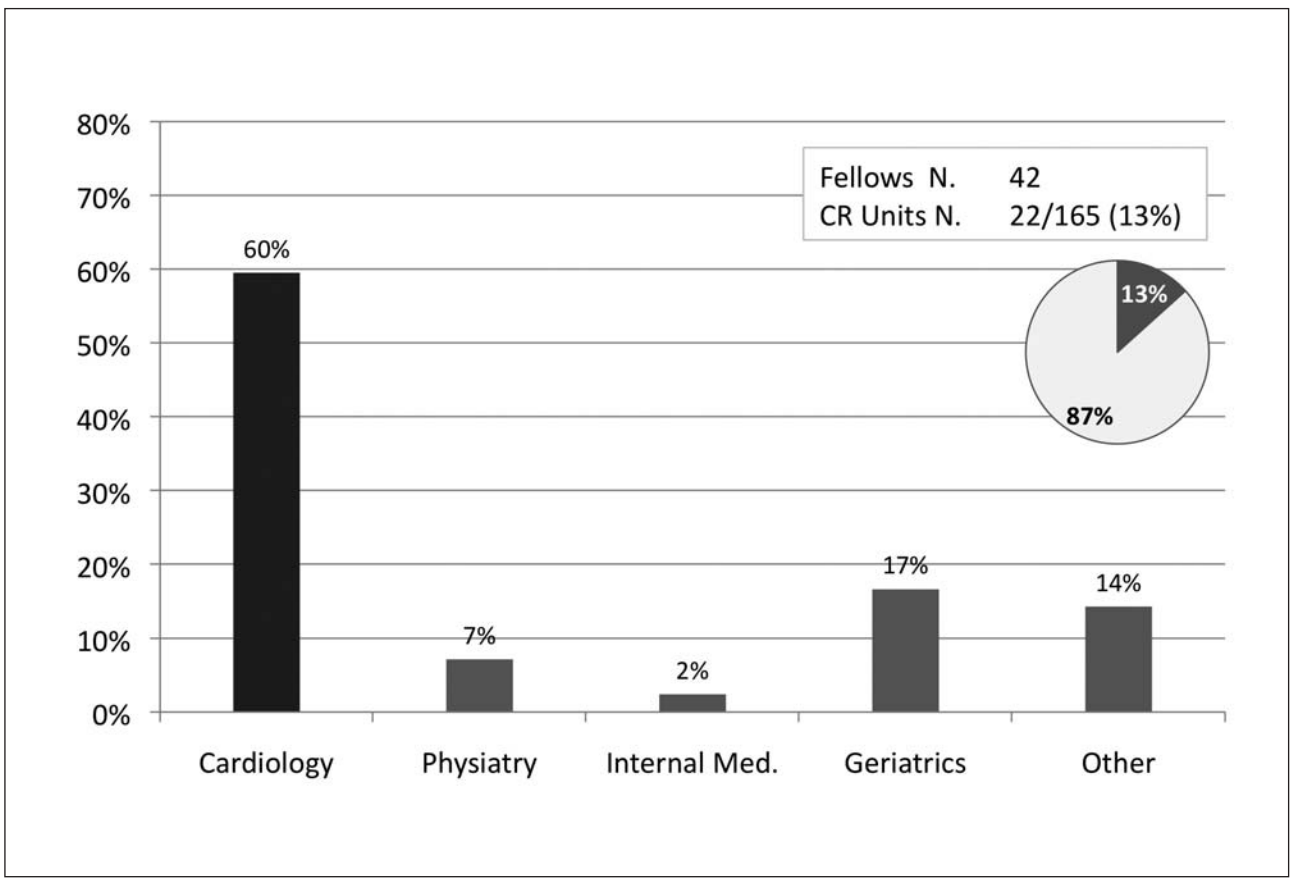

Figure 21. - Postgraduate specialization schools of training fellows attending teaching rehabilitation units.

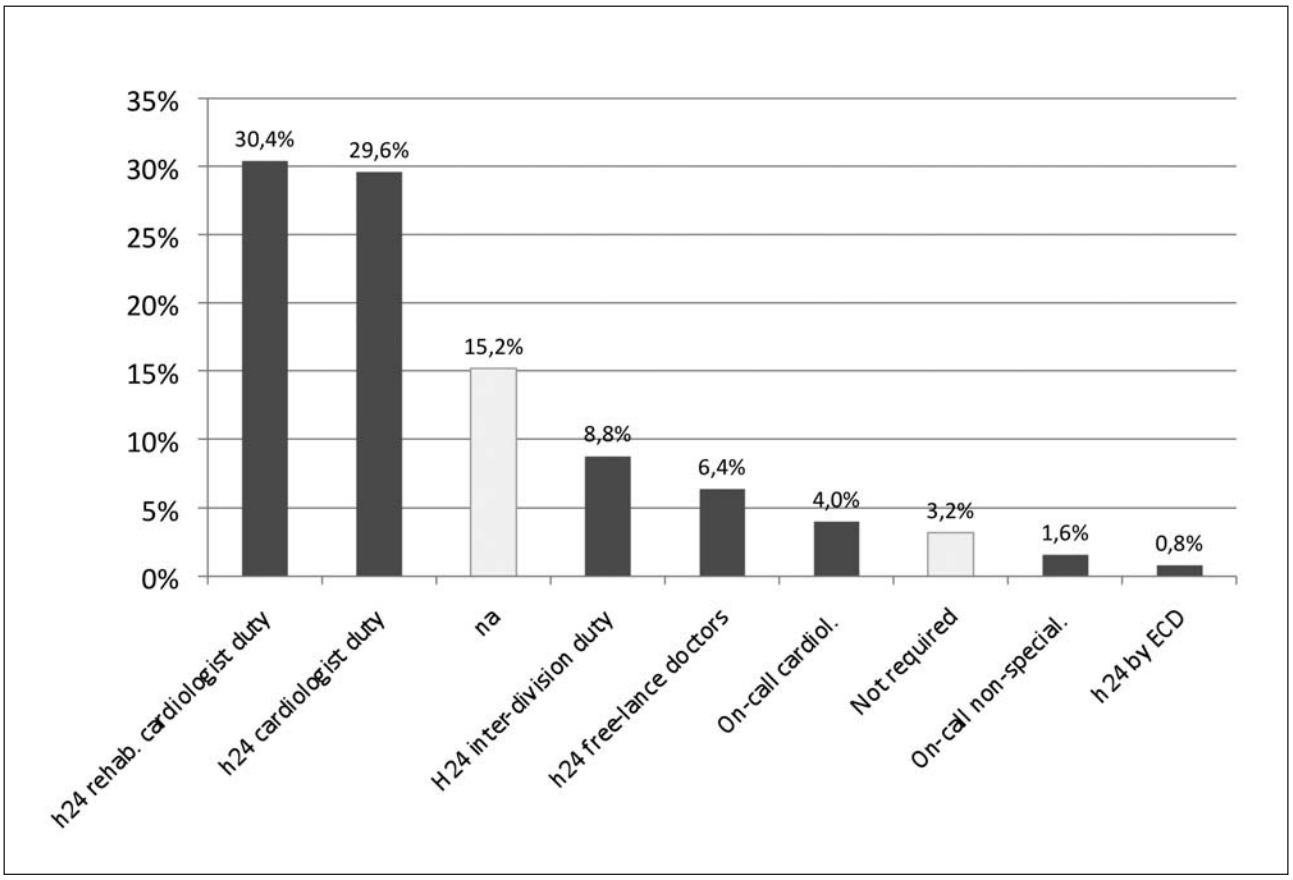

Figure 22. - Medical duty services or on-call medical availability for in-hospital cardiac rehabilitation programs.
Legend: na = not available data; ECD = Emergency Care Department.

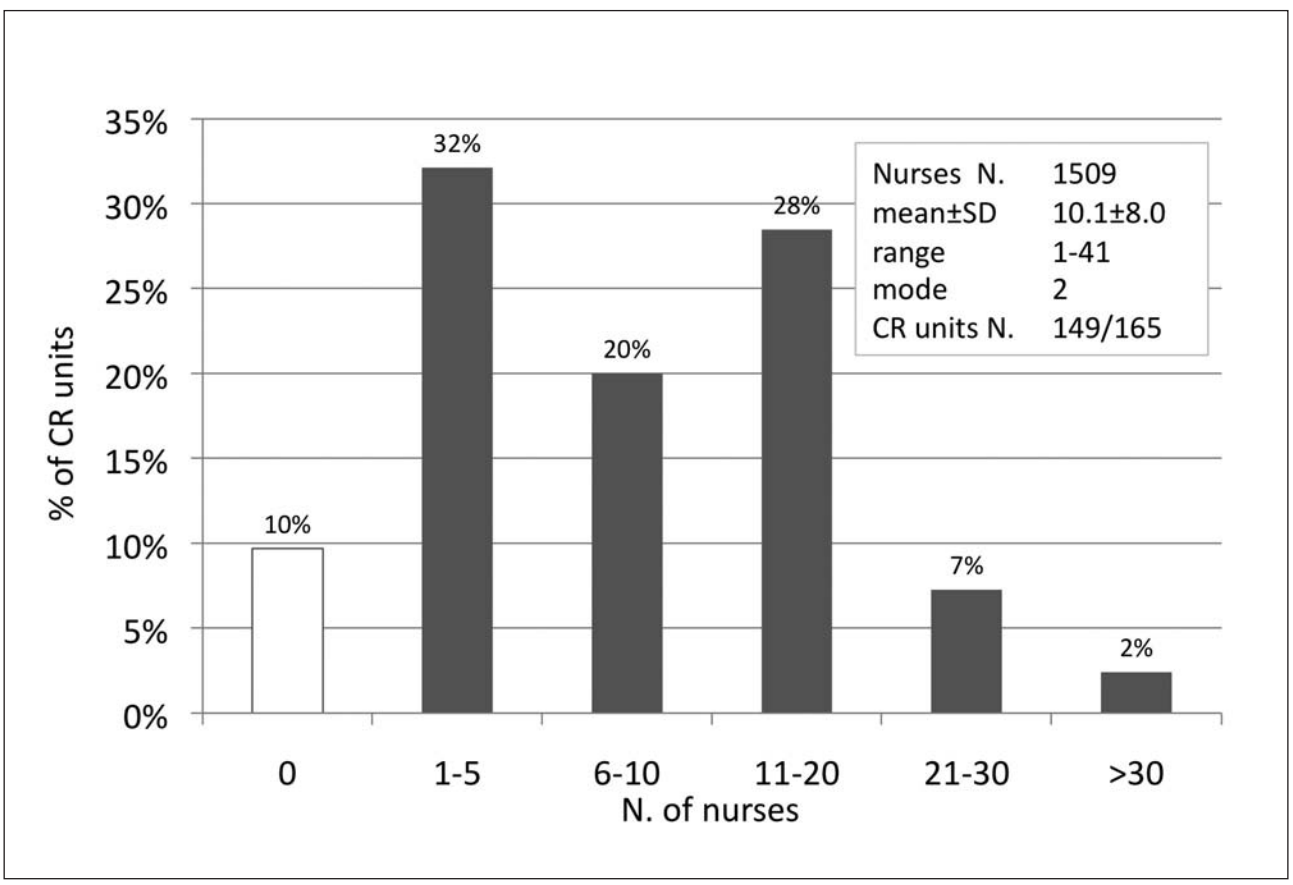

Figure 23. - Distribution of nurses across cardiac rehabilitation units.

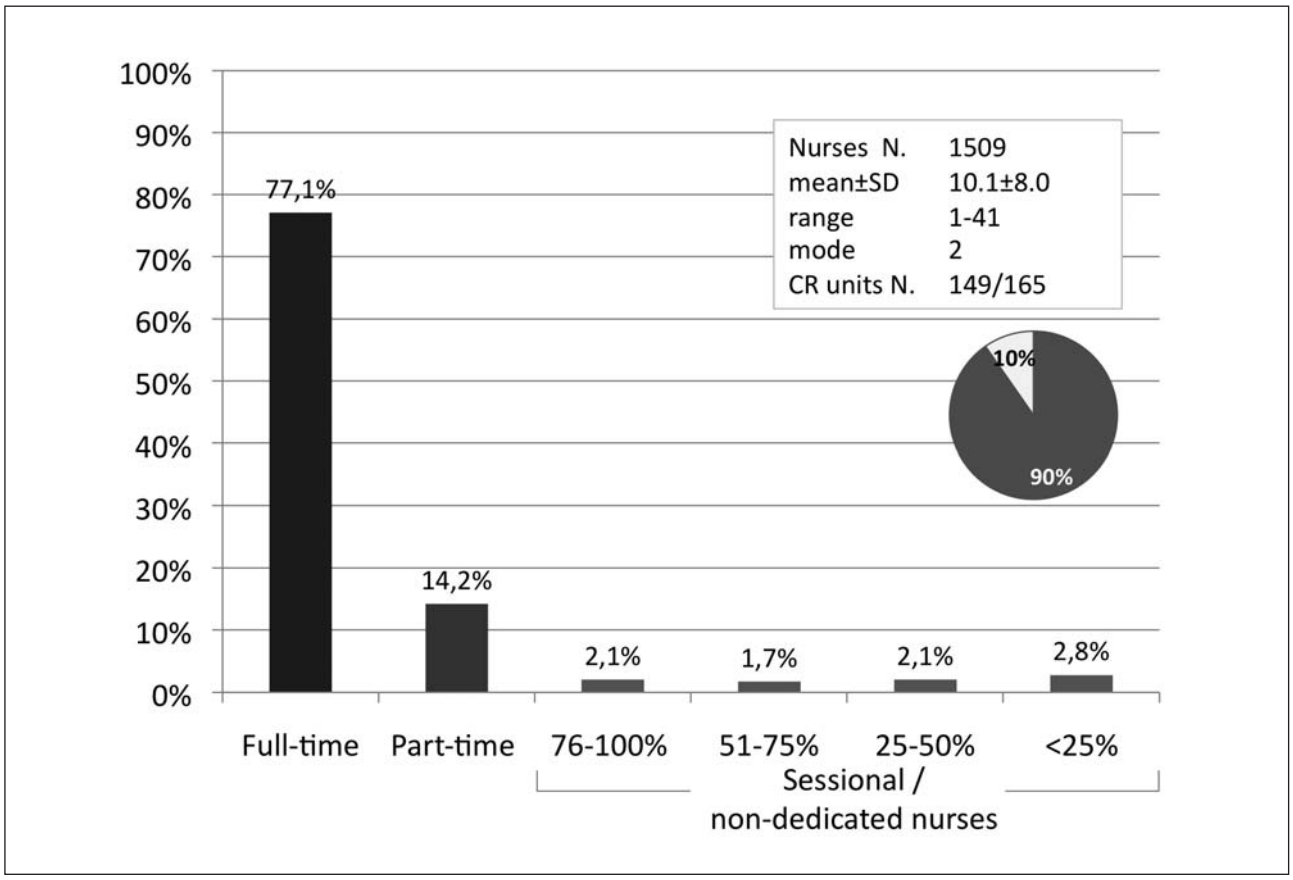

Figure 24. - Distribution of nurses across cardiac rehabilitation units according to their professional full-time or sessional labor contract. The clear section of the pie shows the percentage of units without nurses in their team.

