BASYS

Human Resources of European Health Systems

Annex 2: Workshop Report

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Summary

Human resources in the health sector can be analysed from different ankles using different variables and dimensions (numbers, volumes, distributions by sex and age, by type of profession or by education). One of the problems clearly emerging from the contributions made is the type of classifications to adopt: due to the different organisation and structure of the health care sector as well as the education systems throughout European countries, there is a strong variability of data between the various countries. Closely related to the problem of variety of definitions and classifications of data is the problem of heterogeneous sources of data. This issue constitutes one of the most weak aspects of the project.

At the same time it is important to underline that there is an increasing interest in the evaluation of human resources in the health sector not only from an economic but also from a social perspective. Solutions how to meet the health needs of the population has become more and more relevant in politics, especially against the background of deep social, economic and demographic changes.

Moreover, designing possible future scenarios based on reliable and comparable international statistics in order to put into action adequate planning programmes has become increasingly relevant (analysis of the past and the present is considered to be reductive and not sufficient to correspond to actual requirements).

This interim report describes the current status of the project on “Human Resources of European Health Systems” focusing on the description of the presentations given by the representatives of the participating countries at the first workshop on April 6-8, 2001 at Augsburg/ Germany.

This workshop aimed at giving an introduction and description of the methodology to be used as well as to give an overview and developments in participating countries. The participating experts discussed the current status of data collection on human resources in the health sector in their countries. They also referred to various problems such as the limited availability of data in some areas and the various classifications and level of data used. This, as well as the differing level of quality of reporting causes difficulties of submitting comparable statistics on human resources on an European level.

Furthermore, this workshop aimed at setting conclusions and recommendations on priorities for further steps in order to promote the implementation of common international reporting for health care manpower:

Human Resources of European Health Systems: Introduction

All European Health Systems experiencing rapid and fundamental change. New medical technologies, e-health commerce, changing demographic and social structures put pressure on health system's management, with a constant requirement to improve productivity. In addition financial restraints of public budgets and unemployment in most EC countries provide challenges to the human resource function.

Health care organizations employ now more physicians and health professionals, and there are more women employed than ever before, in more senior positions. Managing in the rapidly changing environment requires new competences. As one might anticipate, it is the conflict among productivity of human resources in health care, increasing consumer wants and financing caps that drive system toward new institutional solutions.

While European wide labour accounting of human resources in the health sector is quite new, the European Union has a long tradition in general labour accounting. In 1960, a first attempt was made to collect comparable data on employment and unemployment (in total) from all six Member States (MS) of the European Community. Since that date the number of MS has risen to fifteen and the character of the European labour market has been transformed by the radical changes which have taken place, for example in activity rates, in the allocation of working time, and in the distribution of employment across the various sectors of the economy. The ongoing development of the now European Union has led to changed information requirements. The economic and the social implications of recent trends in the area of employment across sectors stresses the importance of monitoring these developments. Reliable and comparable statistics are needed to provide policy makers with appropriate and thorough information. The demand for accurate and comparable information on the labour market across the different economic sectors has consequently become progressively more urgent.

Since a comprehensive framework for the collection of data is still missing, the sources used for the employment statistics in health care in the MS vary a great deal: labour force survey, census, micro-census, provider statistics. In order to gain more comparable data across the MS, the importance of a framework covering national health accounts and labour accounts is inevitable.

Against the background of this scenario, one of the aims of this project is to develop a system which will consistently and comprehensively provide data on human resources of European health systems. The borderline of health care system will be defined as in the OECD manual "System of Health Accounts, (SHA)". The project will cover all organisations providing preventive services, care and cure such as hospitals and other organisations. All organisations active in administering health care such as public sickness funds and economic sectors providing exclusively intermediate production for health care, e.g., the pharmaceutical and medico-technical industry are equally

included. Using the principle of *ex-post* harmonisation on the existing heterogeneous sources, comparable data will be made together with recommendations for improvement to overcome the outcome shortcomings of existing data collections. Together with other on-going efforts, the Member States can analyse the efficiency and effectiveness of their respective health care production. The indicators on human resources resulting form the project will support international and national analysis on health accounts as about 70 per cent of health expenditures are spent on human resources. They will be given the chance to make better use of the potentials of a growing labour market which is characterised by increasing specialisation, new qualifications, intensive work-sharing and a highly qualified labour force.

