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The composition of the Italian NHS staff: A managerial perspective

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION AND MAIN FINDINGS

1.1. Introduction

1. Human resources are an important determinant of the health the population (Anand and Bärnighausen, 2004: 1603) and the most valuable input of health systems (WHO, 2000). Healthcare is in fact a labour-intensive industry, human resources explain the largest proportion of healthcare expenditure, and much of the quality of healthcare services rely on the professional competences and skills of health workers (Bloor and Maynard, 2003: 1; Lega, 2008).

2. A quite special characteristic of analyses about Human Resources for Health (HRH) is that their regulation has profound effects both on the labour market and on managerial practise. In other words, HRH issues should be analysed keeping together three levels or dimensions of analysis that in other industries are usually kept independent, i.e. labour economics, professional regulation, and human resources management (HRM) (De Pietro, 2005a). Let consider for example the key concept of legal monopoly given to an occupation by the professional regulation: this will impact both the labour market (eventually raising its contractual power) and the healthcare organisation unit when managing night shifts, on-call time, etc., because of the restricted – if any – substitutability with other occupational groups.

3. This work adopts that integrated approach to look at the Italian health workforce and, more specifically, to the salaried staff of the Italian National Health Service (NHS). The NHS represents one of the largest employers of the country, with around 650,000 staff. While the Italian NHS in recent years has undergone profound changes with a major devolution to Regions of responsibilities for funding, organising and managing the system (France et al., 2005)[1], however one of the main responsibilities left to the national government refers to health

[1] For a critical and recent review of the Italian experience with decentralisation in the healthcare system, see Tediosi et al. (2008).

workforce. This national responsibility – that could appear strange in a system with high degrees of regionalisation – can be further specified along three dimensions:

- *education:* the school system is centrally regulated and managed, most universities are owned and regulated by the national Ministry, the health workforce planning process involves Regions and professional bodies (Orders, Colleges, and Associations), but the last decisions for *numeri clausi*, *curricula studiorum*, recognition of foreign degrees, etc. belong to the national Ministry;
- *professional regulation:* the recognition of the professions and of its legal monopolies is done by the national Ministry and Parliament, and professional bodies are semi-public bodies regulated by the public law and managed by the national federations of orders and colleges, while maintaining an internal organisation based on provincial orders and colleges;
- *national work agreements:* the work conditions of the 650,000 NHS staff – that define classification system, pay levels, work hours, continuous education requirements, etc. – are defined in three national "collective work agreements" signed by, on one side, a specialised agency of the Ministry of Public service and, on the other side, trade unions.

4. Along with these national responsibilities in HRH issues, a second important level of responsibility lays in the HRM policies and systems developed and implemented by each public healthcare organisation part of the Italian NHS. So, Local Health Authorities (LHAs) and Independent Hospital Trusts (IHTs) are asked to integrate national rules with a "second-level collective work agreement", jointly signed by each LHA/IHT, the elected workers, and trade unions. A broad reform of the Italian public service started in 1993 and continued through the nineties (Rebora, 1999; Valotti, 2005), in the larger band of a wave of reforms aimed to improve accountability and efficiency of the Italian public sector (Ongaro and Valotti, 2008). Therefore, LHAs and IHTs have substantially increased the degrees of their managerial autonomy (Marcon and Panozzo, 1998; Donna et al., 2002; Anessi Pessina and Cantù, 2006) and can now develop HRM solutions coherent with their internal organisation and activities, and with the conditions of their local labour market (Adinolfi, 2008).

5. In terms of HRM, we can than identify three approaches or visions for HRM, plus a fourth.
The first approach, very strong in the tradition of the Italian NHS, is bureaucracy (Borgonovi, 2000; Del Vecchio and De Pietro, 2002). The classical model of bureaucracy has offered for decades the ideal-type of public organisation and, hence, it has been adopted as reference for the Italian public healthcare organisations. It seeks impartiality and objectivity based on procedures

developed on rational ground and legitimated by the formal, legal authority. It should easily clear that this bureaucratic view, while coherent with some assumptions of the public action, does not fit with many characteristics of the healthcare work, notably with professional autonomy, technological innovation, etc. (Zangrandi, 1999).

The second approach is based on professional membership. Professional autonomy, code of conduct, and social control become key concepts (Costa and Gubitta, 2008: 312-314). But also boundary encroachment, "jurisdictional disputes" (Abbott, 1988), task delegation, etc. Organisations cannot relay on hierarchy as main coordinating principle, but have to refer much more to skills standardisation (Mintzberg, 1980), mechanisms for running multi-professional teams, etc.

The third approach could be referred to as the one focused on managerial functionality, i.e. the approach prevailing in most industries less affected by the presence of a professionalised workforce and or by the presence of a major public intervention as employer.

The fourth approach is somewhat extra, i.e. it is not a HRM approach or view, while it can affect HRM practices in the Italian NHS: namely, it is politics. LHAs and IHTs are often the largest employer in their local labour market. Therefore, they are also the largest employer on the local electoral market. That makes inevitable that ideas and conveniences developed in and by the political arena affect to various degrees some choices both in the national policies and regulation and in HRM of each LHA/IHT. It is useful to remark that the stronger are managerial practices, the more autonomous they will be from political pressures – and the tighter will be the possibilities for politics to decide in HR issues.

6. In the Italian NHS, all three-plus-one logics are present. However, we can try to assess their development in the last fifteen years. While with some hesitations and recoils, the general trend has seen a long-range reduction of the bureaucratic influence, substituted by a parallel increase in the relative strength of both the professional and the managerial approaches. Finally, also politics has lost influence, above all because of the development of sounder managerial competences and practices.

7. In this broad picture, several themes deserve special attention.

A first issue concerns workforce planning, professional regulation, and work division in day-by-day operations inside the healthcare organisations. Here the main hypothesis is that workforce planning is an exercise difficult from a theoretical point of view, and above all when implemented into practice, because it suffers of lack of relevant information, vested interests of

the actors involved in the professional regulation, and clinical approaches that sometimes overlook the economic dimensions involved by professional choices.

In particular, a special case of this large debate refers to nursing shortage. As in most other developed countries, the Italian health system perceives a shortage of several health professions and, namely, nurses among them. This is a highly debated issue in the country, while public information is poor and often biased.

A second public-wide debate in the country refers to public service and public administration efficiency. Here, the common perception is of a public administration plethoric and inefficient, and a public service too dependent on both bureaucratic and political logics. Healthcare is the second public sector for number of employees after school, and therefore it is often cited as a sector where a better use of the employed personnel could lead to more flexibility, effectiveness, and quality of the services.

However, behind these first – and much – debated issues, there are other elements worth to highlight. Some of them are the long-range, structural changes occurring in the healthcare workforce demography. Here to crucial elements are the ageing of the health workforce and, with less dramatic consequences, the feminisation of physicians.

Finally, a last element that encompasses many issues touched so far, are the large differences in the actual occupational composition of IHTs. This represent a very interesting theme for investigating the strengths but also the weaknesses of professional regulation, that seems to be overcome – and contradicted – by actual choices and conditions for professional work in the NHS healthcare organisations, i.e. much more flexible and substitutable than predicted by the professional regulation.

8. These referred above are also the themes developed in the following chapters.

The second chapter deals with workforce planning. It presents a reasoned review of issues at stake and then focuses on the Italian experience, highlighting some of the reasons for its main difficulties.

The third chapter deals with nursing shortage in the Italian healthcare system, presenting the reasons of the perceived shortage and some measures developed to cope with it both at the system-wide level and inside healthcare organisations.

The fourth chapter analyses regional differences in professional composition and in pay levels for the NHS staff, and gives an economic quantification of these differences.

The fifth chapter deals with the current ageing of the Italian health workforce and discusses some managerial consequences that such a structural change will have in the next years.

The sixth chapter presents and discusses another major demographic change occurring in the health workforce, namely the feminisation of medical staff and its managerial impacts.
The seventh chapter looks at the prevalence and the role of men in the Italian NS nursing staff.
Finally, the eighth chapter discusses the differences in occupational mix adopted by the IHTs of the Italian NHS system, with some tentative explanations for them.

9. Chapters are almost independent from each other, while forming a whole, coherent picture. For this reason, some chapters present limited repetitions.

1.2. Research hypotheses and main findings

Workforce planning

The second chapter is dedicated to the discussion of the many facets and problems of health workforce planning in develop countries. These range from the technical problem of running perspective studies in a highly innovation industry, to the role of professions as social actors pursuing their own goals – e.g. increasing their social status – that can enter into the planning process with biased and self-interested opinions.
After this review, the last sections deals with the Italian case, referring to the classic occupational groups in modern medicine, i.e. physicians, nurses, and aides. Italy is usually referred as outlier among OECD countries having many doctors and few nurses[2]. Despite this, until few years ago the quite articulated workforce planning, with strict controls based on *numeri clausi* for the medical education both at general level and for specialty schools, and for the nursing education as well, did show important flaws.
Another issue analysed in the last part of the chapter deals with ratios between nurses and aides. Here also, large differences among Regions exist, also explained by the fact that, while health professions including physicians and nurses are regulated at the national level, non-professional support figures – including aides – are regulated at the regional level, within a national framework. But large differences exist also between the different LHAs and IHTs within each Region. These differences cannot be explained only with differences of activities run by different LHAs/IHTs. Rather, they are explained by a different division of labour occurred in

[2] However, other countries go even more in that sense, e.g. Greece.

different organisations, despite the common rules and the common focus on efficient allocation of resources set by national and regional regulation[3].

Nursing shortage

Usual reports claim a shortage of 60,000 to 100,000 nurses in Italy, i.e. 17%-28% of total registered nurses[4]. Given this apparently enormous problem, the chapter tries to 1) understand how these figures are calculated; 2) describe the responses develop at the system-wide level; 3) describe the responses developed by the healthcare organisations themselves; 4) discuss the concept of nursing shortage and its possible developments.

First, an assessment of how those figures are calculated is proposed. Here, explanations go from international comparison with other developed countries (namely with the average OECD prevalence of nurses in general population), to the cumulated differences between the nursing Colleges requests and the Ministry of education decisions in the process leading to set *numeri clause* for nursing education, to official unfilled vacancies in the NHS LHAs and IHTs. However, each of these calculi suffers some flaws. Moreover, other symptoms induce to think that most Italian Regions do not suffer of absolute nursing shortages but, rather, of "relative shortages". Relative shortages mean that Italian healthcare organisations often do not find in the labour market the specific nursing skills they require or minimum conditions for retention and for developing long-lasting, effective employment relationships.

While a better understanding of dimensions and characteristics of the shortage would deserve further investigation, both national and regional policies have been coping with the problem in recent years. Therefore, for example, registered nurses passed from 286,000 in 1995 to 342,000 in 2005. Moreover, other measures have been deployed at national and regional levels. Namely higher pay levels; the possibility of extra-hours work; the development of the competences of the support staff in order to allow for a task transfer able to free nurses from non-nursing tasks; a broad process of further professionalisation of nurses that, among other results, will improve their social status; and some measures for an easier recognition of foreign degrees, in order to increase the number of foreign nursing practicing in Italy.

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[3] Similarly, Keeney et al. (2005: 347) report about a survey conducted in 1999 by the UK Royal College of Midwives, where 42% heads of midwifery agreed that health care assistants (i.e. staff supporting the midwives) «were performing duties that should be undertaken by a midwife».

[4] In Italy, nurses are all RNs with the Italian Federation of provincial Colleges, a semi-public body in charge of self-regulate the profession.

Along with policies responses, also managerial practices have contributed to cope with the shortage, seeking for a better operational efficiency, adopting new organisational models in order to facilitate the task transfer to support staff, developing some – even if limited – career perspectives in order to motivate and retain nurses, etc.

Regional differences in composition and pay levels for the NHS staff

The chapter proposes a regional analysis of two main dimensions of the Italian NHS staff, i.e.:

- the professional composition of NHS staff, referring to ratios between the different occupational groups such as medical doctors, nurses, aides, etc.;
- the average pay of each professional group.

The final goal is to position all Italian Regions along these dimensions and, finally, to calculate savings (positive or negative) that Regions should get if they adopted the national averages for professional composition, pay levels, or both.

The analysis if the employed staff of the NHS reveals profound differences in the professional composition. Looking for example to the ratio nurses/physicians, Regions range from a maximum in the northeastern Regions, with values above 3.00, to a minimum below 2.00 in some southern Regions. The analysis of these differences helps answering two alternative research hypotheses, namely the first legitimating differences as the consequence of the managerial autonomy of LHAs/IHTs, and the second more critical about differences and based on the assumption that the professional regulation is determined at the national level and this should not allow for large differences in the professional mix.

A second dimension analysed in the chapter is organisational composition. This, again, highlights large differences between Regions, with the quota of heads of clinical units or sub-unit among medical staff ranging from one fifth to one third.

Finally, also pay levels are analysed. Here the research hypothesis is:

"One of the main dimension for a national action in governing the Italian NHS is the regulation of work conditions, strongly determined by the collective agreements signed by the National Agency for the representation of Public Employers and the trade unions at the national level. So, pay levels should be quite homogeneous among LHAs and IHTs".

Actually, here again quite large differences emerge between Regions for the 15 occupational groups defined for the analysis. For some groups those differences reach also ±20%[5], moreover with no evidence of differences linked to the regional cost of living.

The chapter provides some explanations for all these differences, together with an analysis of their impact and consequences from a managerial point of view. In addition, we suggest some tentative interpretations of the relations with the overall performances of regional health services.

Greying workforce

«Workforce ageing is a relatively new issue for managers. […] Aside from demographic reports, few studies have focused on the adaptation of working conditions in order to accommodate older nurses in health care organization » (Lavoie-Tremblay et al., 2006: 207).

«Key stakeholders in policy-making in the United Kingdom are able to identify issues arising from the ageing nursing workforce» (Andrews et al., 2005: 305).

These are only two references dealing with workforce greying and its organisational consequences. However, in the case of Italy we still lack an adequate knowledge of the problem in demographic terms, before developing consequent managerial responses. So, the chapter is mainly devoted to assess greying in its "hard", demographic dimensions.

Average age for the Italian NHS staff was 43.5 in 2001 and 46.5 in 2007. If we couple this result with a very limited total turnover balance (inflow – outflows) from 2001 to 2007, we can say that the fast pace of ageing in these last years can at least partially considered a temporary effect, explained with the recent pension reforms asking for longer work lives and with the increased professionalisation of staff leading to older entries.

If we focus on staff old 55+ years, greying appears even more pronounced and strongly claims for HRM answers able to cope with it. In percentages, the increase was from 10% to 17% of total staff. As the analysis clearly demonstrates, this long-range change is far from being completed. On the contrary, in the next years a further, major distribution of staff in older cohorts will continue. This asks for a profound adjustment in the dominant organisational culture of the Italian NHS organisations, as well as new innovative HRM practices able to cope

[5] This is the range obtained after excluding the Region Trentino-Alto Adige, which enjoys a special degree of constitutional autonomy and recognise higher pay levels to certain occupational groups. This semi-autonomous status also explains why in our analysis instead of considering the Region we consider the two Provinces of Trento and Bolzano.

with employees with needs – in term of work-life balance, professional development, job rotation and enrichment, etc. – substantially different from twenty years ago.

Physicians' feminisation

In 2007, women represented 35% of salaried doctors of the Italian NHS, compared with 30% in 2001. This was the coupled effect of a 5,632 positive balance of net inflows for physicians in the NHS during those years and a much-feminised young medical workforce. In fact, when looking at the gender of this cumulative balance, it gives a net gain of 6,674 women and a net loss of 1,042 men.

Further, to have a longer look on feminisation, we can consider the fact that in 2007 women were around 10% of employed doctors in their sixties, 30% of doctors with age 50-59, 40% of doctors with age 40-49, 55% of doctors with age 30-39, and 60% of doctors aged less than 30 years.

This structural change of the medical workforce will have several consequences with respect to workforce planning: in Italy, as in most other countries, women retire earlier, use more frequently part time arrangements, do less extra-hours work, and have maternity and childcare leaves in their thirties. Moreover, women usually specialise in some medical specialties. Finally, further changes could involve relations with female or male nurses, managerial styles, etc. In turn this will require consequent actions both at the level of system-wide policies (e.g. when defining *numeri clausi* for medical education) and in managerial practices developed inside LHAs ad IHTs.

The chapter also analyses the prevalence of women in posts of head of clinical units or sub-units. These posts too often represent in the Italian NHS the only true career opportunity for medical staff. In 2007 women represented 35% of all physicians but only 12% of heads of unit and 27% of heads of sub-unit, while they were 39% of other jobs. Also controlling for age, the gender gap remains. For instance, in 2007 women represented 52% of the age class 35-39 but only one out of ten heads of unit was a woman.

Prevalence and role of male nurses

The chapter describes the prevalence and the role of the male nurses working as employees of the Italian NHS and considering different age classes.

In 2007 men represented 24% of total nursing staff, with an average age of 45.1 years compared with 42.8 for women and increased by 2.2 years compared with 2001 (3.2 for women).

Unexpectedly, the analysis did not confirm the hypothesis that high unemployment and/or low female participation rates in a Region are related with higher male incidence in nursing staff, usually reported also in literature (e.g. Buerhaus et al., 2004: 530).

Finally, when looking at career results, the Italian experience seems to confirm the gender gap often found in several studies and in many countries. An analysis of newly appointments as head nurses of LHAs and IHTs – a job that enjoyed a new status and a more favourable regulation after 2000 – shows that in 2007 male prevalence was 46%, much higher than prevalence in total nursing staff. Also controlling for age this gender gap persists, with men over-represented in all age classes for appointment to top position. Unfortunately the database available does not allow us to control at the same time for age and part time prevalence (in 2007 14.1% of female nurses were part time, compared with 1.2% for men), as another possible explanation of differences in career results (Whittock et al., 2002).

Occupational composition of hospital staff

The chapter describe the occupational composition of the Italian NHS acute IHTs, splitting the whole staff in six groups: physicians (representing on average 18% of total staff), nurses (40%), support staff (i.e. aides and other extenders; 12%), other health professionals (e.g. pharmacists, biologists, laboratory technicians, radiology technicians, physiotherapists, etc.; 11%), administrative staff (9%), and other staff (9%).

The main research question is to verify if, given the national regulation of health professions and staffing requirements, this leads to similar staff composition in the about 100 IHTs of the Italian NHS

All indicators used by the analysis (e.g. nurses/physicians ratio, etc.) show large differences between hospitals, much larger than the professional regulation would imply. This suggests that IHTs enjoy a certain degree of autonomy in defining their own skill mix and, in turn, that this autonomy can be guided by HRM policies and systems developed by each healthcare organisation.

Despite these large differences in occupational composition, a first tentative analysis based on bivariate linear regressions does not highlight any clear relation with indicators such as the Region where the hospital is located, the dimension of the hospital (measured by the number of beds), the volumes of its production (inpatients cases or total number of days of stays), the complexity of the production (case mix index) or its heterogeneity (entropy index), etc. This calls for further research, based on stronger – multivariate – statistical analysis.

2. HEALTHCARE WORKFORCE PLANNING: A CRITICAL ASSESSMENT

2.1. Subject, goals, and method

The availability and the quality of healthcare workforce are central elements of the modern healthcare systems and a determinant of population health (Anand and Bärnighausen, 2004: 1603). Moreover, it can be said that human resources are the most important of the health system's inputs (WHO, 2000). Healthcare is in fact a labour-intensive industry, human resources explain the largest proportion of healthcare expenditure, and much of the quality of healthcare services rely on the professional competences and skills of health workers (Bloor and Maynard, 2003: 1).

In turn, healthcare is one of the determinants of population health status, with other determinants including socioeconomic, environmental, behavioural, and biologic factors.

The importance of having a sufficient and skilled workforce, together with other reasons discussed below, explains the efforts made by public authorities in most developed countries for estimating workforce needs and planning its supply. In fact, «some sort of planning for the required health care workforce takes place in most developed countries» (Hall, 2005: 65). Unfortunately, «in most is regarded as unsuccessful as health-care labour markets swing from surplus to shortage» (Hall, 2005: 65).

This chapter will discuss the reasons for such a regulation, the actual experiences of developed countries, the problems it faces, and the results in terms of both absolute availability and efficiency.

Special attention will be given to the Italian case, where a strong regulation has not been able to reduce the relevant differences with other countries, and encounters increasing difficulties in managing a labour market with a high degree of rigidity and fragmentation.

The chapter will rely on the literature produced by three main sources: international organisations such as OECD and WHO, economic academic research, and leading medical journals. For the Italian case, results of original research will be added.

2.2. Why to have a workforce planning

Avoiding absolute shortages

A main task for healthcare systems is to ensure an adequate number of healthcare workers, with codified competences and technical skills, in order to cope with the healthcare needs of the population. But what does "adequate number" mean? And what are absolute shortages?

The concept of shortage has many definitions in literature, and in any case it requires a better understanding.

To explain this point, we can refer to the often-quoted "nursing shortages". As Charles E. Phelps – a prominent health economist – points out (2003: 308), «a 'nursing shortage' suggests that something is constricting either the supply or the wage rate. Neither situation appears to exist in the United States. People can decide to enter nursing freely, with a large number of schools offering training to become a nurse». So, why other authors claim the existence of such a shortage? Just to make an example, Janiszewsky Goodin (2003: 335) says: «without a doubt, the United States of America is experiencing a nursing shortage. […] It remains largely undisputed that there is national shortage of Registered Nurses». Bloor and Maynard (2003: 1) explain this apparent contradiction noting that «the market for healthcare human resources is not a free market for several reasons. There is a substantial public sector regulation of all health care markets, entry to the labour market is highly constrained by licensing and professional regulation, and wages are often negotiated nationally for groups of health professionals, making 'price' inflexible in response to changing demand and/or supply. Consequently, the price mechanism does not create equilibrium, and other mechanisms for matching supply and demand have to be used. This has meant that many countries have systems of planning health care human resources, particularly the medical workforce».

Another point is that shortages are often considered "absolute", but actually they depend on cultural and socio-economic factors: in fact, «high income countries have three to four times more doctors and nurses than lower income countries per unit of population» (Hongoro and McPake, 2004: 1451) , while health status of less developed countries population is generally poorer than in developed countries. As Zurn et al. (2002: 6) point out, «the notion of shortage is a relative one; what is considered a shortage in Europe would probably be viewed differently from an Africa perspective».

Finally, usually the availability of healthcare workers refers to professionals that have a formal education in western medicine, and do not consider other traditional providers, practicing non-

western-type medicine. It is clear that those providers do guarantee a high percentage of services in many less developed countries, despite the existence of professional restrictions and regulations, often securing to the formal professionals some competences and activities. But also in developed countries many services are provided by non-formal operators (Colombo and Rebughini, 2003; De Pietro, 2007).

To understand what shortage means, we can identify two basic types: clinical need shortages, and economic shortages.

The former is a non-market, non-economic definition that implicitly or explicitly rejects the market as a tool for distribution and allocation of resources (Folland et al., 2001: 336-8). Needs – and eventual shortages – are calculated by clinical staff on purely clinical grounds. This will lead to disregard economic constraints and to ask for increasing healthcare staff. To explain this point referring to the US, Feldstein (2002: 360) says: «the policy proposals that results from normative definitions if a shortage of health manpower occurs, are generally the same: increase the number of trained professional through increased federal funding».

Economic shortages can result from sticky wage rates that remain above the equilibrium level, or can temporary result from a sharp increase in demand. Another reason for economic shortages could be the monopsonistic nature of the healthcare labour market, with one big buyer[6]. This is the case of countries with NHS type healthcare system, where the reported shortage actually represents an equilibrium status, because the monopsonist is willing to hire more workers at the current wage, but it does not intend to pay a higher wage in order to hire them.

Despite difficulties in dealing with the concept of shortage, international comparisons do show differences and dynamics that cannot be explained with physiological market forces, but clearly imply severe relative shortages. This is related also with the increasing international emigration of healthcare workers from less developed to industrialised countries. This phenomenon, also referred as brain drain, is especially tough in those countries where emigration, together with other causes, results in a decreasing number of healthcare professionals. An example for such a situation is Malawi, that contemporaneously faces an increase in healthcare needs because of the HIV/AIDS epidemic, a higher incidence of AIDS between the healthcare workers than in

[6] The analysis of monopsonistic labour markets was initiated by Archibald in 1954 and nursing soon became a classical example for it (Sullivan, 1989). Recent contribution, however, sow mixed results and suggest that «nursing should not be held up as a prototypical example of monopsony» (Hirsch and Schumacher, 2004).

general population, and a strong emigration of healthcare workers to middle and high income countries: «in 1997, Malawi lost 44 nurses as a result of AIDS, which is 44% of the annual number of nurses trained» (Hongoro and McPake, 2004: 1452).
This example highlights a basic question, i.e. whether low income countries can pursue and afford a western-style healthcare, in a labour market increasingly internationalised that tends to set international prices (i.e. wages) for health professional. That is, if low income countries can find a feasible way to retain high skilled health professionals in their domestic labour market (Lancet, 2000; Hongoro and McPake, 2004; Nullis-Kapp, 2005; Zurn et al., 2002).

Controlling the supply-induced-demand

The healthcare market is characterized by several – and severe – information asymmetries between patients, healthcare professionals, insurers/financers, etc. Traditionally healthcare professionals enjoy an information advantage compared with patients and with insurers/financers regarding the clinical needs of the patient, the alternative ways to treat him, the effort – and costs – of treatments, etc. Therefore, professionals can induce "demand" of clinical services by suggesting and orienting the patients. This is especially true in systems where physicians and other health professionals work on a fee-for-service basis, and when third-party payers reimburse them. As Reinhardt (1994: 253) points out for physicians, but valid for most healthcare professionals, «once trained, physicians enjoy almost total discretion in dictating the volume and composition of the health care they render patients».
Those asymmetries and advantages are conformed by the fact that in many western countries affected by reported workforce surpluses, healthcare professionals do not suffer neither higher unemployment rates than general workforce, nor lower wages. Similar conclusions are drawn by several studies that have analysed the internal rate of return of medical education, finding no clear relations between physician/population ratios in single countries and the internal rate of return (i.e., variations in the availability of medical staff do not imply variations in the return of medical education, compared with other professions).

In order to avoid those information asymmetries and to avoid the exploitation of information asymmetries by healthcare professionals, most countries have developed explicit systems to limit the supply of healthcare workers. As control of behaviours is difficult to manage, regulators control the volume of inputs. Due to that workforce control, health workers can exploit information asymmetries asking higher wages, but they cannot raise volumes of

professional activities (except for the adjustment in supply that is possible with extra-work, higher participation rates, etc.).

In this case, workforce planning is acting as a constraining force, while in avoiding shortages (see previous paragraph) it is acting as a positive force.

Having a longer and wiser view and anticipating technologies development

«In the case of health manpower, the long time lags between entering a professional school and becoming a professional suggest the need for forethought and invite the question of whether market forces alone will suffice» (Folland et al., 2001: 335).
Market failures, usually linked to information problems, explain most public regulation in the economic system. Unfortunately, the healthcare sector suffers endemic information asymmetries between different actors. This can imply opportunistic behaviours, as seen in the previous paragraph, usually explained in terms of moral hazard. In addition, this can also imply a limited information and rationality with regard to the future, in terms both of health needs, and of healthcare organisation.
As far as the healthcare workforce is concerned, the sum of individual education choices could mismatch the system's needs in terms of absolute availability for the different healthcare professions, specialties, and sub-specialties. Individuals can be shortsighted in their decisions, because of the little information they have about future epidemiological trends and of future assets of the healthcare system.

The same reasoning applies to technology developments. Information about its possible impacts the healthcare labour market is difficult to know and to assess by individuals. Moreover, technology developments are partially growing with a rhythm and a direction of their own, regardless of the health care systems' needs.

However, the strongest reason for a public or collective workforce planning is the extensive involvement of public powers in shaping the healthcare sector of the future, both from an economic and a political point of view. In all developed countries, independently of the institutional model of healthcare (NHS, Bismarck, market-based, etc.), pubic authorities are in fact the pivotal actor of the market, for funding the system, regulating it, or both. Moreover, in all countries the development of the system and the features that will characterise it in the future, are the result of ongoing political decision-making. Investments in research and

development in science and in the medical sector, medical education funding, public health programmes, systems to reimburse or finance providers, policies for insurance coverage, etc., are – at different degrees in different countries – public responsibilities. Therefore, politics and the public action strongly influence the future status of healthcare. In turn, this implies the opportunity of workforce planning, that is an activity where political and professional attitudes meet.

Avoiding to spend for unnecessary and expensive education

Education for healthcare professionals, compared with other sectors, is on average long, sector-specific (i.e. it has a technical content, and does not give general competences) and, above all, expensive. Usually those costs are financed by public resources, at least for a relevant part, as an outcome of public concern for the adequacy of the supply of such workers (see above). When this happens, it becomes clear the opportunity for public authorities to avoid unnecessary education, restricting the access to university undergraduate and graduate degrees. The way to estimate that unnecessary education represents a strong tool of workforce planning because it is based on the same concept of needs discussed above.

Access restrictions give market power to healthcare workers, both in terms of employability and in terms of wages, and so they limit the flexibility on the labour market. Consequently, for several professions the true "recruitment" is actually anticipated at the access to the college, because afterwards the employment is almost guaranteed. Professionals do not need searching actively a job on the labour market. This will limit the stance for sound recruiting and selection policies made by the healthcare organisations (hospitals, health maintenance organisations, etc.), forced to hire the scarce professionals that are available on the market.

Also in that case, like in the case of controlling for supply-induced-demand, the workforce planning acts as a constraining force, avoiding supply surpluses on the labour market.

2.3. How to manage the workforce planning

The actors on the field: public regulators, health providers, and professions

Countries have developed different ways to cope with healthcare workforce planning. The planning process usually involves – with different roles – the public authorities (above all in systems where financing is based on public resources), the professions' system (orders, colleges, professional trade unions, etc.), the health providers (hospital associations, sickness funds, etc.), and the education system.

Usually, the higher is the market power of each actor, the stronger will be the role it will play in the planning process. Market power will depend on two dimensions: the spending power, and monopolistic positions.
In public financed systems, with little prevalence of private insurance or patients co-payments, public bodies will have a pivotal role in decision-making. That role will be strengthened if the same public bodies own and run healthcare facilities, i.e. hospitals etc. In that case, the financing function will sum up to the providing one and the public bodies will be the main employer acting on the labour market.
The second dimension is monopolistic power. This refers firstly to professions. Strong and unite professions will become a pivotal actor of decision making, while fragmented professions could have less visibility and effectiveness in pursuing their own interests.

A special role is played by the education system, i.e. by medical schools and other universities offering programmes for health professionals. As we have seen, health education is long, specific, and expensive. Therefore, it requires relevant investments in facilities, technology, etc. Moreover, it requires a deep involvement – and so a full cooperation – of practicing professionals, that become tutors of health students for several years. In fact, in no other sector of economic activities formal education and professional practice are melt together into the university programmes. For most professional domains (lawyers, engineers, etc,), university education gives the theoretical knowledge, while professional internships supply the practical skills. This special role of academic and other educational institutions gives them a special role in the workforce planning process in the healthcare sector.

Different ways to pursue the same goal

The tools for implementing workforce planning, that is, for controlling the number of health workers, rely mainly to *numerus clausus*, State exams/licensing and enrolment, behavioural control by orders and colleges, and system of continuous education and re-accreditation.

Numerus clausus applies both to undergraduate and graduate education. It is a system present in most developed countries for most health professions. In some countries, it does apply at an intermediate phase of education programmes (in France, for instance, *numerus clausus* applies for entering the second year of the medical degree).
The more the healthcare professions are differentiated, the more the system of *numerus clausus* becomes expensive to manage and rigid in its utilisation, because it requires the involvement of many professions, and the sum of many – and independently run – decision process can lead to incoherent overall planning.

In most developed countries, above all in continental Europe, a second step for supply control is the State exam needed to enter the profession, once concluded the studies. In some countries – notably the US – this enrolment is not mandatory; in most continental Europe systems it is, and once the exam is passed, the professional is asked to enrol with the order or the college of its own profession/specialty.

Another tool/step for workforce planning is the behavioural control practised by orders and colleges. This is clear in many European countries, where orders and colleges are public or semi-public bodies subject to special regulation, enjoy public powers, have disciplinary power over professionals, and they can also remove them from the profession. Therefore, the professions practice a dynamic control on workforce supply, via the orders and colleges' control on competences and behaviours of their own members.
In many countries registration is mandatory on a geographical basis, i.e. professionals register with the order or college that is established in the county, province, or so, where they work.

The last tools for managing the workforce planning decisions are continuous education and professional re-accreditations. The need to guarantee adequate professional competences of health workers had brought many countries to establish continuous education or re-accreditation programmes.

The former asks – often on mandatory basis – the health professionals to get a certain amount of training during their professional life, certified with a system of education credit or in a similar way by the professions' system, by public agencies, etc. For instance, to practise as a nurse, the programme will ask each professional to get five-to-ten days of relevant "training" (in form of classroom lectures, practical on-the-job training, academic conferences, etc.) each two years.
Re-accreditation programs do ask professionals to have periodically a formal exam (for instance, every five years) or to discuss their own *curriculum vitae* to go on practicing. Also in this case, the programme can be managed by the professions' system (orders and colleges), by public bodies, or jointly.