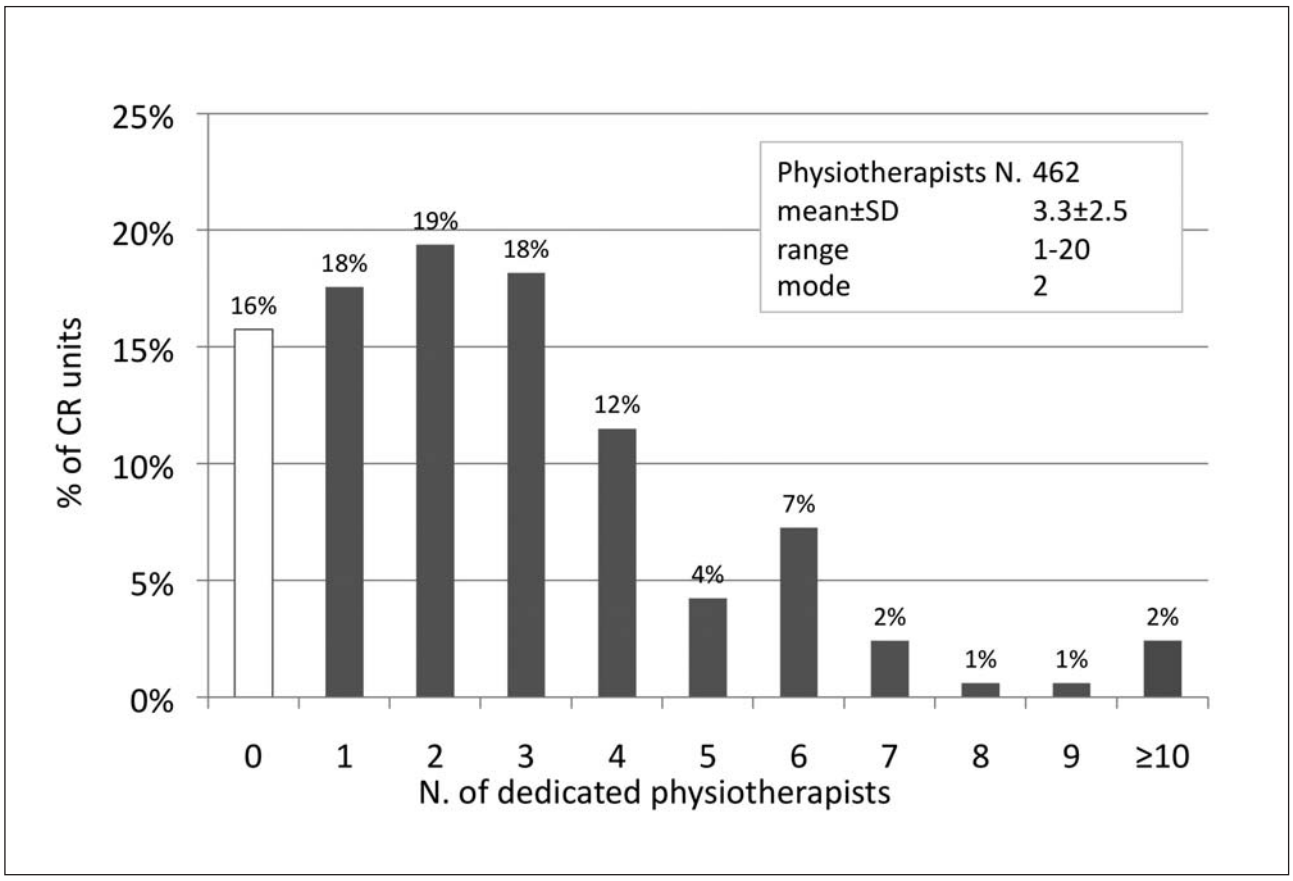

Figure 25. - Distribution of physiotherapists across cardiac rehabilitation units.

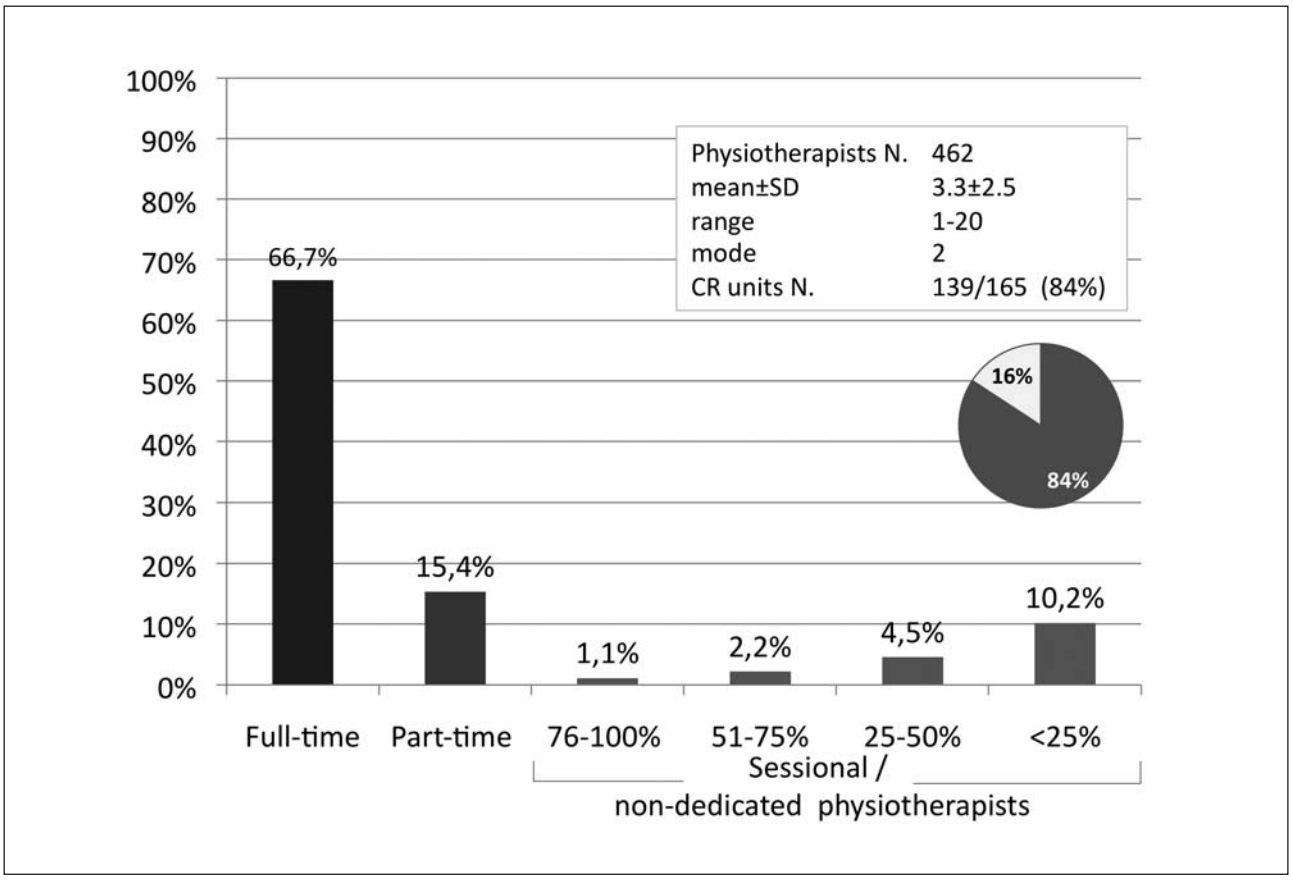

Figure 26. - Distribution of physiotherapists across cardiac rehabilitation units according to their professional full-time or sessional labor contract. The clear section of the pie shows the percentage of programs in which physiotherapists are not involved.

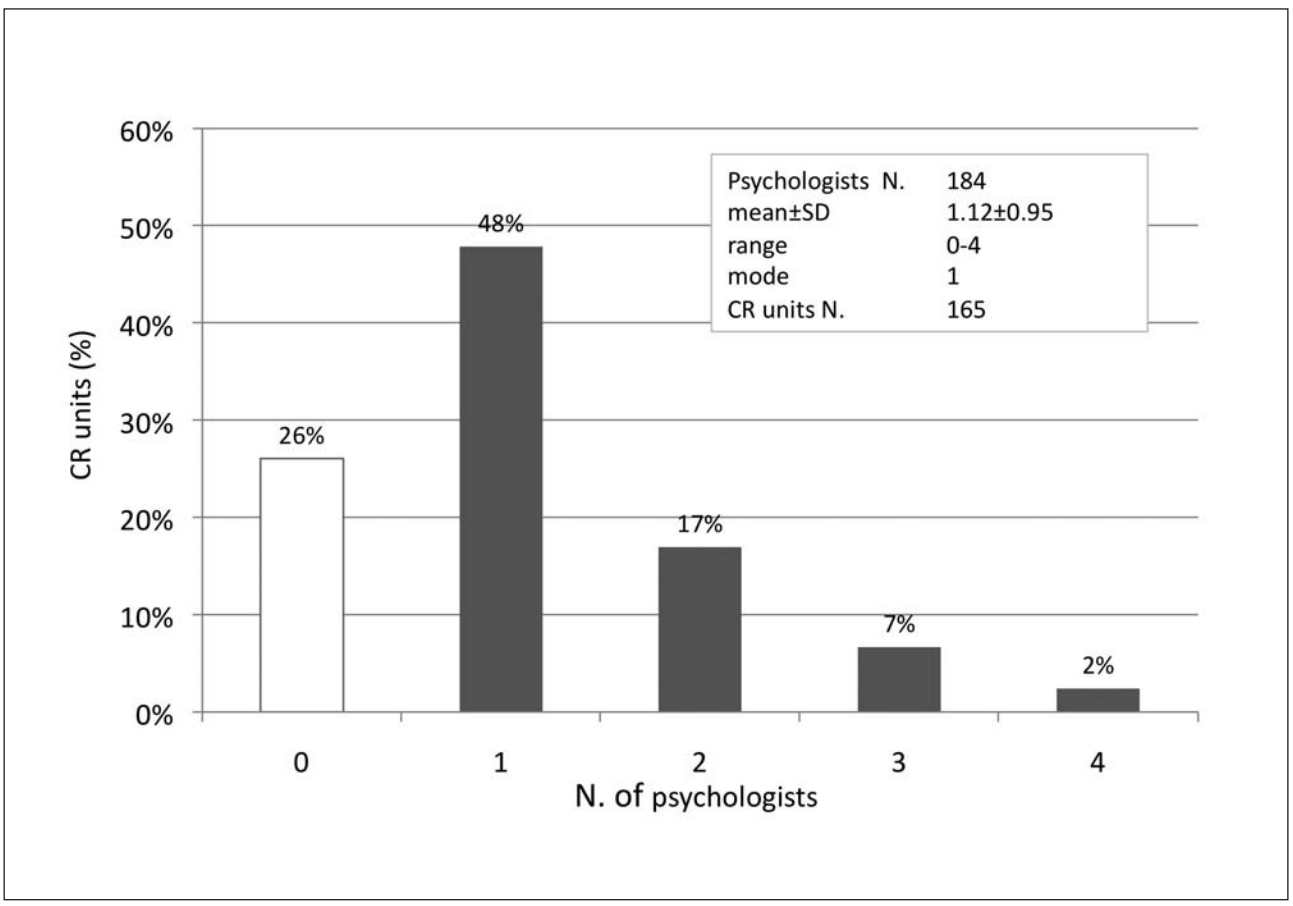

Figure 27. - Distribution of psychologists across cardiac rehabilitation units. The mean, SD and mode are referred to all 165 centers.

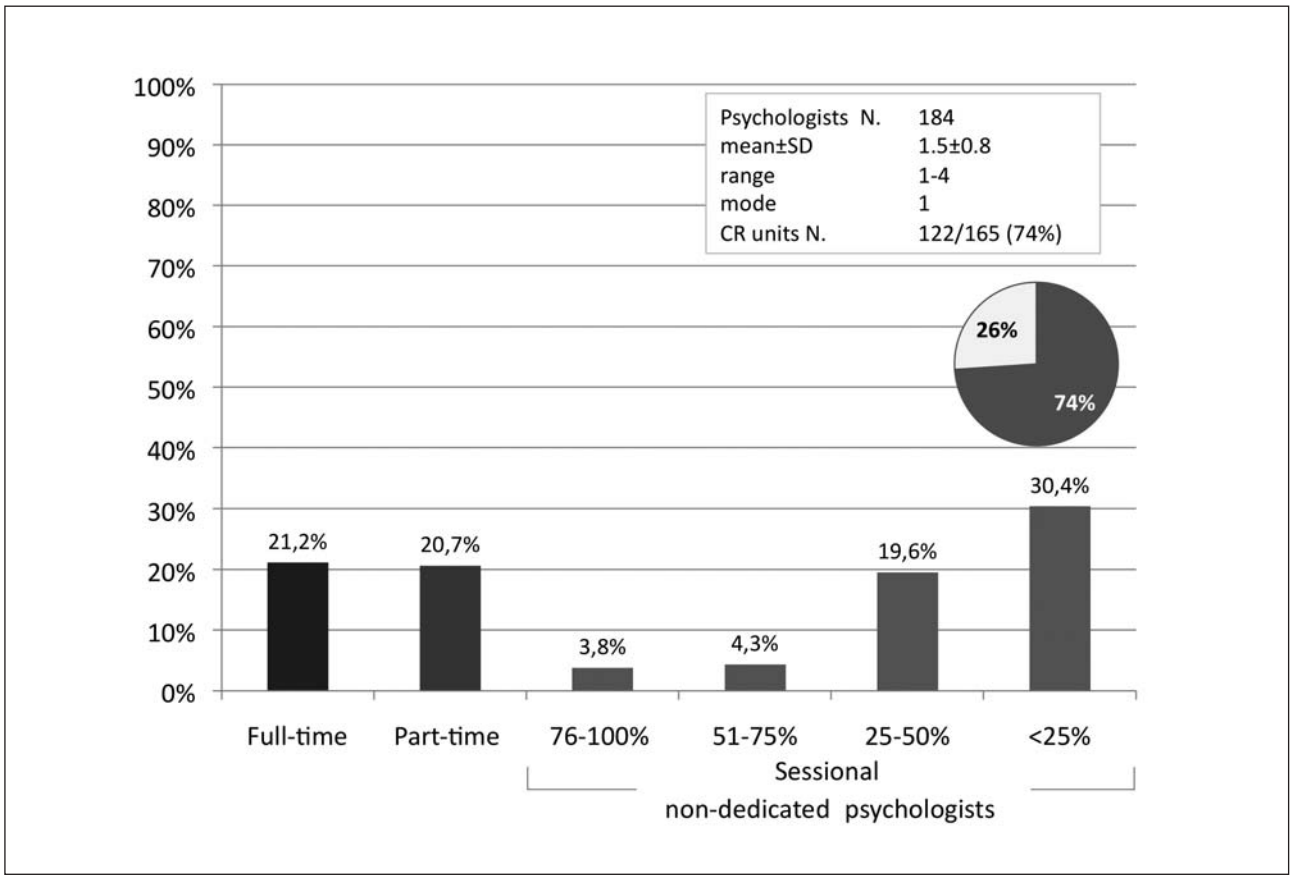

Figure 28. - Distribution of psychologists across cardiac rehabilitation units according to their professional full-time or sessional labor contract. Mean, SD and mode are referred to 122 units providing psychology activities. The clear section of the pie shows the percentage of programs in which psychologists are not part of the multi-professional rehabilitation team.