Furthermore, this project builds on the work of the Eurostat/ Working Group on Health Statistics and the existing Task Force on Health Care Statistics (TF Care) as well as on the on-going OECD efforts of introducing a System of Health Accounts (SHA). Further common roots are the Dutch CCP1 and the Luxembourg CCP2 projects on health care resource statistics. The approach of the project is based on agreed and proposed international classifications such as the OECD „System of Health Accounts" and the ILO „Occupational Classification (ISCO-88)". Within this project proper links to on-going data collections of Eurostat's Unit E3, to methodological work in the LEG framework and to the EUCOMP project approved under the HMP framework will be established. Furthermore, it ties into activities under Pillar B of the HMP, formerly IDA-HIEMS. The project will build and further elaborate on recent methodological progress of Eurostat/OECD in health accounting and international comparisons. The borderline of health care system will be defined as outlined in the OECD manual „System of Health Accounts (SHA)".

Another aim of this project is to have the expected results of this project incorporated in class 4 "Health system" of the health indicator set of the ECHI-project (European Community Health Indicators). One part of class 4 is 4.2 "Health care resources" of which the subclass is 4.2.2 "Manpower". The ECHI-project phase II aims, in the long run, to further incorporate the results of this project as well as results from other recent and forthcoming expert projects on specific subjects running under HMP to establish a consistent and comprehensive indicator list.

The structure of this report is grouped around the following two aspects:

1. Description of the methodology
2. Overview and development in participating countries

The chapter on methodology describes the methodological approach of various projects already done in this field (EUCOMP, ISCO) which at the same time offer a basis to develop a more advanced and more consistent data basis on human resources in the future. It also refers to the OECD "System of Health Accounts (SHA)" which provides international classifications on which the methodological approach of this project is based upon. The second chapter gives an overview of the current statistical collection of data on human resources in the various countries by referring to the sources of data and institutions providing these data and the classifications used. Mostly, the contributions also discussed in short the various difficulties regarding the comparability

of these data deriving from the level on which these data are collected and the classifications that are used.

In order to further develop the existing methodology, a questionnaire was developed and sent out to collect the information available in Member States based on existing data collections (taking into account various methodological improvements resulting from previous projects, especially EUCOMP). Furthermore, this questionnaire aims at obtaining data items for selected provider categories (e.g. hospitals) with definitions, commentary (assumptions/ interpretations) and sources per item. The results of the questionnaire will be presented in the final report.

This interim report describes the current status of the project on "Human Resources of European Health Systems" focusing on the description of the presentations given by the representatives of the participating countries at the first workshop on April 6-8, 2001 at Augsburg/ Germany. The workshop aimed at giving an introduction and description of the methodology to be used as well as to give an overview and developments in participating countries. Furthermore, this workshop aimed at setting conclusions and recommendations on priorities for further steps in order to promote the implementation of common international reporting for health care manpower:

The participating experts discussed the current status of data collection on human resources in the health sector in their countries. They also referred to various problems such as the limited availability of data in some areas and the various classifications and level of data used. This, as well as the differing level of quality of reporting causes difficulties of submitting comparable statistics on human resources on an European level.

References

CBS (1998): „International Comparison of Health Care Data", Dordrecht 1998;

OECD (2000): „System of Health Accounts", Version 1.0, Paris.

Statistisches Bundesamt (StBA): Forschungsbericht „Gesundheitspersonalrechnung", Wiesbaden, forthcoming.

Part A: Methodical Issues of Labour Accounting in the Health Sector

International Comparison of Health Manpower (Poul Erik Hansen)

ECOFIN-Council, January 1999:

”For the proper functioning of EMU and the Single Market, effective surveillance and co-ordination of economic policies will be of major importance. This requires a comprehensive information system providing policy makers with the necessary data on witch to base their decisions”.