2.4. In any case, a difficult task

Forecasting difficulties

Forecasting in labour economics is a difficult task. It needs to know which are the actual conditions of the labour market (number of active and non-active professionals, specialisations, etc.), and then to make assumptions about the future.
To describe the existing workforce is often more difficult than imagined, because it means to know its skills, its geographical and professional distribution, its demographic characteristics (age, marital status, etc.) (O'Brien-Pallas et al., 2001).
Once the existing conditions are described, then the task is forecasting, that is, to make assumptions about how many hours per week will people work on average, about the participation rates, about the retirement age, etc. Moreover, it requires forecasts about technology developments and their effects on healthcare services demand, as well as about patients' behaviours, inter-professional shifts of defined tasks, the development of non-orthodox medicine, etc. To compare those difficulties with the actual practice of the workforce planning, let consider what Hall (2005: 65) says: «to date, must workforce planning has been pretty mechanistic. Future demand has been estimated based on current patterns of use, extrapolated for changes in the size and age/sex structure of the population […]. Supply has been estimated based on current work patterns of service providers, with estimates of the numbers retiring or otherwise leaving the workforce. […] In general, there has been little or no consideration of how the structure or funding of the health system might affect demand and supply».

In a recent survey on workforce planning in five developed countries (Australia, France, Germany, Sweden, and the United Kingdom), Bloor and Maynard (2003: i) find the following main results:

1. all countries have a partial approach to planning, and ignore relationships between different health professions;
2. most countries have some central planning when it comes to medical workforce, ranging from planning medical student intake to forecasting future demand for doctors;
3. most countries have some central planning of the nursing workforce and allied professions, but with less systematic approaches to forecasting demand;
4. while there has been some control of overall staff numbers, little or no attention has been given to the distribution of medical and nursing staff between specialties and regions, resulting in inequalities;
5. despite attempts to plan, all countries have experienced cycles of shortages and surpluses of health professionals, perhaps most acutely in the nursing workforce;
6. a number of countries rely on the immigration of health professionals as a short-term fix for shortages;
7. there is no performance management of health professional staff, particularly in the medical profession, so it is difficult to plan and measure efficiently;
8. performance problems are perpetuated by poor access to information, weak management and an absence of systematic continuing education and re-accreditation;
9. in general, there is a lack of attention to basic economic principles: the role of incentives is largely ignored, and supply elasticities in the labour market are, for the most part, unknown and poorly researched. It is often assumed that manipulating price alone will control expenditure, without paying attention to volume;
10. there is clearly a need to better integrate planning across the professions, with special attention to skill mix and geographic balance. Effective development of skill mix requires legislative change and incentives for physicians that encourage advancement.

Points 1-4, 7, 9, and 10 of this list do show forecasting naiveties or difficulties. Partially, this can be explained with the heavy difficulties of gathering relevant and reliable information, and of coordinating the planning activity. In any case, once planners do know the existing conditions of the labour market and have made assumptions about the future, workforce planning implies a value judgement about the desirability of utilisation patterns, that is, a political decision. In this political decision process, healthcare workers – i.e. their professions –

are involved, as well as other relevant stakeholders (hospitals' and consumers' representatives, etc.).

A fragmented, professionalized labour market

No other economic sector relies so much on the professions' system as done by healthcare (Tousijn, 2000: 7). That system has a main effect on the labour market, that is, we have a labour market for each different healthcare profession, some of which are very small. This happens because competences are defined for each of those professions, without any substitution admitted in the production function (and, a fortiori, no osmosis with other labour markets is possible).

These limits to substitution are often the result of pressures made by specific professions in order to defend their own interests. Most times they origin in the medical association, that for several reasons play a dominant role on the labour division in healthcare. Hongoro and McPake (2004: 1452) report examples of these pressures: «professional bodies that protect the interests of their members have played a part […]. In Uganda, midwives may supervise less than one delivery per day on average in rural facilities. […] The Brazilian Medical Council succeeded in securing legislation that prohibits any health professional, including university trained nurses, from prescribing any medicine».

The fragmentation on the health labour market implies high costs.
First, there are costs due to the confrontation and the conflicts between professions to get new spaces in the division of labour (that arrives often as a by-product of new technologies that call for new delivery designs).
Second, workforce planning will have to guarantee the availability of a sufficient number of workers of each profession during the peak of activities required to that specific profession. This will lead to inefficiencies in utilisation of health professionals and to an increase in their whole number.
Third, there are costs of coordination and integration at the operation level, with difficulties linked to multiple hierarchies inside healthcare organisations (nurses will not accept physicians as their bosses, and vice versa).

These problems are becoming more and more apparent to analysts and practitioners. For instance, «during the 1980s, a moratorium on new 'tribes' was called for in the USA by which

time over 50 had gained official recognition. Current thinking in educational circles is centred on interprofessional learning» (Black, 2004: 1).

The two main moves to cope with the problems discussed so far refer to competition policies and skill-mix approaches.

Health professions have to be analyzed with a cost-benefit approach, that is, it is necessary to assess the gains that society can get from the existence of professional regulation and compare them with the welfare losses derived by lower competition. The same assessment should be made on the number of actual professions, wondering if any aggregation between different professions (some of which are really small) could help to get a more flexible and efficient labour market.

The second move is towards skill-mix approaches, which explicitly recognize the possibility – and often the suitableness – of shifting or overlapping competences between health professions. Key concepts used in this long-running debate are – with different nuances – horizontal or vertical substitution, task transfer, delegation, supervised roles, etc. (see for instance Nancarrow and Borthwick, 2005).

In general, for many countries a promising approach seems to have less and broader professions, more overlapping with each other (De Pietro, 2005a: 76-7).

Professional ethics and the clinical needs approach

When planning workforce, decisions will tend to be based on clinical needs, independently of economic constraints. That is, workforce needs will always been defined in order to assure the best quality services, along with EBM and EBN prescriptions. This, again, is a special feature of the healthcare sector and has a particularly strong capacity to legitimate itself. Nevertheless, this implies increasing problems for financing the system. In fact, the clinical need approach does not recognise the problem of "scarcity" (WHO, 2002: 4), and it thinks that problems of resources – and management – must to be solved by politicians, economists and managers, without any impact on the clinical needs determination. The same, it thinks that every decision of prioritisation or rationing the services provided is responsibility of those other actors.

If we go ahead with this reasoning, it will imply an ever-increasing request of health workers, as the quality of services is positively linked with labour volumes (hours spend in consultations, etc.).

The clinical need approach can be considered a by-product of the professional ethics. The primacy of patient welfare is a principle that dates from ancient time in the medical profession

and in healthcare, restated recently by a well known charter on medical professionalism (Brennan et al., 2002: 244), pointing out that «market forces, societal pressures, and administrative exigencies must not compromise this principle».

This ethics is a positive and necessary element of a sound healthcare system, and the health professions are asked to defend this professional duty. In the same way, that logic has to be reconciled with other necessities of the healthcare systems, first of all the trivial evidence of resources scarcity.

A problem is that the clinical need approach has a strong and self-evident capacity to get legitimisation and consent, while rationing is an extremely difficult political task. So, most times explicit rationing is substituted by implicit rationing managed by clinical staff. In turn, this gives stronger power to clinical staff when dealing with politicians and managers of healthcare organisations. In fact, politicians and managers need the cooperation and the action of clinicians, if they want to avoid the heavy burden of making explicit the rationing actually occurring in the system.

The vested interests: pressures by medical universities and by the professions' system

In few – if any – sectors education and professional activity is mixed together as in healthcare. This fact has led to the development of powerful medical schools inside universities, which play a considerable role in the academic arena, and enjoy relevant budget for research. Medical faculties usually count more professors then other academic discipline, and this means to have more power inside university circles. In turn, this power is used to get more resources inside the academic system. In some cases, this can lead to make pressures to increase the number of new students every year, independently from clinical – or other kinds of – needs.

The professions' system could well have opposite goals, compared with those of medical faculties. In fact, while it is possible that the latter do get power and reputation by increasing the number of students, the former could profit from limiting the access to the profession, in order to enjoy more patients (i.e. clients) for each single professional. In a world, professions could try to exploit the monopolistic rent guaranteed by the State and the legal system. As far as doctors, Bloor and Maynard (2003: 22) point out that workforce «forecasts are made about physicians by physicians, and the process is dominated by physicians». Again, that implies similar patterns for other professions, and an overall picture of fragmented and independent processes, with the indirect consequence of making more difficult to discuss about skill mix and substitution policies.

Vested interests are a structural element of today workforce planning process in the healthcare system. A better understanding of those interests is a key component for effective policies. Moreover, specific interests have to be considered when promoting changes – for instance in terms of skill mix – in order to compensate eventual losses suffered by some categories of workers.

2.5. The Italian case

Many physicians, few nurses?

Difficulties of workforce planning in healthcare become clear when referring to the Italian case. A large number of medical doctors and a limited number of nurses characterize the Italian healthcare system, compared with other western European countries of similar size.
According to the OECD (2008a), Italy in 2005 had 3.8 physicians in 1,000 inhabitants, which is the third highest density after Greece (5.0) and Belgium (4.0) among the 30 OECD countries (Table 2.1)[7]. For nurses, Italy had 7.0 in 1,000 inhabitants, ranking 21st among the 30 OECD countries.

Table 2.1. Practicing physicians and nurses in selected European countries, density per 1,000 population, headcounts.

	Physicians			Nurses		
	1995	2000	2005	1995	2000	2005
Italy	3.9	4.1	3.8	5.2	5.2	7.0 (2)
France	3.2	3.3	3.4	5.9	6.5	7.4
Germany	3.1	3.3	3.4	9.1 (1)	9.4	9.7
United Kingdom	1.8	1.9	2.4	8.1	11.3 (2)	12.3

Source: OECD (2008a).

Notes: (1) 1997 instead of 1995; (2) break in series.

Personnel-to-population ratios are often used for forecast and planning health workers requirements. This is a major issue, because it is difficult to identify a "norm": as Zurn et al. (2002: 25) point out, «norms are often copied from other countries or from international averages and do not fit the situation of a specific country».

[7] Others country at 3.8 in 2005 were Spain and Switzerland.

In any case, Italian ratios differ quite relevantly from other comparable high income, European countries, characterized by similar *curricula studiorum* and similar roles of health professions inside the healthcare sector. Therefore, we could wonder if the Italian situation represents an anomaly that probably implies an inefficient distribution of the investments in human resources for health (for similar conclusions referred to low income countries, see Hongoro and McPake, 2004: 1451).

In Italy the workforce planning for the health professions is based on *numeri clausi* entering the university. Then, once obtained the university degree – and the specialisation, where required – some health professions (notably physicians) require to pass a State exam. Finally, the professionals have to register with the Orders or Colleges, which enjoy legal monopoly over a Province (i.e. for physicians there are provincial orders, for nurses there are provincial colleges, etc.) and are then organised in national federations. So, Italy shows a strong control over the healthcare workforce planning, similar for example to the UK or Québec cases.

The process for defining the *numeri clausi* runs as follows:

- Regions, which are in charge for the whole responsibility of the National Health Service (in fact they have a pivotal role in the system, both for regulating, funding, and managing healthcare organisations), set their workforce need and communicate it to the Ministry of Health (MOH);
- the Orders and Colleges of health professions (or the associations, for those recognized professions without orders or colleges) give their advice to the MOH;
- the MOH sum up the Regions' needs and the professions' advices, decides on the whole numbers, and discuss them together with the Regions in the State-Regions committee;
- the MOH communicates the results of such negotiation to the Ministry for the Education, the University and the Scientific Research (MEUSR);
- the MEUSR passes a ministry decree specifying the *numerus clausus* for each health profession and each university, both at the graduate level, and for specialisation schools (Mastrillo, 2003: 14; Pozzi, 2002: 92-3);
- the universities can decide to reduce or to confirm those numbers, and then they start recruiting the candidates.

Therefore, the actors for setting the final *numeri clausi* are the State (with the MOH and the MEUSR), the Regions, and the Universities. On the premises of the MEUSR has been established a special Observatory for the health professions, with participants from the Ministry

itself, and from all the recognized professions allied to medicine. This observatory is in charge to run analyses and make advice on workforce planning.

Looking at the labour marketplace for physicians, the perceptions and claims look schizophrenic. The national federation of medical orders (FnomCeO) says that in Italy the number of unemployed or underemployed physicians is around 100.000, that is, around 45% of total physicians practicing in the country. At the same times, several articles in mass media and in the professional press claim severe shortages in several specialties.

Table 2.1 describes the recent trends for medical and nursing graduates. After a huge increase in medical doctors started in the seventies, Italy has sharply reduced the inflows in medical schools, so creating demographic imbalances in the age profile of medical staff, with huge cohorts that will retire in the next ten years (Chaloff, 2008).

However, despite that perceived surplus, in the academic year 1997-1998 new entering students in medical schools were 6,462 and in academic year 2005-2006 they were 7,424 (Mastrillo 2005).

Table 2.2. Medical and nursing graduates per 1,000 practicing professionals in selected European Countries.

	Physicians			Nurses		
	1995	2000	2005	1995	2000	2005
Italy	30.8	27.6	28.9	-	20.0 (2)	24.6
France	24.9	20.3	16.7	41.2	37.6	48.0
Germany	50.4	30.7 (1)	-	-	-	-
United Kingdom	37.4	38.6	35.9	-	20.9 (2)	27.0

Source: OECD (2008a).

Notes: (1) break in series; (2) 2002 instead of 2000.

For nurses, current estimates produced by the profession and literature set in 40,000-100,000 headcounts the actual shortage in the Italian healthcare system, that is about 11-28% of registered nurses , and Table 2.2 shows numbers of graduates that were not sufficient to replace retiring colleagues both in 2000 and in 2005.

To have a better understand of the planning process leading to define the *numerus clausus* for nursing education, we can look at the process for nurses entering the university in fall 2005. We find relevant differences in the estimates and forecasts produced by different actors. In fact, Regions had set in 15,186 their whole requests; the national federation of provincial colleges of nurses (IPASVI) had suggested 17,200, the MEUSR has finally decided for 12,740, and the universities have confirmed that number (12,740) (Mastrillo, 2005: 32-3). In other words, the

numerus clausus is 20% less than the Regions' requests and 26% less than the profession request.

For other health professions those differences are even sharper. For radiology technicians (Mastrillo 2005: 32-3), the Regions' request was of 1,651, that is 27% more than the 1,300 finally decided by the MEUSR, and the profession suggestion was 970, that is 25% less than MEUSR's decision (the universities confirmed 1,300). The yearly turn over is about 1,050. It is useful to notice that the 1,651 required by the Regions is 70% more than the 970 required by the profession.

The case of nurses and aides

Another interesting way to look at those planning difficulties is to consider the physician-nurses-aides distribution inside Italian hospitals. The hypothesis is that this distribution, which is at the core of hospital services, should show similarities in hospital running similar activities. However, this is not at all the case.

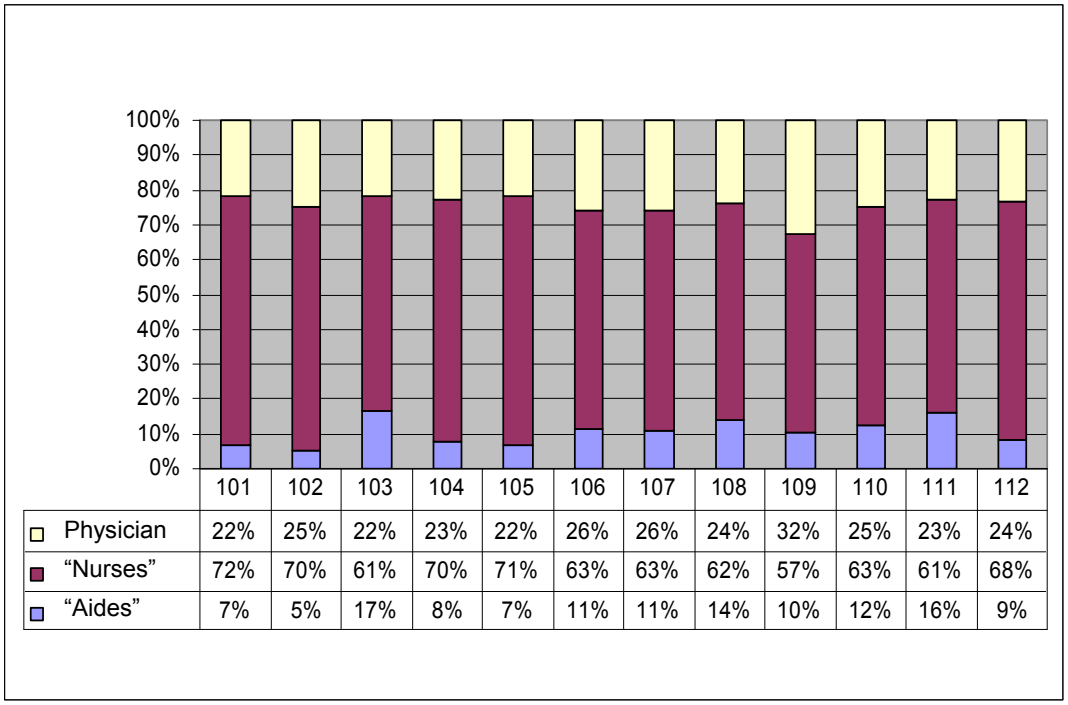
Preliminary results of an on going study show that hospitals running similar activities do actually have distributions that are substantially different. For the analysis, we identified eight formal professional profiles existing in the Italian healthcare system and three occupational groups:

PHYSICIANS	"NURSES"	"AIDES"
Physicians	Nurses with coordination responsibilities	Socio-health workers with additional training
	Nurses	Socio-health workers
	Nurses without university degree	Technical operators for assistance
		Aides

The hospitals analysed are all the public hospital of an Italian average Region, grouped in twelve Local health authorities (LHAs), each running one ore more hospitals.

Figure 2.1 shows the personnel of the three classes above defined working in hospital facilities at the end of 2003. Figures are for headcounts of employed personnel, and not full time equivalent, but this does not represent a major problem because in Italy most contacts are full time. Note that physicians working in the Italian public hospitals are employed staff.

Figure 2.1. Hospitals personnel employed by the 12 LHAs of an Italian Region, 2003.



	101	102	103	104	105	106	107	108	109	110	111	112
Physician	22%	25%	22%	23%	22%	26%	26%	24%	32%	25%	23%	24%
"Nurses"	72%	70%	61%	70%	71%	63%	63%	62%	57%	63%	61%	68%
"Aides"	7%	5%	17%	8%	7%	11%	11%	14%	10%	12%	16%	9%

The differences in composition are evident:

- physicians vary from 22 to 32% of this selected staff, showing a difference of 45%;
- "nurses" vary from 57 to 72%, showing a difference of 26%;
- "aides" vary from 5 to 17%, showing a difference of 240%.

This, in turn, means that:

- the "nurses"/physicians ratio varies from 1,75 to 3,25, showing a difference of 86%;
- the "nurses/"aides" ratio from 3,9 to 13,9, showing a difference of 256%.

Also if LHAs can serve population with different composition, they can have a slightly different epidemiology, however LHAs are much comparable in their nature and activities. Therefore, the differences found in the occupational mix remain strong and unexplained on rational bases.
Another finding of the analysis shows that those differences tend to persist over the last years in the recruitment choices made by the LHAs. In other words, LHAs with high "nurses/"aides" ratios, tend to confirm their behaviour, instead of reversing them by hiring more "aides".
Moreover, those differences become even greater when the analysis:

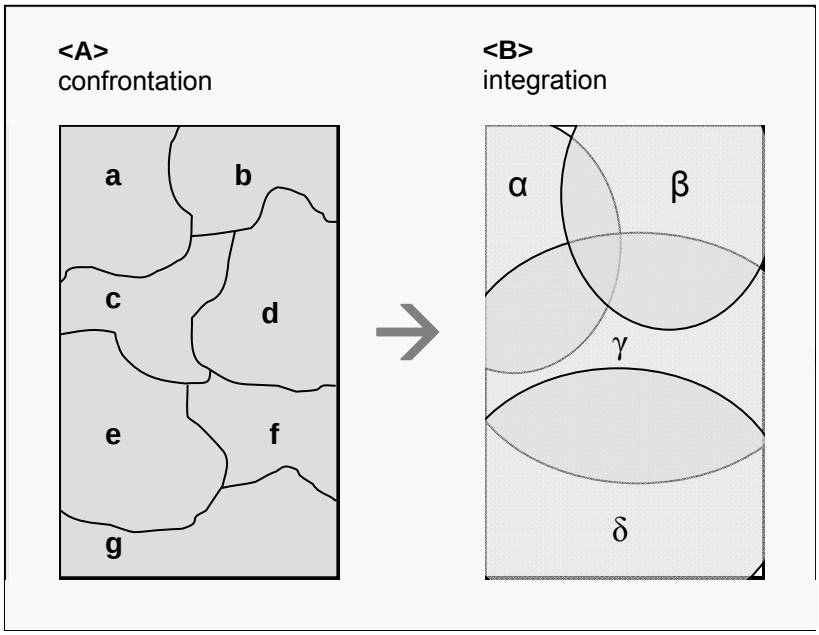
- is carried on with observations for each hospital run by the twelve LHAs of the Region analysed;

- considers the internal composition of the classes “nurses” and “aides”, based on the different professional profiles included within those labels.

All those findings make clear that, despite the detailed regulation and the specific investments in education *curricula* for each of those work profiles, current practices show a much higher substitution between profiles than codified in rules and laws.
Moreover, those reported variations do not depend neither from differences in regulation (in the Italian NHS the relevant regulatory levels are Regions and the State), nor from differences in labour market (in the Region where the study is conducted, there are three main medical schools and several universities releasing nursing degrees, that provide the entire regional territory with a reliable flow of health professionals).

This analysis, carried for the Italian public hospitals, does not confirm the codification of competencies and responsibilities guaranteed by the system of the healthcare professions, that is, the very hearth of workforce planning in healthcare.
If we consider the relevant amount of debate, regulation, and investments in specific education for those different professional roles, that could well hide problems in terms of efficiency. Maybe, it should be better a simpler system, without so many codified differences, but with broadband classifications. That is illustrated in Figure 2.2, where <A> represents the situation as it is currently designed by the Italian professional regulation. This situation does not permit any inter-professional integration, and every one of the many professions defends its territory. In the <B> situation, while recognizing special areas of competences for each profession, there are less professions, overlapping areas between them, and more flexibility.

Figure 2.2. Inter-professional confrontation and integration.



Source: De Pietro (2005a: 76-7).

2.6. Concluding remarks

Literature and experience tell us that healthcare workforce planning is a necessary but difficult activity. Public debate has developed in last years, but there are still many ambiguities and different positions.
Here we will give only some brief concluding remarks.

The first problem is about trust in the market rationality and, on the other side, on planning possibilities (Jacoby and Meyer, 1998; Feldstein, 2002; Grumbach, 2002). Market failures in healthcare explain public intervention and workforce planning. Nevertheless, it is not clear if planning gives better results – in terms of absolute shortages, economic efficiency, costs control, etc. – than the invisible hand of market forces. Of course, answers depend on personal values and, in any case, the effective equilibrium is in between the two extremes.

Second, the internationalisation of health labour market raises difficulties for a national workforce planning. This is especially true for workforce exporting countries, whose attempts to retain skilled workers have often failed, by now. This globalisation of the healthcare workforce has led to relevant efforts by the international institutions – WHO, ILO, IOM, WB, EU, OECD,

etc. – to standardize and gather data, to discuss global policies, do develop conduct codes for regulating the international flows and protect less developed countries from brain drain.

Third, much ambiguity is about the notions of shortage and surplus. Economic theory, which usually deals with those subjects, suggests using the notion of (relative) scarcity. This could improve the debate. In any case, many definitions and measures of scarcity exist, and that could add frustration in research and policymaking (WHO, 2002; Zurn et al., 2002).

A fourth difficulty can refer to political cycles. Their length, usually limited to three-to-five years, can partially explain the relatively short-term view that has so long prevailed in workforce planning, where longer approaches could lead to better results.

A major issue remains the need (or clinical need) approach. This is quite specific of healthcare, and must be considered as a positive element of the debate. By now, the problem has been that many times the clinical needs approach has been the main – or only – element of such debates, leading to misunderstandings, hypocrisies, and economically irresponsible behaviours between the various stakeholders involved in the policy arena: clinical professionals, politicians, regulatory agencies, etc.

Planning difficulties highlight a special feature of the healthcare system: i.e., the pivotal role of health professions in running the systems and in defining the labour division. Codified professions do form separate labour markets and do hinder – if not forbid – the shift of competences and activities between different professions. Moreover, this leads to separate workforce planning for each profession, with the consequent need of a supplemental coordination effort and the final result of making difficult to discuss or envisage possible skill mix change.

This last point is particularly relevant. It refers to the past and future developments of the professions. In most countries, the number of recognised health professions has grown in last decades, often accelerating in the very last years. In several cases, this was the result of actions and pressures explained with particular interests, more then with the general interest and public protection (Davies, 2004: S55-6). It is now time to assess the structure of the system of professions, and to explore possibilities for a reduction of their number and for innovative skill mix changes.

3. THE MIXED EVIDENCE OF NURSING SHORTAGE IN ITALY

3.1. Object and goals

In the last decade, the Italian healthcare system has experienced for the first time a major perceived nursing shortage, receiving widespread attention by mass media.

In particular, the IPASVI (Italian federation of nursing colleges)[8] and the mass media report a shortage of 60,000-100,000 nurses in the Italian healthcare system (for example, Corriere della Sera, 2006). In order to appreciate this claim, it should be noted that registered nurses in Italy at the end of 2007 were 360,874, that registration with the Nursing College is mandatory for practicing, and that not all registered nurses are actually active as nurses. This makes clear that, if correct, the claimed shortage – which ranges from 17 to 28% of registered nurses today – would represent a major and structural constrain to the healthcare provision in the country. So, it is worth to see how the claimed shortage is usually quantified and to look at its main characteristics.

Instead of discussing the various possible definitions and causes of workforce imbalances (for a review, see Zurn et al., 2004), here we will focus on perception and tentative explanation of nursing shortages in Italy. Here, measures of the shortage refer both to national and comparative analyses.

National data refer to:

- the gap between official staffing needs of NHS Local Health Authorities and Hospital Trusts[9], and the actual staff, totalling around 25,000[10];

[8] The Federazione dei Collegi IPASVI (www.ipasvi.it) represents Italian nurses on a national basis. The national Federation coordinates the Provincial Colleges, non-profit bodies established by law in 1946 and 1950. In Italy there are 100 IPASVI Colleges, the first ones being established in 1954.

[9] For a description of the Italian NHS structure, see France et al. (2005). Here and elsewhere, staff data is given in terms of headcounts.

[10] This figure does not include possible gaps for private organisations (e.g. private hospitals, outpatient facilities or nursing homes run by the Municipalities) and other services outsourced by NHS public organisations.

- the gap between the requests done each year by IPASVI when the Ministry of Education has to define the *numerus clausus* for nursing education[11], and the actual number of students who each year successfully attend the courses. In the period between the mid-eighties and the mid-nineties this gap has summed up to around 35,000[12].

International comparisons have usually considered Italy relatively poor in nurses. This was the case until the 2006 report by OECD (2006) and the 2007 report by WHO (2007). There, the number of practicing nurses per 1000 inhabitants in Italy was reported to be 5.4 in 2003, while the OECD average was around 6.9. Thus, in order to align with the OECD average, Italy would had to add further 70,000 nurses.
However, those analyses have several weaknesses, discussed in next section. Section 3 presents shortly the possible determinants of nursing shortage. Sections 4 and 5 present policy and managerial responses to shortage, respectively. Section 6 presents the experience of a major public hospital coping with the shortage in Milan. Finally, section 7 presents some conclusions.

3.2. The nursing shortage (or emergency): a fuzzy concept

1. A first indicator often used for assessing – partially – the nurses' shortage is the gap between the official staffing needs of public NHS organisations and their actual staff. However, several researches have shown that official staffing needs are usually the result of strategic behaviours aimed to strengthen the negotiating power when dealing with the regional government (that is in charge of governing and financing the regional healthcare service), or the consequence of the history of the NHS organisations, more than a reliable measure of workload (Palese et al., 2001: 205 and 209).

[11] *Numerus clausus* ("closed number" in Latin; plural *numeri clausi*) consists of setting a limit to yearly entrances into university bachelor courses. In Italy *numerus clausus* is adopted for healthcare professions and implies an exam for selecting new students. In sectors different from healthcare, in the Italian universities *numerus clausus* is rare.

[12] The most recent available example refers to the academic year starting in autumn 2008: IPASVI suggested a *numerus clausus* of 21,973 but the Ministry of education set 14,635.

2. The second indicator used for assessing the shortage is the gap between the *numerus clausus* proposed by IPASVI for nursing education, and the number of students that actually attended courses between mid-eighties and mid-nineties.

In Italy several actors enter into the process leading to identify *numeri clausi*. The need of health professionals is initially set by Regions and then by the Ministry of health, «once listened at the professional bodies» (depending on the profession, associations, colleges, or orders). Then, the final decision is taken by the Minister of education, who signs a decree stating *numeri clausi* for each profession and university.

So, IPASVI represents only one of the actors involved in the process, and cannot be considered the only rational interpreter of staffing needs for the system. So, the proposal done by the profession can be criticised as self-referential.

3. A third major critique refers to comparative analyses. OECD (and WHO) reports have traditionally considered the Italian healthcare system quite poor in nurses. So, along this reasoning, Italy should increase its nursing labour force of 70,000 units to reach the OECD average density. However, it seems very dangerous to draw normative indications from this positive analysis. Comparative analyses require prudence in their interpretation, because of differences in the institutional features of the healthcare systems, the professional and labour market regulation, etc. Moreover, specific difficulties refer to the different contents of professions sharing the same name in different countries, the definition of «practicing» professionals, and the reliability of data collection, which vary from one country to another (Bloor and Maynard, 2003; Hall, 2005).

Also if the OECD average nurses' density represents a very useful reference for comparative purposes, the variance of this indicator makes clear its heterogeneous contents among member States. According to OECD data, in 2004-2005, Turkey and South Korea had less than 2 practicing nurses per 1000 inhabitants, while Norway and Ireland enjoyed ratios above 15 per 1000 population (OECD, 2007a). Such a wide range of situation requires extreme prudence in drowning normative conclusions.

Another major remark refers to the number of health professions recognised in each country and the labour division among them. The high number of health professions in Italy (thirty) could in fact lead to a nursing profession characterised by more specific and narrower contents than in other countries. If this is true, this is a reason for having a lower nursing density.

A more reliable exam needs to consider the whole bulk of health professions, as well as the relations among them. For instance, international comparisons have traditionally considered Italy rich in physicians, and the Italian medical federation often reports unemployment or

underemployment for its members. This could explain a slower pace of task shifting from doctors to nurses (Dent, 2002: 156), relaxing the need for nurses or other allied professions[13].
Finally and most important, the very last releases of OECD databases show a significant correction of nursing density in Italy. Data published in 2007 (OECD, 2007a) give an estimation of 6.7 practicing nurses per 1000 population in 2004 and 7.0 in 2005. So, the gap compared with the OECD average has virtually disappeared, as well as the claimed shortage. This is the consequence of a new and broader definition of nurses, which passed from 312,377 in 2003, to 386,000 in 2004, and 405,000 in 2005 (note that in the same period registered nurses – practicing or not – were 331,699 in 2003, 338,245 in 2004 and 342,273 in 2005; IPASVI 2008a). The OECD methodological notes explain these results. For the period 1993-2003 data were provided by the Italian Ministry of Health and covered the entire nursing population. Since 2004, new data provided by ISTAT (the Italian National Institute of Statistics) and based on a sample survey have been used. Attention should also be given to the deviation from the standard definition of «practicing nurse» used by OECD. While the standard definition includes «salaried and self-employed nurses delivering services irrespectively of the place of service provision», Italian data before 2004 included only nurses salaried by the public organisations of the NHS or by the private hospitals in contract with the NHS. So, nurses working in health facilities outside the NHS or self-employed nurses were excluded.

4. To confirm the difficulties of interpreting inter-professional divides or relations, we can look to the relevant case of ratios between nurses and doctors. Table 3.1 shows the average ratios between nurses (numerator) and doctors plus dentists (denominator) among NHS employees in the Italian regions at the end of 2004. The table shows a wide variance among average regional values and despite the similar services provided in the whole country by the NHS. Major differences are confirmed also when restricting the analysis to public hospitals and excluding outpatient services. Those differences are difficult to explain on rational bases. Rather, ratios are at least partially the result of different histories and local traditions, as confirmed by the high ratios experienced in the North-East[14]. This is difficult to reconcile with the professional

[13] For example, nurse or midwife prescribing is not permitted in Italy.