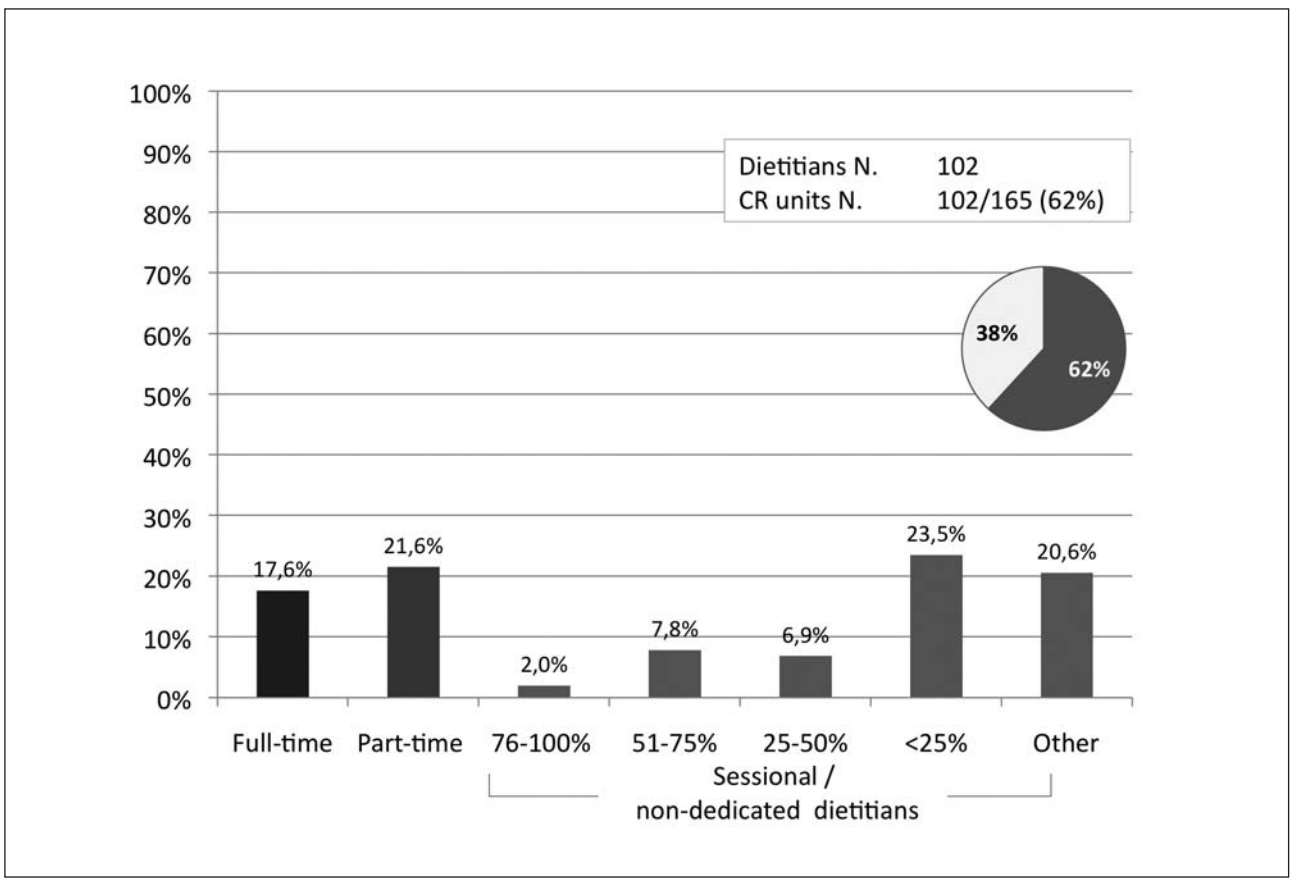

Figure 29. - Distribution of dietitians across cardiac rehabilitation units according to their professional full-time or sessional labor contract. The clear section of the pie shows the percentage of units in which a dietitian is not present.

Currently 184 psychologists work in 122 (74%) of the 165 Italian CR units: in these units the mean number of psychologists is 1.5±0.8. In most cases (48%) there is a single psychologist, in 17% 2, in 7% 3 and in 2% 4 (Figure 27, 28). Twenty-one percent of the psychologists are full-time and an equal percentage is dedicated part-time to CR. Approximately 60% are sessional professionals, non-dedicated to CR, being on the staff of other services. In 30% of cases they contribute less than 25% of their time to CR programs, in 20% of cases the time devoted to CR is 26-50%.

A dietitian is part of the multi-professional team in 62% of CR units. In 17.6% of cases the dietitian is full-time dedicated to the CR unit, in 21% the collaboration is on a sessional basis (Figure 29).

Eighty healthcare technicians, including occupational therapists, trainers, sonographers and educators, participate in the multi-professional team in 38 (23%) of CR units. In this restricted number of facilities the mean number of rehabilitation technicians is 2.5±1.6 (Figures 30, 31).

At the moment 3,022 health professionals work in 165 Italian CR units: as a whole, the multi-professional teams include 656 physicians, 1,509 nurses, 462 physiotherapists, 184 psychologists, 102 dietitians, 80 rehabilitation technicians, and 29 other professional figures (Figure 32). The overall composition of CR personnel is reported in Figure 33. In addition, 515 nursing auxiliaries are present.

Figure 34 compares the composition of multi-professional CR teams in public and privately-owned organizations, independently of the CR setting. In private rehabilitation facilities the total number of employees exceeds that in public organizations (1,631 vs. 1,391, 53.9% vs. 46.1% respectively). In particular, the number of nurses, physiotherapists, psychologists and rehabilitation technicians is slightly superior in private facilities.

Figures 35-37 compare the multi-professional CR team composition in public vs. private organizations for inpatient, day hospital and outpatient settings.

Finally, Figure 38 shows the number of beds per member of the rehabilitation team for all 103 units providing inpatient rehabilitation programs, differentiating public and private organizations.

Programs

Phase II CR programs are provided in 67.9% of cases in residential (inpatient) and in 60.6% of cases in outpatient (day-hospital and ambulatory) settings. Seventeen CR services (10.3%) offer phase II home based programs, 7 (4.2%) with, and 10 (6.1%) without telemetric surveillance. Phase III programs are offered on an ambulatory outpatient basis in 94 (56.4%) centers and directly at home with telecare supervision in 9 centers (4.8%) and without in 13 centers (7.3%). Finally, long term maintenance programs are provided by 42.4% of CR services.

Considering the accessibility to CR programs, the waiting time between the referral date of patients from the cardiology or cardiac surgery unit to

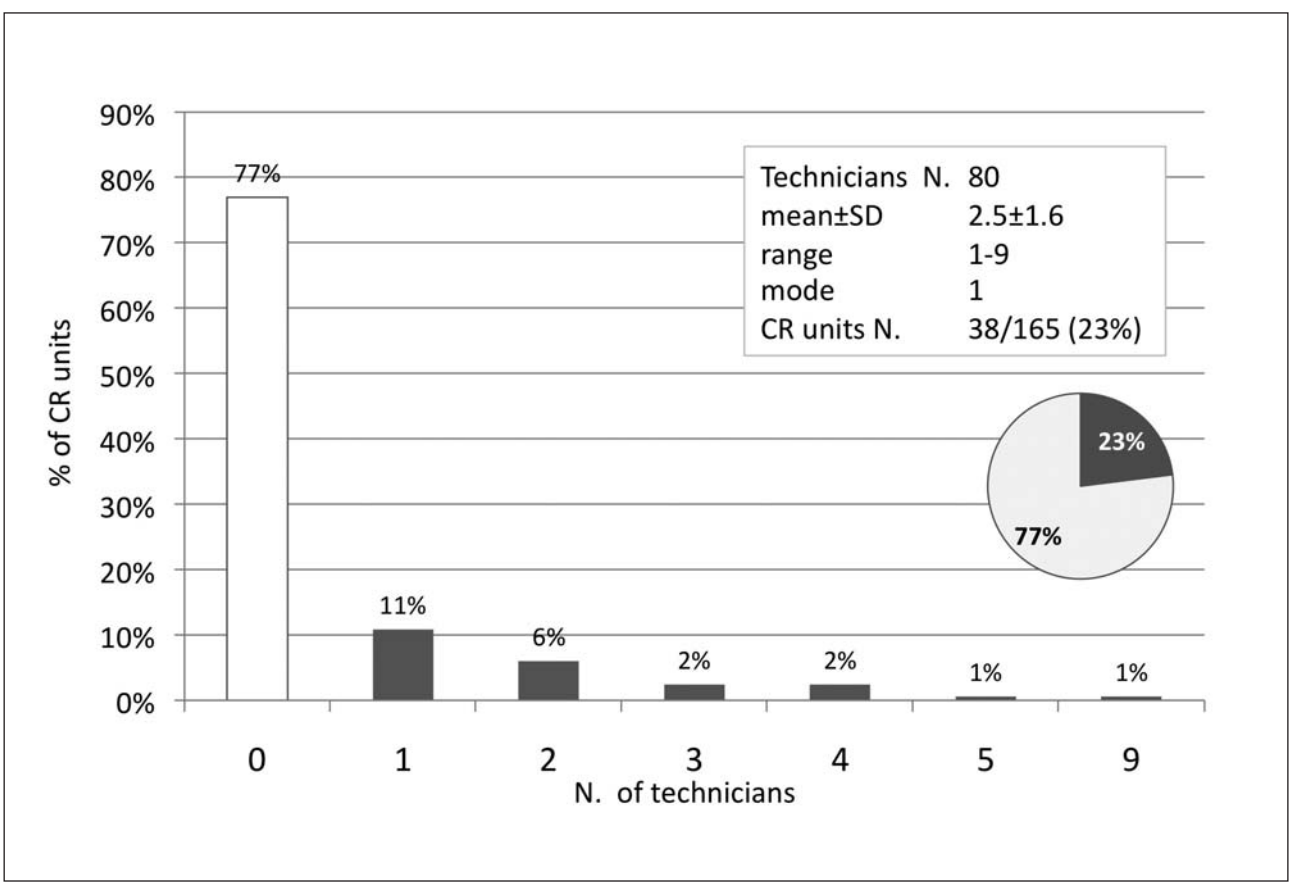

Figure 30. - Distribution of technicians across cardiac rehabilitation units. The clear section of the pie shows the percentage of units without rehabilitation technicians in their team.

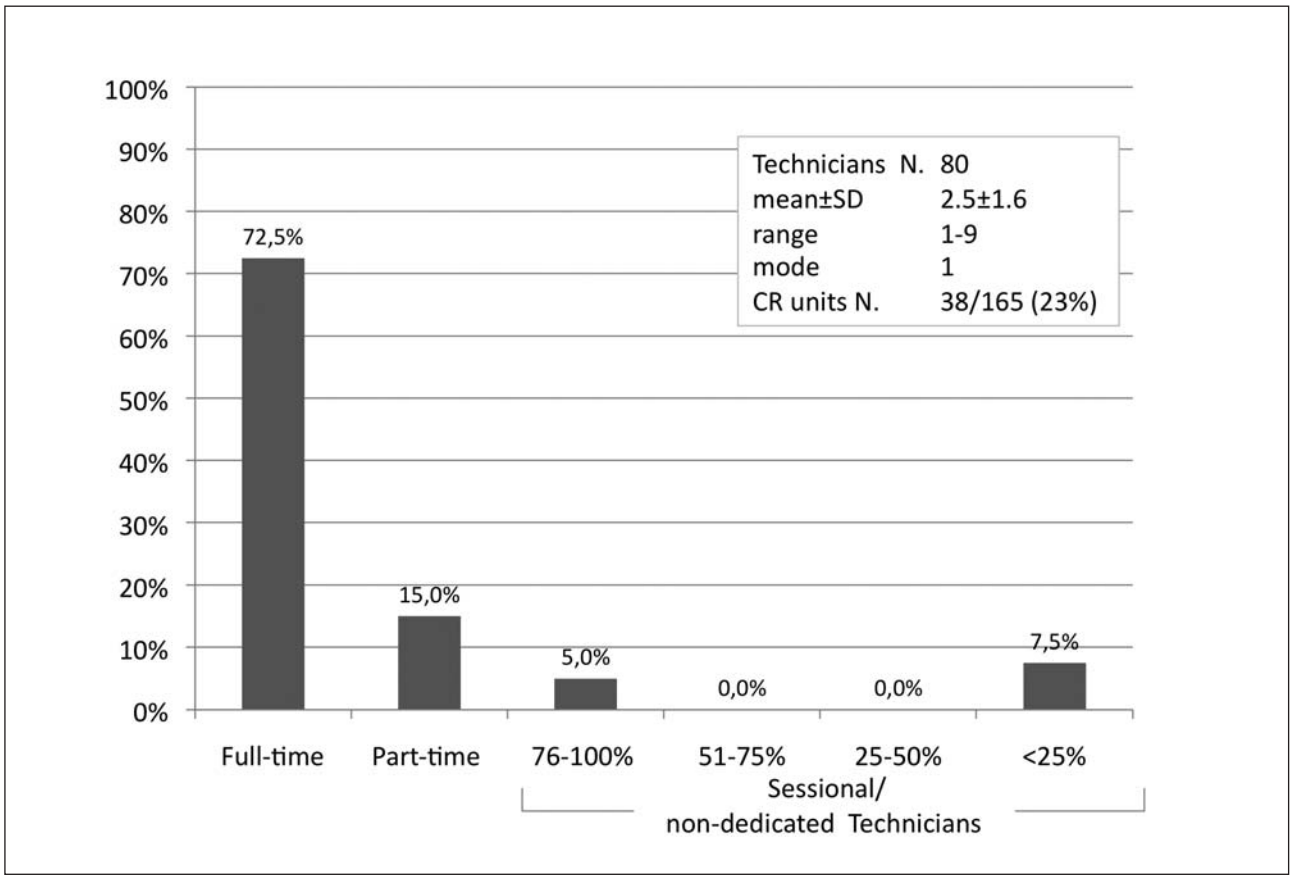

Figure 31. - Distribution of technicians across cardiac rehabilitation units according to their professional full-time or sessional labor contract. Mean, SD and mode are referred to 38 units with at least one technician in their staff.

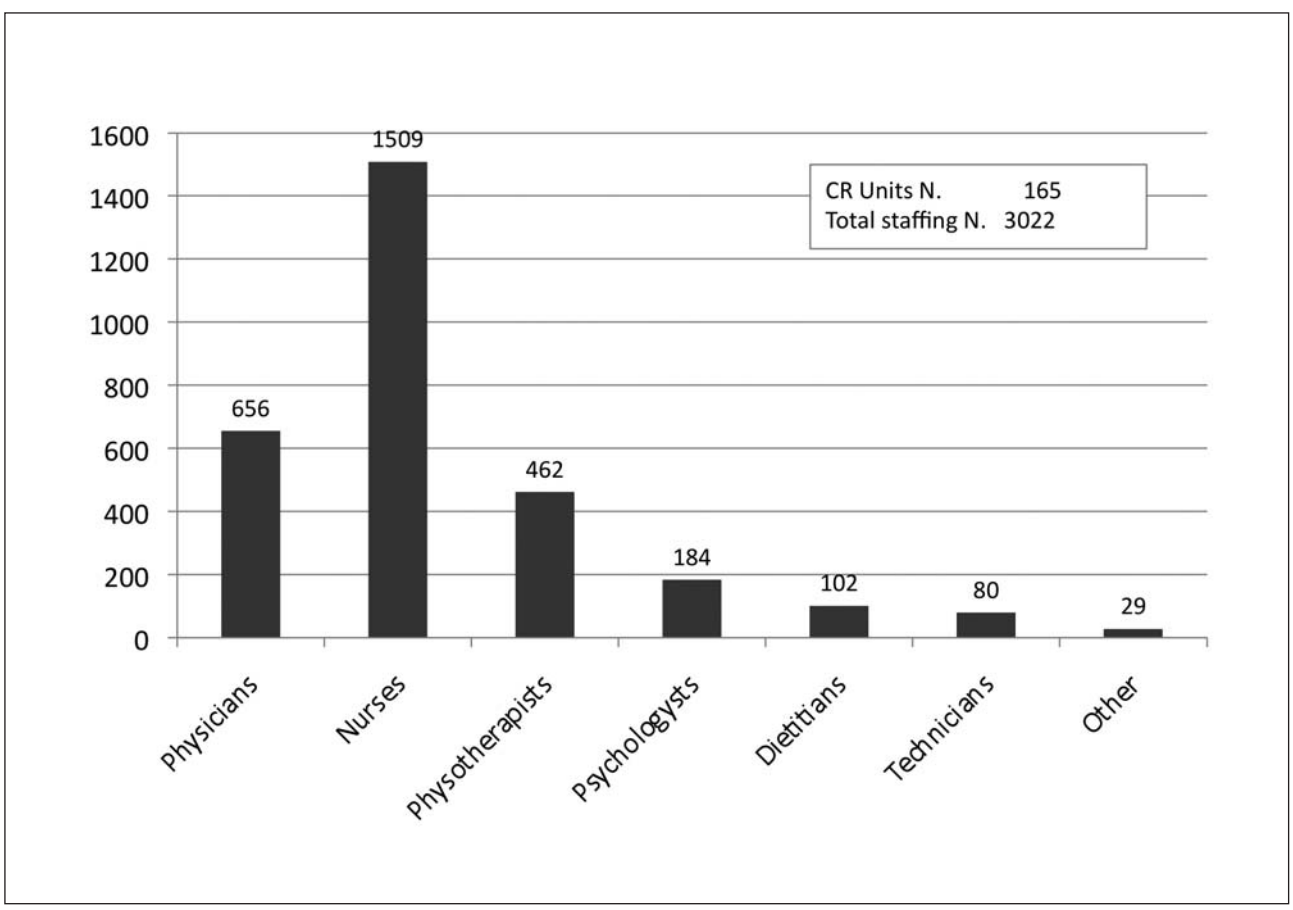

Figure 32. - The multi-professional staffing of cardiac rehabilitation in Italy.

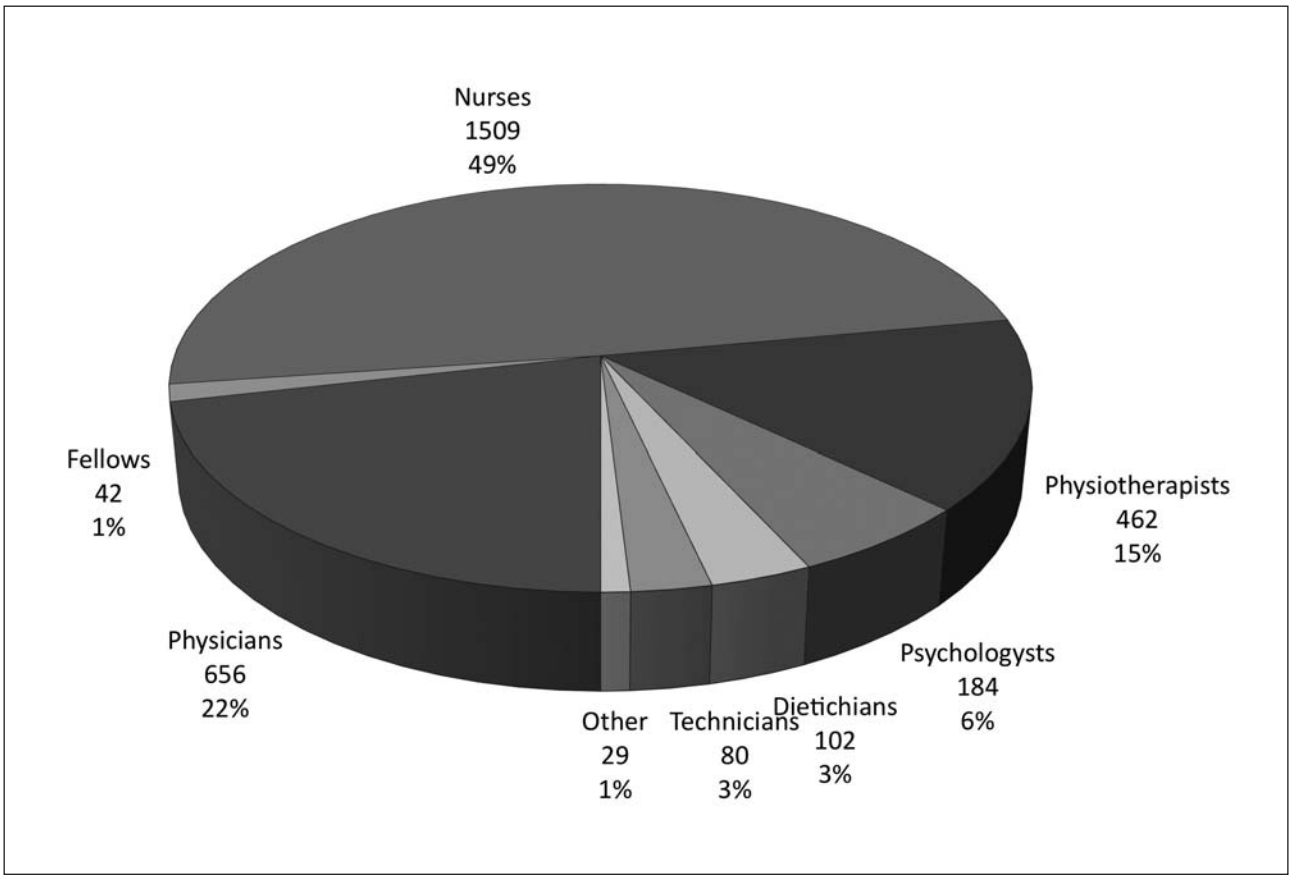

Figure 33. - Overall composition of “cardiac rehabilitation personnel”. In addition, 515 nursing auxiliaries should be considered.

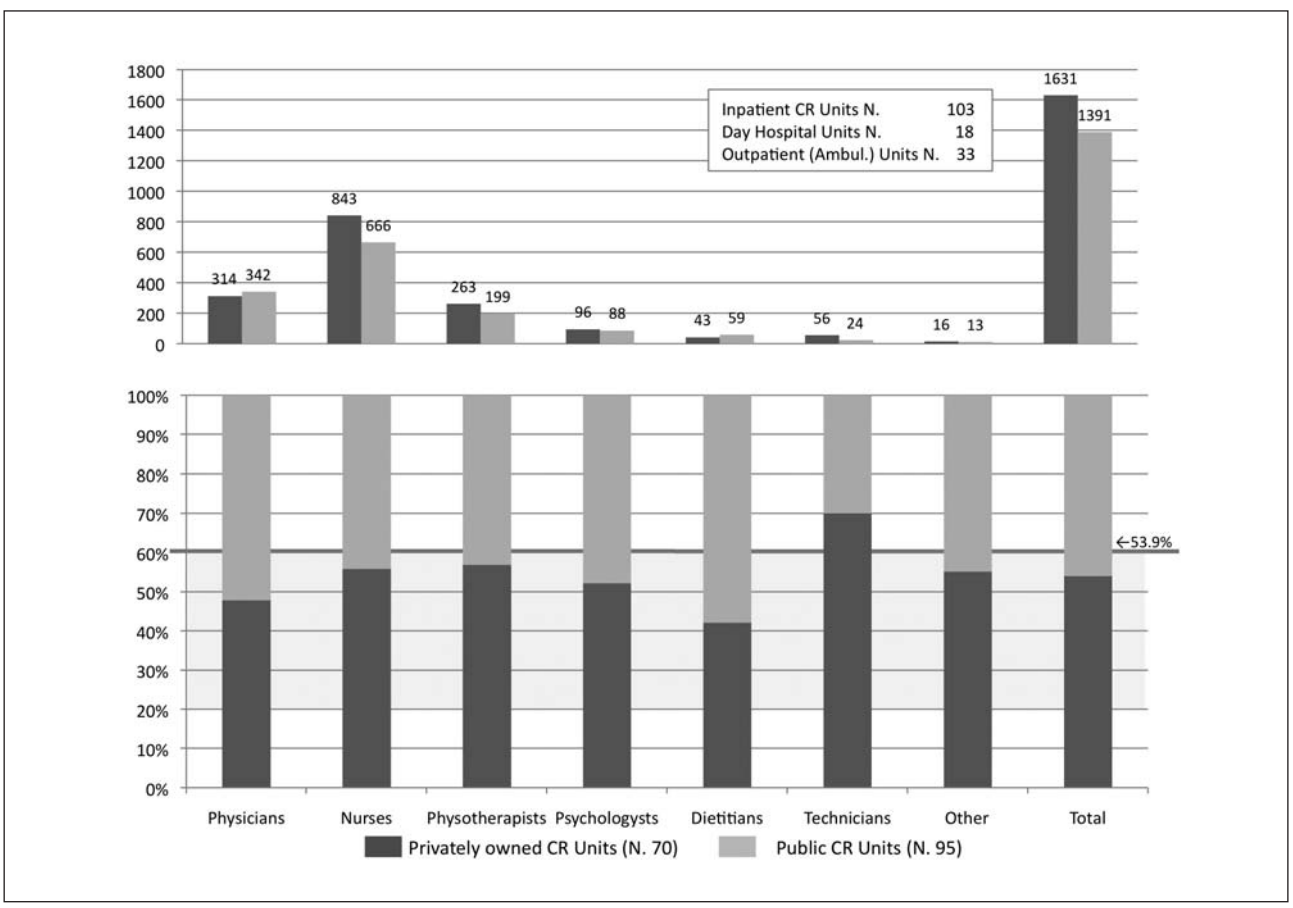

Figure 34. - Composition and percentage distribution of multi-professional cardiac rehabilitation teams in public and privately owned units.