[14] Friuli-Venezia Giulia, the provinces of Trento and Bolzano, as well as Veneto, developed their healthcare and social systems during the Austrian-Hungarian Empire, before joining Italy between 1860 and 1918.

regulation, which in Italy is defined by the State (and not by the Regions) and is based on the idea of distinct tasks for each health profession, hindering substitutability between them[15].

Table 3.1. Ratio (Nurses / Physicians+Dentists), 2006.

Region	Among total NHS staff	In public hospitals
Piemonte	2.46	2.30
Valle d`Aosta	2.28	1.99
Lombardia	2.80	2.57
Prov. Aut. Bolzano	3.23	2.87
Prov. Aut. Trento	3.08	2.99
Veneto	3.35	2.95
Friuli Venezia Giulia	3.15	2.84
Liguria	2.79	2.58
Emilia Romagna	2.97	2.59
Toscana	2.88	2.47
Umbria	2.56	2.26
Marche	2.78	2.55
Lazio	2.15	2.07
Abruzzo	2.37	2.58
Molise	2.24	1.99
Campania	2.09	1.91
Puglia	2.20	2.19
Basilicata	2.52	2.57
Calabria	1.98	2.09
Sicilia	1.85	1.79
Sardegna	2.17	2.13
Italia	2.51	2.33

Source: Ministero della Salute (2008).

5. Another aspect that challenges the real relevance of the nursing shortage refers to the commercial difficulties found by some agencies for temporary work trying to sell nursing services to hospitals and other healthcare organisations. In fact, motivated by the shortage debate, several agencies entered this market, but then they often realised that the claimed

[15] This is the result of legal monopolies given to professions, minimum staff requirements set by authorisation or NHS accreditation procedures, etc.

shortage does not lead to a demand of nurses by even the same organisations which perceive it (De Pietro 2005b: 439).

A possible explanation for such a situation needs a better focus on the demand and the supply of nursing work. Here, two main issues become relevant:

- the healthcare organisations could refuse the services of the temporary work agencies because they are expensive[16]. Public NHS organisations have been used for years to apply the pay levels set by the national collective contracts and they find culturally difficult to overcome those levels. In turn, this means that there is not an absolute nursing shortage but, rather, a relative shortage explained at least in part by legal and cultural rigidities in pay policies of public NHS organisations;
- the healthcare organisations could be looking for special competences or, probably, long-last relationships with nurses. Again, this being the case, a constrained nursing shortage – rather than an absolute shortage – arises. Moreover, this increasing attention given to long-lasting staff is coherent with the ongoing professionalisation of nurses and with the development, within each organisation, of special solutions for controlling the professional behaviours (for example implementing clinical pathways), improving the patient's safety, etc. (Lega and De Pietro, 2005).

6. Last but not least, a key element for understanding nursing shortages is the "clinical need" concept (Feldstein, 1963: 25-28). The clinical need defines the number of professionals needed in order to guarantee the best services in terms of clinical safety and effectiveness, based on evidence-based medicine and nursing. Clearly, this clinical need approach does not have any concerns for allocative efficiency (De Pietro and Tereanu, 2005).

This approach influences the staffing criteria for authorisation and accreditation of healthcare facilities. However, if adopted without adjustments, the clinical need approach implies to neglect organisational or economic constraints (Feldstein, 2002). The clinical need is defined by the health professionals, without considering its consequences in terms of costs. So, no efficiency or cost-benefit analyses apply.

[16] According to the Italian legislation, temporary workers provided by agencies get the same pay than the employees of the healthcare organisation using them. Therefore, this latter organisation will incur both the costs of the pay recognised also to its own salaried employees, and the cost of service provided by the agency.

3.3. Nursing shortage determinants

In the previous section we discussed the difficulties of defining and measuring nursing shortages. However defined, some shortage – maybe "relative" or lower than claimed in media – exists in the Italian healthcare system. Its possible explanations are well known in the literature, grounded in several disciplines such as management (e.g. Barron and West, 2005), economics (e.g. Antonazzo et al., 2003), sociology (e.g. Heitlinger, 2003), occupational medicine (e.g. Camerino et al., 2004), nursing (e.g. Janiszewski Goodin, 2003; Newman and Maylor, 2002), and economics (e.g. Folland et al., 2001; Feldstein, 2002; Phelps, 2003).

Analyses usually look at the factors behind the decision of entering the profession or early exits, of decreasing the number of weekly worked hours, etc. Most cited causes – not only for the Italian case – refer to:

- low pay levels coupled with pay rigidities that hinder the smooth adjustment of wages on the labour market. In Italy wages are basically set by national collective work agreements and only limited regional or organisational pay adjustments are permitted[17];
- a professional status still characterised by some traditional features of nursing, such as the female predominance, the vocational ethos, the dominance by medical doctors, etc.;
- labour conditions, often characterised by night shifts, high emotional charge (with risk of burning-out), increasing pressures by the employer and its hierarchy, etc.;
- low substitutability among health professions, forbidding or hindering a flexible utilisation of the workers available inside the healthcare organisation or in the local labour market;
- changes in healthcare needs and demand by patients and their families, explained by the increasing age of the population, the increasing prevalence of chronic diseases, etc.;
- the crisis of the traditional family and the increasing participation of female population to the formal labour market, leading to an increase in the demand for professional nursing services.

Other two special reasons also explain the nursing shortage in Italy.

A first reason is represented by recent reforms requiring a higher and longer education for entering the profession (see IPASVI, 2008b and 2008c). Since 2000, nursing education has been

[17] This leads to a much more severe shortage in the northern (richer) regions, where the cost of living is higher, the average pay levels in the broad system are higher, and the unemployment is lower, than in the southern (poorer) regions. Because the nurses' wage is set at the national level, it will be much less appealing in the north, leading to low supply and, thus, a shortage on the labour market.

fully incorporated in the faculties of medicine of the university system, and entering the profession now requires a bachelor degree. Moreover, in the last years, many universities have started master and PhD programmes in nursing. As a consequence, in the first years following those innovations, the pace of entries into the procession has temporary slowed down[18] and a cohort of .

A second reason for nursing shortage can be monopsony (Phelps, 2003). In Italy most nurses are salaried staff of the NHS. Monopsony leads to wage levels lower than in competitive market, so the shortage could be a consequence of this strong concentration of the labour demand (Folland et al., 2001)[19].

3.4. Policy responses to the shortage

Policy measures for addressing nursing shortages can be developed in order to increase the number of worked hours per active nurse; to delay the exit from the profession; to call back early exits; to increase the number of young people applying for nursing education; and to limit abandonment during the bachelor programmes. Moreover, when considering the international labour market, shortages can be reduced by recruiting nurses abroad or by retaining national ones from leaving the country. Further measures include the efforts to use nurses on an effective way, focusing their jobs on the core tasks of the profession and allocating administrative, support or maintenance activities to other professional groups (McKee et al., 2006).

This section will present some policy measures influencing the Italian labour market or the professional system, while the next section will deal with managerial measures adopted by healthcare organisations. In particular in this section we will consider:

- the national process for defining the *numerus clausus* for bachelor in nursing;
- the current efforts to change the division of work among the health professions;
- the changes in work conditions set by the national collective agreements valid for the NHS salaried staff;

[18] For example, the reform of 1999 introduced the three-year bachelor, with an increase of one year compared with the previous two-year university degree. Consequently, a one-year cohort inflow was delayed by one year.

[19] The analysis of monopsonistic labour markets was initiated by Archibald in 1954 and nursing soon became a classical example for it (Yett, 1970; Hurd, 1973; Link and Landon, 1975). Recent contribution, however, sow mixed results and suggest that «nursing should not be held up as a prototypical example of monopsony» (Hirsch and Schumacher, 2004).

- the attempts of – and the constraints to – foreign recruitment.

1. Table 3.2 shows the progression of registered nurses in Italy since the establishment of the colleges in the mid fifties. Numbering 23,720 in 1956, registered nurses overcame 50,000 in 1974, 100,000 in 1982, and 200,000 in 1992, reaching 361,000 in 2007 (IPASVI 2008a)[20]. Those data confirm a major long-term increase that accompanied the development of the Italian healthcare system.

Table 3.2. Registered nurses, 1960-2005.

Year	Registered nurses
1960	25,408
1965	29,487
1970	37,259
1975	67,973
1980	83,277
1985	137,449
1990	183,734
1995	286,386
2000	319,123
2005	342,273

Source: IPASVI (2008).

In recent years this effort has been sustained by the increase in the *numerus clausus* for entering bachelor programmes, from 10,135 for the academic year 2000-2001, to 13,445 for 2005-'06. Moreover, the ratio of students who, once passed the exam, confirmed their enrolment with the bachelors, increased from 82.3% to 85.5% in the same years, also supported by grants and other financial aid offered by some Regions in order to increase the appeal of nursing education.

2. A second policy for coping with the nursing shortage refers to the improvement of the competences of the support staff. This has made possible a gradual shift of many tasks from nurses to support staff.
The main action was the definition of a new figure, the OSS (Operatore Socio-Sanitario, or socio-health worker). So far, this attempt to devote nursing competences to the core activities of

[20] The number of registered nurses also reflects the consequences of some change in the Italian professional regulation, that over time re-labelled several health professions.

the profession, did produce limited effects, while perspectives are good. A first problem is that support staff already employed was offered the possibility to attend special courses in order to become OSS, but the quality of those courses, as well the quality of the students' selection, were often questioned. A second problem is the organisational and the individual resistance to implement such a task shift, also because of the mixed trust that nurses devote to OSS. Another problem, maybe more important for the future, is that many activities run by nurses cannot be easily split in simpler activities and then distributed to different professional groups. In surgical wards, for example, short stays and intensive technology make difficult to physically and temporally separate the tasks that can be given to OSS.

Another possible measure for reducing the nursing shortages is to increase the substitutability among health professions with similar education or activities. Unfortunately, the Italian healthcare system looks increasingly crowded of separate professions, claiming for their legal monopolies and hindering inter-professional substitutability (De Pietro, 2005a).

3. A third policy sphere is about work and pay conditions. Also in this case, several responses were implemented, along with the professionalisation process.

A first major attempt was in 2000, when a general increase in pay levels for the salaried nurses of the NHS was decided. This decision, based on the perceived shortage of nurses, led to claims by the other health professions that traditionally had enjoyed the same work status of nurses (laboratory technicians, radiology technicians, midwives, physiotherapists, etc.). Unfortunately those claims proved successful: the pay increase was recognised to all professions "similar" to nurses, so the premium for nurses was cancelled.

A second measure gave to nurses and other similar health professions the possibility to enter the management of the NHS organisation.

Furthermore, since 2002 NHS organisations can buy extra-time activities provided by their employed nurses. The law n. 1/2002 recognises to nurses employed by the NHS the possibility to carry out private practice within the premises of the organisations they already belong to, in order to guarantee through «additional services […] the healthcare standards in wards and in the operating theatres»[21]. This law includes also the possibility to re-employ nurses who had retired and sign contracts for a limited period of time.

[21] NHS nurses also asked to run private independent activities inside the NHS facilities (as already permitted to doctors; see De Pietro, 2006a), but did not obtain it.

4. The last policy action worth to remember refers to recruitment from abroad. In this sense, Italy is much less attractive than other countries with stronger immigration tradition, such as the United Kingdom, France, or the United States (see for instance Pittman et al., 2007 and the following articles). Major obstacles for international recruitment by the Italian healthcare systems are: the language difficulties (Italian is almost not spoken outside the country); the difficulties in the immigration bureaucratic procedure; the need of recognition of education and degrees by the Italian ministry of health; and, for NHS organisations, the law requiring the citizenship of the European Union in order to become life-long salaried staff.

However, the number of foreigner nurses registered with the colleges has increased during the last years, from 2,612 in 2002 (37% from Rumania; 16% from Poland; 13% from Tunisia; 8% from Peru) to 6,739 in 2005 (30% coming from EU-15 countries)[22], often supported by the agencies for temporary work (De Pietro, 2005b). Despite the low absolute number, the incidence is higher in young cohorts.

Finally, if the number of foreign nurses will continue to increase in the future, then the Italian nursing profession, the NHS, as well as the healthcare organisations, will be asked to develop measures to compensate for the «brain drain», i.e. the reduction in human resources for health available in the origin countries (Nullis-Kapp, 2005)[23]. Until now, those issues have raised very little debate in Italy.

3.5. Managerial responses to the shortage

The nursing shortage can also be addressed by managerial measures. Palese et al. (2001: 206) reviews actual measures taken by eleven Italian NHS organisations operating in the north-eastern Italian Regions. The list below ranks the managerial measures by prevalence among the 11 organisations, starting from the most frequent[24]:

- temporary merge of wards in low peak months;
- increased utilisation of support staff (aides, OSS);
- nurses mobility between the services of the organisation;
- reduced utilisation of nurses in administrative jobs;

[22] According to many sources, the foreign nurses registered with IPASVI are much less than the nurses not (yet) registered.

[23] This problem has recently led to proposals and experiences of «ethical recruitment» (Martineau et al., 2004).

[24] The analysis has been repeated two years later and the results are in Palese (2004).

- adoption of more efficient models for shifts;
- elimination of redundancies or inefficiencies in activities run by nurses;
- nurses paid extra-money by their employers for additional activities run extra-time;
- closing down wards and reduction of the hospital's bed capacity;
- purchase nursing activities from external professionals;
- paying nurses for substituting short absences of colleagues, instead of over-staffing;
- lower nursing assistance at night;
- short-term recruitment of foreign nurses;
- delaying of continuous nursing education programmes;
- accommodation facilities for nurses.

In some cases these measures show an organisational "malaise", with even severe decisions such as to close down wards, reduce the services provided, or postponing training initiatives. But most measures reflect a better utilisation of this scarce resource, with a critical assessment and reengineering of work processes, a more efficient task distribution between the different professional groups, the mobility or pooling of some resources, etc.

Examples of other possible measures not listed above include long-term incentives through schemes of capitalised pay in order to increase retention, develop a work environment improving the work-family balance, etc. Some of these measures will be discussed in the next section.

Finally, some healthcare organisations have tried to develop – or to confirm – relationships with the universities and to host students attending the bachelor programmes in nursing. This often gives an advantage in the recruitment process, because students already know the organisation and its activities, they have already arranged accommodation, etc.

3.6. The experience of a public hospital in Milan

This section describe the experience of the «Ospedale Niguarda Ca' Granda» (www.ospedaleniguarda.it), a public Hospital Trust of the NHS based in Milan. The analysis was conducted in 2006 through several meetings with the HR manager and the head of the nursing service, ad with the examination of relevant documents. The hospital has around 1,000 beds, 55,000 inpatient stays a year, and 4,300 salaried staff (1,600 nurses). It is one of the two largest hospitals in Milan. It has also a contract with the faculty of medicine of the State University of Milan, hosting 70 nursing students for internship every year.

While this single case cannot represent the bulk of experiences done in the NHS, however it deserves attention because of its central role in the metropolitan area of Milan, a very competitive labour market for health professionals.
The measures for coping with the nursing shortage can be grouped in:

- external solutions, looking at the labour market;
- internal HR policies, such as new pay or career paths.

1. The hospital has used for years short term contracts and other flexible arrangements, useful to overcome some rigidities of the Italian public service regulation[25]. Term contracts have also been used for a group of Spanish nurses, working on 8-months renewable contracts. The project was managed in cooperation with the Provincia di Milano (http://www.provincia.milano.it), the EURES (http://www.europa.eu.int/eures), the INEM (http://www.inem.es), and the Ministries of Health of Italy and Spain. The recruitment was run in Madrid by the head of the nursing service of Niguarda Hospital. The project also managed the administrative requirements for practicing in Italy (recognition of the diploma; immigration process; enrolment with the IPASVI) and provided additional services, including a three-week course of Italian language, honour loans, and advice for accommodation. Once in the hospital, a tutor was assigned to each nurse and an orientation programme has been run. Finally, the Spanish Ministry of Labour recognised the work in Milan as experience valid for the Spanish public service careers.
Other nurses working in dialysis and operation theatres have been contracted with special arrangements.

2. In addition to this exam of the external labour market opportunities for overcoming the nursing shortage, other measures refer to internal management. Here we highlight five of them that represent – with the exception of the last one – innovative efforts to overcome the strict bureaucratic regulation of NHS staff.
First, the hospital has paid their own salaried nurses for extra-hour activities with a higher fee (gross wage of 30 euro per hour) than the normal overtime (14 euro).
Second, a special mechanism for rewarding nurses remaining with the hospital was implemented. The three-year programme started in 2005 and gave some extra-pay for staff with

[25] Standard appointments in the public service – included the NHS – are full-time, long-life, after passing a public selection. In general, bureaucratic approach still remain strong in personnel management, despite the major reforms adopted since 1992 for the NHS management (Anessi Pessina and Cantù, 2006), and since 1993 for the Italian public service (De Pietro, 2005a).

law absenteeism rates. Moreover, it increased the incentive for nurses remaining till the end of 2006 and increased again for nurses remaining till the end of 2007.

Third, the hospital has divided work settings (wards, ambulatories, day surgery, operating theatres, emergency room, etc.) in four levels of professional or organisational burden, based on criteria such as the predictability of patients' admissions, the request of night shifts, the competences required (for instance in ICUs)[26]. Each level has been rewarded by a special indemnity for nurses.

Fourth, career opportunities have been offered to senior nurses through the recognition of special roles, such as «tutor for new entries» or case manager. This opportunity is given to around one tenth of nurses.

Fifth, the hospital introduced a certified nursing case history as a part of the medical record of the patient. This led to a critical assessment of the activities run by nurses, so it was easier to identify the tasks that could be delegated to support staff. Consequently, a new work organisation was adopted, with a better focus of nurses on their core professional tasks.

3.7. Conclusions

1. The consequences of the last professionalisation phases of Italian nurses on the labour market are still unclear[27]. The stronger professional status could lead to a parallel improvement in the social one in turn increasing supply for nursing education and practice. However, labour organisation has proven resistant to change, with a claimed gap between education content – and students' expectations – and the actual content of nursing work. Moreover, some characteristics of the nursing work such as night shifts will remain as structural obstacles to the recruitment of new professionals. So, early exits or part-time arrangement could continue or even increase, reducing the nurses' supply.

Similar changes are also occurring in other health professions, so it is difficult to image how the Italian health professions' system will look in ten years. In turn, these changes will be accompanied and influenced by managerial responses, adapting the internal organisation to the new equilibriums of the professional system.

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[26] It should be noted that in Italy that the NHS collective labour agreements do not recognise neither special competences nor different pay levels for nurses employed in intensive care units, in emergency room, in the operating theatres, in dialysis units, etc.

[27] For brief information about the process of professionalization of Italian nursing, see Dent (2002). For the interactions with the medical professions, see Tousijn (2002: 734).

2. A clear trend in the Italian nursing is toward an increased differentiation inside the profession itself. This is confirmed by managerial practices, trying to overcome the regulatory homogeneity of the profession and national agreements setting common standards for all nurses, with poor attention to individual specialisations, the different burden of some work settings, etc. In this sense, the university education has increased the average knowledge of Italian nurses and has provided, with master and PhD programmes, opportunities for differentiation inside the profession, both in clinical practice (e.g. oncology, paediatrics, etc.), or in specific organisational roles (case manager, risk manager, team coordinator, etc.). So, the expression «nursing shortage» will leave room to differentiated situations for each sub-profession.

3. The perceived nursing shortage and the recent changes in health professions' regulations have led to innovations in recruitment and retaining polices. This confirms the results of the reforms that, started at the beginning of the nineties, have deeply changed the Italian NHS, developing managerial practices along with the more traditional bureaucratic and professional dominance of the system (Marcon and Panozzo, 1998; Anessi Pessina et al., 2004; Anessi Pessina and Cantù, 2006; Mattei, 2006).

4. The claimed nursing shortage pushed several temporary work agencies into the healthcare industry, with special investments for nursing recruitment abroad. So, for the first time in its history, the Italian healthcare system can benefit from structured international recruitment processes managed by the agencies that opened recruitment branches abroad, manage the procedures for the recognition of diploma and other degrees, support the professionals in sustaining the IPASVI exam of «Italian language for nursing», etc. (De Pietro, 2005b).

5. The claimed nursing shortage in Italy is yet an ambiguous phenomenon, requiring more reliable data and deeper analyses. So, despite the loud debate running for years, basic information are yet needed to develop adequate policy answers to the perceived problem. The article also presented some managerial measures implemented in the Italian healthcare organisations. Unfortunately, also in this latter case, knowledge is little more than anecdotic, asking for further research.

4. COMPOSITION AND PAY LEVELS OF THE ITALIAN NHS STAFF: A REGIONAL ANALYSIS[28]

4.1. Object and goals

This chapter describes some results of a research project conducted at CERGAS Bocconi and funded by the Ministry of Health (www.sanita.it) that analysed the staff composition and the pay level of the staff employed by the Italian National Health Service (NHS) in the Italian Regions.

The main goals of the chapter are three:

- to present and to discuss some first results already produced by the research project;
- to suggest analyses that could be then adopted by the Ministry of Health and repeated on a yearly base, also at a deeper level of analysis (for instance, to apply such analyses to NHS organisations, without summing them up at the regional level);
- to describe some tracks for possible future research, above all about structural changes in the NHS staff that will have a major impact on labour market conditions and on human resources management (HRM) in the Italian NHS organisations in the very next years and, nevertheless, have attracted scant – if any – research so far.

4.2. Rationale for the analysis

The Italian NHS in the last ten years has undergone a deep decentralisation, shifting direct responsibilities from the central level to Regions (France et al., 2005). For this reason, we can also refer to 21 RHSs (Regional Health Services) when we want to highlight the regional action in organising, funding and running the NHS of each single Region[29].

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[28] This chapter is a revised version of De Pietro and Filannino (2008). Many thanks are due to Cristina Filannino, colleague at CERGAS and SDA Bocconi, for the common work done on that previous paper.

[29] Here the Region Trentino-Alto Adige will be considered as split in the Province of Trento and Province of Bolzano. This is because this Region enjoys a special degree of constitutional autonomy and they result

A second major wave of reforms started in 1992 has led to an increase of managerial responsibilities to the Local Health Authorities (LHAs) and public Independent Hospital Trusts (IHTs), that is, to the organisations providing healthcare services to patients and to the general population, in coherence with the general principles and framework supplied by the New Public Management theories (Marcon and Panozzo, 1998; Anessi Pessina et al., 2004; Anessi Pessina and Cantù, 2006; Mattei, 2006).

However, the national Ministry of Health maintains a broad responsibility over the results of the system and specific prerogatives, especially in the personnel area. Here, at least two dimensions have a major importance:

- *the professional regulation:* the national parliament and Ministries of Health and of Education produce most laws and rules regarding professions[30]. They refer to (see also De Pietro, 2005a: 37-82, and Tousijn, 2000):
    - the identification/recognition of health professions;
    - the definition of the so called "professional profiles", stating responsibilities and competences of each of them;
    - the regulation of orders and colleges[31];
    - the definition of *numeri clausi* for the university courses, both at the bachelor, master, and specialty levels[32];

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two independent bodies as refer to NHS activities. Furthermore, for the same reasons also the Ministry of health statistics consider two autonomous bodies.

[30] Major exceptions, with the main responsibilities assigned to Regions, refer to:

- the definition of professional skills and competences of supporting staff (for instance the definition of activities permitted to aides) and the regulation/provision of their education;
- the definition of regional norms that improve/specify the national regulation regarding the minimal staffing requirements for authorising healthcare organisations to provide services and/or to get public funding as NHS private providers;
- the role of Regions in the process defining *numeri clausi* for bachelor, master and specialisation university education (while the final decision is taken by the national Ministry of education);
- the organisation and provision of specialisation curricula for family doctors;
- the possible development of a "continuous education in medicine" programme integrating or substituting the national one (note that while named "continuous education in medicine", it applies and requires mandatory education to all health professions).

[31] In Italy Orders and Colleges are semi-public bodies subject to public law. All professionals must be enrolled with them in order to practise. Usually they are organised at a provincial bases (in Italy provinces are 107) with a national federation.

- requirement of minimal staffing for healthcare organisations;
- requirement of minimal continuous professional education;
- etc.;

- *the collective labour agreements:* the labour conditions for employed staff in Italy are set by national agreements signed by employers and workers organisations for each industry. In the case of organisations providing healthcare services, public staff of the NHS are regulated by three national agreements, regarding respectively: 1) medical doctors, dentists, and veterinary doctors; 2) biologists, pharmacists, chemists, psychologists, physics degrees, and other technical, administrative and legal staff with managerial responsibilities; 3) other staff (nurses, aides, laboratory and radiology technicians, administrative employees, etc.). Other staff working for private organisations providing healthcare services is regulated by other collective agreements always signed at a national level by employers and workers organisations, the most important among them being the agreement adopted by the main federation of private hospitals (AOIP). These national agreements are then integrated by "second level" agreements signed at the level of each single healthcare organisation, but without major consequences or changes of the national agreements (that in any case state conditions that can only be improved – i.e. with advantages for employees – upgraded by the "second level" agreements). In this framework, almost no role is left to Regions (while they have the main responsibility for organising, funding and running the system): this is a peculiar characteristic of the Italian labour market and legal setting, that guarantees a high level of homogeneity of labour conditions across Regions, despite the major inter-regional differences in terms of socio-economic development, cost of living, etc.

The analysis presented in the following pages refers to the positioning of Italian Regions along two main dimensions:

- the occupational composition of NHS staff, referring to ratios between the different occupational figures such as medical doctors, nurses, aides, etc.;
- the average pay of each occupational group.

In addition, the analysis will look at the economic consequences of these differences.

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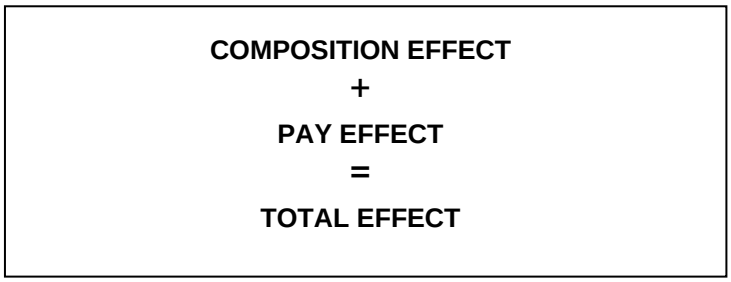
[32] *Numerus clausus* ("closed number" in Latin; plural *numeri clausi*) consists of setting a limit to yearly entrances into university bachelor courses. In Italy *numerus clausus* is adopted for healthcare professions and implies an exam for selecting new students. In sectors different from healthcare, in the Italian universities *numerus clausus* is rare.

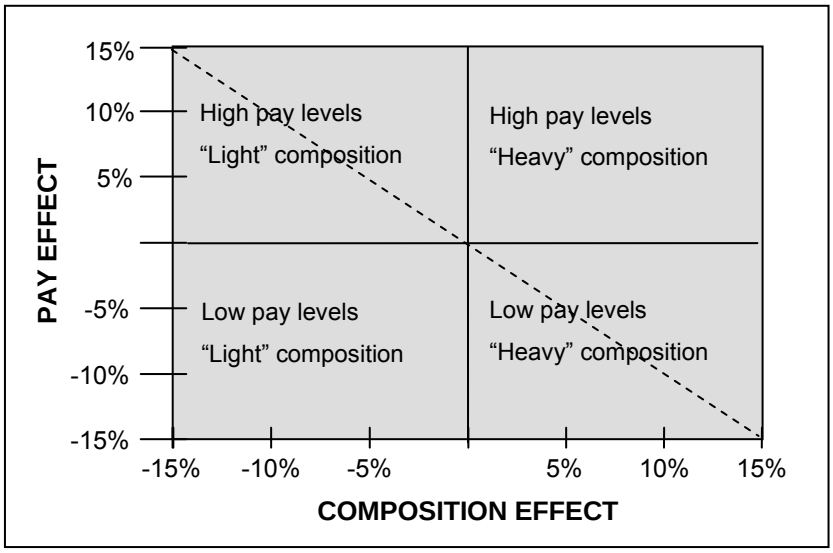
In particular, we define "composition effect" the economic consequences of the occupational composition of the staff of a certain RHS compared with the average composition of the NHS.
In the same way, we define "pay effect" the economic consequences of the average pay level for each figure in a certain RHS compared with the average pays in the NHS.
It is then possible to define a "total effect", summing up the two effects referred above. The "total effect" measures the savings (or greater expenditures) that the Region could obtain if it adopted the national average occupational composition among different figures (composition effect), and the national average pay levels for each of them (pay effect).
Figure 4.1 summarizes the basic definitions given above.

Figure 4.1. The elements of the positioning analysis.



The analysis can finally position RHSs on the matrix of Figure 4.2, where percentages on the axes gives us a measure of possible savings (with positive or negative sign) that Regions could obtain adopting national averages for occupational composition and/or pay levels, measured as percentage of the total regional expenditure for RHS salaried staff. It is then possible to highlight four areas of the matrix, combining compositions "light" and "heavy/expensive" with pay levels "high" and "low".

Figure 4.2. Matrix of regional positioning.



In the same figure, Regions that will position themselves above the diagonal (dotted line) have a combination composition/pay levels more expensive (and so they would obtain economic savings if adopting the national averages). Regions below the diagonal have a combination less expensive (therefore, they would spend more if adopting the national averages).

Finally, as already said it is possible to measure the economic consequences of the composition and of the pay levels effects for each Region, measured as percentage of potential decrease/increase of their expenditure for salaried staff pays compared with current spending.

In the following section the staff composition will be analysed not only referring to the occupational composition (measured by indicators such as the ratio between nurses and doctors), but also referring to what we define "organisational composition". This second dimension of the staff composition refers to the managerial choices of each organisation of the NHS providing healthcare services. In this case, the management of the LHAs or IHTs will define their own organisational structure, with crucial choices about the number of clinical services, of coordinating jobs for nurses, etc. Left aside the organisational consequences of these choices (for example in terms of equilibriums between specialisations and integration needs), they also have strong economic consequences in terms of pay levels. In fact, the head of clinical units or the nurses coordinator receive higher pays than their colleagues (i.e., respectively, consultants or collaborating doctors, and team nurses).

Finally, a very important specification should be done about the "normative" utilisation of such analyses. It is clear that higher – or lower – pay levels cannot be automatically associated to bad – or good – managerial practices. In the same way, a "heavy" – or "light" – staff compositions structure cannot be automatically associated to bad – or good – managerial decisions. In fact,

the performances of LHAs and IHTs (or of RHSs at large) should be evaluated for their effectiveness in pursuing their public mission and so a broader set of indicators should be adopted, while in a framework that should promote an efficient use of the public funding. Moreover, the regional characteristics of the labour market can explain some decisions. Just as an example, in areas suffering nursing "shortages" LHAs and IHTs could effectively decide to increase the pay levels in order to retain or attract nurses.

4.3. Methods and data

The analysis is based on data collected in the Conto Annuale by the Ragioneria Generale dello Stato (www.contoannuale.tesoro.it) of the Ministry of economy (www.tesoro.it). The database is updated yearly for all employed staff of the public services. The information provided by the Conto Annuale is very rich and represents a major basis for system-wide analyses. Contents of the database are listed in Box 4.1.

Box 4.1. Contents of the database "Conto Annuale" for the Italian NHS.

The database is available from 2001 for all the 338 organisations of the NHS (in 2007). LHAs and IHTs total 280, while research hospitals were 17. Other organisations include regional environment agencies, research agencies, research hospitals, university hospitals directly owned by the Ministry of Education, etc.

Information tables:

General information about the organisation

Information about the "second level" labour agreements signed by the organisation and the workers organisations

Table 1 – Salaried staff on 31 December (headcount)

Table 2 – Staff with other flexible labour contracts (term contracts, other collaborations)

…

Table 5 – Staff that has left during the year (for any reason: retirement, passage to other organisations, etc.)

Table 6 – Staff hired during the year

Table 7 – Seniority distribution of salaried staff

Table 8 – Age distribution of salaried staff

Table 9 – Distribution of salaried staff by education

…

Table 11 – Absences of salaried staff during the year

Table 12 – Costs for "fixed" retribution of employed staff

Table 13 – Costs for indemnities and other "flexible" retribution of employed staff
Table 14 – Other costs for employed staff
Table 15(1) – Fund for second level collective bargaining – Medical doctors
Table 15(2) – Fund for second level collective bargaining – Biologists, pharmacists, veterinary doctors, psychologists, chemists, physicists and managerial roles in administration and technical services
Table 15(3) – Fund for second level collective bargaining – Other staff

Other Tables required by the Ministry of health:
Table 1A – Health staff divided for professional figure
…
Table 1C – Staff employed for inpatient services
Table 1D – Staff employed in the Mental health department
Table 1E – Staff according to career scale

Tables 1 and 3-13 are compiled for 134 types of staff and most times distinguish among male and female staff.

Moreover, this information is already available from 2001, permitting both time-series and cross-section analyses[33].
Despite the very interesting content of this database, only few researches have used data of Conto Annuale so far.