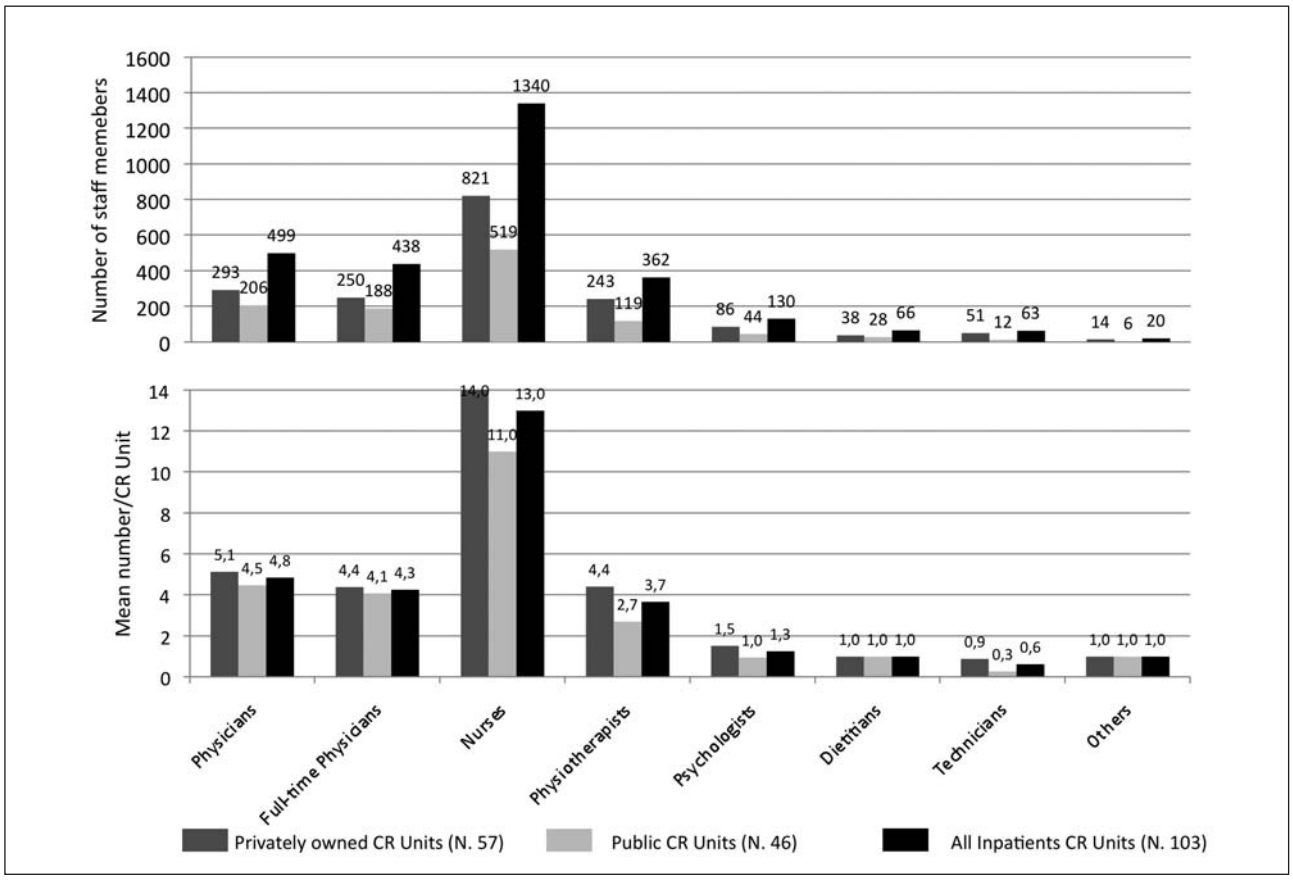

Figure 35. - Multi-professional cardiac rehabilitation team composition in 103 inpatient units and staffing comparison between privately owned and public providers.

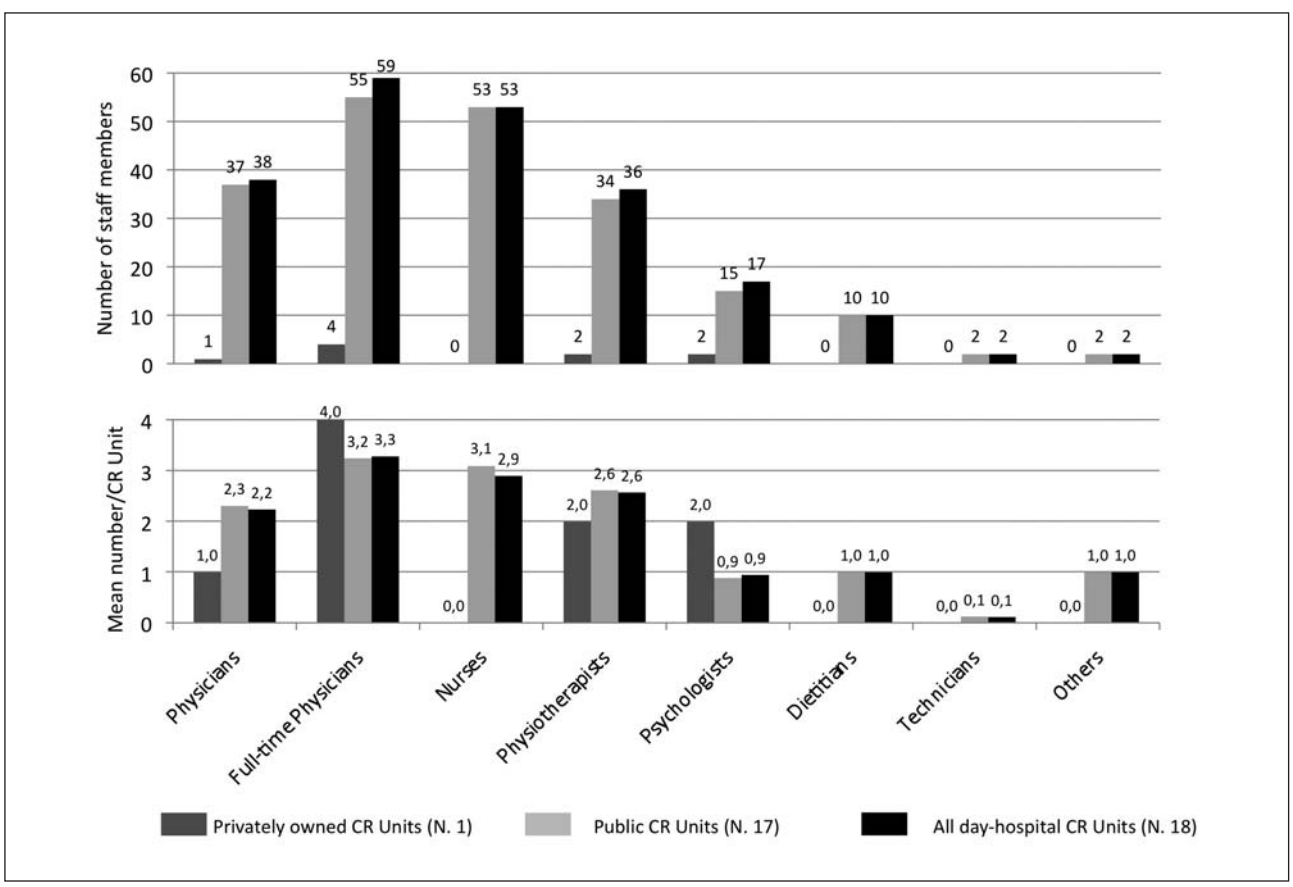

Figure 36. - Multi-professional cardiac rehabilitation team composition in 18 day-hospital based units and staffing comparison between privately owned and public providers.

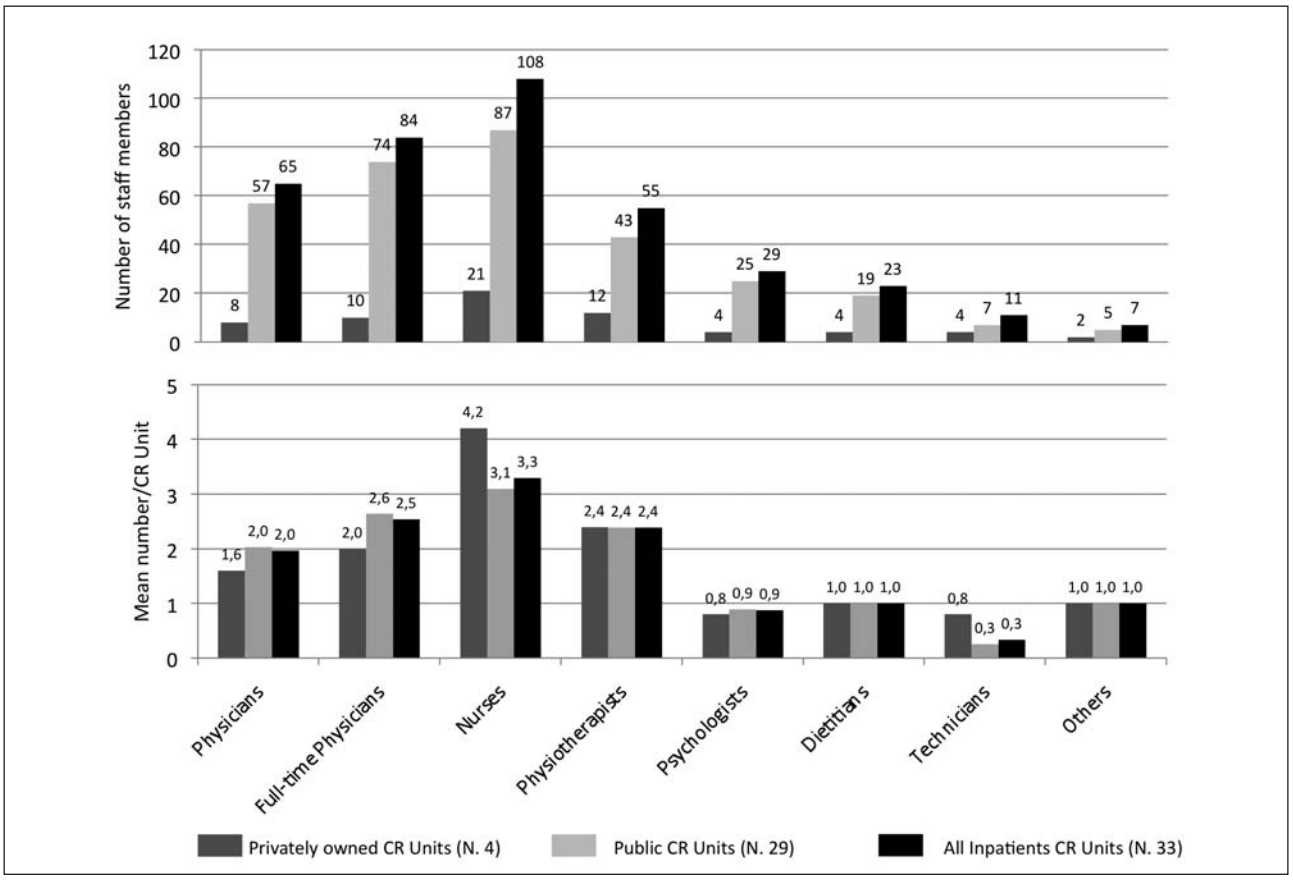

Figure 37. - Multi-professional cardiac rehabilitation team composition in 33 outpatient ambulatory units and staffing comparison between privately owned and public providers.

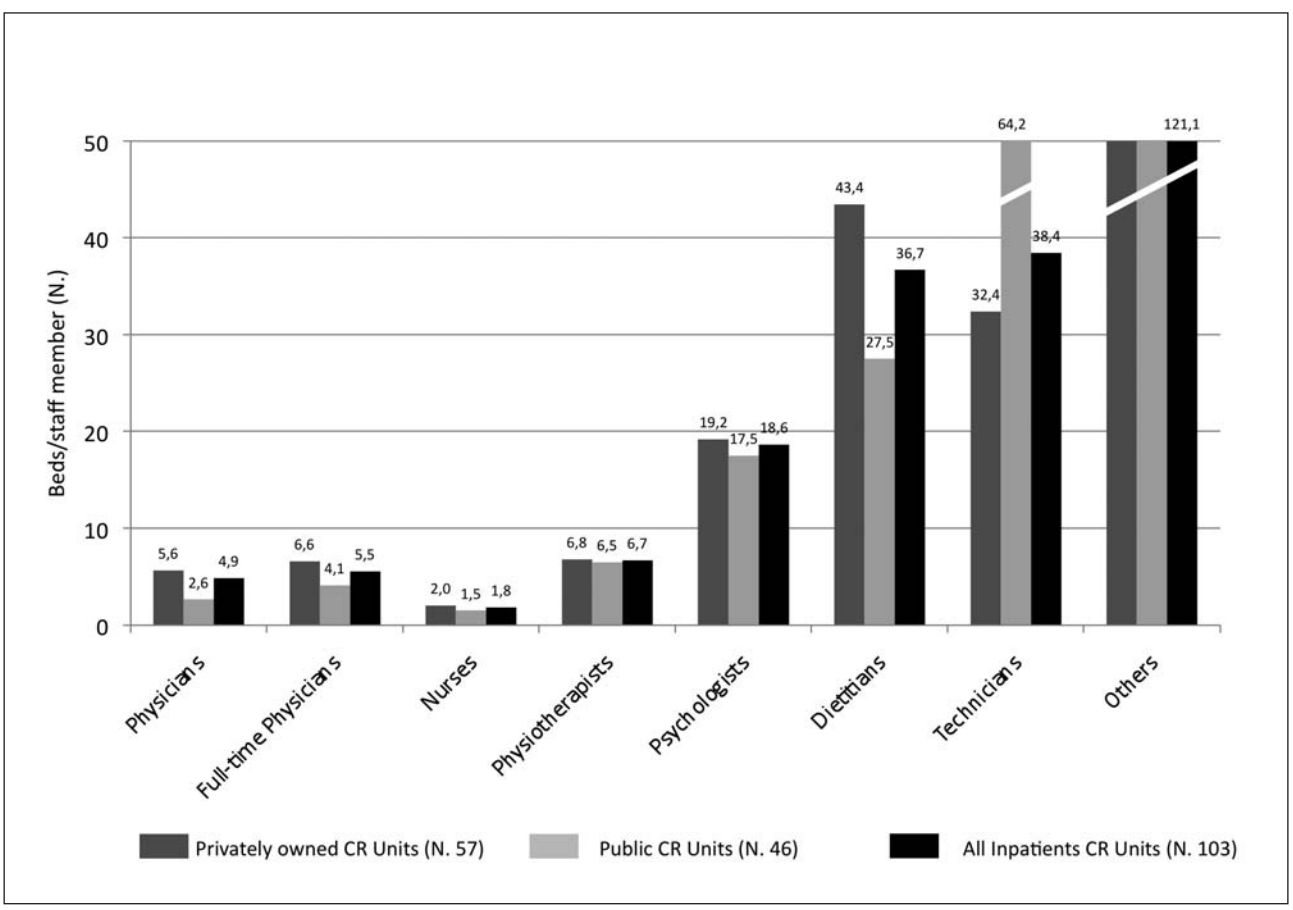

Figure 38. - Comparison of cardiac rehabilitation staffing in privately owned and public inpatient centers normalized per number of beds.

admission to the CR program is 2.5 days for inpatient programs (range 0-20 days), 3.1 days for day-hospital programs (range 0-30 days) and 4.1 days (range 0-60) for outpatient programs.

The analysis of the 2,281 patients surveyed shows that the mean length of stay for inpatient CR programs is 18.5±10.2 days (range 1-133, mode 15), and for day-hospital programs 23.7±15.3 days (range 1-140, mode 10). For ambulatory CR the mean duration of programs, involving on average 14.5 accesses, was 87.7 days (Table 3).