For our analysis, we have defined 15 figures summing up the 134 originally considered in the database[34]. This aggregation, resulting from a common analysis with people from both the Ministry of economy and the Ministry of health, has been decided in order to increase the readability and relevance of the analysis. In particular, the 15 figures are:

- medical doctors and dentists (called physicians henceforth);
- veterinary doctors;
- biologists, pharmacists, psychologists, chemists, physicists;
- managerial roles in administrative activities;
- statisticians, sociologists, and IT analysts with managerial roles;

[33] While available from 2001, data have gained in reliability since then. This is the main reason why analyses presented in this chapter refer to 2006 only.

[34] We did not consider five types of personnel present in the original 134, that is: general directors, medical directors, administrative directors, social services director (these four figures represent the "top management" of the NHS organisations) and a residual category of long-life contracts for special figures, totalling few people in the NHS.

- lawyers, engineers, architects, and geologists with managerial roles;
- other administrative staff;
- religious staff;
- staff supporting nurses;
- other technical staff;
- nurses, midwives, and paediatric nurses (called nurses henceforth);
- laboratory technicians, radiology technicians, dietists, oral hygienists, audiometrists, audioprothesists, perfusionists, neorophysiopatology technician, and orthopaedic technician;
- health assistants[35], and technicians of prevention in environment and work settings;
- professional educators, physiotherapists, logopedists, eyes technicians, podologists, education and psychiatric and psychosocial technician, neuro and psycho-motr. of childhood technicians, and work therapists;
- other health staff.

A second selection was made among the organisations appearing as employers in the database. We considered only LHAs, IHTs and the research hospital jointly run by the State and the regions (in total 287 organisations).

Third, we selected only persons working under collective labour agreements signed for healthcare. Therefore, we did not consider employees of municipalities temporarily working for a LHA, etc.

Fourth, as regards pay elements, we did not consider the sums given in 2006 but matured in previous year (also because of the delays with which collective agreements are signed, causing "backward" pay settlements). Also, the analysis did not consider the revenues of private medical activities run by NHS employed physicians in the same NHS facilities that partially benefit also other occupational groups (for an overview of this regulation, see De Pietro, 2006a; for the relevance as a part of total revenues, see De Pietro, 2003).

Finally, we eliminated some Regions or healthcare organisations because data were incomplete or erroneous. Therefore, we did not consider Region Calabria, Region Molise, and a research hospital of Friuli-Venezia Giulia.

[35] In Italy health assistants are professional workers usually employed in the Prevention Departments of the LHAs. Despite their name (in Italian, "Assistenti sanitari) could remind us non-professional workers or extenders of other health professions, actually they are an autonomous health profession with university education (bachelor at least) comparable to nurses, physiotherapists, laboratory technicians, etc.

4.4. Results

Professional composition

The indicators here selected for assessing the professional composition are the ratios "Nurses / Physicians" and "Nurses / Support staff". Data presented in Table 4.1 are in terms of full time equivalents.

Table 4.1. Professional composition, FTE 2006.

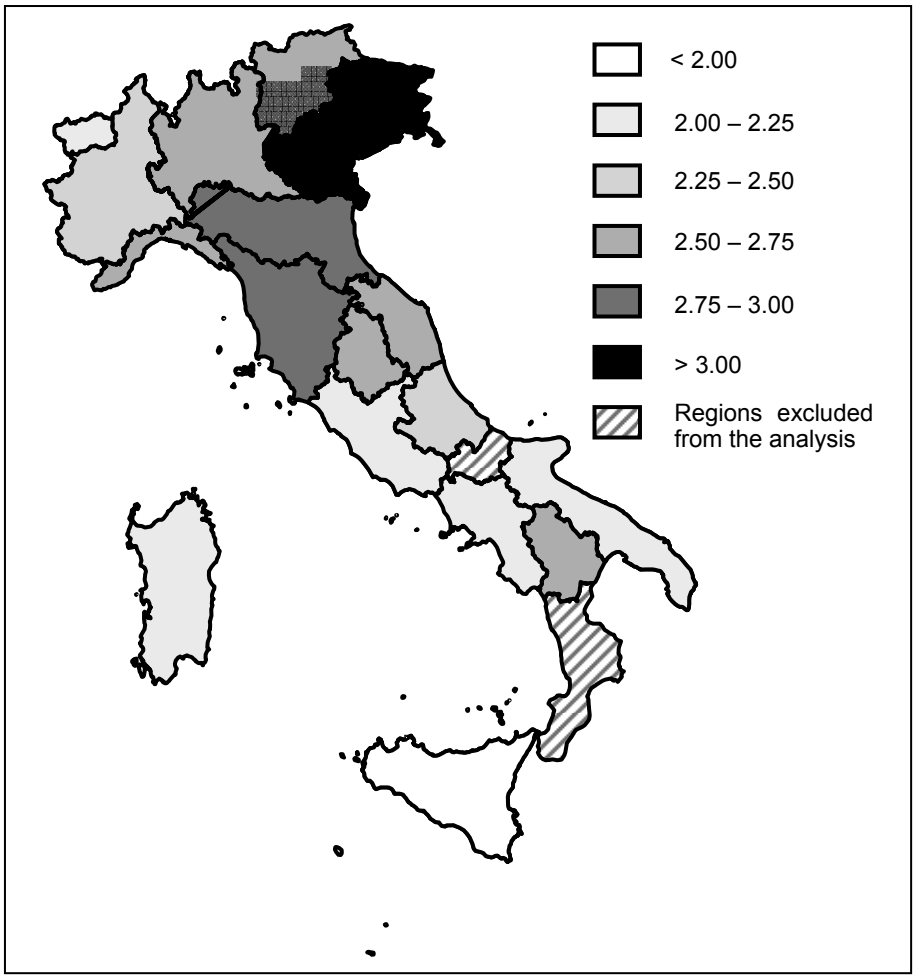
Region	Nurses / (Medical doctors + Dentists)	Nurses / Support staff
Piemonte	2.32	2.95
Valle d'Aosta	2.21	3.61
Lombardia	2.54	3.20
Bolzano	2.54	1.92
Trento	2.80	2.58
Veneto	3.06	3.46
Friuli-Venezia Giulia	3.09	2.96
Liguria	2.65	4.16
Emilia-Romagna	2.84	6.04
Toscana	2.78	4.08
Umbria	2.53	5.33
Marche	2.73	5.17
Lazio	2.20	6.12
Abruzzo	2.34	4.01
Campania	2.09	4.75
Puglia	2.13	3.76
Basilicata	2.51	6.55
Sicilia	1.77	3.78
Sardegna	2.06	4.19
ITALY	*2.46*	*3.96*

The variability of the professional composition is clear, also when we consider the regional averages and quite broad indicators like "nurses / physicians" or "nurses /support staff". It is then evident that this variability would be stronger if comparing single healthcare organisations and not regional averages.

This variability is at least in part unexpected. In fact, the strong regulation of the health professions and of the healthcare services, trying to set clearly who does what *via* legal monopolies in the professional activities, the minimal requirements for professional staffing (De Pietro e Tereanu, 2005: 69-70), etc., are all elements that should imply less heterogeneity. In fact, if that regulation was effective, similar healthcare services activities should be accompanied by similar professional compositions. Nevertheless, data clearly do not confirm such analysis.

The indicator "Nurses / Physicians" ranges from 1.77 in Sicily to 3.09 in Fruli-Venezia Giulia, that is +75%. Figure 4.3 shows the same data on the Italian map, highlighting a general increase of the ratio along the axis South – North-East (see also De Pietro, 2006b: 572).

Figure 4.3. Ratio "Nurses / (Medical doctors + Dentists)", FTE 2006.



The second indicator "Nurses / Support staff" shows an interregional variance even larger. However, this information should be evaluated with some prudence, because of the different

regional policies influencing the funding and availability of education processes for support staff and, even more, because of the managerial decisions about possible outsourcing of support services (in fact our data only refer to employed staff, and do not consider outsourced teams).

Organisational composition

A second possible meaning of composition is related to the managerial choices made by LHAs and IHTs when defining their own organisation design and structure. Here, if we consider the labour collective agreements, their contents and their effects in terms of organisational functionality, the most meaningful indicator that is possible to calculate based on the Conto Annuale is the ratio between the number of heads of units and the rest of medical doctors, dentists, veterinary doctors, biologists, pharmacists, psychologists, chemists, and physicists.

Table 4.2 again shows a large variance in the ratio between Regions. While the ratio is finally determined by choices made by the management of LHAs or IHTs, these are conditioned by the Regional policies acting as a "holding" for the "dependent" LHAs/IHTs. Therefore, regional wishes can have an effect through "hard" or "soft" pressures able to influence the action and the choices of each healthcare organisation. Among the "harder" tools, we can list regional laws, guidelines or the formal control that Regions apply on the main choices of their LHAs/IHTs. Among "softer" tools are the activities of regional workgroups, but also the "shared culture" developed in several Regions, and also the "political pressures" of the regional government on top managers of the LHAs/IHTs (who are appointed with a term contract by the regional government).

Interestingly, this indicator of regional organisational composition seems not related with the two indicators of professional composition analysed above.

Table 4.2. Organisational composition, FTE 2006.

Region	Heads of units / Other professionals
Piemonte	0.27
Valle d'Aosta	0.21
Lombardia	0.27
Bolzano	0.35
Trento	0.37
Veneto	0.32
Friuli-Venezia Giulia	0.21
Liguria	0.26
Emilia-Romagna	0.21
Toscana	0.21
Umbria	0.36
Marche	0.29
Lazio	0.27
Abruzzo	0.30
Campania	0.29
Puglia	0.32
Basilicata	0.33
Sicilia	0.27
Sardegna	0.25
ITALY	*0.27*

Data show major differences, with Regions having one professional out of five as a head of operating unit, while others have one out of three. Several explanations can be proposed for these differences. A major one refers to the difficulties of Italian NHS organisation to develop professional careers not based on managerial jobs but based on performance appraisal and the evaluation of technical and professional skills (Del Vecchio and De Pietro, 2002: 564-568).

Pay levels and composition

Before looking at regional data for pay levels and composition, here we present some general data at the national level.

Table 4.3 presents the number of full time equivalents for the fifteen professional figures defined in § 4.3. It also reports the gross pay per-FTE and its main division in "fixed" and "flexible" elements excluded, as already said, the "backward" pay settlements (due for activities

run on previous years) and the revenues of private medical activities run by NHS employed physicians in the same NHS facilities.

The "fixed" pay encompasses the thirteenth month pay. "Flexible" elements refer to job evaluation, extra-work, performance appraisal (often based on the results of the organisational unit), other indemnities for risks, nightshifts, urgency calls, etc., and other elements specific for medical doctors, dentists, and veterinary doctors.

Table 4.3. Average gross pay, FTE 2006.

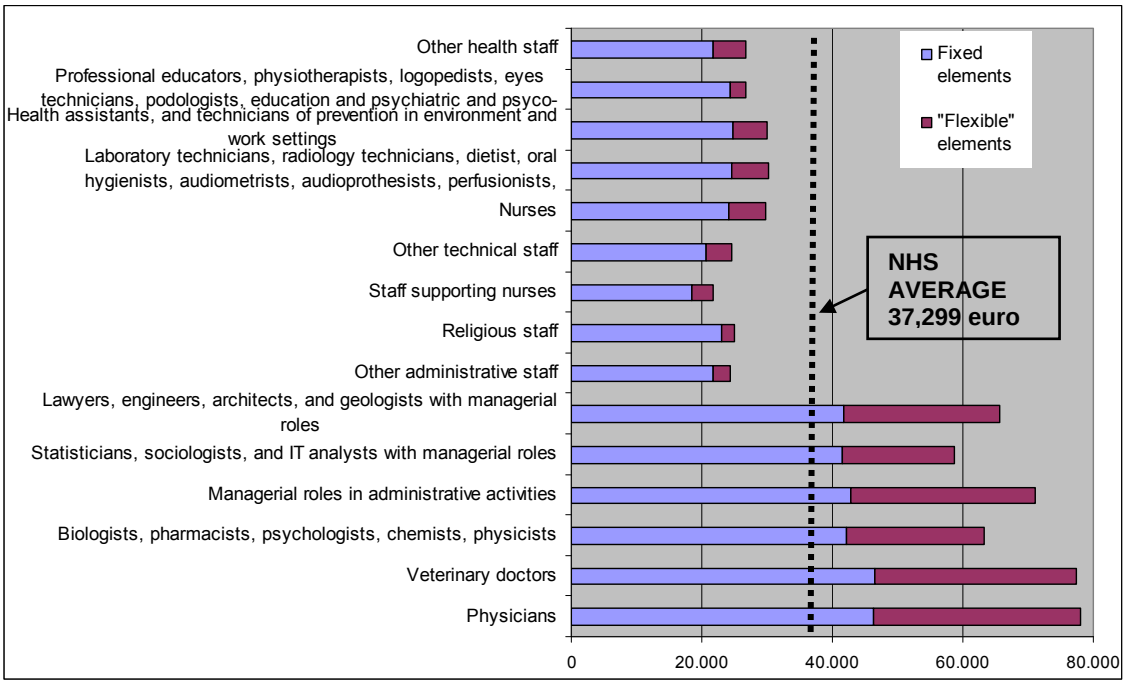
Occupational groups	*FTE*	Fixed gross pay	"Flexible" gross pay	Average gross pay
Physicians	*100,458*	46,366	31,771	78,137
Veterinary doctors	*4,901*	46,562	30,806	77,368
Biologists, pharmacists, psychologists, chemists, physicists	*12,818*	42,133	21,172	63,304
Managerial roles in administrative activities	*2,521*	42,882	28,269	71,151
Statisticians, sociologists, and IT analysts with managerial roles	*961*	41,590	17,057	58,647
Lawyers, engineers, architects, and geologists with managerial roles	*1,153*	41,794	23,893	65,686
Other administrative staff	*66,913*	21,836	2,574	24,410
Religious staff	*355*	23,114	1,843	24,957
Staff supporting nurses	*61,327*	18,524	3,266	21,791
Other technical staff	*49,373*	20,584	4,076	24,660
Nurses	*224,940*	24,154	5,537	29,691
Laboratory technicians, radiology technicians, dietist, oral hygienists, audiometrists, audioprothesists, perfusionists, neorophysiopatology technician, and orthopaedic technician	*31,140*	24,491	5,640	30,131
Health assistants, and technicians of prevention in environment and work settings	*9,130*	24,773	5,318	30,091
Professional educators, physiotherapists, logopedists, eyes technicians, podologists, education and psychiatric and psycho-social technician, neuro and psycho-motr. of childhood technicians, and work therapists	*16,634*	24,260	2,496	26,756
Other health staff	*18,551*	21,788	4,988	26,776

Looking at the whole NHS staff, the average gross pay per FTE in 2006 has been 37,229 euro, plus the eventual "backward" pay settlements and revenues of private medical activities. This figures – as well as all our analysis – do not include the pension contributions paid by the employer, so they are around 35%-40% lower than total labour cost.

Figure 4.4 reports the same data but highlights the sharp difference in pay levels between the occupational groups belonging to the first two collective agreements (see § 4.2) and the

occupational groups that belong to the third one (in Figure 4.4 these latter go from "Other health staff" to "Other administrative staff"). Moreover, it highlights the major importance of the "flexible" elements of total pay for the figures getting the most.

Figure 4.4. Average gross pay, FTE 2006.



Data also report differences among professional groups when we consider the composition of "flexible" pay. De Pietro and Filannino (2008: 248-249) show that for medical doctors, dentists, veterinary doctors, biologists, pharmacists, psychologists, chemists, and physicists the largest part of "flexible" pay is explained by elements specific to those professions, but that can be only partially considered as "flexible" and from a managerial perspective are much more fixed elements of total personnel expenditure. For managerial roles, the largest part of "flexible" pay is based on job evaluation. For other staff, the largest parts of "flexible" pay are related to nightshifts and other aspects of availability of the personnel (for example urgency calls), and to group performance-related-pay for the participation to special projects.

In general, the analysis of the pay composition for NHS staff highlights at least three aspects:

- first, the contractual power developed along the history of the Italian NHS explains much of the differences in pay level between different occupational groups;
- second, the work organisation on a 24 hours basis requires a major organisational effort (nightshifts, on call availability, etc.) and this explain a quite large part of total labour cost in the NHS;

- third, the collective labour agreements signed in the last fifteen years have deeply modified the pay structures in the Italian public service, leading to a much larger use of flexible pay elements, notably as a consequence of job evaluation for the managerial positions and performance appraisal for – at least nominally – most public servants[36].

Regional differences in pay levels

Pay levels are largely set by the national labour collective agreements, with some Regions adding so-called "regional additional resources", quite limited in volume.
However, the history of each single organisation – LHA or IHT – with the qualitative and quantitative dynamics of its staff, coupled with some managerial choices, can influence the availability of resources that the national agreements leave for the so-called "second level" agreements signed in each organisation. Moreover, each organisation enjoys relevant degrees of autonomy in deciding how to use those resources.
Table 4.4 describes the differences in gross pay levels 2006 of each Region compared with the national average level. Some regions show pay levels that are all above national averages (this is the case of Piemonte and Valle d'Aosta). In the opposite situation, Friuli-Venezia Giulia reports pay levels below the national averages for all professional figures considered. Other Regions show mixed results with positive and negative signs compared with national averages.

[36] A major reform of the Italian public service occurred in 1993. Major exceptions, remaining within a frame of public law, were the juridical system, the military forces, the police, the diplomatic corps, and the prefect corps. For the other sectors – namely schools, NHS, local government, ministries staff, etc. – the reform aimed to reduce the differences with labour conditions prevailing in the private sector (De Pietro, 2005a).

Table 4.4. Differences in regional gross pay levels compared with national averages, FTE 2006.

	PIE	VdA	LOM	BZ	TN	VEN	F-VG	LIG	E-R	TOS	UMB	MAR	LAZ	ABR	CAM	PUG	BAS	SIC	SAR
Physicians	6%	9%	3%	46%	18%	4%	-1%	-4%	2%	-5%	-1%	3%	-7%	-3%	-3%	-1%	7%	-2%	-4%
Veterinary doctors	1%	9%	5%	30%	18%	8%	-3%	3%	0%	-2%	2%	4%	-10%	-4%	-6%	-1%	3%	0%	-4%
Biologists, pharmacists, psychologists, chemists, physicists	14%	16%	4%	4%	11%	9%	-3%	5%	-1%	0%	0%	1%	-5%	-5%	-5%	-3%	-2%	-5%	-18%
Managerial roles in administrative activities	9%	20%	16%	-25%	23%	7%	-18%	2%	-13%	0%	6%	8%	-4%	-9%	-10%	5%	-8%	-2%	-12%
Statisticians, sociologists, and IT analysts with managerial roles	19%	18%	15%	-14%	-2%	12%	-10%	18%	0%	11%	-2%	5%	-6%	-19%	-7%	-5%	-13%	-7%	-15%
Lawyers, engineers, architects, and geologists with managerial roles	20%	18%	3%	-12%	5%	14%	-9%	5%	-7%	-3%	-3%	-1%	-2%	-13%	-8%	18%	-8%	-2%	-19%
Other administrative staff	3%	5%	0%	-17%	-3%	1%	-5%	-4%	2%	4%	8%	-2%	-3%	-7%	4%	-2%	-2%	0%	-10%
Religious staff	6%	12%	5%	9%	-7%	-5%	-3%	-10%	-20%	5%	-9%	-8%	-2%	-4%	9%	-2%	-7%	3%	-7%
Staff supporting nurses	3%	3%	1%	-23%	2%	-2%	-3%	-3%	1%	0%	0%	-4%	2%	-8%	11%	-2%	-5%	-1%	-8%
Other technical staff	3%	7%	-1%	-11%	-1%	-2%	-3%	-3%	-6%	-2%	1%	-3%	7%	-5%	13%	1%	-3%	3%	-8%
Nurses	4%	10%	1%	-4%	3%	-1%	-4%	-4%	-1%	-2%	2%	-3%	-1%	-7%	8%	-3%	-2%	3%	-7%
Laboratory technicians, radiology technicians, dietist, oral hygienists, audiometrists, audioprothesists, perfusionists, neorophysiopatology technician, and orthopaedic technician	5%	7%	-1%	0%	4%	0%	-4%	-4%	-2%	2%	1%	-4%	1%	-4%	7%	-2%	4%	-1%	-9%
Health assistants, and technicians of prevention in environment and work settings	3%	10%	0%	-5%	-2%	0%	-5%	0%	-1%	4%	3%	-1%	-1%	-10%	9%	-3%	-5%	-1%	-10%
Professional educators, physiotherapists, logopedists, eyes technicians, podologists, education and psychiatric and psychosocial technician, neuro and psycho-motr. of childhood technicians, and work therapists	4%	8%	2%	-8%	1%	-1%	-4%	-3%	0%	5%	0%	-1%	-4%	-7%	4%	-1%	-6%	-2%	-7%
Other health staff	3%	7%	0%	-11%	15%	0%	-4%	-3%	0%	1%	-9%	-3%	1%	-6%	2%	-4%	1%	6%	-9%

Positioning analysis

It is now possible to proceed with the comparative analysis of the occupational composition and the pay levels and to position Regions in a matrix measuring the economic impact of those differences along the two dimensions. We define:

- "composition effect" the potential savings (also negative) in percentage that each Region could obtain in the personnel expenditure if it maintains its pay levels but adopts the national average occupational composition;
- "pay effect" the potential savings (also negative) in percentage that each Region could obtain in the personnel expenditure if it maintains its occupational composition but adopts the national average pay levels;
- "total effect" the sum of the two effects referred above, that gives the potential savings (also negative) or in percentage that each Region could obtain in the personnel expenditure, if it adopts both the national average professional composition and pay levels[37].

Those effects can also be calculated in absolute values, but in that case pension contribution paid by employers should be also considered. Table 4.5 gives the percentages.

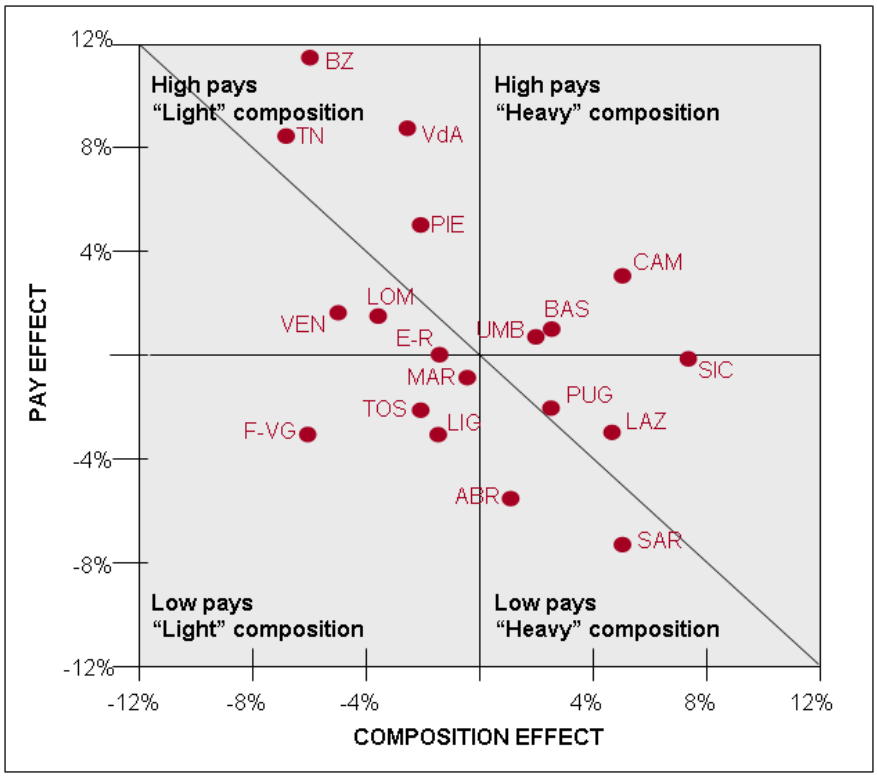
[37] While the sum is not strictly correct, it represents an effective approximation for the purpose of our analysis.

Table 4.5. The economic impact of professional composition and pay levels in the Italian Regions, as percentage on total personnel expenditure, 2006.

Region	Composition effect	Pay effect	Total effect
Piemonte	-2.1%	5.0%	3.0%
Valle d'Aosta	-2.5%	8.9%	6.4%
Lombardia	-3.5%	1.7%	-1.8%
Bolzano	-6.1%	11.7%	5.6%
Trento	-6.8%	8.5%	1.8%
Veneto	-5.0%	1.7%	-3.3%
Friuli-Venezia Giulia	-6.1%	-3.1%	-9.2%
Liguria	-1.4%	-3.1%	-4.5%
Emilia-Romagna	-1.4%	0.0%	-1.4%
Toscana	-2.1%	-2.1%	-4.2%
Umbria	2.0%	0.8%	3.0%
Marche	-0.3%	0.0%	-0.3%
Lazio	4.7%	-3.0%	1.7%
Abruzzo	1.3%	-5.5%	-4.2%
Campania	5.0%	3.1%	8.1%
Puglia	2.5%	-1.9%	0.6%
Basilicata	2.7%	1.0%	3.7%
Sicilia	7.4%	-0.1%	7.3%
Sardegna	5.1%	-7.1%	-2.0%

Finally, percentages can be also shown in Figure 4.5.

Figure 4.5. Position of Regions in terms of "Composition effect" and "Pay effect", 2006.



Despite the quite random dispersion of Regions on the matrix, it is possible to suggest some tentative evaluations:

- many northern Regions are in the top-left quadrant, where high pays are somehow compensated by "light" professional distribution, notably with the two big Regions Lombardia (first Italian Region by population, with almost 10 million inhabitants) and Veneto (fifth Region with almost 5 million) below the diagonal and so reporting an actual saving compared with the national average values;
- Campania, Sicilia and Lazio are the RHSs with the worst economic results, explaining large part of the total NHS debt. It is interesting to remark that these three Regions are all above the diagonal – so they spend more than would be the case adopting national average values for occupational composition and pay levels – and they all share a heavy occupational composition. While this analysis does not state clear relations, this result seems to say that the occupational composition definitely is a key element for the functionality – and the efficiency – of healthcare organisations and services. In other words, the concept of "lean organisation" seems crucial for professional bureaucracies such as the LHAs or the IHTs of the Italian NHS.

4.5. Suggestions for further research

Hospitals' professional composition

A first possible development of research refers to the professional mix of hospitals' staff. Here the key concept is the degree of substitutability between health professions and the skill mix change between nurses and support figures. The goals of this analysis could be two:

- to describe differences or regularities among different hospitals;
- to suggest tentative explanations for skill mix differences.

Possible explanations could look to relations with variables such as:

- the Region where the organisation is placed;
- the dimension of the organisation measured by total number of beds and staff headcounts;
- the kind of activities run by the organisation measured by the length of stay and by the case mix index;
- etc.

Age composition and dynamics

NHS staff is greying. This will have major impacts on the functionalities of NHS organisations and will require important managerial responses in terms of HRM practices but also of organisational culture. Research questions are:

- which is the distribution of NHS staff along age groups?
- which are the foreseeable impacts of such a greying on motivation and, hence, on NHM management practices?

Gender dynamics

A second dimension for further research refers to gender composition.
Here, we can address at least two main themes. The first is medical doctors' feminisation and its impacts on HRM. The second refers to the prevalence of male nurses, its explanations and, again, its managerial consequences.
As regards physicians' feminisation, a first useful analysis has to answer these questions:

- is the female quota among doctors employed by the Italian NHS increasing?

- at what pace?
- with similar patterns in different Regions?

Another relevant issue is about "glass ceiling" in female careers, considering the different prevalence of part time, the percentage of female heads of units, and other data available in the Conto Annuale.
Finally, a further issue is pay gaps: do women get lower pays for similar jobs?
The second gender issue refers to the percentage of males in nursing staff. Here the research question could be: is this percentage related in a positive way with unemployment rates prevailing in the general labour market? If this hypothesis is confirmed, this could mean that nursing is considered as a "refuge profession" much more than a "vocational profession".

Staff absenteeism

Absenteeism of public service staff is currently an issue much debated in Italy. However, this debate is mainly limited to newspaper and other general public media, while so far it has received much less attention in scientific literature (Costa et al., 2007).
Moreover, in the next future the absenteeism issue could even get growing importance, because of the pension system reforms occurring in Italy and of the consequent lengthening of professional life for NHS staff, with obvious impacts on motivation.
Therefore, an analysis of absenteeism could try to answer the following research questions:

- are higher absenteeism rates related with worse economic performances of LHAs and IHTs in the Italian NHS?
- can we distinguish between various types/reasons of absenteeism?
- which is the prevalence of absences along the age profile for the NHS staff and for its main occupational groups?

Turn over

The data provided in the Conto Annuale permit to look at the turn over dynamics occurred in the last eight years. Therefore, it is possible to verify questions such as:

- do administrative staff has suffered a severe stop in turn over in the very last years, as required by several national and regional laws?
- is the actual turn over sufficient to replace medical doctors and nurses?

4.6. Conclusions

The analysis of staff composition and pay levels in the different RHSs has shown major differences. This, in turn, arises several interesting questions and suggests some conclusion.

1. The professional composition of the Italian NHS staff is not homogeneous through Regions. Both the nurses/doctors and the nurses/support ratios show differences that cannot be explained by parallel or similar differences in the services provided. While in a framework of strong regionalisation for organising, funding and running the public health system, the NHS framework implies a similar basket of services provided by all Regions and guaranteed by all LHAs. At the same time, the national laws and rules set the professional regulation, with some exception regarding the less skilled figures. So, similar activities should be run with similar professional compositions.
In turn, this has several implications for both national and regional policies:

- the workforce planning (managed *via* the definition of *numeri clausi* for bachelors and specialties schools but also, for some health professions, *via* the State exams) should consider not only the theoretical professional profiles (i.e., what the laws and other regulation expect they will do) but also the actual experiences (i.e., the real professional composition of LHAs and IHTs staff). The differences in occupational composition in fact demonstrate an actual substitutability that is much higher than foreseen by the professional regulation;
- if legal monopolies given to professions do not seem fully reflected in professional compositions, then this is another reason to stop – and even reverse – the recent proliferation of separated health professions in Italy and its problematic consequences in terms of labour coordination and processes integration (De Pietro 2005a, 74-77).

2. The analysis of the organisational composition confirms large differences. In this case, the managerial autonomy of each LHA or IHT can correctly explain those differences, in the framework of regional guidelines and "soft pressures". However, the analysis shows some flaws that would deserve a closer examination. In fact, it is difficult to image efficient healthcare organisations when managerial roles represent one third of all employed medical doctors. More correctly, this is most probably is the consequence of limited efforts – or effectiveness – in developing appealing professional careers for physicians and other health professionals. Where those professional career perspectives are not available, then professionals will look to managerial roles for career advancements. This, in turn, can lead to managerial problems

because the pressures for creating managerial positions will increase independently from the organisational needs, but rather explained by the professionals' interest in career, recognition, greater power and better pay levels.

3. The overall effect combining "composition effect" and "pay effect" is important for our analysis, giving us a meaningful positioning of Regions compared with national averages. However, the ± 8% imbalances – with the notable exception of Trentino-Alto Adige and Valle d'Aosta, which enjoy special constitutional autonomy – say that Regions cannot rely only on composition and pay levels if they want to fix RHSs with poor economic performances. In fact, direct personnel expenditure represents around 35-40% of total public health expenditure, so maximum savings can be around ± 3% of total budgets. Moreover, to adjust and realign regional professional compositions or pay levels can be very tough for political reasons and in any case difficult because of many obstacles produced by the texts of the collective agreements, which tend to guarantee personnel conditions and rights.

4. The overall performances of the RHSs seem to be quite independent prom pay levels. We find very well performing Region paying high and low wages, and the opposite (badly performing Regions paying high and low wages). Instead, the indicator "occupational composition" (measured synthetically in terms of percentage possible saving in Figure 4.5) seems strictly related to overall performances of RHSs. We did not provide any specific indicator for overall performances, but the knowledge of the system allow us to sustain such a relation. In other terms, the RHSs with "light" staff compositions are the ones with better overall performances, and *vice-versa*.

5. The analysis proposed so far has several limitations that further research could overcome. First, analysis considered 15 macro-figures but it can also be replicated using all 134 professional figures present in the original database. Second, our analysis considered the Regions as research units, while further research could be run considering all the almost 300 LHAs and IHTs present in the Conto Annuale. This would be useful above all for certain analyses such as the skill mix prevailing in hospitals. Third, all analyses discussed so far could improve their explicative effectiveness if conducted on time series rather than only as cross-sections.

5. GREYING WORKFORCE IN THE ITALIAN NHS: HOW MUCH? WHICH CONSEQUENCES?

5.1. Object and goals

Ten years ago, J. Buchan analysed the "greying" of the UK nursing workforce: «One in five nurses on the United Kingdom (UK) professional register is aged 50 years or older. […] The significance for policy makers and for employers of this age-shift is two-fold. Firstly, it is clear that greater numbers of nurses and midwives are reaching, or soon will reach, potential retirement age. Secondly many more nurses are now reaching their middle years and they are likely to have different requirements and attitudes to nursing work» (Buchan, 1999: 818). The forecasts there presented have proved correct. And the situation, if possible, is even more severe. In particular, workforce ageing is often liked to less organisational flexibility, less innovation and skills maintenance, and higher labour costs for the employer, along with some positive effect, like higher retention.

This chapter presents similar analysis for the Italian National Health Service (NHS) staff. The first goal is to describe the phenomenon and its dynamics. The second goal is to comment the consequences of such a structural dynamics in terms of human resources management (HRM) policies and tools. We will omit discussing the policy implications in terms of workforce planning via *numeri clausi* etc.

More specifically, the chapter wants to answer the following questions:

- which is the age pyramid of the Italian NHS staff and of its main components?
- do these pyramids confirm an ageing dynamics? If so, which are the factors explaining this change?
- are there differences in age profiles and their recent dynamics between occupational groups? If so, why?
- are age profiles and their possible changes consistent across Italian regions? If Regions show differences in their age profiles, are they converging over time?
- which are the main consequences of changes in age profiles from an HRM perspective?

- more generally, which are the main changes foreseeable as a consequence of recent reforms of the Italian pensions system that have increased minimum length of contributions in order to be entitled for pension?

5.2. Methods

The analysis is based on data collected in the Conto Annuale by the Ragioneria Generale dello Stato (www.contoannuale.tesoro.it) of the Ministry of economy (www.tesoro.it). The database is updated yearly for all employed staff of the public services. The information provided by the Conto Annuale is very rich and represents a major basis for system-wide analyses. Moreover, this information is available since 2001, permitting both time-series and cross-section analyses. Despite the very interesting content of this database, only few researches have used data of Conto Annuale so far.

For our analysis, we have considered headcounts, except for specific purposes. This does not produce any relevant bias to the analysis, given the fact that part-time arrangements represent a limited quota of total jobs in the Italian NHS and that they are present in all those jobs (while with different percentages).
Secondly, the analysis refers to standard tenured employment status, excluding all forms of term-contracts, free-lance collaborations, etc.[38]
Third, we considered total NHS tenured staff as first reference. Then, we also identified three occupational groups that deserve special attentions for the recent changes in policies and regulations in Italy. The three groups are:

- Physicians;
- Nurses[39];

[38] "Total NHS staff" refers to all figures with tenured employment status. This excludes "Direttori generali" (781 headcounts in 2001 and 813 in 2007) and "Personale contrattista" (684 headcounts in 2001 and 608 in 2007), reported in the Conto Annuale despite their non-tenured status.

[39] For 2001 this category includes the following groups present in the database: "Coll.re prof.le sanitario esperto Ds", "Coll.re prof.le sanitario – pers. infer. – D", "Oper.re prof.le sanitario pers. inferm. – C", and "Oper.re prof.le di ii cat.pers. inferm. Bs". For 2007 it includes the macro-category "Totale profili ruolo sanitario - personale infermieristico". For 2001, the structure of the database does not permit to extract from this group a small number of non-nurses counted among "Coll.re prof.le sanitario esperto Ds".

- "Administrative staff", referring both to managerial positions (e.g. head of accounting, head of purchasing, head of personnel administration) and to other administrative staff.

A selection was made among the organisations appearing as employers in the database. In a broad and comprehensive view, the Italian NHS in 2007 encompassed 273 Local Health Authorities (LHAs) and Independent Hospital Trusts (IHTs), 6 Teaching hospitals directly owned and managed by the Ministry of Education, 10 Institutes for zoo-prophylaxis, 18 hospitals of healthcare and scientific research, 8 nursing home organisations, 17 regional agencies for the environment, and few other agencies or institutions.
Here, we chose to consider only the 273 LHAs and IHTs, i.e. the core of the network of public organisations providing direct healthcare services to patients within the Italian NHS.
Finally, we did not consider the 128 physicians resulting to have less than 25 years in 2001 and the 73 in 2007, because clearly impossible due the length of the medical education.

5.3. Background

Workforce is ageing in most developed countries. This is the consequence of two main dimensions:

- *a demographic dimension*, referring to long-range changes such has the increase in the length of lives and the decrease in the average fertility, which reshape the age pyramid and produce a natural cohorts' shift in older ages. Also in this big picture, a special case refers to baby boomers, that is, the high number of people born between the end of World War two (1945) and the mid-sixties, who produced a "wave" in the age pyramid and are now approaching the retirement age. These "boomers" are often referred as a "pig in the python", moving along the age distribution as a huge bubble. As welfare state institution lived a strong development in the sixties, i.e. when boomers were starting to enter the labour market, those institutions have an especially high prevalence of boomers in their workforce. This poses a two-fold problem. First, the massive retirement of boomers poses a succession challenge, requiring special efforts in replacing them and in guaranteeing an effective knowledge transfer from boomers to new hires, in order to avoid a "brain drain" (DeLong, 2004). Second, for late-boomers

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However, this represents less than 0.5% of the total category here referred as "Nurses" so it does not imply serous flaws in our analysis.

still in the workforce, employers have to develop special HRM policies, able to cope with these older workers attitudes, requirements and expectations;

- *the funding crisis of social security and protections programmes*, first of all health insurance and pensions, calling for an increase in pension age (both as minimal required years of contributions for occupational pension schemes, and as increase in the minimum and maximum ages for getting entitlement to pensions programmes). These pension reforms can be seen as an important contributor to the more general "greying pattern" of healthcare workers in the western countries (Buchan, 1999; DREES, 2002).

In turn, workforce ageing has several, long-range consequences (Loretto et al., 2007; Shultz and Adams, 2007):

- *difficulties in managing older workers*. Usually it is said that older workers are less flexible, they cost more, they show higher sick-leave ratios, and they can loose motivation, above all in routine jobs. While evidence for those problems is not well settled, it is obvious that managing older workers requires a profound change in many managerial practices and even – in many contexts – In the organisational culture prevailing on workplaces. Older workers cannot be seduced by career perspectives nor can be employed in jobs requiring physical strength. Usually older workers do not like to move from their own – for example to another branch of the organisation located in other towns – nor they are easy to adapt to new technologies, above all the information and communication technologies (ICT). Also, older workers can accept with more difficulties hierarchies where bosses are much younger;
- *avoiding "ageism"*. Ageism in workplaces means discrimination based on age, usually against older workers. This can be the case with downsizing, usually leaving at home older workers and keeping the younger. The European Union Council Directive 2000/78/EC for example considers the age discrimination as serious as discrimination based on religion or belief, disability, or sexual orientation. Employers can also have explicit equal opportunities policies which give a commitment to avoid discrimination on the grounds of age within the organisation;
- *knowledge transmittance between workers' cohorts and generations*. As already mentioned, this represents a special challenge for baby boomers replacement. But in general, as professional lives get longer, the distance – biographical but also cultural – between retiring and entering workers can be so large that special systems and tools should be developed and implemented to facilitate this knowledge transfer.

An apparent paradox is that in many cases this age increase did not show up yet. Prevalence of men working at 50-65 years is lower today than it was the case 15 years ago in many developed countries. This is the result of four main dynamics:

- in the long-range there has been a huge shift from self-employment in agriculture and handcraft sectors where people used to work until able, to organised and employed work, with stricter rules defining the maximum length of employment and providing effective pension schemes;
- the huge increase in labour productivity in the XX century made possible this decrease in activity rates for older cohorts. The productivity gains permitted a decrease of the real age of retirement while preserving the social security system. In the U.S. this has made possible for instance to report a steady decline in average retirement age from age 67 in 1950 to 62 in 2000, according to the Bureau of Labor Statistics (reported in Bezaitis, 2008: 16);
- modern pension schemes were based on the actuarial hypothesis of pyramid-shaped age distribution in the working population, so they could be relatively generous in allowing for early retirements and often also in offering "bridges to retirements";
- in last decades, early retirements have increased both for blue and white collars, due to large re-structuring and downsizing actions in many industries.

However, this "paradoxical" scenario with a decreasing retirement age does not seem to fit anymore the actual and foreseeable conditions of the economic system. There is growing international consensus that this trend is unsustainable because of the slowdown of the economy in the developed countries, coupled with the ageing of their population. For example, when Social Security was established in 1935 for Americans aged 65 and older, the average life expectancy in the United States was 61. This has produced a wide debate about the opportunity – or the strict financial necessity – to increase the normal age of retirement or to provide scope for phased retirement over a period of years (Munnell and Sass, 2008).

In turn, the employability of the workforce throughout the whole working life has received considerable attention and prompted various policy initiatives, particularly within the European Union, to promote active ageing and limit early exit from the labour force (e.g. Hasselhorn et al., 2003). Building on the Lisbon Strategy set out in 2000, the Stockholm European Council in 2001 recommended that Member States increase significantly the number of older people (aged 55–64) remaining in the workforce and the Barcelona European Council in 2002 proposed increasing the age of retirement by five years by 2010 (currently it averages 58 years). Yet, in 2001, the employment rate of older workers was only 38% in the 15 Member States of the EU

pre-2004 and 37% in the enlarged EU (European Commission, 2002). This figure is substantially lower in Italy, mainly because of advantageous early-retirement schemes prevailing until recently.

Any increase in workforce participation by older workers will thus require fundamental changes in pension schemes and in employers' policies on recruitment and retention, including organisational practices and working conditions. In health care, the challenges look especially great. First, it is difficult to engage senior people in nightshifts or on holidays. Second, healthcare is often considered a wearing labour context, leading to burn out syndrome, etc., so an ageing workforce could be characterised by higher rates of absenteeism or other work limitations, with serious consequences for the labour organisation and effectiveness.

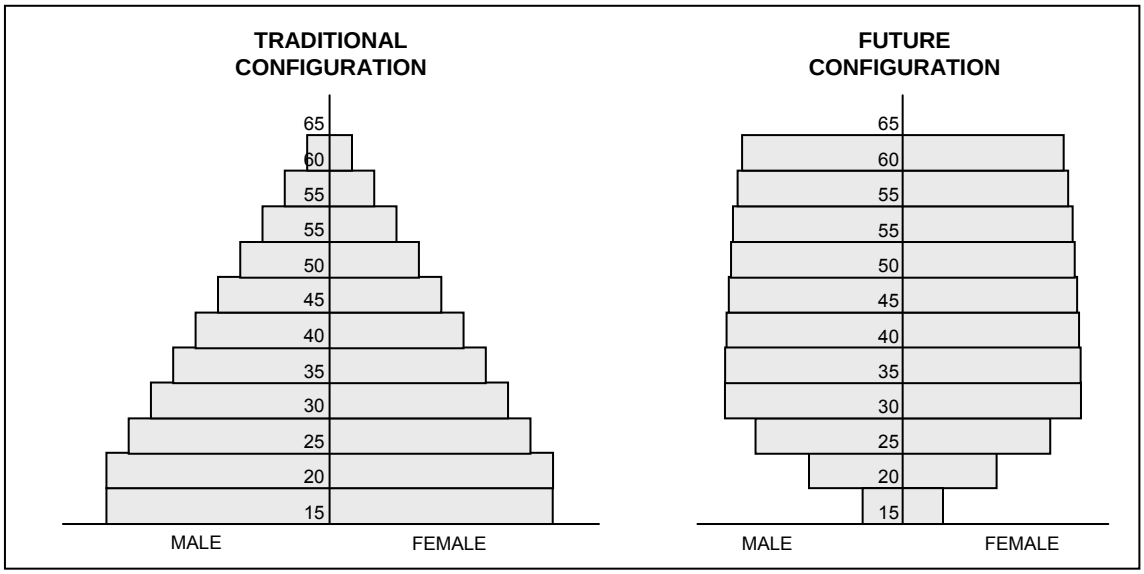
More generally, with a steady population and pension systems setting almost fixed exit ages, the workforce "age pyramid" will not be anymore a pyramid.

As shown in Figure 5.1, the traditional workforce composition was usually associated to a pyramid shape. Omitting for a moment biased gender composition, in the traditional configuration the younger cohorts were more populated than the older one, the entry age was between 15 and 25 for most jobs, jobs were usually stable and life-long, the pyramid-shape age distribution of the general population was reflected in the workforce pyramid, very few people lasted till 65 years before retiring.

The new or future configuration has a completely different shape. The entry level has increased, because of general regulation increasing the minimum required education for young people, and because an average increase in professional degrees and skills required by most industries. After the entry level ages, the shape of the configuration becomes close to a cylinder with almost no steps[40] until the required age for pension entitlement, usually set at 65 years. No early exits are – at least nominally – permitted if the workers want to save their pension entitlements. If no flexible retirement age schemes are developed, then at 65 a sharp exit will occur.

[40] As mortality is today very rare before 65, then deaths will explain only a minimal number of "exits", compared to the traditional configuration.

Figure 5.1. Traditional and future configuration for the workforce "pyramid".



Ageing is also affecting health workforce. In 2007, the Regional Committee for Europe of the WHO said: «Countries such as Denmark, France, Iceland, Norway, and Sweden are witnessing a greying of the nursing workforce, with the average age of employed nurses currently standing at 41-45 years. In the United Kingdom, one in five nurses is aged 50 or older and nearly half is over 40. The decline in numbers of younger nurses is a major concern. In the United Kingdom, between 1988 and 1998, the proportion of nurses under the age of 30 fell from 30% to 15%. Similar trends were observed in the medical profession. Thus, in 1985, 55% of French doctors were old less than 40 but, by 2000, this percentage had fallen to only 23%. A United Kingdom census indicated that, in 2001, only 19% of the consultant (medical specialist) workforce was under the age of 40, while about 40% of those over 50 were likely to retire in the following 10-15 years. These figures suggest that past policies, such as restrictions on intake for medical and nurse training, alongside ageing populations and declining prospects for recruitment in the European labour market, will generate serious imbalances between the demand and supply of health care labour» (WHO Regional Office for Europe, 2007: 16).

In addition, in 2006 Simoens and Hurst wrote: «Physician ageing is likely to have a profound effect on the future supply of physician services in many countries. The generation of doctors who were born during the 'baby boom' following World War II, will be coming up to retirement during the next decade or two. […] The supply of physicians is also influenced by the number of hours that physicians work. […] In all countries (except Greece), weekly work hours rise for physicians between 35-39 and 45-49, but fall in most countries from 50-54 years onwards as physicians approach retirement age. That suggests that the coming 'retirement

boom' among physicians will be preceded by a falling off in the hours of work that older physicians wish to offer, pre-retirement» (Simoens and Hurst, 2006: 23-25).

5.4. Results

Age distribution for total NHS staff

Table 5.1 reports age distribution for total NHS staff at the end of 2001 and at the end of 2007, together with sex (M and F).

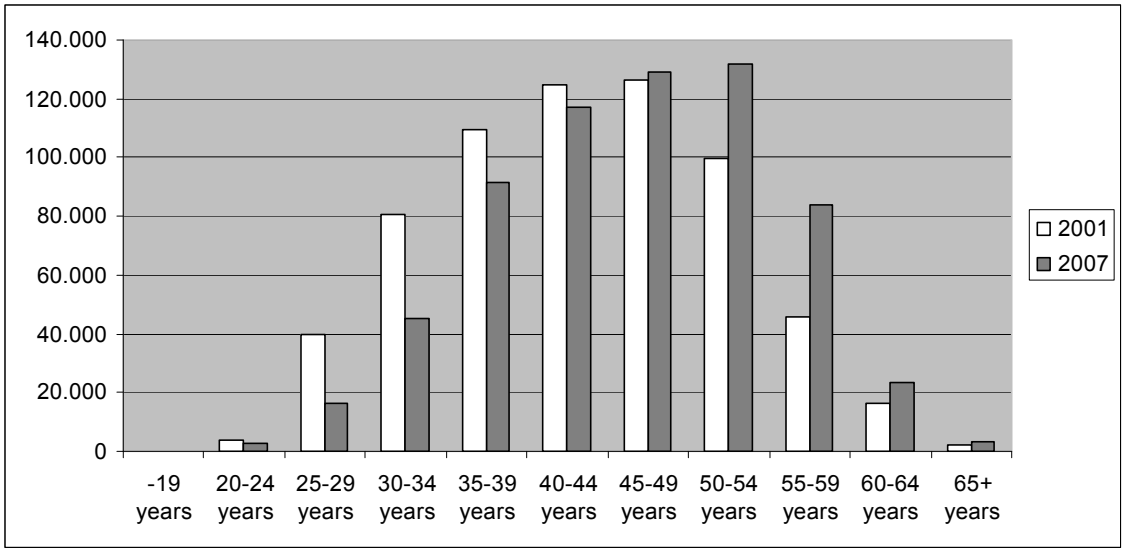
Table 5.1. Age distribution of the Italian NHS staff, headcounts 2001 and 2007.

2001									
Age	Physicians		Nurses		Administrative staff		Total NHS staff		
	Males	Females	Males	Females	Males	Females	Males	Females	*Total*
0-19 years	–	–	12	38	2	2	28	69	*97*
20-24 years	–	–	565	2,117	62	236	1,001	2,978	*3,979*
25-29 years	352	180	5,899	24,563	420	1,583	8,873	30,763	*39,636*
30-34 years	1,924	2,003	10,472	41,621	1,285	5,030	20,304	60,333	*80,637*
35-39 years	7,018	5,336	9,310	40,894	2,703	9,924	32,298	77,273	*109,571*
40-44 years	13,845	7,952	9,366	33,847	3,743	10,444	46,797	77,952	*124,749*
45-49 years	19,393	9,246	12,379	27,030	4,719	8,947	58,682	67,692	*126,374*
50-54 years	17,475	4,274	11,726	17,383	5,802	6,359	55,561	43,997	*99,558*
55-59 years	6,898	924	4,737	7,180	4,468	2,696	26,614	19,110	*45,724*
60-64 years	3,111	254	1,384	1,624	2,277	745	11,676	4,911	*16,587*
65+ years	707	54	125	136	319	113	1,771	512	*2,283*
All ages	*70,723*	*30,223*	*65,975*	*196,433*	*25,800*	*46,079*	*263,605*	*385,590*	*649,195*

2007									
Age	Physicians		Nurses		Administrative staff		Total NHS staff		
	Males	Females	Males	Females	Males	Females	Males	Females	*Total*
0-19 years	–	–	8	34	1	6	13	44	*57*
20-24 years	–	–	339	1,594	41	62	585	1,927	*2,512*
25-29 years	22	34	2,401	9,845	194	445	3,743	12,587	*16,330*
30-34 years	1,319	2,115	6,289	23,917	684	1,983	11,174	34,266	*45,440*
35-39 years	3,829	4,150	11,887	44,618	1,637	5,214	24,225	67,098	*91,323*
40-44 years	8,110	6,483	10,088	42,999	3,169	10,795	34,371	82,646	*117,017*
45-49 years	13,338	8,253	9,137	34,667	4,555	12,900	46,146	83,093	*129,239*
50-54 years	20,410	10,215	11,512	27,437	5,463	10,887	58,790	72,995	*131,785*
55-59 years	16,727	4,968	8,102	13,212	5,021	6,545	44,923	38,723	*83,646*
60-64 years	5,144	620	2,029	2,288	2,815	1,601	15,934	7,337	*23,271*
65+ years	782	59	214	194	506	201	2,376	680	*3,056*
All ages	*69,681*	*36,897*	*62,006*	*200,805*	*24,086*	*50,639*	*242,280*	*401,396*	*643,676*

A first representation of these data is in Figure 5.2, showing the age profile of the Italian NHS staff in 2007 compared with 2001.

Figure 5.2. Age profile of the Italian NHS staff, headcounts 2001 and 2007.



The greying of the total NHS staff results clear, with the switch from white to dark bars looking like the movement of a wave. In addition, the modal age class was 45-49 in 2001 and moved to 50-54 in 2007.

We can also look at the average age of total staff and selected figures, calculated using mid-ages for each class (for instance employees in class 20-24 years are considered all 22.5 years old[41]). Table 5.2 shows that the average age in 2001 was 43.5, while in 2007 it was 46.5.

Table 5.2. Average age of the Italian NHS staff, 2001 and 2007.

	Physicians			Nurses			Administrative staff			Total NHS staff		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
2001	48.1	44.5	47.0	42.9	39.5	40.4	49.0	43.3	45.4	46.3	41.6	*43.5*
2007	51.3	47.6	50.0	45.1	42.8	43.3	50.9	47.5	48.6	49.0	45.0	*46.5*
Difference 2007 – 2001	3.2	3.2	3.0	2.2	3.2	2.9	1.9	4.2	3.3	2.7	3.3	*2.9*

[41] For the age class 0-19 we used 19 because both in 2001 and 2007 current rules for recruitment in the Italian public service do not allow to recruit before 18 years. In any case, the total number of NHS in that class is very low. For age class 65 we adopted 67.5 because 70 is the maximum age for retirement, permitted only to some qualified types of staff. Again, the total number of NHS in this age class is vey low.

The 3 years of increase means an annual increase of 0.5. This result occurred despite a turnover that barely covered exits with inflows, with a total balance for the six-year period of –0.9% for total NHS staff (Table 5.3), a slight decrease that is at least partially explained by the ongoing outsourcing of activities formerly run directly by the NHS with its own salaried staff.

Table 5.3. Total turnover balance (inflow – outflows) in the Italian NHS staff from 2001 to 2007, headcounts.

	Physicians			Nurses			Administrative staff			Total NHS staff		
	M	F	Tot.	M	F	Tot.	M	F	Tot.	M	F	Tot.
No.	–1,042	6,674	5,632	–3,969	4,372	403	–1,714	4,560	2,846	–21,325	15,806	–5,519
%	–1.5%	22.1%	5.6%	–6.0%	2.2%	0.2%	–6.6%	9.9%	4.0%	–8.1%	4.1%	–0.9%

From 2001 to 2007 the total number of salaried staff of the NHS has almost remained the same (–0.9%, that is –5,519 in headcounts). Therefore, the sensible ageing can be explained by several causes that worked together: 1) pension reforms delayed the exit of some employees; 2) inflows were a little below the substitution rate; 3) staff composition changed, with a higher prevalence of skilled staff, requiring longer education and so hired at a higher age.

The parallel analysis of Table 5.2 and Table 5.3 leads to the following considerations:

- in 2001, physicians salaried by the NHS staff already had an average age of 47 years. In 2007 they reached 50, despite the inflow of newly hired physician in the period, leading to an increase of 5.5% in headcounts. The explanations for the three years increase lies in the major inflow of doctors occurred in the eighties, linked both to baby boom and to a phase of fast expansion of the newly established Italian NHS, funded in 1978;
- between 2001 and 2007, the average age of nurses salaried by the Italian NHS has gained 2.9 years, the same than total NHS staff. Two main explanations can be proposed for such increase. First, since 1999 a new major acceleration in the process of professionalization of Italian nurses most probably produced a temporary delay in inflows into the nursing workforce. A second major reason for such an increase in average age lies in the pension reforms, that set stricter conditions for retirement entitlement, namely requiring to stay longer in the workforce, above all for women (and so with a major impact on the nursing workforce);
- with an average age above 45 years in 2001, clerical staff reached almost 49 in 2007, that is almost the same average level of physicians, despite the shorter education required for most administrative jobs and a quite important increase (+4%) in administrative staff during the period 2001-2007. This last point is unexpected, considered the efforts made in recent years in the NHS to rationalise administrative

units, also supported by several national and regional laws that allowed only partial – if any – turn over for administrative staff.

Finally, a further way to analyse the ageing of the Italian NHS staff is to consider staff old 55 years and over, i.e. staff with less than 10 years left to work. In this way, greying appears even more pronounced and clearly claims for HRM answers. If we consider the total NHS staff, over 55 passed from 64,594 in 2001 to 109,973 in 2007, i.e. more than 7,500 headcounts of increase every year (Table 5.4). In percentages, that means an increase of 70%, from 10% to 17% of total staff.

For physicians the increase was even more evident: 55+ passed from 12% to 27% of total medical staff (+124%).

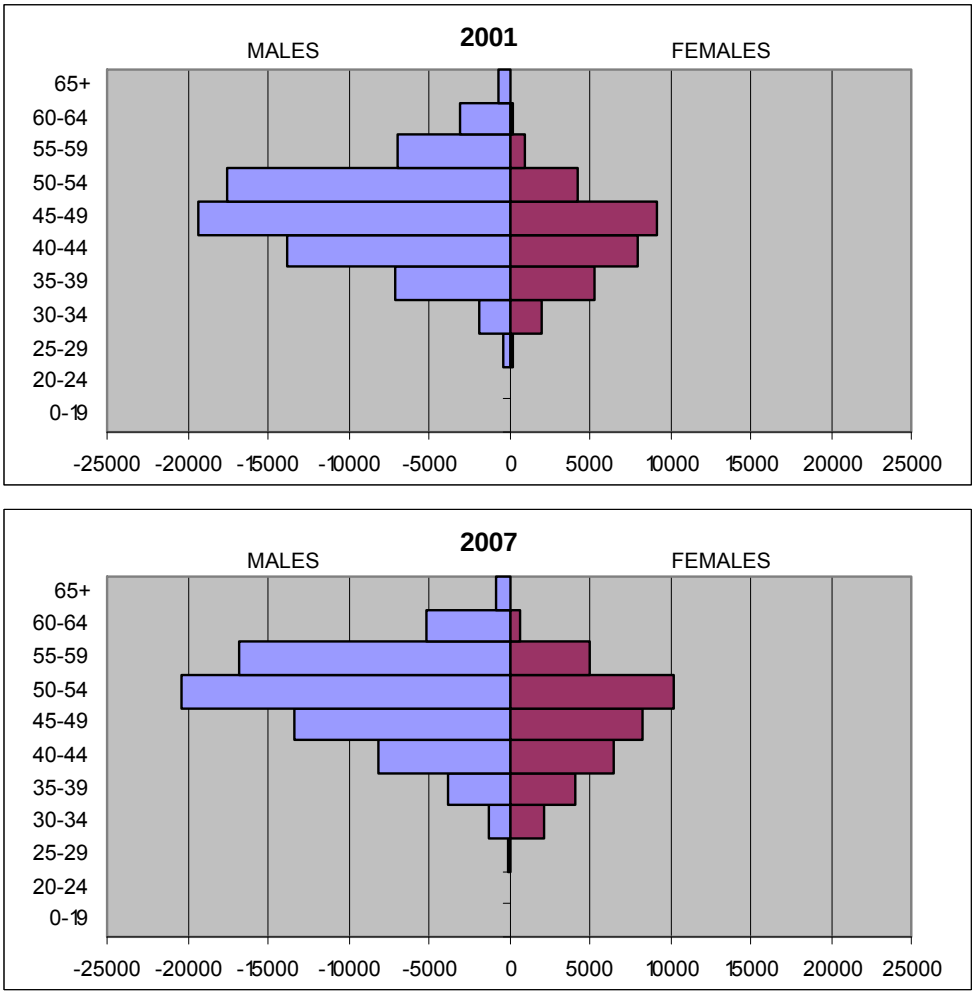
Table 5.4. Staff aged 55+, headcounts 2001 and 2007.

	Physicians			Nurses			Administrative staff			Total NHS staff		
	M	F	Tot.	M	F	Tot.	M	F	Tot.	M	F	Tot.
2001	10.716 (15%)	1.232 (4%)	11.948 (12%)	6.246 (9%)	8.940 (5%)	15.186 (6%)	7.064 (27%)	3.554 (8%)	10.618 (15%)	40.061 (15%)	24.533 (6%)	64.594 (10%)
2007	22.653 (33%)	5.647 (15%)	28.300 (27%)	10.345 (17%)	15.694 (8%)	26.039 (10%)	8.342 (35%)	8.347 (16%)	16.689 (22%)	63.233 (26%)	46.740 (12%)	109.973 (17%)

Age distribution for professional figures

The following figures report age pyramids for physicians, nurses, and administrative staff, respectively.

Figure 5.3. Age pyramid for physicians salaried by the Italian NHS, headcounts 2001 and 2007.



Physicians are the only occupation among the three here analysed that is characterised by a clear male dominance. Both nurses and administrative staff are highly feminised.

Physicians' pyramids show a marked concentration in few cohorts:

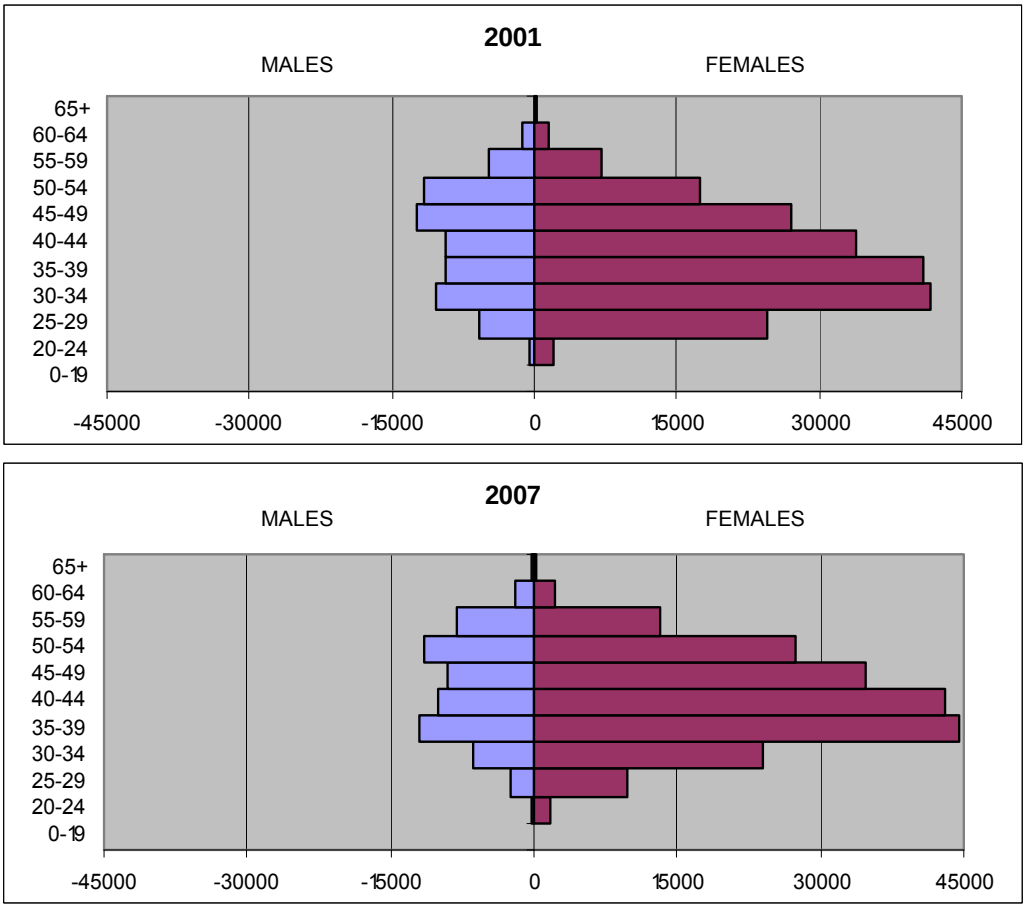
- in 2001, the most populated cohort was 44-49 years, with 28,639 headcounts representing 28% of total medical staff. Another 22% was represented by the cohort 40-44 years (N = 21,797), equalled by the cohort 50-54 with another 22% (N = 21,749). So, three cohorts represented almost three quarters of the medical population;
- in 2007, the most populated cohort was 50-54 years with 30,625 doctors representing 29% of all medical staff. Following cohorts were 55-59 years with 20% (N = 21,695), equalled by 45-49 with 20% (N = 21,591).

As already mentioned, physicians over 55 in 2001 represented a scant 12%, increased to 27% in 2007. However, physicians working over 60 remained a small percentage of total medical staff, increasing from 4.1% in 2001 to 6.2% in 2007.

Finally, doctors employed below 35 years of age represent a very limited quota of the salaried physicians of the Italian NHS. In 2001, they were 4.4%, decreased to 3.3% in 2007, despite the net influx of 5,632 physicians from 2001 to 2007. While considering the long medical education[42] and the fact that salaried doctors of the NHS are all specialists, this tiny prevalence of young physicians could be a symptom of the difficulties of the NHS in recruiting procedures, often delayed because of constraints set by the fiscal laws and by the long bureaucratic selection processes.

[42] Medical education lasts six years for the degree in medicine and surgery (from 19 to 25 years of age) plus four to five years for specialisation. Therefore, also in the hypothesis of a fast curriculum, without any break and with a fast access to the speciality school, standard minimum age for being hired as a salaried physician by the Italian NHS is around 30.

Figure 5.4. Age pyramid for nurses salaried by the Italian NHS, headcounts 2001 and 2007.