The indications for admission to CR programs are reported in Figure 39. Approximately two thirds of patients enter in a rehabilitation program after cardiac surgery: namely, 30.1% after coronary surgery, 15.8% after valvular surgery, 7.5% after combined coronary and valvular surgery, and 2.4% after thoracic aorta surgery. The admission rate is 8.8% for patients after acute coronary syndromes, 14.2% for patients after percutaneous revascularization and 1.8% for patients with stable angina. Heart failure represents 12.5% of current indications to CR, chronic peripheral artery disease only 1%. Other conditions including heart transplantation, adult congenital disease surgery, and cardiovascular very-high-risk represent 5.8% of CR indications.

Of the 2,281 surveyed patients 1,677 (73.5%) were males and 604 (26.5%) females. The mean age was 67±10.5 years, range 15-107, and the "over 70s" represented 40.8% of the entire population of cardiac patients admitted to CR programs (Figure 40).

Table 3. - Duration of cardiac rehabilitation programs in residential inhospital and outpatient ambulatory units. Data refer to all 2,281 patients discharged or at the end of their outpatient program during the 2-week survey.
LOS= length of stay.

CR settings	Total Days	LOS		
	N.	Mean±SD	Range	Mode
IN-PATIENT	26,398	18.5±10.2	1-133	15
DAY-HOSPITAL	9,442	23,7±15,3	1-140	10
OUT-PATIENT (Ambulatory)	39,910	87.7± 129.4* * 14±7 accesses	2-365	

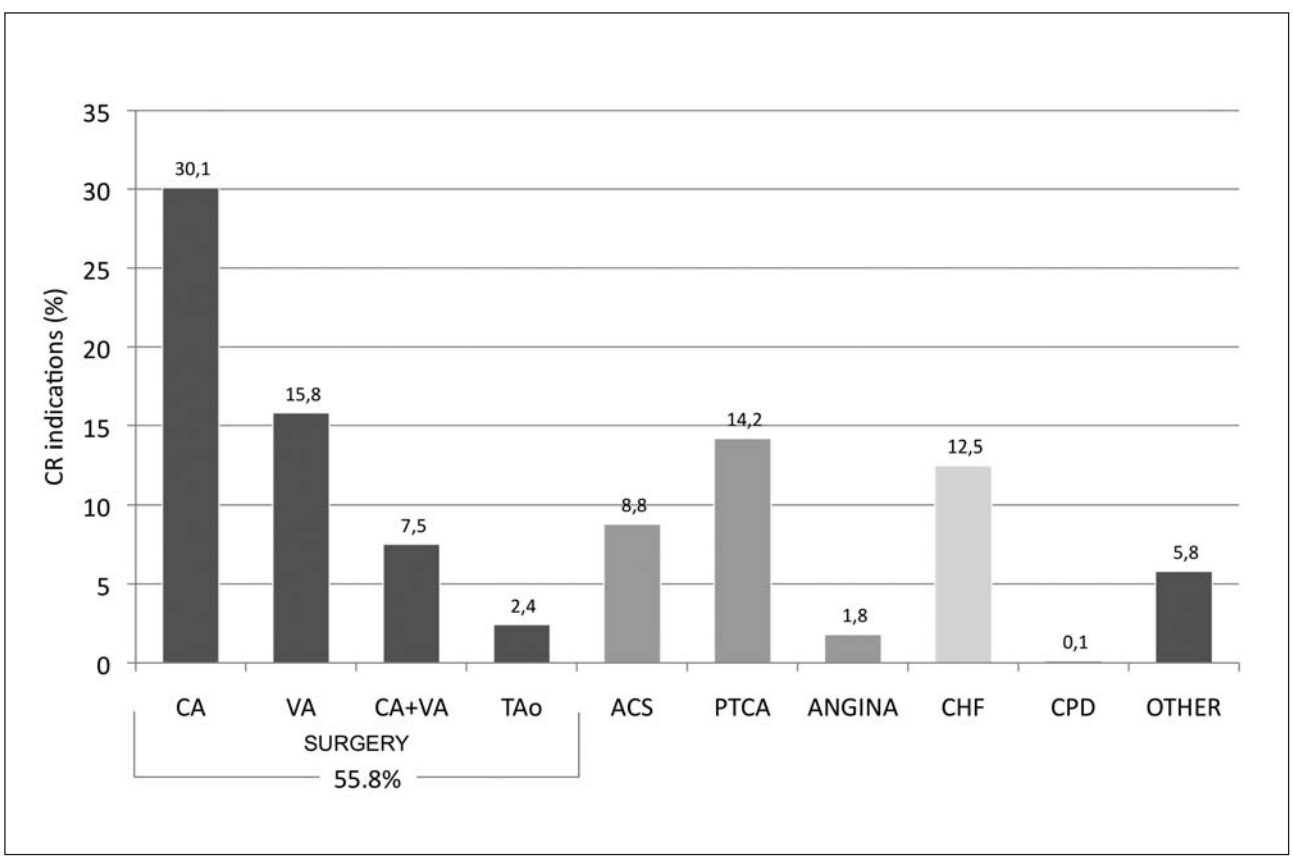

Figure 39. - Indications for admission to cardiac rehabilitation programs.
Legend: CA = coronary artery surgery; VA = valvular surgery; TAo = thoracic aorta surgery; ACS = acute coronary syndromes; PTCA = percutaneous coronary angioplasty; CHF = chronic heart failure; CPD = chronic peripheral artery disease.

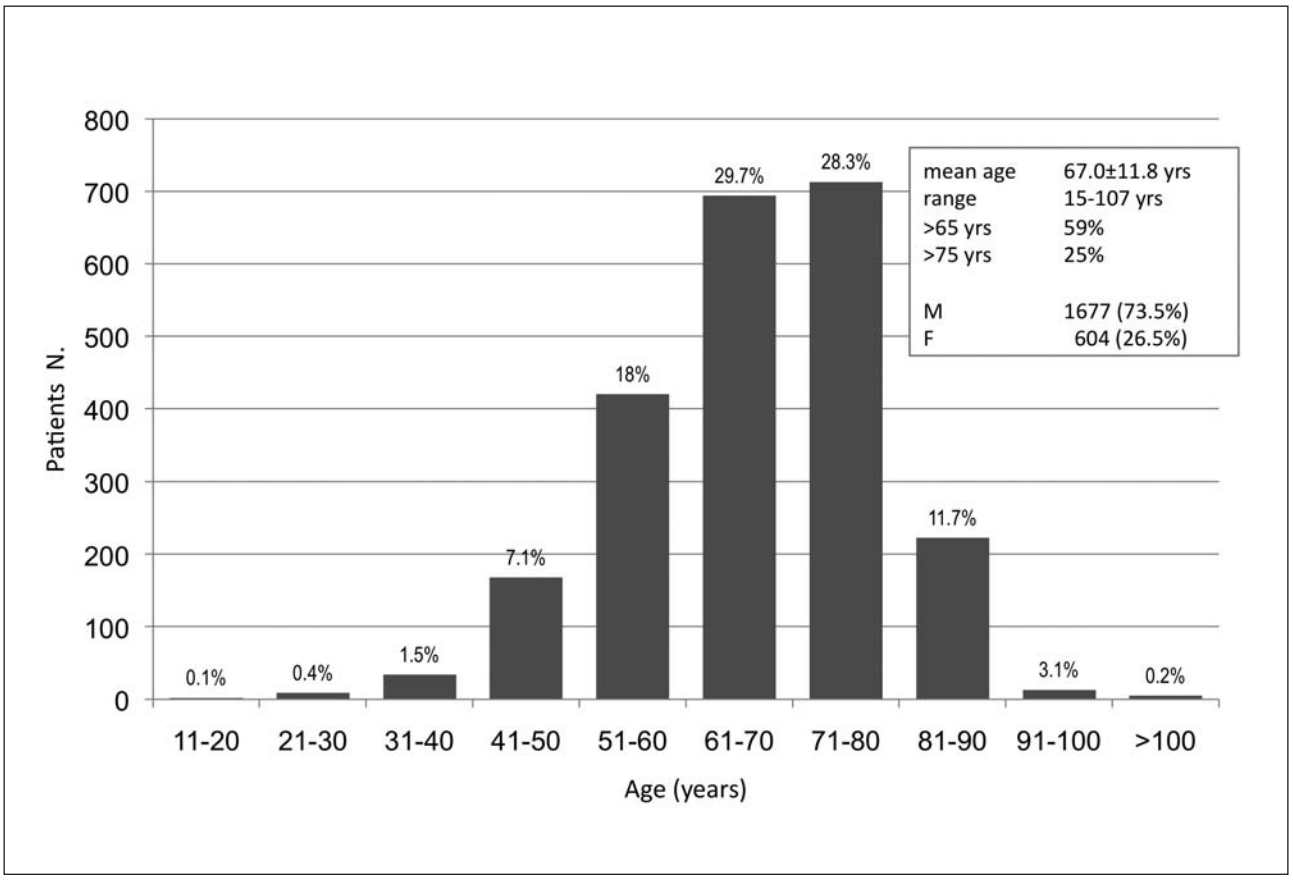

Figure 40. - Age distribution per decade of patients admitted to cardiac rehabilitation programs.

In accordance with the study design, the analysis of data on the 2,281 surveyed patients regarding clinical characteristics, risk profile, contents of the rehabilitation program in terms of diagnostic procedures, exercise and educational programs, treatments and follow-up strategies, is ongoing. The results of this analysis and evaluation will be the object of future publications.

Discussion

ISYDE-2008 provides a detailed snapshot of current CR activities in Italy and an update on CR units with respect to the previous surveys carried out by the IACPR-GICR in 1996 and 2001. In addition, it offers to cardiologists and cardiac surgeons, to national and local health care providers, policy makers and consumers useful data on the number, territorial distribution, settings, functional integration with acute care facilities, multi-professional character, staffing and activities of CR units.

The online web-based data collection and its user-friendly design with smart multiple choice items and jump menus in order to reduce the risk of confounding answers, favored the participation of the large majority of Italian CR units (87%). Considering the low rate of missing centers and that the number of beds in the non-participating units did not exceed 4.5% of the surveyed CR beds, the data reported in this survey can be considered truly representative of the current status of CR in Italy.

Taken together, in the last twelve years, there was a significant increase of CR centers in almost all Italian regions. Nevertheless striking differences still exist in the regional distribution of CR facilities both in terms of number and setting. The number of inhabitants per CR unit is four times higher in Sardegna than in Lombardy, and in 3 regions there is not a single inpatient program. Different reasons might explain such discrepancies. First of all, the north-to-south macro-area gradient reflects different socio-economical conditions and different phases of the cardiac care network implementation. Indeed, even in southern Italy the rate of increase in new CR units over the last 8 years has been greatly superior to that of coronary care units. Furthermore the wide variability in CR in the same macro-area is also accounted for by differences in local health policies and priorities of the region-based Italian healthcare system.

Privately-owned organizations participate to a marked degree in the offer of Italian CR programs and their activity seems more oriented to inpatient programs. On the contrary, despite the fact that almost all public and healthcare providers operate with common rules, according to the regional public health accreditation and funding system, two thirds of outpatient CR programs are run by public institutions.

The current progessive extension of comprehensive CR indications to a variety of chronic conditions including advanced chronic heart failure has promoted the development of several inpatient units with

sub-intensive care areas with beds fully equipped for ECG, respiration, non-invasive and/or invasive hemodynamic monitoring and ventilation support. Interestingly two thirds of these sub-intensive-care beds are located in privately-owned centers, contrasting the general perception of a prevailing preference of private hospitals for healthcare activities addressed to diseases with a lower degree of complexity.

At present, inpatient CR represents a substantial component of the inhospital national cardiology care network: the number of beds dedicated to CR programs exceeds the number of cardiac surgery beds and, considering the non-surgical area, more than 1 bed out of 5 are located in CR units. As far as semi-residential programs are concerned, one third of day-hospital units in the heart care area are dedicated to CR. Also concerning the availability of CR beds there is a wide regional variability: in four regions the number of inhabitants per bed is even lower for CR than for coronary care units and in northern Italy the number of beds per 100,000 inhabitants is more than threefold that of southern Italy. But again, looking at the variability within each macro-area, the observed discrepancies are not due only to socio-economic differences, but largely to different regional healthcare strategies.

In Italy the last 1998 national guidelines for the organization of rehabilitation services were basically oriented to the process of care in physical medicine and rehabilitation, traditionally focused mainly on neurologic and orthopedic patients and aimed primarily at the management and reduction of physical disability. Thus the structural and organizational accreditation standards, as well as staffing, and even professional tools, clinical records, documents, and lexicon of all rehabilitation branches are to some extent aligned to the physical medicine and rehabilitation viewpoint. Consequently in some regional healthcare plans the provision of CR services is within the rehabilitation area, with no acknowledgment of the specificity of CR as a standard of care for patients with cardiovascular disease.

Nevertheless, according to the data of the ISYDE-2008, in the “real word” the positioning of CR services in the heart care network is clear. Despite the fact that 17% of CR units are part of general rehabilitation departments, most CR services are located in cardiology units and directed by cardiologists. Only 5% of CR services are sections of a physical medicine and rehabilitation division, and only 2% are directed by specialists in physiatry (while another 10% are directed by other specialists).

In addition, 78% of CR-dedicated physicians are cardiologists and medical duties for inpatient CR units are largely catered for by cardiologists.

Looking at the composition of multi-professional teams, the majority of nurses and physiotherapists are full-time dedicated to CR. Surprisingly, despite the current guidelines and recommendations on CR and secondary prevention, in a still significant number of programs (16%) physical training is not provided or supervised by physiotherapists. Similarly, the absence of psychologists and dieticians in almost one third of units signals an important warning alarm on the reliability and thoroughness of the comprehensive risk assessment and management as well as on the tailored nature of interventions in CR programs. It is likely, therefore, that a portion of Italian cardiac patients undergoing CR are receiving less benefits than expected. These discrepancies vis-à-vis current national and international CR guidelines could be partly accounted for by the fact that in some regional systems for provider accreditation, psychologists, dietitians, educators and other professions are indeed not formally included in the rehabilitation team.

More than half of the people working in CR in Italy are employed in privately-owned organizations. For outpatient programs, the number of members of a rehabilitation team is approximately the same in public and private facilities, but for inpatient programs the ratio of beds/physicians, nurses, and other professionals shows a higher commitment of public providers. In this respect we believe that inadequacies of key staff should be the object of specific standard of care definitions and accreditation monitoring by regional health care authorities.

In any case, independently of the staffing dimension, the ongoing data analysis on the 2,281 patients surveyed will provide information on the core components of CR programs.

Despite regional discrepancies in CR provision, the waiting lists for admission to CR programs are acceptable. Most likely the referral of cardiac patients to CR units is planned at local level on the basis of locally defined selection criteria.

The duration of CR programs, both residential and outpatient, seems short with respect to guideline recommendations, much shorter than the 12-week programs reimbursed since 2006 by Medicare. The maximal length of stay for inpatient CR programs has been defined by most regional healthcare agencies: this is likely the driving force in explaining the short duration of phase II rehabilitation which, in most of cases, is not followed by a structured phase III outpatient program.

Our study confirms striking gender differences in referral to CR programs, and the disparity we found with the low proportion of women (26.5%) enrolled in CR programs is consistent with findings from previous studies [17,18]: the reasons for these observed gender related differences in referral rate and in cardiovascular disease management during CR are the object of the ongoing analysis of clinical data of ISYDE-2008 patients.

Elderly patients are at high risk of disability after a coronary event or hospitalization. Despite an increased severity of the risk profile of patients undergoing cardiac surgery, operative mortality is declining due to increased experience over time in operating on high risk patients and to the improvement of surgical strategies [19,20]. For these reasons the number of patients at high risk of adverse outcome and with special-care requirements after discharge is increasing: more than half of patients eligible for CR programs are older than 65 years. In fact in our survey 59% of patients admitted to CR are over 65 years of age and 25% are

older than 75. Arguably, the high proportion of inpatient CR programs, mainly in regions with higher availability of cardiac surgery units, might be in answer to the need for a more efficient, comprehensive care process tailored to this growing, older and high-risk category of patients [20-22], who are frequently disabled, dependent and hampered by post-discharge organization and social deprivation problems.

Currently cardiac surgery remains the first indication for CR. With respect to the previous 2001 national survey there has been a noteworthy increase in the referral rate after PTCA and for heart failure. Nevertheless, the low referral rate after acute coronary syndromes and stable coronary heart disease poses the problem of the overall underuse of CR due not only to inadequate public health expenditure allocated to CR and prevention programs, and to geographic limitations of accessibility to program sites, but also to limitations of attitude on the part of the cardiological community, still steadily focused on acute and interventional domains of cardiovascular disease management.

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Appendix 1

ISYDE-2008 Study Investigators

Scientific Board
R. Tramarin (Chair), R. Griffo (Arenzano-GE), C. Riccio (Caserta), R. Carlon (Cittadella-PD), A. Castello (Palermo), M. Ferratini (Milano), C. Schweiger (Milano), C. Chieffo (Napoli), C. Vigorito (Napoli).

Writing Committee
R. Tramarin (Cernusco S/N-MI), M. Ambrosetti (Cunardo-VA), S. De Feo (Peschiera del Garda-VR), R. Griffo (Arenzano-GE), M. Piepoli (Piacenza), C. Riccio (Caserta).

Executive Board
R. Tramarin (Chair), M. Ambrosetti (Cunardo-VA), S. De Feo (Peschiera del Garda-VR), T. Diaco (Rivolta d'Adda-CR), and GICR Regional Coordinators: C. Ciglia (Chieti), Basilicata: A. Lapolla (Policoro-MT), Calabria: F. Pietropaolo (Soriano Calabro-VV), Campania: G. Furgi (Telese Terme-BN), Friuli Venezia Giulia: G. Martin (Sacile-PN), Emilia Romagna: P. Semprini (Rimini), Lazio: A. Avallone (Roma), Liguria: D. Bertoli (Sarzana-SP), Lombardia: T. Diaco (Rivolta d'Adda-CR), Marche: R. Belardinelli (Ancona), Piemonte: F. Soffiantino (Lanzo Torinese-TO), Puglia: D. Scrutinio (Cassano Murge-BA), Sardegna: P.Maxia (Cagliari), Sicilia: R. Coco (Catania), Toscana: C. Giustarini (Volterra-PI), Umbria: P. Anniboletti (Perugia), Veneto: G. Favretto (Motta di Livenza-TV).

Data and CFR management
P. Vaghi (Saronno), P. Calisi (Arenzano-GE), C. Chiavetta (Genova), Aristea SpA (Genova), Segno & Forma SpA (Milano)

ISYDE-2008 Investigators
See Appendix 2.

Appendix 2

List of participating cardiac rehabilitation centers

Region	City	Hospital / Rehabilitation Center	Address	Head	CR Medical Coordinator
Abruzzo e Molise	Tagliacozzo	Presidio Ospedaliero Tagliacozzo	Via Variane Tiburtina Valeria	Guarracino Leonello	
Abruzzo e Molise	Chieti	Casa di Cura Villa Pini d'Abruzzo	Via Dei Frentani 228	Ciglia Carlo	
Abruzzo e Molise	S Omero	Presidio Ospedaliero S. Omero	Via Alla Salara	Marcellini Giorgio	Zanchè Ermete
Calabria	Siderno	Presidio Ospedaliero Siderno - Usl 9 Locri (Rc)	Via Europa	Iannopollo Michele	
Calabria	Catanzaro	Azienda Ospedaliera Mater Domini	Via Tommaso Campanella, 32	Borrello Gennarino	Mazza Maria Lucia
Calabria	Cetraro	Presidio Ospedaliero di Cetraro	Via Amalfi 1	Sollazzo Gaetano	Matta Marilena
Calabria	Mormanno	Ospedale di Mormanno - ASL2 Castrovillari	C/Da Malinieri-	Peccerillo Nicola	
Calabria	Cosenza	Ospedale Dell'annunziata	Via Migliori 2	Fernando Fascetti	Francesco Boncompagni
Calabria	Mendicino	Casa di Cura "San Francesco"	C/Da Candelisi 69	Amici Achille	
Calabria	Soriano Calabro	Presidio Ospedaliero	Via Prof. V. Caglioti	Vara' Natale	Pietropaolo Francesco
Calabria	Cosenza	Inrca - IRCCS	C/Da Muoio Piccolo	Feraco Emidio	Carmine Carparino - Monteleone Fortunato
Calabria	Reggio Calabria	Presidio Ospedaliero "Madonna Della Consolazione"	Via Cardinale Portanova ,130	Pulitanò Giancarlo	Ruggeri Albarosa
Calabria	Scilla	Asp 5 Regione Calabria	Via Tripi Superiore	Tripodi Ermete	
Campania	Telese Terme	IRCCS Fondazione Salvatore Maugeri	Via Bagni Vecchi 1	Furgi Giuseppe	
Campania	Napoli	Casa di Cura Clinical Center	Via Cinthia - P.Co S.Paolo	Chieffo Carmelo	
Campania	Sant'angelo Dei Lombardi	Presidio Ospedaliero Polispecialistico Don Gnocchi Onlus	Via Quadrivio	Capomolla Soccorso	
Campania	Caserta	Azienda Ospedaliera di Caserta	Via Palasciano	Golino Paolo	
Campania	Eboli	Campolongo Hospital Spa Casa di Cura	Viale Della Marina	Parrilli Gennaro	
Campania	Castel Morrone	Casa di Cura Villa Delle Magnolie	Via Ciummiento		Di Patria Antonio
Campania	Benevento	Casa di Cura Privata Villa Margherita, Istituto San Giuseppe Moscati - Benevento	C/Da Piano Cappelle	Di Gioia Claudio	Borzillo Gabriele
Campania	Napoli	Azienda Ospedaliera V. Monaldi	Via Leonardo Bianchi	Caputi Mario	Miceli Domenico
Campania	Napoli	Azienda Universitaria Policlinico - Università Degli Studi "Federico II"	Facoltà Di Medicina, Università Di Napoli Federico Ii	Vigorito Carlo	
Campania	Napoli	ASL Napoli 1	Via Ciccarelli 1 Barra Napoli	Perrotta Silvio	
Campania	Avellino	Azienda S. G. Moscati	Via Pennini		Rubino Alessandro
Campania	Pozzuoli	Centro Serapide Spa	Contrada Toiano, 61,	Aulitto Vincenzo	
Campania	Nocera Inferiore	Ospedale di Nocera	Via S Francesco		Riccio Gerardo
Emilia Romagna	Ferrara	Azienda Universitaria Ospedale S. Anna	Via Gramicia, 35	Codec Luciano	Grazzi Giovanni
Emilia Romagna	Parma	Fondazione Don Carlo Gnocchi Onlus	Piazzale Dei Servi 3	Coruzzi Paolo	
Emilia Romagna	Castelnovo Monti	Azienda Ospedaliera di Reggio Emilia	Via Roma	Menozzi Carlo	Violi Enrico
Emilia Romagna	Castelfranco Emilia	Ospedale Regina Margherita	Via A.Costa 8		Nardini Massimo
Emilia Romagna	Bologna	Azienda Usl di Bologna	Via Altura 3	Urbinati Stefano	
Emilia Romagna	Ponte Dell'olio	Casa di Cura Privata San Giacomo S.R.L.	Via San Bono 3	Maini Maurizio	D'Cruz Sylvia
Emilia Romagna	Rimini	Ospedale Degli Infermi	Viale Settembrini, 2 Via Ovidio 10	Piovaccari Giancarlo	Semprini Pierluigi
Emilia Romagna	Piacenza	Azienda USL di Piacenza	Cantone Del Cristo	Capucci Alessandro	Piepoli Massimo
Emilia Romagna	Ferrara	Ospedale Sant'anna	Via Mortara 16	Ferrari Roberto	Alessandro Fucili
Emilia Romagna	Gaiato di Pavullo N/F	Ospedale Privato Accreditato Villa Pineta	Via Gaiato 126		Cerulli Massimo
Emilia Romagna	Cesenatico	Azienda USL CESENA	Via Abba 2	Pieri Pierluigi	bini roberto
Emilia Romagna	Cotignola	Villa Maria Cecilia Hospital	Via Corriera 1	Berti Gianni	Balestra Guido
Friuli Venezia Giulia	Udine	IMFR Udine - ASS 4	Via Gervasutta, 48		Tuniz Duilio