Nurses' pyramids suggest at least four comments:

- compared with physicians, nurses show a lower concentration in their age pyramids. In 2001, the most populated cohort was 30-34 years with 52,093 nurses representing 20% of total nursing staff. In 2007 the most populated cohort was 35-39 years with 22% (N = 56,505). The three most populated cohorts in 2001 were 30-34, 35-39, and 40-44 with 145,510 nurses, i.e. 55% of total nursing staff. In 2007 the ageing dynamics moved ahead the most populated cohorts, to 35-39, 40-44, and 45-49 with 153,396 nurses, i.e. 58% of total nursing staff;
- a remarkable difference between 2001 and 2007 is the almost complete disappearing of the cohorts younger than 30 years. In 2001 with 33,194 nurses they still represented 13% of total nursing staff, while in 2007 their prevalence was only 5% (N = 14,221). This result can only partially be explained by the recent reforms occurred in nursing education, because the current regime has started in 2001. In any case, also after the

reform nurses get their bachelor degree at an average age of 25[43] IPASVI, no year: 19), so well below 30the average age of graduating for nurses. therefore, this sharp decrease in the younger cohorts of the nursing staff should be explained with other factors, such as the general dynamics asking for longer careers in order to be entitled to satisfying pension levels, coupled with the relative shortage of nurses in several Italian Regions (consequence of low *numeri clausi* for bachelors in nursing and high attrition rates that characterise that education);

- further information that we can retain from Figure 5.4 is the low prevalence of nurses remaining at work over 60 years of age. In 2001 they were 3,269, i.e. 1.2% of total nursing staff. In 2007 figures were 4,725 and 1,8%, respectively;
- finally, nurses' age pyramids seem to show a higher retention for males, compared with females. Even if we lack data on work seniority, the left (male) side of the pyramids shows a distribution along ages less concentrated than the right (female) side, thus strongly supporting the hypothesis of careers lasting more years for men than for women.

Just as a benchmark, we can consider that ten years ago Buchan, analysing UK nurses, defined "older" the nurses above 40 years of age and found that in the UK NHS in 1997 nurses of 40+ years of age represented 46% (and 50+ years were the 17%; Buchan, 1999: 819-820)[44]. As reported in Table 5.2, in the Italian NHS the average age for nurses was 40.4 in 2001 and 43.3 in 2007. Moreover, nurses with 40+ years were 48% of total nursing staff in 2001 and 62% in 2007 (and 50+ years were 17% in 2001 and 25% in 2007).

Now, the definition of "young" and "old" workers represents a cultural construction and a social convention, but it is hard to consider old the nurses 40+. Also because in Italy in 2006 the average age for obtaining the bachelor in nursing was 25 years (IPASVI, no year: 19). Therefore, on average, we can expect that young nurses entering the profession at 25 will spend more years of their professional life above the threshold of 40 years than below.

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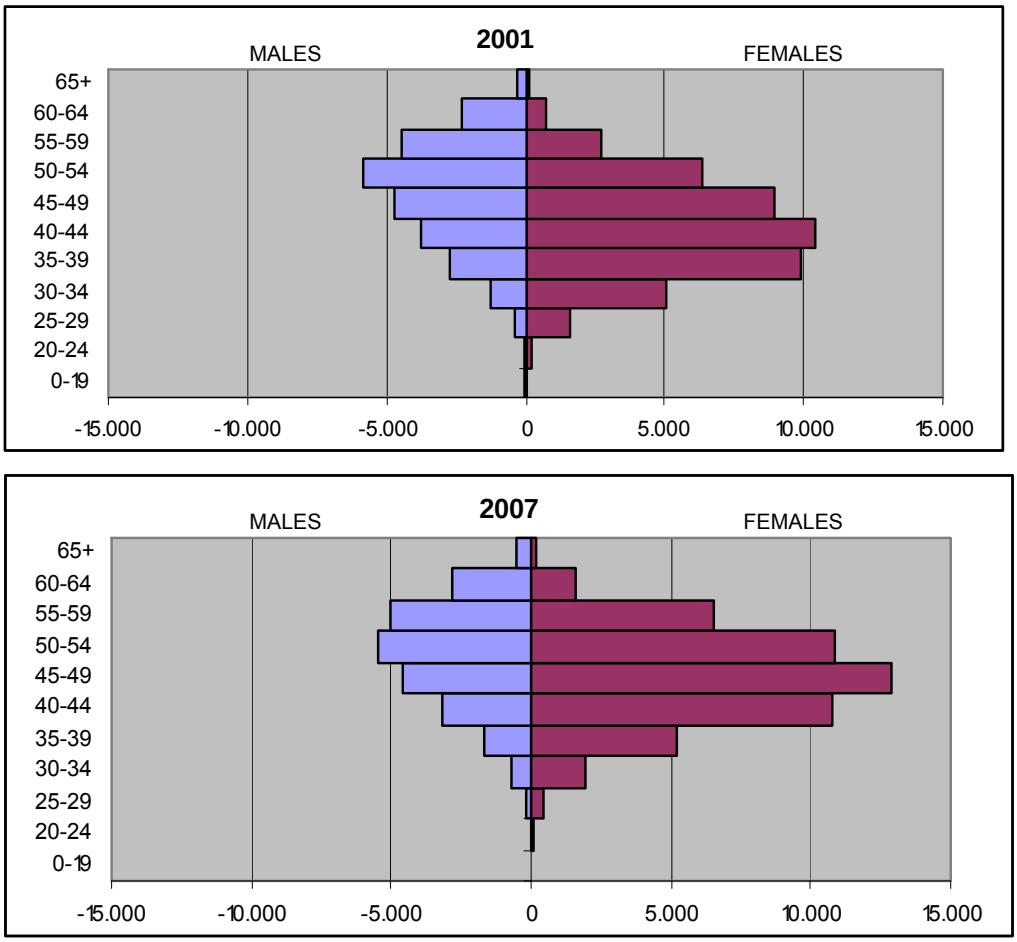
[43] The standard age should be 22 (19 is the entry age and the bachelor lasts three years), but the observed age is 25. This is explained by a high incidence of students that enter the bachelor quite late. In academic year 2006-2007 the percentage of students entering the first year of bachelor old 21 years or less – i.e. two years later than standard age – was 45% and students entering when old 30 years or more were 17% (IPASVI, no year: 11).

[44] In Canada the average age of nurses reached 44.5 years in 2003, when one in three nurses in Canada was 50 years of age or older (CIHI, 2004).

Figure 5.5. Age pyramid for administrative staff salaried by the Italian NHS, headcounts 2001 and 2007.



Also the pyramids for administrative staff show an ageing dynamics, with the most populated cohort that in 2001 was 40-44 years, switched to 45-49 in 2007[45]. As already reported in Table 5.2 and in Table 5.4, this is the group that experienced the highest increase in the average age from 2001 to 2007 (+3.3 years) and in 2001 was the group with the highest prevalence of staff aged 55 or more (15%), even higher than for physicians (12%)[46].

While characterised by an overall aged demographics, administrative staff present major differences according to genders, with a concentration in higher age groups for men and in lower age groups for women. Again, one explanation for such evidence could be a higher

[45] In 2001 the cohort 40-44 had 14,187 employees, representing 20% of total administrative staff. In 2007 the 45-49 cohort had 17,455 employees, representing 23% of total administrative staff.

[46] In 2007 physicians had 27%, while administrative staff "only" 22%.

retention for men than for women. It is also important to highlight that, while confirmed, this differences decreased in intensity from 2001 to 2007.

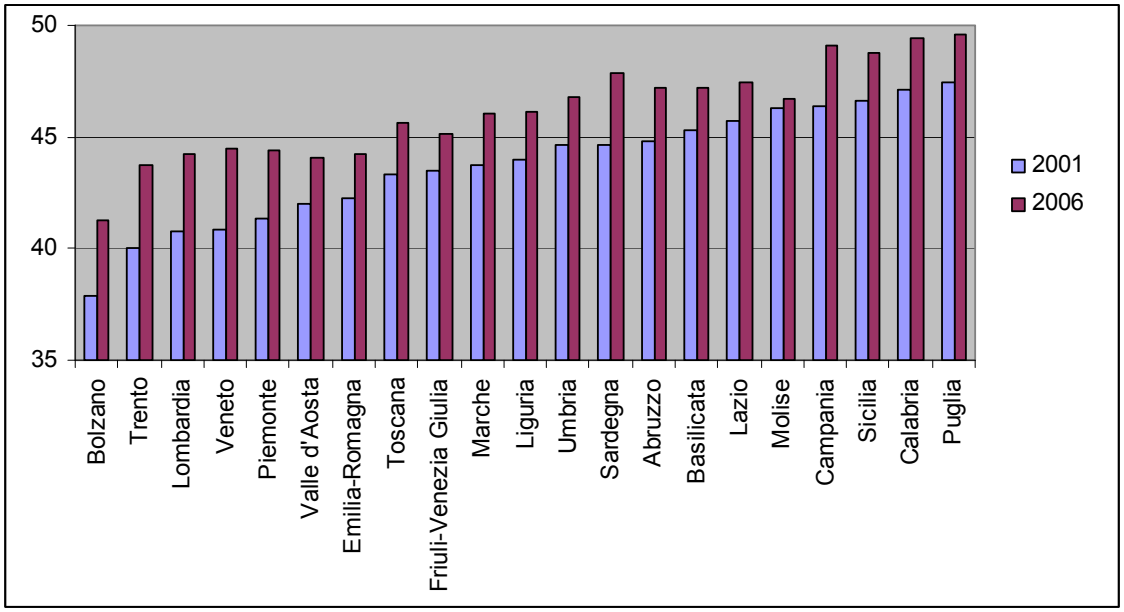
Age distribution by Regions

This section is based on data referred to 2006 instead of 2007, this latter being unavailable for a regional analysis.

Figure 5.6 reports average ages for total staff in 2006 compared with 2001 in every Italian Region. Here, at least two remarks deserve attention:

- first, the figure shows differences extremely large between Regions in both years. In 2001 average age ranged between 37.85 years in the Province of Bolzano to 47.45 in Puglia, with a difference of around 10 years in the average age of NHS regional staff. In 2006 the range went from 41.24 years in the Province of Bolzano to 49.58 in Puglia, with a 8 years difference;
- in addition, also the differences between 2001 and 2006 show large differences between Regions, while all of them experienced an increase in the average age. Coherently with their ranking in 2001, Bolzano, Trento, Lombardia, and Veneto experienced the largest increases (ranging from 3.39 to 3.70). This contributed to a limited convergence of the average age among Regions.

Figure 5.6. Average age of total staff by Italian Regions, headcounts 2001 and 2006.



5.5. Discussion and conclusions

Demographics

Information presented in the previous pages describes a major, structural change in the composition of the Italian NHS staff, with a general ageing as main driver. Despite its importance, analyses about ageing remain rare[47].

Most indicators reveal a sharp shift between 2001 and 2007:

- average age in 2007 was 46.5 years old, compared with 43.5 in 2001;
- the most populated cohort in 2007 was 50-54 (with 20% of total staff) while in 2001 it was 45-49 (19% of total staff);
- employees old 55 years or over in 2007 was 17% of total staff, compared with 10% in 2001;
- for some key figures of the healthcare sector such as nurses, this shift from 2001 to 2007 was even more important – at least in relative terms – with an average age increasing from 40.4 to 43.3 years and the prevalence of 55+ from 6% to 10%.

These changes experienced in a quite short period have been further highlighted by the fact that in the same period the Italian NHS was recruiting limited number of people. Therefore, staff already employed delayed the decision to retire or in any case matured other years of seniority, while only a few new – younger – resources entered the NHS staff, replacing the retired.

However, the changes occurred so far look yet limited when compared with the new *régime* that it is possible to predict for the next future. This is clearly explained by a comparison of actual 2007 age pyramids of section 5.4 with Figure 5.1. Instead of being distributed along all age classes, current pyramids are highly concentrated in the central cohorts: in 2007 cohorts 35-55 represented 73% of total NHS staff (71% in 2001).

Therefore, in the long run we can expect a limited increase in recruitment of young people, but with an ongoing, deep shift of workforce also in the older cohorts that will reach populations much more similar to central cohorts than it is the case today.

[47] A good exception is Piccoli et al. (2008) that describe the trend of ageing on nurses in three Italian hospitals and explore some retention strategies suggested by literature.

Management implications

The management of the NHS has to develop a full understanding of this major, structural change. First, data provided in the previous paragraph should be detailed, integrated, and updated regularly. Moreover, for several figures data should be collected and analysed for the whole labour market and not only for the NHS staff. This is particularly the case for support staff, much employed in nursing homes and social services needing health assistance.

Another limitation of our analysis derives from the structure of the database that does not permit to assess if older cohorts of employed NHS staff are less likely to work full time. This sensible information should be integrated into the analysis and could be collected on a relevant sample of NHS staff.

In spite of these (surmountable) limitations, it is clear that this rapid ageing of workforce needs a deep assessment of actual organisational culture and HRM systems in many healthcare organisations. Here, at least the following areas should be addressed with "proactive" policies in the Italian NHS organisations:

- *communication.* Older workers want to be talked with and appreciate direct, clear communication. They also value to give suggestions and contributions and to be recognised for it;
- *careers' design and compensation.* Career paths can improve the opportunities for jobs able to develop skills and competences of younger workers, for example creating mentoring programmes etc. In terms of compensation, older workers could be more interested in suitable benefits than in pay increases;
- *internal mobility.* When managing long careers, employers should promote active mobility procedures. Job rotation may reduce boredom and improve cross-departmental communication/cooperation;
- *continuous learning.* This is an important dimension to look after, because older staff could have less incentives and motivation to apply to courses and other continuous development programs. In addition, employers could discriminate older workers, preferring younger staff for which the investment could have greater and long-lasting returns. Usually it is important to be clear, insisting that all employees become and remain technologically literate, not allowing some of them to "opt out" of acquiring new needed skills;
- *flexible and part time arrangements for the last years of the professional life.* Here the challenge is to permit and favour a "phased" approach to retirement. If the employer wants to retain older workers, then changing hours of employment may be a key factor;

- *more cautious policies for assessing limitations and special conditions of employed staff.* Ageing at work has both positive and negative effects for the worker's health. From one side, the social environment provided by the organisation and the colleagues, together with stimuli and satisfaction that can be obtained, are strong factors of health improvement. On the other side, there are some age-related health problems, such as the high incidence of back injury amongst older nurses, often causing absences from work and early retirement or in any case a health condition making them unsuited to physically demanding jobs. In the Italian public service – ad so also in the NHS staff – the established culture has favoured the very common recognition of work injuries among employees or other health conditions that limit the normal utilisation of workers in their jobs. Examples include lifting limitation to 5, 10 or 20 kg because of back pain, limitations to teamwork because of agoraphobia, or exclusion from nightshifts because of several possible health conditions. Ageing will lead to an increase of these health conditions, so employers have to be extremely careful in recognising those limitations, if they want to safeguard the functionality of the healthcare organisation;
- *procedures and safeguards in order to manage severe impairment of employed staff*. In some cases, ageing could lower the quality of services that a certain employee is able to provide. For example, this is the case with impairment. In order to avoid quality risks for the patients but also to maintain a proper relation with the health professional, the employer should develop measures able to identify potential problems before they become clear, sustain the health professional concerned, but also provide "outplacement" solutions for the cases without solutions[48].

Finally, older staff also has positive characteristics. Not only they are more experienced, but also they are often more reliable and stable, that is less subject to the organisational cost of

[48] Peisah et al. (2007: 826-827) report the case of doctors' impairment: «Having to extricate the impaired older doctor from clinical practice after a lifetime of contribution to patient care is an unpleasant scenario […]. A recent descriptive study of 41 older impaired doctors referred to the New South Wales (NSW) Medical Board included five doctors with frank dementia. Twenty-nine per cent were diagnosed with substance abuse, 22% with depression and 17% with two comorbid psychiatric conditions. Almost 70% were deregistered, suspended from practice or encouraged to retire. Continued practice by such physicians puts the public at risk and forced retirement is a humiliating experience for the doctor. We have a responsibility as a medical community to prevent this». While in this reported case we have not salaried employment, the example remains relevant also for the Italian NHS were doctors are salaried staff.

loosing these experienced staff. This constitutes a major value in labour markets and for professional figures highly volatile, who imply high costs of turn over in terms of recruitment and selection procedures, orientation programmes, etc.

Unfortunately, despite the central role that ageing plays in shaping the challenges for HRM in the Italian NHS, experience does not seem to show any sign of active HRM policies and practices addressing the ageing issue in a creative and effective way. Here, a real green field for innovation and experiments is required and warmly welcome.

6. DOCTORS' FEMINISATION IN ITALY: HOW MUCH? WHICH CONSEQUENCES?

6.1. Object and goals

The feminisation of the medical profession represents a "slow revolution" occurring in most western healthcare systems.

Health care is traditionally highly gendered. Women account for up to 77% of the health care workforce in Europe, with other estimates revealing that in all countries women account for at least 60% of "human resources for health" (Dubois et al., 2006: 20). Importantly, the gender balance is becoming more favourable for women in even traditionally male-dominated health care roles such as medicine. Similarly, the percentage of women enrolling in medical schools continues to increase in most countries and in some cases – including Italy – women entrants now outnumber men. In contrast, nursing has traditionally been a female occupation and remains female-dominated (but in Italy one quarter of all nurses are men).

The increasing feminisation of the medical profession in western countries has important consequences for workforce planning (Bloor and Maynard, 2003). The combination of physical constraints imposed by pregnancy and childbirth and the cultural constraints arising from the conventional role of the mother as the dominant carer in a family means that women are more likely to take career breaks or to work part-time (De Jong et al., 2006). Furthermore, in many countries, structural rigidities inhibit the flexible work patterns that would allow women to continue to participate in the workforce (Heiligers and Hingstman, 2000). These constraints often hinder career progression as women approach a "glass ceiling" – their previous careers may have offered fewer opportunities to accumulate the same breadth of experience as their male counterparts. However, this is not a universal phenomenon and some countries have seen substantial increases in the proportion of women becoming medical specialists, although often concentrated in certain specialties, such as paediatrics, child and adolescent psychiatrics (Gjerberg, 2001).

This chapter wants to assess all these international, general trends, referred to the Italian experience.

We define the following research questions in order to describe the phenomena and to discuss their potential implications.

RQ1. Is the females' quota among doctors employed by the Italian NHS increasing? At what pace?
The analysis will be based on headcounts and on age pyramids of male and female doctors in 2001 compared with 2007.

RQ2. Is there a "glass ceiling" in female careers? If yes, why?
The analysis will look at the ratios females/males for the different positions collected in the database described in next section that distinguishes between heads of clinical units, heads of sub-units, and other medical staff. The database allows also to control for doctors age (with increasing feminisation, female doctors should be less represented in chief positions only because they are younger than male colleagues).

6.2. Methods

The analysis is based on data collected in the Conto Annuale (www.contoannuale.tesori.it) by the Ragioneria Generale dello Stato of the Ministry of economy (www.tesoro.it). The database is updated yearly for all employed staff of all Italian public administrations. The information provided by the Conto Annuale is very rich and represents a major basis for system-wide analyses. Moreover, this information is available since 2001, permitting both time-series and cross-section analyses. Despite the very interesting content of this database, only few researches have used data of Conto Annuale so far.

For our analysis we have considered headcounts, except for specific purposes. This does not produce any relevant bias to the analysis, given the fact that part-time arrangements represent a limited quota of total jobs in the Italian NHS and that they are present in all those jobs (while with different percentages).
Secondly, the analysis refers to standard tenured employment status, excluding all forms of term-contracts, free-lance collaborations, etc.[49]

[49] "Total NHS staff" refers to all figures with tenured employment status. This excludes "Direttori generali" (781 headcounts in 2001 and 813 in 2007) and "Personale contrattista" (684 headcounts in 2001 and 608 in 2007), reported in the Conto Annuale despite their non-tenured status.

Third, we considered total NHS tenured staff as first reference. Then, we also identified three professionals groups that deserve special attentions because of their key role in healthcare services provision and because they have been the target of recent changes in policies and regulation in Italy. The three groups are:

- "Physicians";
- "Nurses"[50];
- "Administrative staff", referring both to managerial positions (e.g. head of accounting; head of purchasing; head of personnel administration) and to other administrative staff.

Fourth, we considered only the 273 LHAs and IHTs, i.e. the core of the network of public organisations providing direct healthcare services to patients within the Italian NHS[51].

6.3. Background

«Female participation in some parts of the health workforce is […] is projected to increase further, and women may provide the main source of labour supply growth in the [European] Region. In most western European countries, the proportion of female physicians (both general practitioners and specialists) rose steadily throughout the 1990s» (WHO Office for Europe, 2007: 16).

Literature usually identifies five main dimensions as effects of doctors' feminisation[52]:

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[50] For 2001 this category includes the following groups present in the database: "Coll.re prof.le sanitario esperto Ds", "Coll.re prof.le sanitario – pers. infer. – D", "Oper.re prof.le sanitario pers. inferm. – C", and "Oper.re prof.le di ii cat.pers. inferm. Bs". For 2007 it includes the macro-category "Totale profili ruolo sanitario - personale infermieristico". For 2001, the structure of the database does not permit to extract from this group a small number of non-nurses counted among "Coll.re prof.le sanitario esperto Ds". However, this represents less than 0.5% of the total category here referred as "Nurses" so it does not imply serous flaws in our analysis.

[51] The database contains information about 335 institutions. In fact, in a broad and comprehensive view, the Italian NHS in 2007 encompassed 273 Local Health Authorities (LHAs) and Independent Hospital Trusts (IHTs), 6 Teaching hospitals directly owned and managed by the Ministry of Education, 10 Institutes for zoo-prophylaxis, 18 hospitals of healthcare and scientific research, 8 nursing home organisations, 17 regional agencies for the environment, and few other agencies or institutions.

[52] Levinson and Lurie (2004) propose four dimensions partially different from our ones: the patient–physician relationship; the local delivery of care (referring to more suitable leadership styles, favouring a team approach); the societal delivery of care (but with «a more ambivalent view» because «on one hand,

- *workforce planning:* «the feminization of the medical profession has important consequences for workforce planning, since women are more likely to take career breaks or to work part-time. These factors need to be taken into account in order to provide realistic estimates for the number of physicians available and needed» (WHO Office for Europe, 2007: 16). «Growing feminisation of the physician workforce and growing part-time working is […] likely to have reduced lifetime hours worked. On average, female physicians work fewer weekly hours than male physicians in many OECD countries. Also, on average, female physicians have shorter working lives than male physicians» (OECD, 2008b: 16);
- *labour conditions and flexibility:* evidence suggests that female physicians are more likely to leave the practice of medicine or practise at low activity levels during child-bearing age and tend to work fewer hours based on part-time arrangements (Simoens and Hurst, 2006: 21; Kaneto et al., 2009: 117-118). More generally, female doctors ask and need flexible education programs and careers, and work conditions in order to achieve an acceptable work-family balance (Allen, 2005). They also respond differently to work stress and look for different solutions to cope with it (Bergman et al., 2003);
- *coverage of all medical specialties:* female doctors prefer – or in any case are more present in – primary care specialities (Burkett and Kurz, 1981; Simoens and Hurst, 2006: 21). Gjeberg (2001) confirms that «in Norway as in most Western countries, doctors' choice of specialty has been strongly gendered. Female physicians have tended both to specialise to a lesser degree and to enter other specialties than male colleague». Several studies explain the large differences in women's prevalence among different specialties – or in specialising (Gjeberg, 2003) – with the difficulties that women find in balancing family duties and the education programmes required by the specialty, or with the labour conditions characterised by long working hours, night on calls, etc. (Ormanczyk et al., 2002; Gjeberg, 2002);
- *cultural approaches to patients and medical practice:* several studies have found differences between male and female physicians both in the relation with patients, in the approach to medical practice, and in clinical decisions. Among the former, studies have highlighted differences in disciplines close to sexuality such as obstetrics, gynaecology (Christe et al., 2008), or paediatrics, but also as a general rule (Roter et al., 2002). An

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female physicians are willing to work in less well-compensated medical positions and are more likely to practice in primary care specialties» but «on the other hand, their work patterns may aggravate problems related to patients' access to health care); and the medical profession itself (in the work-family balance, in the attitude to command lower salaries than male colleagues, etc.).

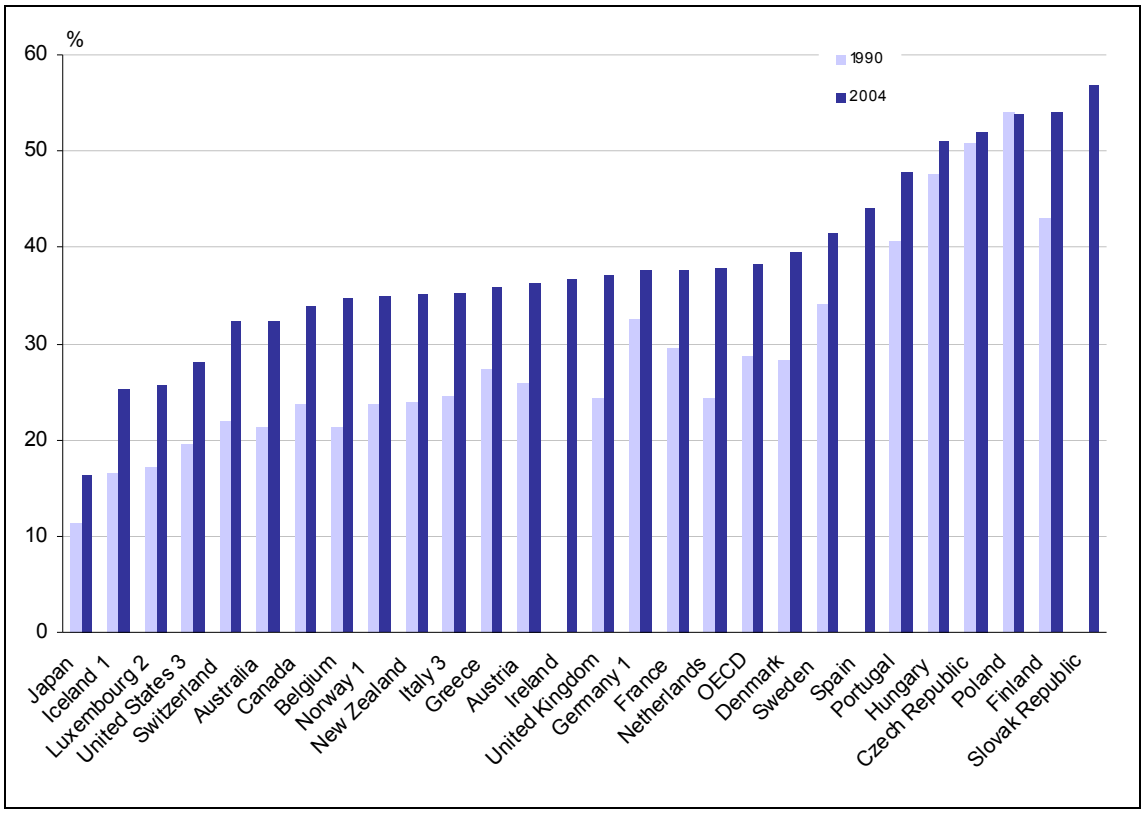
example of different approach to the professional role and the medical practice is reported in McKinstry et al. (2006) that, writing about general practitioners in Scotland, conclude that «auxiliary activities such as teaching and administrative duties are not being taken up by women. This may have serious implications for the future development of the specialty». Finally, several studies have reported differences in clinical behaviours and choices, for instance in the utilisation of prenatal diagnoses (Bouchard and Renaud, 1997);

- *organisational relations with other colleagues and health professions:* physicians' feminisation could change some inter-professional relations traditionally gendered. The first and most obvious example is the doctor-nurse relationship (Gjerberg and Kiølsrød, 2001; Zelek and Phillips, 2003) and in particular the relation between the two figures that in most healthcare systems play a managerial role in line units, i.e. the medical head of clinical unit and the nursing coordinator. This is particularly true because managerial, hierarchical roles are usually more "gender-sensible" than technical-professional role.

Figure 6.1 shows doctors' feminisation between 1990 and 2004 in selected OECD countries. All countries, with the only exception of Poland[53], experienced an increase in the female prevalence. On average, the increase was about 30% in less than 15 years, i.e. around 2% a year.

[53] Eastern European countries all share a common tradition, developed in the former socialist area, where the medical profession was highly feminised and today in Russia two-thirds of physicians are female (Danishevski, 2006: 103-104). Therefore, in Figure 6.1, Hungary, Czech Republic, Poland, and Slovak Republic all have more than 50% of females as a percentage of total physicians, together with Finland, that for many aspects shares a history close to Easter European countries.

Figure 6.1. Women physicians as percentage of total physicians, OECD countries, 1990 and 2004.



Source: OECD, 2007b.

Notes: 1. Data refers to 1991; 2. Data refers to 1992; 3. Data refers to 1993.

6.4. Results

Gender composition in age pyramids

Women at the end of 2007 represented 35% of total salaried doctors of the Italian NHS. As Table 6.1 shows, this percentage was 30% in 2001. Therefore, a 5% increase occurred in only 6 years and this result was produced despite shorter careers still characterising female medical staff compared with men.

Furthermore, in 2007 women were around 10% of employed doctors in their sixties, 30% of doctors with age 50-59, 40% of doctors with age 40-49, 55% of doctors with age 30-39, and 60% of doctors aged less than 30 years. A similar but somewhat lower progression was already revealed in 2001, with a minimum prevalence of less than 10% among doctors over 59 and a maximum of 45% for doctors with age 30-39.

This rapid feminisation during the period 2001-2007 has been partially favoured by an inflow of newly hired physicians with a total increase in the number of employed physicians of 5,632 headcounts. In fact, this increase was a result of a net gain of 6,674 women and a net loss of 1,042 men.

Table 6.1. Age distribution for physicians employed by the Italian NHS, headcounts, 2001 and 2007.

Age (years)	2001					2007				
	Males		Females		Total	Males		Females		Total
	N.	%	N.	%		N.	%	N.	%	
25-29	352	66%	180	34%	532	22	39%	34	61%	56
30-34	1,924	49%	2,003	51%	3,927	1,319	38%	2,115	62%	3,434
35-39	7,018	57%	5,336	43%	12,354	3,829	48%	4,150	52%	7,979
40-44	13,845	64%	7,952	36%	21,797	8,110	56%	6,483	44%	14,593
45-49	19,393	68%	9,246	32%	28,639	13,338	62%	8,253	38%	21,591
50-54	17,475	80%	4,274	20%	21,749	20,410	67%	10,215	33%	30,625
55-59	6,898	88%	924	12%	7,822	16,727	77%	4,968	23%	21,695
60-64	3,111	92%	254	8%	3,365	5,144	89%	620	11%	5,764
65+	707	93%	54	7%	761	782	93%	59	7%	841
All ages	*70,723*	70%	*30,223*	30%	*100,946*	*69,681*	65%	*36,897*	35%	*106,578*

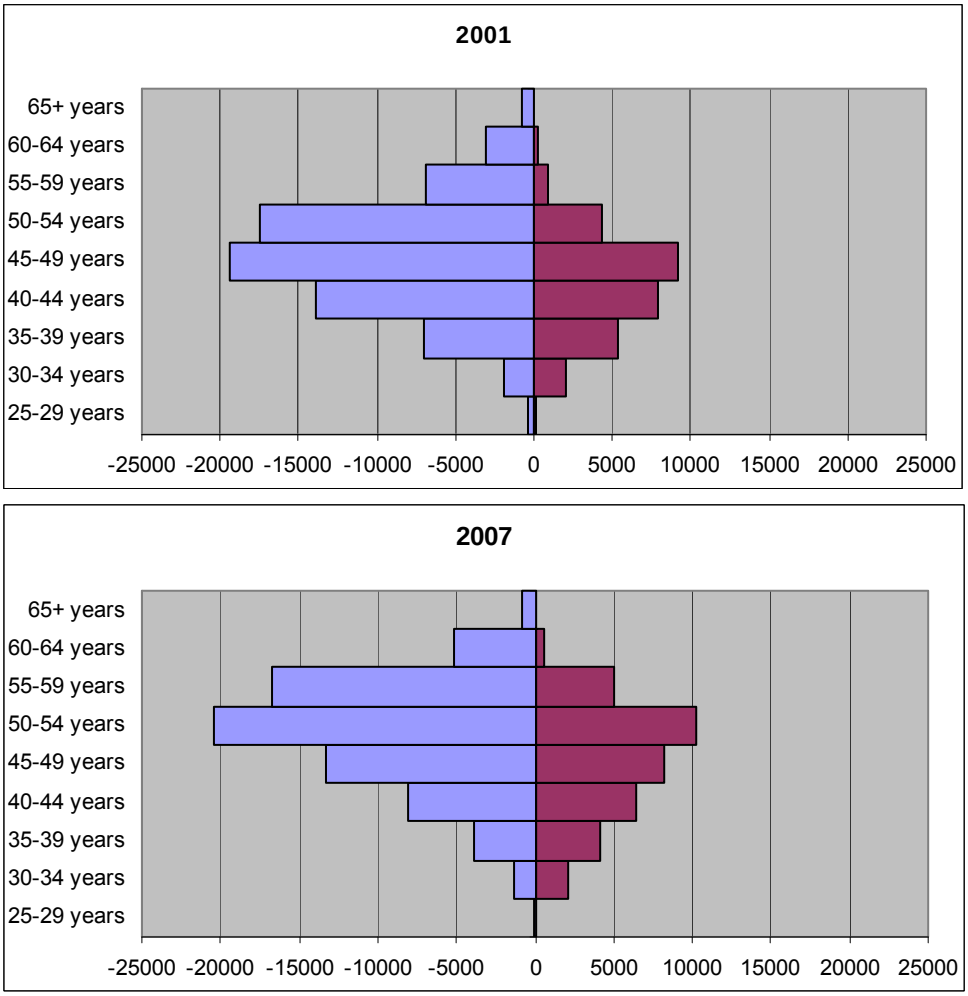
Figure 6.2 reports the age pyramids of NHS employed physicians in 2001 and in 2007, respectively. Age pyramids are particularly effective in highlighting both ageing and feminisation.

Ageing is particular evident in the shift of the two most populated cohorts, that in 2001 where the 45-49 and the 50-54, shifted to 50-54 and 55-59 six years later.

As refers feminisation, the 2001 pyramid reports a slight majority of women only in the 30-34, however poor in absolute number. In 2007, this feminisation is confirmed in the cohort now shifted into the 35-39 class of age, which in the meanwhile has become much more populated due to new recruitment, and has further progressed in the class of age 30-34, were women have reached 62%[54].

[54] In 2007 also the class of age 25-29 has a female majority. However, in the text we did not look at this class because it is very limited in absolute numbers and, given the education and hiring processes, it represents a cohort that could easily change its characteristics because of the later inflows due to new hires.

Figure 6.2. Age pyramids for physicians employed by the Italian NHS, headcounts, 2001 and 2007.



Career perspectives of female doctors

In the Italian NHS tenured physicians are assigned to jobs that belong to three main categories: head of unit, head of sub-unit, and other assignments. All jobs are evaluated and can result in different retribution levels, with no strict or mandatory economic hierarchy between the three categories. Therefore, as an example, in a LHA the job of head of the cardiology unit could be evaluated and paid less than the head of the hand surgery sub-unit, or also less than expert jobs for physicians without managerial responsibilities[55]. However, most times the three types of jobs follow a strict hierarchy also in pay terms (Del Vecchio and De Pietro, 2001). Therefore,

[55] In the Italian tradition, there is not a figure similar to the consultant of the British NHS.

physicians willing to advance in their career will be induced to seek for managerial jobs, asking for the responsibility of a sub-unit and, then, of a unit.

In order to analyse careers of female doctors, Table 6.2 and Figure 6.3 show their prevalence in the three types of assignments in 2001 and 2007 along the age profile

Table 6.2. Prevalence of women in physicians jobs for age profile, headcounts 2001 and 2007.

2001											
Age	Head of unit			Head of sub-unit			Other job			*All jobs*	
	N. of women	% of women (A1)	B1 – A1	N. of women	% of women (A2)	B1 – A2	N. of women	% of women (A3)	B1 – A3	*N. of women*	*% of women (B1)*
25-29	0	-	-	24	39%	6%	156	33%	-1%	*180*	*34%*
30-34	0	-	-	156	43%	-8%	1,847	52%	1%	*2,003*	*51%*
35-39	7	18%	-26%	377	40%	-3%	4,952	44%	0%	*5,336*	*43%*
40-44	74	19%	-17%	882	33%	-3%	6,996	37%	1%	*7,952*	*36%*
45-49	283	17%	-15%	1,467	34%	2%	7,496	33%	1%	*9,246*	*32%*
50-54	321	10%	-10%	785	21%	2%	3,168	21%	2%	*4,274*	*20%*
55-59	134	6%	-6%	187	14%	2%	603	14%	3%	*924*	*12%*
60-64	74	5%	-3%	43	10%	3%	137	10%	3%	*254*	*8%*
65+	15	3%	-4%	7	10%	3%	32	15%	8%	*54*	*7%*
All ages	*908*	*9%*	*-21%*	*3,928*	*28%*	*-1%*	*25,387*	*33%*	*3%*	*30,223*	*30%*

2007											
Age	Head of unit			Head of sub-unit			Other job			*All jobs*	
	N. of women	% of women (A4)	B2 – A4	N. of women	% of women (A5)	B2 – A5	N. of women	% of women (A6)	B2 – A6	*N. of women*	*% of women (B2)*
25-29	0	-	-	0	-	-	34	61%	0%	*34*	*61%*
30-34	0	-	-	22	48%	-14%	2,093	62%	0%	*2,115*	*62%*
35-39	1	10%	-42%	66	38%	-14%	4,083	52%	0%	*4,150*	*52%*
40-44	21	18%	-27%	327	35%	-9%	6,135	45%	1%	*6,483*	*44%*
45-49	149	20%	-18%	935	31%	-7%	7,169	40%	2%	*8,253*	*38%*
50-54	435	18%	-16%	2,024	31%	-2%	7,756	36%	2%	*10,215*	*33%*
55-59	397	11%	-12%	1,235	21%	-2%	3,336	27%	4%	*4,968*	*23%*
60-64	127	6%	-5%	159	11%	0%	334	15%	4%	*620*	*11%*
65+	22	5%	-2%	24	15%	8%	13	6%	-1%	*59*	*7%*
All ages	*1,152*	*12%*	*-23%*	*4,792*	*27%*	*-8%*	*30,953*	*39%*	*5%*	*36,897*	*35%*

1. In 2001 women were 30% of all physicians but only 9% among heads of unit. Prevalence increased among heads of sub-units, where women were 28% and – of course – among other jobs, where they reached 33%.

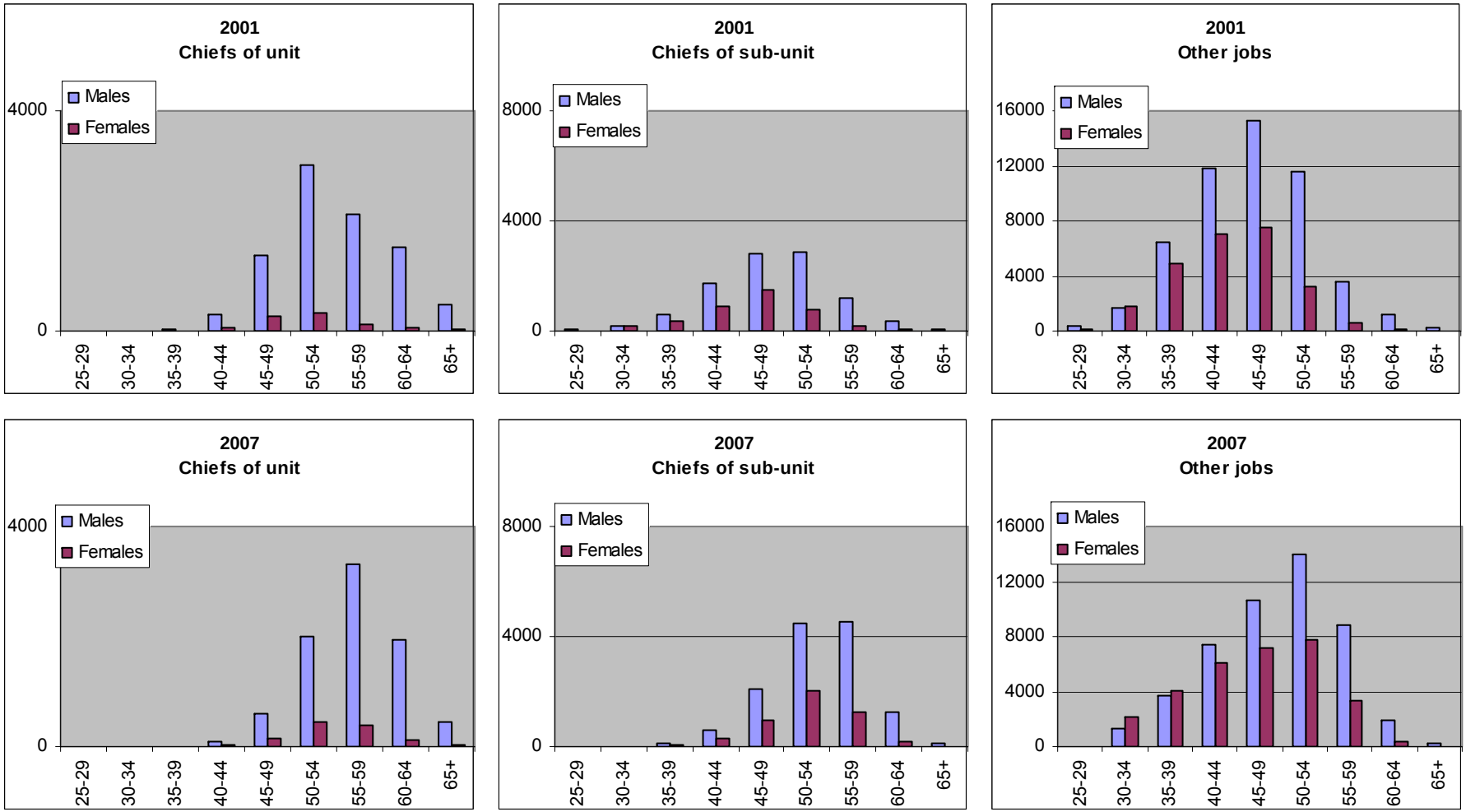
2. In 2007 women represented 35% of all physicians but only 12% of heads of unit and 27% of heads of sub-unit, while they were 39% of other jobs.

3. If we look to the frequency of the three types of assignments along the age profile, then we confirm the gender gap suffered by women in accessing the managerial positions. In 2001, women represented 43% of the class of age 35-39 but only 18% of the heads of unit of that cohort. And in 2007, while representing 52% of that class of age, only one out of then jobs of heads of unit was assigned to a woman.

4. In general, in 2001 women were under-represented in all age classes for head of unit jobs. In other words, the percentage of this kind of jobs assigned to women was less than the percentage on female physicians in every age class. This was confirmed in 2007.

5. In 2001, this under-representation in the head of unit jobs was partially compensated for older ages by an over-representation in the head of sub-unit jobs. So, for instance, among physicians aged 60-64 women were 8%, hold only 5% of head of unit jobs (that is -3%), but hold 10% of the jobs of head of sub-unit. In 2007 however this kind of compensation almost disappeared living women underrepresented also as heads of sub-unit.

Figure 6.3. Distribution of jobs for physicians along the age profile, 2001 and 2007.



6.5. Discussion and conclusions

The analysis has confirmed both research questions.

1. The Italian NHS is undergoing a continuous feminisation of its medical staff. This dynamics is clear and it should be confirmed in the next future, considered the current female prevalence among university students of medicine. In the period 2001-2007, the quota of female doctors has increased because of at least two dynamics. First, we have to consider the retirement of the older cohorts, which was extremely poor in women. Second, this six-year period ended up with an increase of 5,632 physicians (over 5% of total medical staff employed in 2007): while the database does not offer individual data, it is highly probable that most newly hired physicians were young women.
For the future, it is possible to envisage a further feminisation of the medical workforce, due to pension reforms requiring to work longer. So female doctors will be asked to work until 60-65 years of age, while traditionally they retired earlier.
In turn, this will lead to pressures in order to develop work conditions enabling women to balance work and family responsibilities, first of all with a major increase of part time arrangements. In the Italian NHS, most work appointments are full-time and until today part-time can only results from a special request made by the professional to his/her employer.

2. The analysis also showed marked differences in careers for male and female physicians. These differences are confirmed also in the last data available that refer to the end of 2007. In fact, differences are visible from the beginning of the career, involving also the younger classes of age. Partially this could be the consequence of the national collective agreement that sets rules and conditions of employment for the Italian NHS doctors, where it says that part time arrangement are not permitted for managerial positions (i.e. for head of unit and head of sub-unit jobs). However, due to the very low prevalence of part time in the medical workforce, problems seem to lay in other causes, namely the difficult family-work balance and, maybe, different attitudes and goals between male and female doctors.

7. MALE NURSES IN THE ITALIAN NHS

7.1. Object and goals

This chapter presents some information and analyses about male nurses employed by the Italian National Health Service (NHS). More specifically, its goals are:

- to present and comment the age distribution of male nurses compared with the total nurse staff of the Italian NHS. This will be done looking at 2001 and 2007 data, in order to appreciate potential ageing and other changes occurring in the workforce;
- to analyse factors that could be explain the higher percentage of male nurses in Italy compared with most other OECD countries and, namely, the role of labour market conditions such as unemployment etc. that could motivate young men to enter the nursing education and profession;
- to verify if in the Italian NHS men are over-represented in managerial positions.

7.2. Methods

The analysis is based for most part on data collected in the Conto Annuale (www.contoannuale.tesoro.it) by the Ragioneria Generale dello Stato of the Ministry of economy (www.tesoro.it). The database is updated yearly for all employed staff of the public services. The information provided by the Conto Annuale is very rich and represents a major basis for system-wide analyses. Moreover, this information is available since 2001, permitting both time-series and cross-section analyses. Despite the very interesting content of this database, only few researches have used it so far.

For our analysis we have considered headcounts, except for specific purposes. This does not produce any relevant bias to he analysis, given the fact that part-time arrangements represent a limited quota of total jobs in the Italian NHS and that they are present in all jobs (while with different percentages).

Secondly, the analysis refers to standard tenured employment status, excluding all forms of term-contracts, free-lance collaborations, etc.[56]
Third, due to small differences in the data presentation by the Conto Annuale across the years, we define "Nurses" as including the following types of personnel:

- in 2001: "Coll.re prof.le sanitario esperto Ds", "Coll.re prof.le sanitario – pers. infer. – D", "Oper.re prof.le sanitario pers. inferm. – C", and "Oper.re prof.le di ii cat.pers. inferm. Bs"[57];
- in 2007: "Nurses" include the macro-class "Totale profili ruolo sanitario - personale infermieristico".

Fourth, we considered only the 273 LHAs and IHTs, i.e. the core of the network of public organisations providing direct healthcare services to patients within the Italian NHS[58].

For labour market information, data are derived from the regular analyses carried out every three months by the Italian National Institute of Statistics (ISTAT). In particular, we looked at data for 2006.

7.3. Background

Healthcare has traditionally been highly gendered. In the old days, doctors were male and nurses female. However today realty is not so clear-cut. In most developed countries, the medical

[56] "Total NHS staff" refers to all figures with tenured employment status. This excludes "Direttori generali" (781 headcounts in 2001 and 813 in 2007) and "Personale contrattista" (684 headcounts in 2001 and 608 in 2007), reported in the Conto Annuale despite their non-tenured status.

[57] For 2001, the structure of the database does not permit to extract from this group a small number of non-nurses counted among "Coll.re prof.le sanitario esperto Ds". However, this represents less than 0.5% of the total category here referred as "Nurses" so it does not imply serious flaws in our analysis.

[58] The database contains information about 335 institutions. In fact, in a broad and comprehensive view, the Italian NHS in 2007 encompassed 273 Local Health Authorities (LHAs) and Independent Hospital Trusts (IHTs), 6 Teaching hospitals directly owned and managed by the Ministry of Education, 10 Institutes for zoo-prophylaxis, 18 hospitals of healthcare and scientific research, 8 nursing home organisations, 17 regional agencies for the environment, and few other agencies or institutions.

profession is experiencing a long-range process of heavy feminisation[59]. And nursing today is anymore the female profession established by Florence Nightingale[60], where the only relevant exception was in military services or in psychiatric care, requiring the strength and the determination of men to restrain violent patients (Evans, 2004; Girard, 2003). Neither male nurses are anymore closely associated to homosexuality as it was the case in several Anglo-Saxon countries (Harding, 2007).

While some legacies exists for linking the profession to the female world and this rises till today some concerns – for example, for male nurses providing intimate care to female patients (Inoue et al., 2006) – the trend is clearly leading to a more gender-balanced profession. This has several possible explanations:

- first, this is explained by more balanced roles in the society at large as well as in families or in the labour market;
- second, with the professionalization process of nurses, the vocational attitude argument[61] has lost ground in favour of the development and appraisal of technical skills, that are much more neutral in terms of gender;
- third, this can also be explained by tighter labour market conditions in several countries, pushing males to enter into a profession characterised by a high employability.

Three organisational dimensions often present in literature with reference to males in nursing are:

- relations with patients, because of both cultural differences with female nurses, patients' expectations when receiving nursing services (Chur-Hansen, 2002; Evans, 2002), and some special issues regarding services that involve sexuality, such as in obstetrics or gynaecology (Lofdge et al., 1997);
- different motivation and results in career development, showing that in most countries men, despite their low prevalence in total nursing workforce, are often successful in

[59] In some countries this is been already the case for the last 50 years or so, as the Eastern European countries – characterised by a prevalence of females often above 50% of total doctors – demonstrates.

[60] As Evans (2004: 322-323) points out, «To her, every woman was a nurse, and women who entered nurse training were doing only what came naturally to them as women […]. In the apprenticeship style of education championed by Nightingale, it was deemed that women as 'natural' nurses did not require education prior to working in hospitals under the supervision of men physicians […]. In the family based institutional model that emerged, the dominant role of father was assumed by men physicians».

[61] For a recent revision of the concept of nursing as vocation, see White (2002).

career development both in administrative and elite specialty positions (Evans, 1997; Whittock et al., 2002[62]; Tracey and Nicholl, 2007)[63];

- relations with other professional groups, first of all with physicians (for example, Floge and Merrill, 1986).

In Italy male nurses represent a percentage higher than the OECD average[64].

If we look closer to most recent years, in academic year 2006-2007 32.9% of the 12,000 students enrolled at the first year of the bachelor in nursing where male (IPASVI, no year: 10). In the same years, males represented 31.7% of the 32,500 total enrolled in the first, second and third year of the bachelor programme (ibidem: 15). Finally, male represented 21.3% of the 7,000 nurses obtaining their bachelor degree and ready to enter the profession (ibidem: 17).

In general, the prevalence of men is higher for students from the South of Italy. This can be seen in two different dimensions:

- the first and most obvious is the prevalence of male students in Southern universities. There, in academic year 2006-2007 males represented 40.3% of students enrolled at the first year of the bachelor, compared with 31.0% in the North-West, 27.7% in the North-East, and 32.3% in the Centre (ibidem: 10);
- the second dimension is mobility from the residence area to other Provinces or Regions for studying. In fact, 50.0% of male students enrolled at the first year of the bachelor were studying in universities outside their Province of residence, while females scored 41.3%[65].

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[62] Wittock et al. (2002: 305) highlight the role of working arrangements: «Working part-time and taking career breaks, usually because of caring commitments, results in female nurses falling behind male colleagues in terms of career development and promotion prospects, with managers selecting males over females (particularly those who work part-time)»

[63] However, this is not always the case, as the Israeli example demonstrates (Romem and Alson, 2005: 178).

[64] In France in 2002 men represented 13% of total nurses (Berland, 2002: 37). In UK they have rarely made up more than 10% (Whittock and Leonard, 2003: 243). In 2005 in Australia the male prevalence among employed registered and enrolled nurses was 7.9% (AIHW, 2008: 9). In 2003 men were around 8.5% of total registered nurses in the U.S. (Buerhaus et al., 2004: W4-530).

[65] 25.4% of males were enrolled outside their macro-region of residence, compared with 12.8% for females. Partially, this is explained by the higher prevalence of males among students coming from the South, coupled with their higher mobility. While only 10-12% of students residents in Centre-Northern Regions moved in other Regions to study, this percentage was 45.8% for students residents in Southern Regions (ibidem: 14).

Another point that is possible to get from IPASVI (no year) is about the relations between gender and entry age into the bachelor in nursing for academic year 2006-2007. «The gender analysis shows a significantly higher percentage of "young" enrolments (below 21 years of age) among women (49.1%) than among men (37.8%). This seems to confirm the fact that for women, more than for men, nursing represents a first choice in terms of education and professional projects» (translation of the author; ibidem: 11). This is confirmed also by the fact that 2.3% of total women enrolled were 40 years old or over, while men scored 4.5%.

However, Martellotti et al (2006) show how employability is only one of the several causes declared by young people when asked why they chose to enter into the nursing profession. A questionnaire answered by almost 50% of students enrolled at the third year of the bachelor in nursing in the academic year 2004-2005 says that the first reason for choosing the profession is the possibility to be useful for others, leaving the reason "to have a sure work" only second. Table 2.1 also shows limited differences between males and females and between Italian macro-Regions.

Table 7.1. Reasons for choosing the nursing profession (answer frequency in percentage; more than one answers possible), students enrolled in the third year of the bachelor in nursing, academic year 2004-2005.

	Be useful for others	Have a sure work	Work in multi-professional teams	Career perspectives	No expectation at the moment	Other
Males	52.2	35.2	19.7	2.7	2.0	1.2
Females	57.3	33.0	18.0	2.3	1.7	1.0
21-25 years	58.9	35.1	16.4	2.3	1.8	0.4
26-30 years	52.3	32.3	22.5	2.1	0.9	1.8
31+ years	51.0	30.9	21.5	3.0	1.9	2.3
North-West	55.4	33.0	18.8	2.4	2.1	0.8
North-East	57.6	33.0	17.9	2.5	1.5	0.6
Centre	54.3	34.0	18.9	2.3	1.7	1.8
South	56.8	36.4	18.3	2.5	1.4	0.2
Total	56.0	33.6	18.5	2.4	1.8	1.0

Source: Martellotti et al., (2006: 14).

7.4. Results

Age distribution

At the end of 2001 the Italian NHS employed 262,408 nurses, representing 40.42% of total NHS staff. At the end of 2007 employed nurses were 262,811 representing 40.83% of total staff. Cumulated increase of nursing staff was 403, but this was explained by a negative balance for male nurses (–3,969) compensated by a positive balance for women (+4,372).

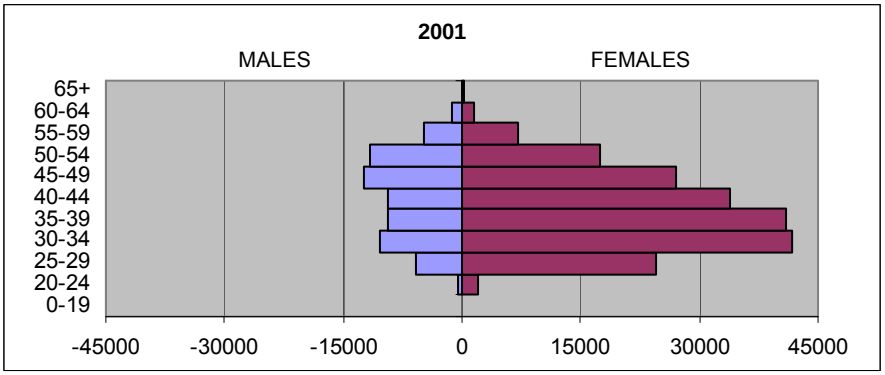
The average age of nurses had increased from 40.4 years in 2001 to 43.3 in 2007, with a yearly increase of around 0.5 years. This important ageing of the nursing staff was lower for males, that increased 2.2 years (from 42.9 to 45.1), while women increased 3.2 (from 39.5 to 42.8). This could partially be caused by the higher average age of male nurses in 2001 and by the limited number of men among new hires.

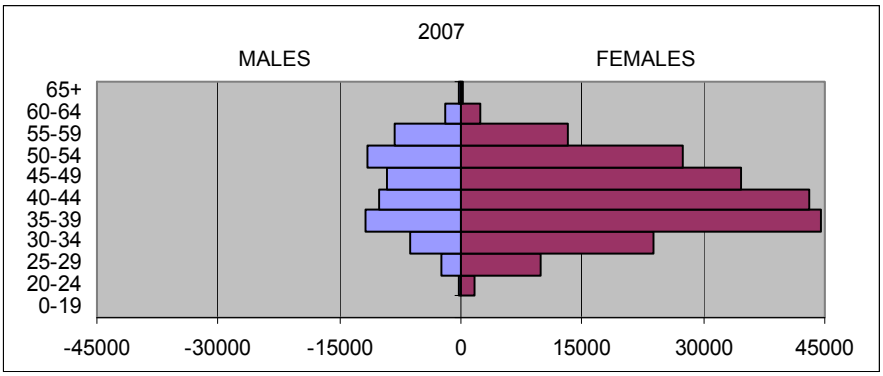
The ageing (+2.9 years from 2001 to 2007), coupled with the tiny net balance of 403 in nursing staff, could be interpreted as the result of two contributing dynamics:

- a longer permanence at work, due also to the stricter requirements asked by national laws for pension entitlements;
- an increase in average age of new hires, at least partially explained by the recent reforms in nursing education that resulted in an age increase for nurses ready to enter the active work.

Figure 7.1 shows age distribution of nursing staff at the end of 2001 and of 2007.

Figure 7.1. Age pyramids of nurses employed by the Italian NHS, headcounts, 2001 and 2007.





Men represented 25% of nurses employed by the Italian NHS in 2001 and 24% in 2007.

Male nurses show an age distribution more spread and regular than female colleagues. If we consider the 15-years elapses more populated, in 2001 51% of all male nurses were in the cohort 40-54, while 59% of all female nurses were in the cohort 30-44. In 2007 50% of male nurses were in the cohort 35-49, whose belonged 61% of female nurses.

When looking at the quota of employed nurses with age 55 or over, men in 2001 were 9%, increased to 17% in 2007. Women's percentages were 4% and 15%, respectively. These changes represent a major challenge to HRM policies and practices in the Italian NHS, but it has also consequences for the men-women balance inside the nursing profession, because women are beginning to stay longer in employment and this could have important consequences for career perspectives and expectations. This, in turn, could require new equilibriums in the gender relationships between nurses.

Unemployment rates and male prevalence in the nursing profession

Seeking for an explanation of the relatively high prevalence of men in the Italian nursing workforce, we will consider simple labour market conditions. The level of analysis will be the regional one[66].

The hypotheses underlying the analysis are:

- the nursing profession offers a good employability: the nursing shortage, while severe in some Italian Regions and much less in others, makes easy for nurses to find a tenured

[66] Italy has 20 Region for a population of around sixty million. However, Regions differ largely in size, going from Valle d'Aosta with 126,000 inhabitants to Lombardia with 9,642,000 in 2008 (http://demo.istat.it/pop2008/index.html). Moreover, due to the special autonomy given to the two Provinces of Region Trentino-Alto Adige, for our purpose we will consider autonomously the Province of Trento and the Province of Bolzano. Therefore, we will have 21 "Regions".

job in the Region of residence or, in any case, in the Italian NHS. This gives e sentiment of comfort and safety, reinforced by the fact that most Italian nurses are employed by the LHAs and IHTs of the NHS, that is by public employers, and the Italian public service is characterised by tenured jobs very guaranteed, with almost no possibilities to be fired off;

- in Regions suffering high unemployment rats and low female activity rates, professions – like nursing – that can offer secured, life-long jobs, are highly appreciated. Especially in families where only the father is in the labour market, while the mother stays at home, the possibility to have secured revenues can be a strong motivator to enter the nursing profession.

So, male prevalence will be related to two indicators: the rate of activity of female population 15-64 years, and the rate of unemployment of male population. Expected signs are negative for the female rate of activity and positive for the unemployment rate.

Differently than previous sections, here we will use data from the Conto Annuale 2006, because we do not have regional detail in Conto Annuale 2007.

We also adopted a slightly different definition of nurses, stricter than the one adopted in previous sections[67]. However, those change do not have a major impact on the analysis.

Table 7.2 reports regional data about male prevalence in nursing staff and labour market conditions. No evidence of strong correlation exists between the selected labour market conditions and male prevalence in nursing staff, both using total nursing staff and the age class 0-34 years.

[67] Here nurses are defined as "collaboratori professionali esperti – personale infermieristico Ds" and "Collaboratori professionali – personale infermieristico D".

Table 7.2. Male nurses prevalence and labour market conditions by Region, 2006.

Region	Male prevalence in NHS nursing staff, percentages		Labour market conditions, percentages	
	All nurses	Nurses aged 0–34	Female activity rate 15-64 years	Male unemployment rate
Piemonte	22.17	22.27	58.9	3.2
Valle d'Aosta	42.38	48.77	60.8	2.4
Lombardia	19.02	20.05	59.4	2.9
Bolzano-Bozen	20.88	20.64	61.4	1.9
Trento	23.09	20.72	57.5	1.8
Veneto	18.68	20.23	57.3	2.4
Friuli-Venezia Giulia	14.13	12.97	57.6	2.5
Liguria	12.34	9.83	56.4	3.4
Emilia-Romagna	18.08	15.27	64.3	2.6
Toscana	30.65	33.73	59.2	3.1
Umbria	39.06	27.61	58.3	2.6
Marche	17.35	20.61	57.6	3.2
Lazio	9.52	8.89	53.1	6.1
Abruzzo	13.86	15.10	49.4	4.6
Molise	26.83	21.43	44.6	7.2
Campania	15.46	15.40	34.6	10.3
Puglia	24.97	27.65	34.7	10.3
Basilicata	10.94	13.33	40.5	7.9
Calabria	17.70	14.18	37.8	11.2
Sicilia	27.71	27.15	36.0	11.2
Sardegna	44.70	38.63	44.8	8.5

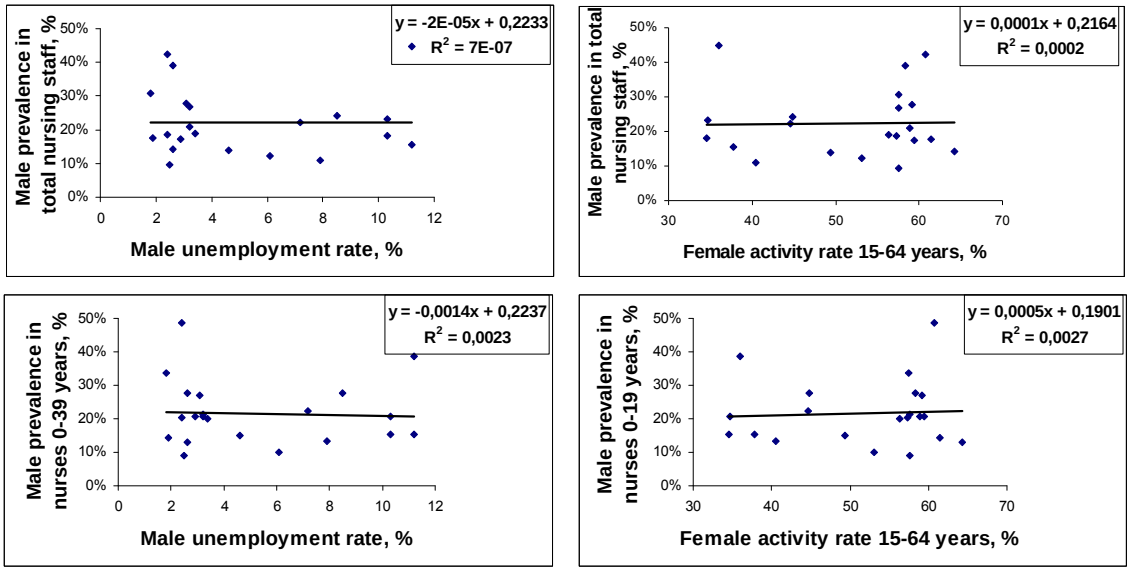
Note: Activity and unemployment rates are drawn from ISTAT (2007)[68].

Figure 7.2 does not show any significant correlations about male nurses prevalence and labour market conditions[69]. In particular, Figure 7.3 makes clear the absence of a geographical gradient along the North-South divide, despite the much higher unemployment and much lower female participation rates prevailing in southern Regions.

[68] While current male prevalence could be better related to past – and not current – unemployment and activity rates, the situation of the labour market in Italy and the large interregional differences have remained much similar in the last decades. This is why adopting the 2006 rates does not bias the analysis.

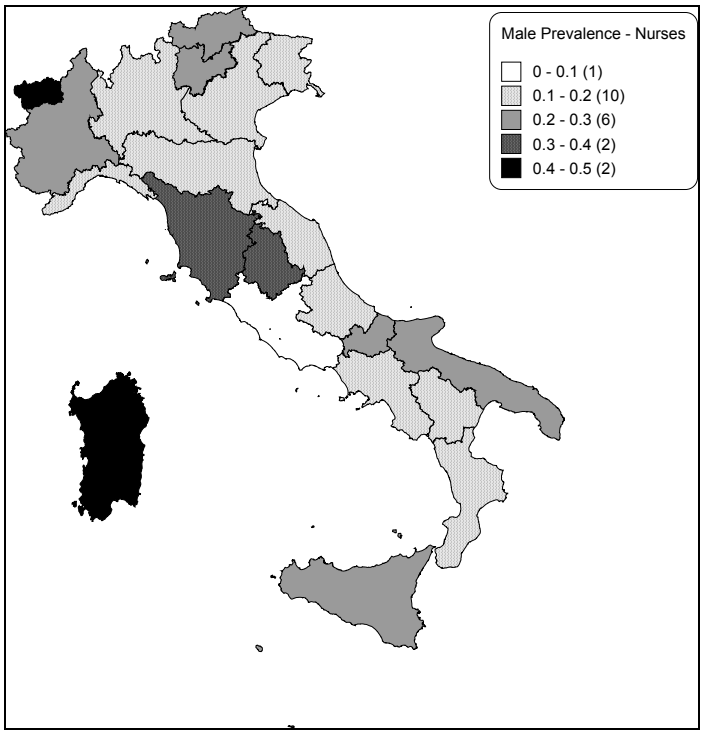
[69] R^2 are extremely low and signs are opposed to expected.