Region	City	Hospital / Rehabilitation Center	Address	Head	CR Medical Coordinator
Friuli Venezia Giulia	Sacile	Azienda Ospedaliera Santa Maria Degli Angeli Pordenone	Via Ettoreo 4		Martin Giovanni
Friuli Venezia Giulia	Aurisina	Casa di Cura Pineta Del Carso	Viale Stazione, 26	Gori Pierpaolo	Canci Ulio
Friuli Venezia Giulia	Gorizia	A.S.S. 2 Isontina	Via Vitt. Veneto 171	Igidbashian Diran	Marini Roberto
Friuli Venezia Giulia	Monfalcone	Ospedale San Polo	V. Galvani, 1	Morgera Tullio	Zilio Giorgetto
Lazio	Nemi	Istituto Clinico Riabilitativo Villa Delle Querce	Via Delle Vigne 19	Di Mario Franco	
Lazio	Roma	IRCCS San Raffaele Pisana	Via Della Pisana 235	Volterrani Maurizio	marazzi giuseppe
Lazio	Roma	Presidio Ospedaliero Santo Spirito,Presidio Villa Betania, ASL Roma E	Via Pio Iv 42	Galati Alfonso	
Lazio	Roma	Policlinico Luigi di Liegro	Via Dei Badoer, 5	Salustri Alessandro	
Lazio	Roma	Presidio Ospedaliero Salus Infirmorum	Via Della Lucchina, 41		Jesi Anna Patrizia
Lazio	Roma	Ao San Camillo Forlanini	Pia.zza Carlo Forlanini, 1	Lacch Augusto	Avallone Aniello
Lazio	Roma	Complesso Integrato Columbus, Universita' Cattolica Del Sacro Cuore	G. B. Moscati 31 -33	Loperfido Francesco	Santarelli Pietro
Liguria	Ruta di Camogli	Istituto Cardiovascolare Camogli	Via Aurelia 85	Corsiglia Luca	
Liguria	Arenzano	ASL 3 "Genovese"	Via Del Giappone	Griffo Raffaele	
Liguria	Rapallo	Struttura Ospedaliera Privata Accreditata Villa Azzurra	Via Cabruna 21	Pantaleo Paolo	Cimino Ester
Liguria	Sestri Levante	Regione Liguria ASL 4 - Centro Regionale di Riabilitazione Cardiologica	Via A. Terzi	Guido Gigli	
Liguria	Sarzana	ASL 5 Spezzino	Via Cisa	Bertoli Daniele	
Lombardia	Brescia	Clinica Domus Salutis Ancelle Della Carita'	Via Del Lazzaretto, 3	Diego Marchesi	
Lombardia	Montescano	IRCCS Fondazione Salvatore Maugeri	Via Per Montescano	Febo Oreste	
Lombardia	Pavia	IRCCS Fondazione Salvatore Maugeri	Via S. Maugeri 10	Cobelli Franco	
Lombardia	Seriate	Azienda Ospedaliera Bolognini	Via Paderno 21	Malinverni Claudio	
Lombardia	Milano	Fondazione Don Gnocchi Onlus	Via Capecelatro 66	Ferratini Maurizio	
Lombardia	Seregno	Ospedale Trabattoni Ronzoni	Via Verdi 2	Jones Norman	
Lombardia	Castellanza	Multimedica Holding - Presidio Ospedaliero di Castellanza	Viale Piemonte 70	Anzà Claudio	
Lombardia	Bozzolo	Azienda Ospedaliera C. Poma di Mantova	Via Xxv Aprile, 71	Frizzelli Rino	
Lombardia	Gardone Riviera	Spedali Civili di Brescia	Corso Zanardelli	Gei Paolo	Proto Alessandro
Lombardia	Monza	Policlinico di Monza	Vai Amati 111	Acquistapace Flavio	Vasicuro Claudia
Lombardia	Tradate	IRCCS Fondazione Salvatore Maugeri	Via Roncaccio 16	Pedretti Roberto	
Lombardia	Cernusco S/N	FERB - Fondazione Europea di Ricerca Biomedica - Onlus	Via Uboldo 19	Tramarin Roberto	Franco Maslowsky
Lombardia	Milano	Centro di Cardiologia Riabilitativa Pio Albergo Trivulzio	Via Trivulzio 15	Carugo Stefano	Valenti Dario
Lombardia	Milano	Istituto Auxologico Italiano IRCCS	Via Spagnoletto 3	Facchini Mario	Malfatto Gabriella
Lombardia	Rivolta D'adda	Azienda Ospedale Maggiore di Crema	Via Montegrappa, 15	Tommaso Diaco	
Lombardia	Cunardo	Clinica Le Terrazze	Via Ugo Foscolo 6b	Salvato Luciano	Ambrosetti Marco
Lombardia	Milano	U.O. di Riabilitazione Cardiologica Ospedale San Raffaele IRCCS	Via Olgettina 60		Meloni Carlo
Lombardia	Lumezzane	IRCCS Fondazione Salvatore Maugeri	Via Mazzini 129	Giordano Amerigo	Zanelli Emanuela
Lombardia	Somma Lombardo	Azienda Ospedaliera S. Antonio Abate di Gallarate	Via Bellini	Margaroli Pietro	Schizzarotto Alberto
Lombardia	Milano	Azienda Ospedaliera Istituti Clinici di Perfezionamento	Via Bignami,1	Zanettini Renzo	
Lombardia	Romano di Lombardia	Ospedale Romano di Lombardia	Via S. Francesco 12	Albergati Michele	Bosco Roberto
Lombardia	Sondalo	Azienda Ospedaliera di Valtellina E Valchiavenna	Via Zubiani 33	Occhi Giuseppe	
Lombardia	Rozzano	Istituto Clinico Humanitas	Via Manzoni 56	Aglieri Stefano	
Lombardia	Bergamo	Humanitas Cliniche Gavazzeni Spa	Via Mauro Gavazzeni 21	Caprioli Giuseppe	Agostini Pietro
Lombardia	Bergamo	Azienda Ospedaliera Ospedali Riuniti	Largo Barozzi 1	Gavazzi Antonello	Cuocina Nicola
Lombardia	Cesano Boscone	Centro di Cardiologia Riabilitativa di Cesano Boscone - Casa di Cura Ambrosiana	Piazza Moneta 1	Lazzaroni Luciano	Lorenzi Aurelio
Lombardia	Lanzo D'intelvi	COF Lanzo Hospital S.P.A. Clinica Ortopedica E Fisiatrica	Loc. Caslà 5	Zanotta Patrizia	Savonelli Cinzia
Lombardia	Rho	Azienda G Salvini Garbagnate Milanese	Viale Settembrini 1	Veniani Marco	Palvarini Michela
Lombardia	Cuasso Al Monte	Azienda Ospedaliera Ed Universitaria, Ospedale di Circolo Ed Universita' Dell'insubria - Varese	Via Imborgnana 7	Semeraro Francesca	Corda Giovanni
Lombardia	Cremona	Azienda Istituti Ospitalieri di Cremona	Largo Priori, 1	Meinecke Claudia	Garini Alberto
Lombardia	Cassano D'adda	ASL Prov. Milano - Presidio Ospedaliero Cassano D'adda	Via Di Vona 41	Ferrari Aldo	Castiglioni Giuseppe
Lombardia	Merate	Azienda Ospedaliera Ospedale di Lecco	Piazza Leopoldo Mandic,1	Maggiolini Stefano	Lecchi Gabriella
Lombardia	Trescore Balneario	FERB - Fondazione Europea di Ricerca Biomedica Onlus	Via Ospedale 34	Giani Paolo	Armanini Maurizio
Lombardia	Morbegno	Opedale di Morbegno, ASL Provincia di Sondrio	Via Morelli,1	Robustelli della Cuna Fabio	Songini Mariagrazia
Lombardia	Lecco	Azienda Provinciale Ospedale di Lecco	Via Dell'eremo 9/11	Giuseppe Gullace	
Lombardia	Cuggiono	Azienda Ospedaliera di Legnano	Via Badi	Passoni Federico	
Lombardia	Milano	Centro Fisioterapico Riabilitativo Club Francesco Conti	Via De Tocqueville 7	Barelli Maria Vittoria	
Lombardia	Belgioioso	U.O. di Riabilitazione, Ospedale San Matteo	Via Cavallotti 123	Richichi Italo	Cresci Roberto
Lombardia	Salice Terme	Casa Di Cura Villa Esperia		Rossi Angelo	
Lombardia	Gravedona	Ospedale Generale di Zona	Via Pelascini 3	Politi Alessandro	Vtali Andrea
Marche	Ancona	Azienda Ospedaliero-Universitaria Umberto I	Via Conca 71	Perna Giampiero	Belardinelli Romualdo
Marche	Jesi	Casa di Cura Villa Serena	Via Di Colle Onorato, 2	Abu Eideh Mohamed Amin	
Marche	San Benedetto Del Tronto	ASUR Marche Zona Territoriale 12 San Benedetto Del Tronto-Area Vasta 5	Via L.Manara	De Curtis Guglielmo	Persico Mauro
Piemonte	Veruno	IRCCS Fondazione Salvatore Maugeri	Via Revislate 13	Giannuzzi Pantaleo	
Piemonte	Piossasco	Casa di Cura Villa Serena - Centro Medico di Riabilitazione Cardiologica E Pneumologica	Via Magenta 45	Mazzucco Gianmauro	Delpero Paolo
Piemonte	Torino	Casa di Cura Major - Sede Distaccata IRCCS Fondazione Maugeri di Veruno	Via Santa Giulia 60	Bosimini Enzo	
Piemonte	Boves	Casa di Cura Riabilitativa Stella Del Mattino	Via Mellana 7		Riva Giuseppe
Piemonte	Lanzo Torinese	Presidio Ospedaliero di Lanzo	Via Marchesi Della Rocca 30	Soffiantino Francesco	Macchia Giuseppe
Piemonte	Torino	Ospedale Evangelico Valdese di Torino	Via Silvio Pellico 19	Massobrio Nicola	Avogliero Giuseppe
Piemonte	Piancavallo di Oggebbio	Unita' Operativa Indirizzo Cardiologico - IRCCS Istituto Auxologico Italiano	Via Cadorna, 90	Liuzzi Antonio	Gondoni Luca
Piemonte	Novara	Azienda Ospedaliero Universitaria Maggiore Della Carita'	Viale Piazza D'armi 1		Aina Franco
Piemonte	Fossano	Ospedale Ss Trinita'	Via Ospedale 4		Ingignoli Biagio
Piemonte	Acqui Terme	Ospedale di Aqui Terme	Via Fatebenefratelli, 1	Roncarolo Pierluigi	Cali' Maria Vincenza
Piemonte	Aosta	Azienda Usl Valle D'aosta - Ospedale Regionale Umberto Parini	Via Vaccari, Nâ 5	Sicuro Marco	Aillon Costante
Puglia	Cassano Murge	IRCCS Fondazione Salvatore Maugeri	Via Per Mercadante Km 2	Scrutinio Domenico	
Puglia	San Giovanni Rotondo	IRCCS Casa Sollievo Della Sofferenza	Viale Dei Cappuccini	Fanelli Raffaele	Villella Massimo
Puglia	Taranto	Casa di Cura Villa Verde Snc	Via Golfo Di Taranto 22	Concetto La Rosa	
Sardegna	Sassari	ASL Sassari	V. Monte Grappa 82	Sannia Luigi	
Sicilia	Catania	Presidio Ospedaliero M. Ascoli, S. Tommaselli, Azienda Ospedaliera	Via Passo Gravina 185	Felis Salvatore	Maurino Federico
Sicilia	Palermo	Ospedale Buccheri La Ferla Fatebenefratelli	Via Messina Marine 197	Castello Antonio	Sarullo Filippo Maria

Region	City	Hospital / Rehabilitation Center	Address	Head	CR Medical Coordinator
Sicilia	Catania	Azienda Ospedaliera Cannizzaro - Dipartimento Cardiovascolare	Via Messina 829	Fiscella Antonio	Coco Rosario
Sicilia	Agrigento	Azienda Ospedaliera San Giovanni di Dio	C/Da Consolida - Agrigento	Vaccaro Ignazio	Rametta Renato
Sicilia	Palermo	Unita' di Valutazione Funzionale E Riabilitazione Del Cardiopatico, Ospedale Civico ARNAS	P.zza Nicola Leotta, 4	Albanese daniele	
Sicilia	Catania	Casa di Cura Carmide Villa L'Ulivo	Via Feudogrande, 13	Circo Antonio	
Sicilia	pedara	Centro Cuore Morgagni	Via Della Resistenza, 30	Raciti Rosaria	
Sicilia	San Cataldo	Casa di Cura Regina Pacis	Via Lanza Di Scalea 5/7	Scarnato Luigi	
Sicilia	Cefalù	Fondazione Istituto San Raffaele Giglio	C.Da Pietrapollastra	Galardi Giuseppe	Dispensa Flavia
Sicilia	Riposto	Centro Ionico di Cardiologia	Strada Nuova 55 - Riposto	La Spina Leonardo	
Sicilia	Siracusa	STAR FOR LIFE C/O Poliambulatorio di Cardiologia Dr. Armaro Biagio S.A.S.	Viale Scala Greca, 324	Stuto Alfio	Armaro Biagio
Sicilia	Enna	Azienda Ospedaliera Umberto I Enna	Contrada Ferrante	Vasco Calogero	Scarpulla Mirella
Sicilia	Catania	Diagnostica Cardiovascolare Del Dr. S. Gibiino & C. Snc	Viale Vittorio Veneto 267	Gibiino Salvatore	Barbagallo Emanuele
Sicilia	Mazara del Vallo	Ospedale Di Mazara Del Vallo		Gabriele Michele	
Sicilia	Messina	Azienda Ospedaliera Piemonte	Viale Europa	Consolato Giovanni	Dispenzieri Claudio
Sicilia	Acireale	Casa di Cura Riabilitativa "Villa Sofia".	Via Delle Terme 80	Carini Vittorio	
Toscana	Lido di Camaiore	ASL 12 Versilia - Presidio Ospedaliero di Viareggio	Via Aurelia 335	Casolo Giancarlo	Provvidenza Michele
Toscana	Cecina	ASL 6 Livorno - Presidio Ospedaliero di Cecina	Via Montanara	Testa Roberto	Alessandro Scalzini
Toscana	Volterra	Auxilium Vitae Volterra Spa	B.Go S. Lazzero 5	Giustarini Carlo	
Toscana	Impruneta	Fondazione Don Gnocchi Onlus, IRCCS	Via Imprunetana N 124	Macchi Claudio	
Toscana	Firenze	Azienda Ospedaliero Universitaria Careggi	Azienda Ospedaliera Careggi	Gensini Gian Franco	Fattirolli Francesco
Toscana	Firenze	IFCA Villa Ulivella E Glicini	Via Del Pergolino 4/6	Vannucci Mauro	
Toscana	Pescia	ASL 3 Pistoia - Presidio Ospedaliero Pescia	Via Cesare Battisti, 2	Vergoni William	Iacopetti Luciana
Toscana	Piombino	ASL 6 Livorno - Presidio Ospedaliero di Piombino	Via Forlanini	Cordoni Mario	Cordoni Mario
Trentino Alto Adige	Arco	Casa di Cura Eremo	Via XXI Aprile 1	Ferrario Gabriele	
Trentino Alto Adige	Arco	Ospedale Classificato San Pancrazio	Via Damiano Chiesa 2	Santoni Renato	
Trentino Alto Adige	Bolzano	Salus Center - Centro di Riabilitazione Del Cardiopatico	Via Boehler 5	Pitscheider Walter	
Trentino Alto Adige	Mezzolombardo	Ospedale di Trento	Via Degli Alpini 7	Disertori Marcello	Bettini Roberto
Trentino Alto Adige	Ala	S. Maria Del Carmine - Rovereto - Centro di Riabilitazione Cardiologica Ospedale di Ala	Piazza Giovanni XXIII 13	Vergara Giuseppe	Danila Girardini Responsabile Non di U.O. Semplice
Umbria	Gualdo TAdino	ASL 1, Gualdo Tadino	Piazzale Dei Giardini	Mandorla Sara	
Umbria	Perugia	ASL 2 Servizio di Cardiologia Ex Ospedale Grocco Perugia	Via Della Pallotta 46	Pier Fabrizio Anniboletti	Calisti Maria Gabriella
Umbria	Nocera Umbra	U.O. Cardiologia, Ospedale di Foligno	Via Septempedana	Patriarchi Federico	Paolucci Paolo
Veneto	Motta di Livenza	Ospedale Riabilitativo di Alta Specializzazione Spa	Via Padre Bello 3	Favretto Giuseppe	
Veneto	Garda	Casa di Cura Villa Garda	Via Monte Baldo, 89	Baroni Pier Luigi	
Veneto	Thiene	ASL 4 - Presidio Ospedaliero di Thiene	Via Boldrini 1	Martino Bortolo	Bordin Federico
Veneto	Montebelluna	Ulss 8	Via Montegrappa 32	Neri Gianfilippo	Biondi Pietro
Veneto	Cortina d'Ampezzo	Istituto Riabilitativo	Istituto Codivilla-Putti, Via Codivilla, 1	Bellotto Fabio	
Veneto	Mirano	Azienda Ospedaliera	Via L.Mariutto 13	Bertaglia Emanuele	Zanocco Albino
Veneto	Padova	Ulss 16 - Padova	Via Dei Colli, 4		Ponchia Andrea
Veneto	Camposampiero	Azienda ULSS 15	Via Cosma 1	Zampiero Aldo Antonio	Mantovani Enzo
Veneto	Zevio	Ospedale Don L. Chiarenzi Aussl 21 Legnago	Via Chiarenzi 1	Li Greci Ennio	
Veneto	Cittadella	Azienda ALSS 15 Presidio Ospedaliero di Cittadella	Via Riva Dell'ospedale	Zanchetta Mario	Carlon Roberto
Veneto	Castelfranco Veneto	UO di Cardiologia - Riabilitazione Cardiologica	Via Ospedale	Celegon Leopoldo	Colangeli Giovanna
Veneto	Lido di Venezia	Ospedale Al Mare Lido di Venezia	Lungomare D'annunzio	Risica Gabriele	Baracchi Stefano
Veneto	San Dona' di Piave	AUSSL 10	V. Nazario Sauro 25	Milani Loredano	Pizzolato Grazia
Veneto	mestre	Policlinico San Marco	Via Zanotto 40		Peroni Lorenzo
Veneto	Asiago	Ospedale di Asiago	Via Martiri Di Granezza 42	Apolloni Enzo	
Veneto	Arcugnano	Casa di Cura Privata Villa Margherita Srl	Via Costacolonna, 6	Mosele Gian Marco	
Veneto	Feltre	Ospedale di Feltre	Via Bagnols Sur Ceze 3	Guarnerio Mauro	
Veneto	Rovigo	Ospedale di Rovigo	Viale Tre Martiri	Roncon Loris	Badini Adolfo