Figure 7.2. Correlations between male nurses prevalence and labour market conditions, 2006.



However, these partially unexpected results could also hide some more articulated dynamics. A possible explanation for this lack of correlation could refer to students mobility or successive emigration. In fact, young people – above all males – could emigrate in order to study and, once obtained the degree, they could find easier to enter hospital or other healthcare providers in the same Regions where they study. Typically this is the case of young people that, living in southern Regions, decide to enter nursing bachelors in other Regions. Alternatively, male nurses once obtained the degree could be much more flexible than women in their working choices, deciding to emigrate in order to find a secure job. Finally, women could be more reluctant to leave definitely their Regions of origin, so a "selective re-emigration" to go back home could develop, with the final results seen above. In any case, no clear evidence sustains this kind of hypotheses.

Figure 7.3. Male nurses prevalence, 2006.



Career results

The Italian NHS offers limited possibilities for careers to nursing workforce. The technical-professional specialisations are only seldom recognised and in any case, they – with limited exceptions – do not give entitlement to preferred labour or pay conditions[70]. Therefore, the dimension most promising to be investigated is the managerial one.

The most diffused managerial role for nursing is the nurse coordinator, managing nurses and their support staff within the clinical unit. In most LHAs and IHTs there are also nurse coordinators for departments, i.e. an organisation level higher than the clinical unit (this latter being the ward, the outpatient facility, the surgical block, etc.), but usually with real coordination responsibilities, leaving the direct managerial work to units coordinators. In any case, the structure of the Conto Annuale does not identify coordinators among other nursing staff, so we cannot look at these two jobs and to their gender distribution.

However, the Conto Annuale gives the possibility to identify and look to the top senior position for nurses in LHAs and IHTs. Moreover this position, while already existing in the Italian

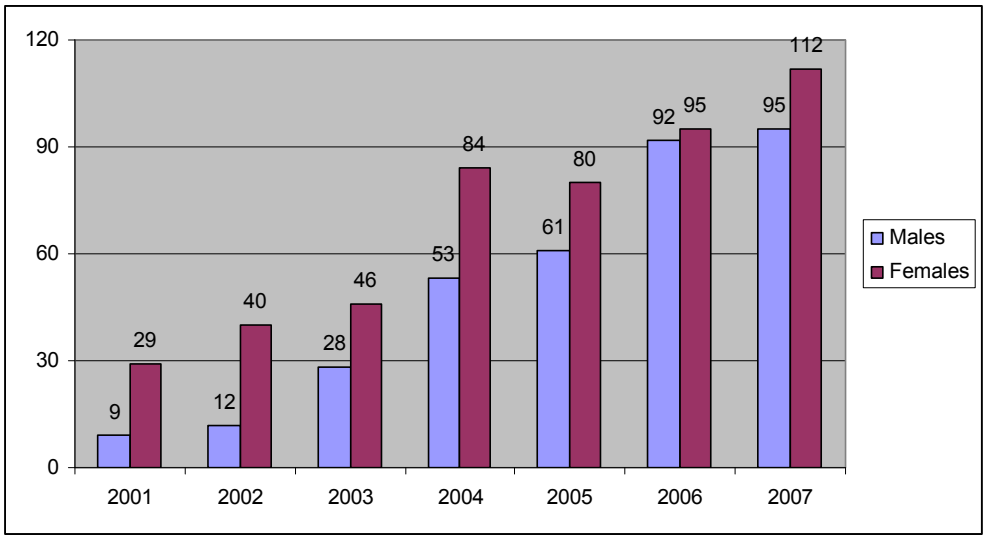
[70] This produces a quite sensible debate within the professions, also related to the fast development and diffusion of many master courses offered by universities in clinical domains. For a recent review in Italian, see Osservatorio IPASVI sulla formazione universitaria (no year).

tradition and in the practice of many healthcare providing organisations, has undergone profound changes set by a national law in 2000 and consequent regulation by Regions. Because of this recent regulation, the Conto Annuale, first published in 2001, offers a very effective way to follow gradually the diffusion of this new senior post, that gives to nurses an institutional visibility never reached before in the Italian healthcare system[71].

Figure 7.4 shows the diffusion of this senior post in LHAs and IHTs. The prevalence of men in this post was only 24% in 2001 and 23% in 2002, but it jumped to 38% in 2003, 39% in 2004, 43% in 2005 and 49% in 2006, with a partial inversion in 2007 when it was 46%.

Of course, these are rates much higher than men prevalence in total nursing staff (25% in 2001 and 24% in 2007), indicating better career results when compared with female colleagues.

Figure 7.4. Nurses appointed to top positions in the Italian NHS by age, 2001-2007.



Evidence of an over-representation of men in top positions is confirmed also when we control for age and we limit our analysis to the classes of age 30 and over, that is ages whit sufficient experience in order to be appointed at senior posts. In fact, the male prevalence in cohorts 30+ was 26% in 2001 and 24% in 2007, i.e. percentages significantly lower than the prevalence gained since 2003 in the top position for nurses in the Italian NHS.

[71] Data provided by the Conto Annuale do not say if the person appointed to that senior post is a nurse: in fact the law says that he/she could also be a physiotherapist, a laboratory technicians, a radiology technicians, a midwife or someone belonging to other health professions considered belonging to a same set and regulated in similar ways since 1999 (see De Pietro, 2005a). However, this represents a minimal limitation, because non-nurses holding those posts are actually extremely rare.

Focusing on 2007 permits a more mature analysis of this recent dynamics, then a more detailed analysis is provided in Table 7.3. Here we see that men are over-represented in all age classes for appointment to top position.

Table 7.3. Men appointed to nursing top executive positions of the Italian NHS by age, percentage 2007.

Age	% of males in total nurses appointed to top position (A)	% of male nurses in total nursing staff (B)	A / B
30-34	100%	21%	4.80
35-39	83%	21%	3.96
40-44	20%	19%	1.05
45-49	37%	21%	1.79
50-54	48%	30%	1.64
55-59	56%	38%	1.48
60-64	69%	47%	1.47
65+	67%	52%	1.27

A final possible – while partial – explanation for this gender gap could be the higher diffusion of part time among female nurses that could be an obstacle for being appointed to top managerial positions. In fact, in 2007 all 207 assigned top positions were full time, with the only exception represented by one woman.

Table 7.4 suggests at least three general remarks about part time:

- the Italian NSH confirms major gender differences in the diffusion of part time;
- part time arrangement have increased at a fast pace from 201 to 2007;
- somewhat unexpected, after controlling for sex composition nurses do not use part time much more than the total NHS staff.

Table 7.4. Part time diffusion for Italian NHS nurses, percentage 2001 and 2007.

	Nurses			Total NHS staff		
	Total	Males	Females	Total	Males	Females
2001	6.6	0.7	8.6	5.3	0.8	8.4
2007	11.1	1.2	14.1	8.5	1.2	12.9
2007-2001	*4.5*	*0.5*	*5.5*	*3.2*	*0.4*	*4.5*

If now we try to summarise, we could argue that:

- until recently part time had a low diffusion among NHS staff. So, it should not be stressed as possible obstacle to female careers;

- however, our database does not permit to check for part time distribution according to classes of age. Despite this limit, we can assume that part time has a higher diffusion when women have to balance professional and family work, with a peak during the first years of the motherhood, i.e. an age crucial for future career developments;
- finally, if the Italian NHS has to develop retention policies for nurses and, more generally, an effective HRM, part time should be considered as physiological. Therefore, HRM policies and tools should be developed in order to avoid considering part time as an obstacle to careers or to organisational efficiency.

7.5. Discussion and conclusions

1. Men represent one quarter of all nurses employed by the Italian NHS. They have 45 years on average but are quite distributed along the whole age profile. Ageing is going ahead, above all because of a sharp increase of nurses in the older cohorts: in male nurses, the cohort aged 55 or over represented only 9% in 2001, but become 17% in 2007.
Until today, Italian male nurses have shown longer work lives and low prevalence of part time than women. The analysis 2001-2007 seems to suggest a convergence path referring to the first dimension, with women remaining longer at work. On the contrary, the analysis does not give any evidence of convergence in the part time utilisation, which remains mostly a female affair, most probably explained with different roles that male and female nurses play in families, in rearing children, etc.

2. Some international past evidence suggests a relation between unemployment and male prevalence in nursing. This is for example the case of Evans (2004: 323) when he remembers that «During the depression years of the 1930s, numbers of men nurses in the USA increased slightly due to the fact that nursing education included room and board and a small stipend». Furthermore, also Buerhaus et al. (2004: 530), seeking explanations for the increase in the number of employed nurses in the U.S. from 2002 to in 2003, observed that «unusually large employment growth […] occurred among two new demographic groups: younger people, particularly women in their early thirties, and men. Both of these groups are probably responding to higher wages and opportunities in nursing driven by publicity about the nurse shortage».

However, the analysis if the Italian NHS staff seems not to confirm those hypotheses, while the difficulty to follow individual biographical trajectories – including going to study out of the Region – prevents us from a clear interpretation of these dynamics.

3. Finally, as regards careers, the Italian experience confirms a greater success of male nurses compared with women. A very recent top executive position introduced in the NHS in 2000 by a national law and implemented starting in 2001, clearly demonstrates a gender gap that favours men. While representing only 24% of total nursing staff, men had 46% of those top positions in 2007. Moreover, this advantage is confirmed also after controlling for age, while the higher utilisation of part time by women seems to explain only partially these results.

8. PROFESSIONAL MIX IN THE ITALIAN PUBLIC HOSPITALS

8.1. Object and goals

This chapter wants to present and discuss the occupational composition of the Italian public acute hospitals.

The "skill mix" issue[72] highlights a key aspect of HR regulation and management in the hospital industry, which is substitutability between its most important inputs, namely occupational groups.

The main underlying research hypothesis that we want to test is that staff composition in acute hospitals is quite homogeneous. This can be explained by several considerations:

- Italy is characterised by a strict professional regulation set at the national level for health care professions. This is especially true for legal monopolies over professional activities that, as general principle, are assigned exclusively to a specified profession. So professional mix should be similar for providing each service, in all possible settings across organisations and Regions. A higher degree of autonomy is left to Regions for regulating "support staff" that provides only some specified services directly to patients, supports nurses and other professional staff, and has other general duties such as transports in non critical situation, bathing patients, housekeeping, etc.;
- national laws and guidelines also identify the staffing parameters for running activities and providing services to patients. In most cases, national parameters refer to broad type of activities – e.g. inpatient hospitalisation. Then Regions can integrate those requirements, better specifying among different types of services, adding other parameters or requiring stricter values for the ones already used by national regulation. While in same cases the regional influence can be important and even determinant, however it occurs within a framework set at the national level and so leading to national homogeneity.

[72] «Skill mix is a relatively broad term which can refer to the mix of staff in the workforce or the demarcation of roles and activities among different categories of staff» (OECD, 2008: 55).

However, as we expect some differences in skill mix, a second research question aims at a first, tentative interpretation and explanation of those differences. What are the factors related to occupational mix in acute hospitals? Here a range of hypotheses can be raised, based on the dimension of the hospitals, its production, its internal operational efficiency, or to external factors such as regional regulation.

8.2. Methods

The analysis is based on data available from the Ministry of Health (Ministero della salute – Banca Dati del Servizio sanitario nazionale – Dati statistici e dati economici-finanziari; http://www.ministerosalute.it/servizio/sezSis.jsp?label=usl) and referred to the 97 Independent Hospital Trusts (IHTs) of the Italian NHS.

For each IHT we considered the total employed staff with tenure posts at December 31, 2005 and then we divided it the following categories:

- physicians and dentists;
- nurses;
- supporting staff (e.g. aides and other staff supporting nurses for non-professional activities);
- other health professionals (e.g. biologists, laboratory technicians, radiology technicians, physicists, etc.);
- administrative staff;
- other employed staff.

All figures are headcounts. However, this does not represent a limitation to the analysis, due to the low prevalence of part-time arrangements in the Italian public service and so among NHS staff.

In order to discuss and maybe explain some differences in occupational mix, we considered other information available on the Ministry of health online databases. Namely, we decided to consider the following dimensions:

- the presence of university activities. IHTs can be attached to universities or can host some courses. A proxy for this presence is the percentage of the IHTs staff directly paid by the Ministry of Education, because of his/her university tasks. We named "University Presence" this indicator. The hypothesis is that the university activities

imply more medical supervision, so implying a higher prevalence of physicians in the IHT staff;

- the dimension of the IHT, measured by the indicator "Beds" that include also day hospital/surgery beds. The hypothesis is that larger dimension could lead to some economies of scale for administrative staff and the "other staff";
- the utilisation of the IHT facilities, expressed as percentage "Occupancy Rate" in 2005. the hypothesis is that different mixes of the nurses/aides ratio could have be related on the functionality of the hospital and so – with an exploratory purpose – to the occupancy rate;
- the production of the hospital, measured by the number of patients stayed at the hospital for (at least) overnight inpatient services ("Patients") and days of overnight stays ("Days") in 2005. Here again we can assume that some economies of scale will go with higher production;
- the heterogeneity of inpatient activities in 2005, measured by the indicator "Entropy" that is minimum when all patients had the same DRG and maximum when all patients cover all DRGs and with same percentages. The hypothesis is that this heterogeneity implies a need for several specialised medical competences, while in nursing the required need of specialisation could be less pronounced. If this hypothesis is correct, then the ratio nurses/physicians will decrease with heterogeneity;
- the complexity of inpatient activities, expressed by the Case Mix Index ("CMI"), calculated comparing the composition of the IHT production with the Italian NHS average. Also in this case the hypothesis is that higher complexity needs several medical specialties, with the consequence of limiting the possible economies of scale and so reducing the nurses/physicians ratio. A second, partially alternative hypothesis is that higher complexity hinders to possible substitution of nurses with aides or other support staff. In this case, a higher ration Nurses / Support Staff should appear.

8.3. Background

«The importance of workforce flexibility is receiving increasing international attention resulting in widespread policy level support for boundary renegotiation. […] Recent UK policies actively endorse the notion of workforce flexibility both to address workforce shortages and enhance patient-centred care» (Nancarrow and Borthwick, 2005: 899-900). In general, changes in inter-professional boundaries can take the form of vertical substitution or horizontal substitution

(ibidem: 909-912). The first implies a transfer of responsibilities and task along an organisational or social hierarchy. The latter implies a transfer between occupational groups that enjoy similar levels of training and expertise, as well as similar levels of organisational or social status.

Vertical substitution has received large attention in literature (Berland, 2003), while often suffering methodological limitations[73]. If we focus on the hospital activities, most attention has gone to task transfers from physicians to nurses – possibly with clinical specialisations (Buchan and Calman, 2004) – and from nurses to their aides or extenders[74]. Drivers for this task transfer can be the shortage in one or more professions, efficiency arguments, the will of a professional group to focus on more rewarding activities giving away less interesting ones, or also the extension of one profession in the traditional exclusive boundaries of another one as a way to increase its market and revenues (e.g. the medicalisation of midwifery). Less often vertical substitution seems the result of efforts for gaining better quality of the services provided[75]. An important facilitating condition for this transfer is the ongoing professionalization and specialisation of most groups working in the healthcare sector and, namely, nurses and other allied professions, which experienced a fast professionalization (with the passage to the

[73] Richardson et al. (1998: 125) for example found that «most of these studies suffer from at least one defect. The most common weaknesses were that many of the studies were based at a single site with small sample sizes and poor design», and also Buchan and Dal Poz (2002: 578) noted that «many published studies in this area are merely descriptive accounts, which add little in terms of use of methods or interpretation of results. Where studies do move beyond description, their usefulness is often constrained by methodological weaknesses, lack of appropriate evaluations of quality/outcome and cost, and/or use of small sample sizes. Moreover, many of the studies were undertaken in the USA, and the findings may not be relevant to other health systems and countries. The results may therefore be suspect, and of little use for comparative purposes or in drawing general conclusions».

[74] Pope and Menke (1990) analysed this trend referred to the hospital sector in the US. While they underlined that «if cost containment efforts are to succeed, they must constrain the rate of increase in hospital labor costs» (pag. 127), they also had to admit that the whole hospitals' skill mix experienced an upgrading and, somewhat disappointingly, the hospital employment increased during the 1980s (pag. 129). So, "downward" transfer along the levels of the occupational mix can be accompanied by a general upgrade of the whole occupational structure in terms of competences and skills. In addition, the changing patients' mix could ask for a different occupational composition of the team treating the patients.

[75] for instance, referring to nurses-aides work division in New Brunswick (Canada), Rhéaume (2003: 442) notes that « improving quality of care should be at the centre of any changes in the reorganization of health care worker roles. However, as the data highlight, both economic factors and the self-interests of various groups sometimes take precedent over the interests of patients».

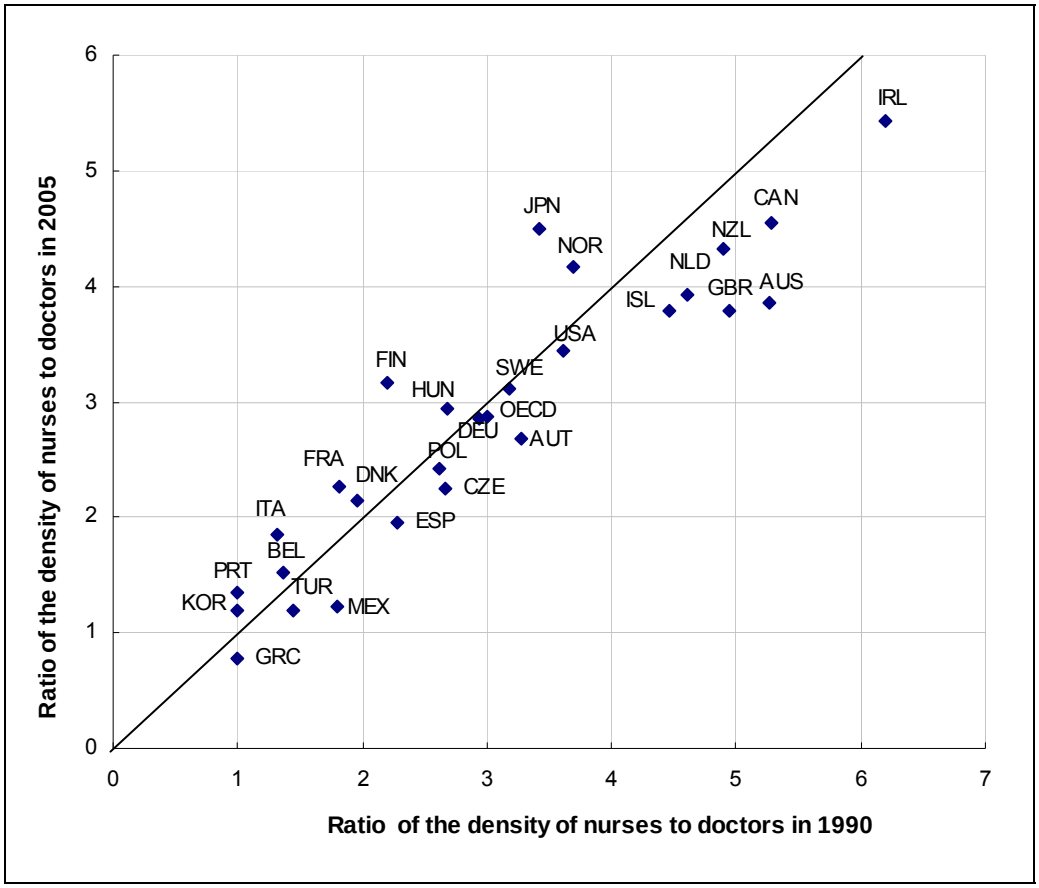
university education, etc.) and provided skilled professionals or para-professionals (e.g. Hooker, 2006). Finally, in some case of downward task transfer, professions do not like to talk about substitution and prefer to call it "supervised roles", also because this leaves open the possibility to retire back this transfer and to regain the exclusive control over certain activities.
Much less attention has been given to horizontal substitution, despite the large number of health professions sharing similar levels of training and expertise.

In their original assumptions, however, both vertical and horizontal substitution do not cause the traditional exclusionary nature of modern professionalism, based on "jurisdictions" firmly controlled by only one professions (Abbott, 1988), without stance for overlapping activities shared by several professions.
Despite this, substitutability becomes a condition for the functionality of healthcare organisation and systems. Even if it can seem paradoxical, increasing specialisation needs not only more integration, but also possibility to overlap and substitute.

Figure 8.1 reports the change occurred in the of ratios nurses/physicians in the OECD countries from 1990 to 2005. As noted by Buchan and Calman (2005: 4), the «large differences in reported physician/nurse ratios across OECD countries and evidence of significant changes over time in some countries […] raises the issue of the direction of change and its desirability». However, «there are no absolute norms regarding the right ratio of physicians or nurses to population; rules of thumb are often used» (WHO, 2000: 80).

More generally, «organizational reforms […] challenge the traditional division of labour by promoting better integration and coordination of services and teamwork. Technological innovations and organizational reforms are also drivers for change in the mix, roles and characteristics of the workforce: changing the balance of requirements for some occupations, creating opportunities for others and changing the knowledge, skills and competences required to perform new activities. New approaches to work are obscuring traditional demarcations between occupations and challenging the traditional hierarchical structure of health care. The changing relationships between clinical service providers and patients also demand changes in communication skills» (WHO Office for Europe, 2007: 17)

Figure 8.1. Change in skill mix between 1990 and 2005 or nearest year available for practicing physicians and nurses, OECD countries.

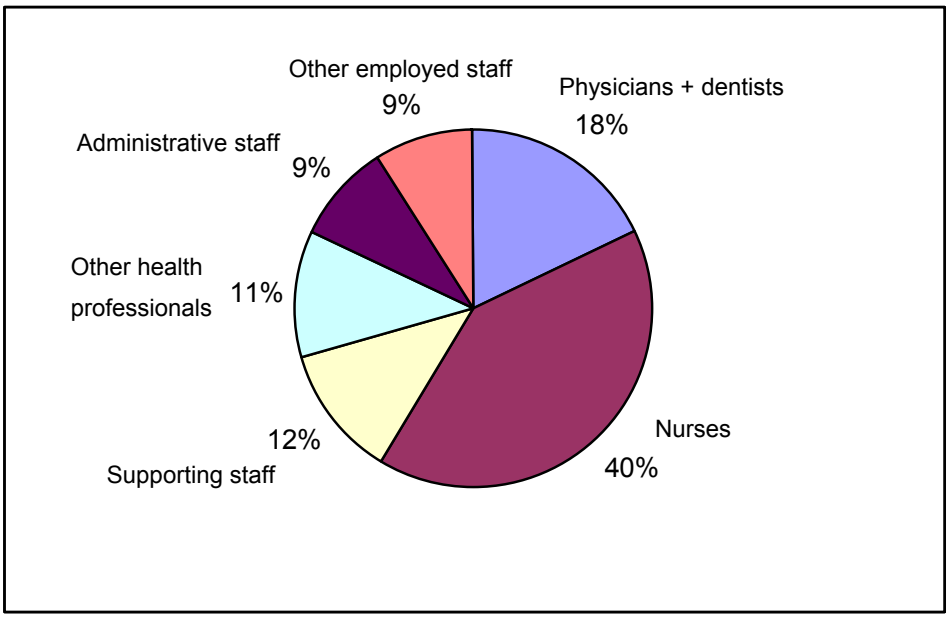


Source: OECD (2007b).

8.4. Results

Figure 8.2 reports the occupational mix of the Italian NHS acute hospitals in 2005. Nurses, followed by physicians, represent the largest quota of staff. If we add the other health professionals (including laboratory technicians and biologists, pharmacists, radiology technicians, physiotherapists, etc.) and the supporting staff, composed of people directly involved in the patients assistance but in a non-professional role (i.e. involved in patients' transport, housekeeping, feeding, etc.), we find that 82% of the hospitals' salaried workforce is involved in the direct health assistance or treatment of patients. Other 18% are administrative (legal affairs, purchasing, accounting, personnel administration, etc.) or technical (building and technology maintenance, drivers, etc.) staff.

Figure 8.2. Occupational composition of the public acute hospitals of the Italian NHS, 2005.



However, the analysis of occupational mix behaviours adopted by IHTs shows large differences, as confirmed by Figure 8.3.

Here, the ratio nurses/physicians (top-left quadrant of Figure 8.3) ranges from 1.10 to 3.50, with a continuum of intermediate situations between 1.53 and the maximum, while the average for all IHTs is 2.25. Here, the 13 highest values all belong to IHTs based in the Region Lombardia. Therefore, it could be sustained that regional policies and orientation play an influence on the occupational mix of hospitals staff.

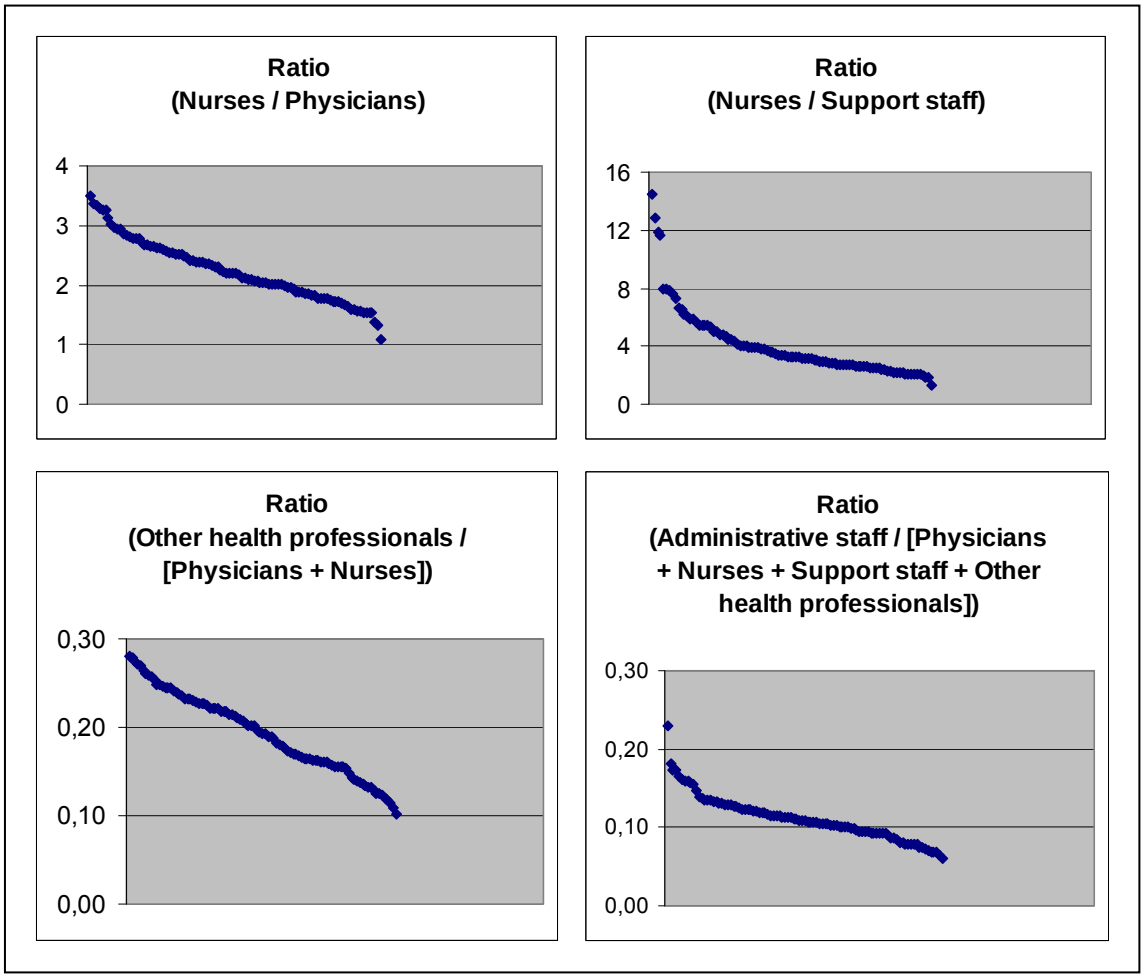
The ratio nurses/supporting staff (this later including aides and other extenders) has an average value of 3.31 and ranges from 14.43 to 1.29 (while most observation are between 7.97 and 1.29). These large differences could be related to the influence of several causes that we cannot verify based on the available data:

- true differences in the organisational choices regarding the skill mix between nurses and aides;
- different use of outsourced aides' services;
- different regional policies and implementation of the education programmes for aides, affecting their availability in the regional labour markets.

Differences in the ratio between "other health professionals" and "physicians + nurses" (bottom-left quadrant) are somehow less pronounced, while ranging from 0.10 to 0.28. Here,

lower values are all concentrated in hospital of southern Regions, and this could tentatively be explained with the lower prevalence in services such physiotherapy, and the lower specialisation of IHTs in providing outpatients diagnostic services (both laboratory and radiology services)[76]. Finally, also the ratio between the administrative staff and "physicians" + "nurses" + "support staff" + "other health professionals show differences around the average of 0.11, ranging from 0.06 to 0.23[77].

Figure 8.3. Occupational composition ratios for the Italian IHTs, 2005.



Bivariate linear regressions confirmed little – if any – of our original the research hypotheses. Namely,

[76] This is suggested by the fact that among the 25 IHTS with the lowest values 22 are located in the four Regions characterised by the highest supply of privately run diagnostic centres and that traditionally did not develop strong services inside the public hospitals.

[77] Excluding the observation with the highest value, the ratio ranges from 0.06 to 0.18.

- "University Presence" was very poorly related with the prevalence of physicians in the IHT total staff. R^2 for linear regression is 0.1739 and ß is 0.3203;
- "Beds" was neither related with the prevalence of administrative staff on total employees of the IHTs (R^2 = 0.0029) nor with the prevalence of "other staff" (R^2 = 0.0036);
- "Occupancy Rate" was not related with the ratio "nurses/aides" (R^2 = 0.0016);
- "Patients" was not related with the prevalence of administrative staff (R^2 = 0.0102) or with "Other staff" (R^2 = 0.0010). The same for the indicator "Days" (R^2 = 0.0038 and 0.0020, respectively);
- "Entropy" was not related with the ratio nurses/physicians (R^2 = 0.0236);
- "CMI" was not related with the ration nurses/physicians (R^2 = 0.0005) nor with the ratio nurses/support staff (R^2 = 0.0003).

8.5. Discussion and conclusions

«The World Health Report 2000 noted that determining and achieving the ''right'' mix of health personnel are major challenges for most health care organizations and health systems. Health care is labour-intensive and managers of health care provider units strive to identify the most effective mix of staff that can be achieved with the available resources, taking into consideration local priorities» (Buchan and Dal Poz, 2002: 575).
Despite this importance, the empirical evidence for possibilities and effect of the skill mix differences or changes remains unclear. Skill mix change is often envisaged as a mean to improve professional development opportunities and, as a consequence, a mean to retain health professionals inside the system. Moreover, it could improve efficiency in the use of economic resources (Townsend et al., 2004) and, in some cases, even the patient satisfaction (Horrocks et al., 2002) or the quality and effectiveness of the healthcare services (Vrijhoef et al., 2000).

The skill mix debate most times refers to the regulation of the professional boundaries, which represents a major issue for policy makers (McKee et al., 2006). This attention is explained by the fact that the professional system has self-evident impacts on the labour market, where workforce planning, legal monopoly on professional activities, and limited substitutability between workers belonging to different professions, give rise to "closed-markets" and rigidities both on the supply and the demand side (De Pietro, 2003).

Also in Italy in the last ten years we have experienced a strong acceleration in the professionalisation of nurses and other major allied health professions like midwifery, radiology technicians, laboratory technicians, and rehabilitation therapists. At the same time, a requalification of support personnel has occurred. In turn, these developments have begun to show their effects in the health organisations' staff composition. However, the full development of those changes will probably take additional years to show up.

HRM is strongly impacted by this choices referring to professional regulation and policies. However, international experience shows that healthcare organisations – and their HRM policies and systems – can deeply affect the actual labour division in the day-by-day practise. In other words, the professional regulation does not imply standard, homogeneous occupational compositions also among organisations providing similar healthcare services.
The Italian experience with NHS IHTs confirms this analysis. The previous sections in fact have demonstrated large differences in the hospital occupational mix, despite the strong national regulation of health professions. Also limiting our analysis to hard indicators such as the "nurses/physicians", it ranges from 1.50 to 3.50 (excluding outlier observations), while the ratio "nurses/support staff" ranges from 7.97 and 1.29. Differences in the ratio between "other health professionals" and "physicians + nurses" are somehow less pronounced, ranging from 0.10 to 0.28. Similarly, the ratio between the administrative staff and "physicians + nurses + support staff + other health professionals" ranged from 0.06 to 0.23.

Even more disappointing, these differences do not show strong relation with some indicators proposed for the analysis, such as the hospital capacity (number of beds), production (number of inpatient treatments), complexity or heterogeneity of inpatient services provided, etc. Therefore, a more advanced statistical analysis could prove useful.

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