ILO, 1992:

It was said that some Labour Accounting Systems related issues,

”such as possible solutions to estimation problems, would seem to be so specific to national data situations and user priorities that international exchange of information rather than agreement would seem most useful. On other issues ….. it would seem useful to develop international guidelines.”

(dual strategy)

ILO, 1992:

”…the LAS is to provide a logical framework for obtaining internally consistent estimates of key labour market variables and their distribution over the population.. (which) .. are necessary for the description and analysis of the state and dynamics of the labour market and its interaction with the rest of the economy”

Framework
ILO, SNA/ESA, LEG on Social Accounting Matrices, EUCOMP, Human Resources of European Health Systems
General principles I

- Complete coverage (of all economic activities and the economically active population)
- Compliant with ILO and SNA etc. concepts
- Transformation of data referring to single days or weeks to monthly, quarterly or annual averages

- Consistency, the data satisfy accounting relationships between, e.g., jobs, employed persons, hours worked and wage sum, in addition tables are available to describe the links between the labour accounts and the primary sources

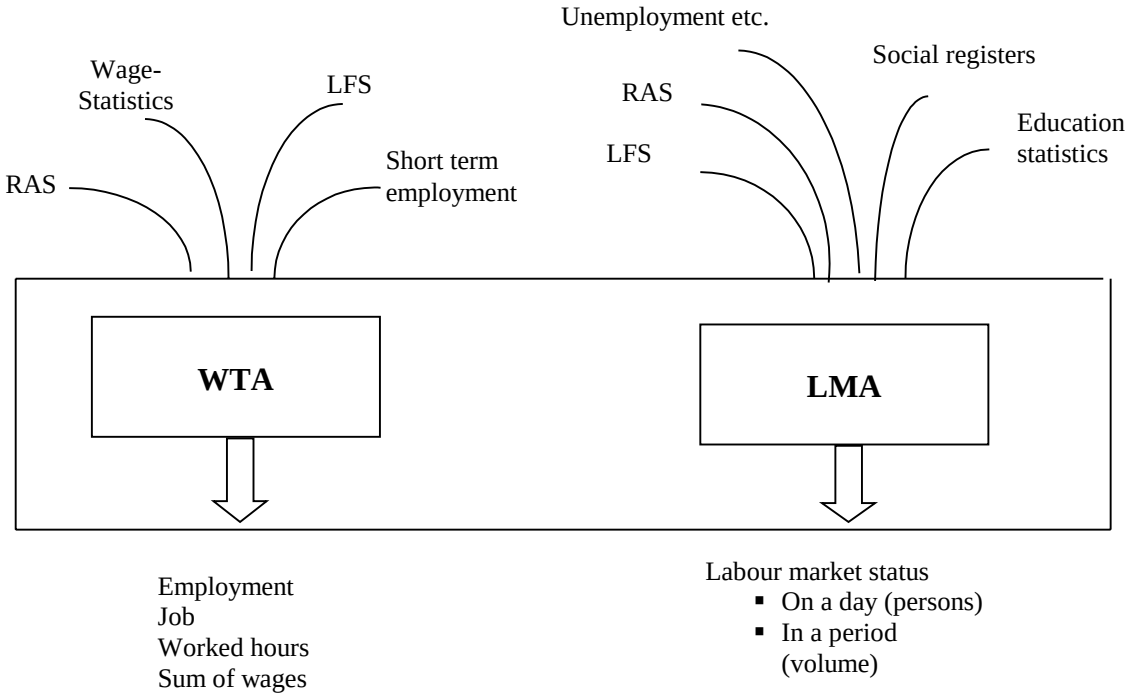
General Principles II

- High quality because the best sources are used for different variables and sub-populations and data are adjusted in four steps (see later)
- Comparability over time: adjustments must be made for breaks in time series
- Timeliness, frequently available short-term estimates can be incorporated through their links with the source data
- Transparency of the compilations
- Work organisation top-down statistical co-ordination and a minimum distance to the source statistics

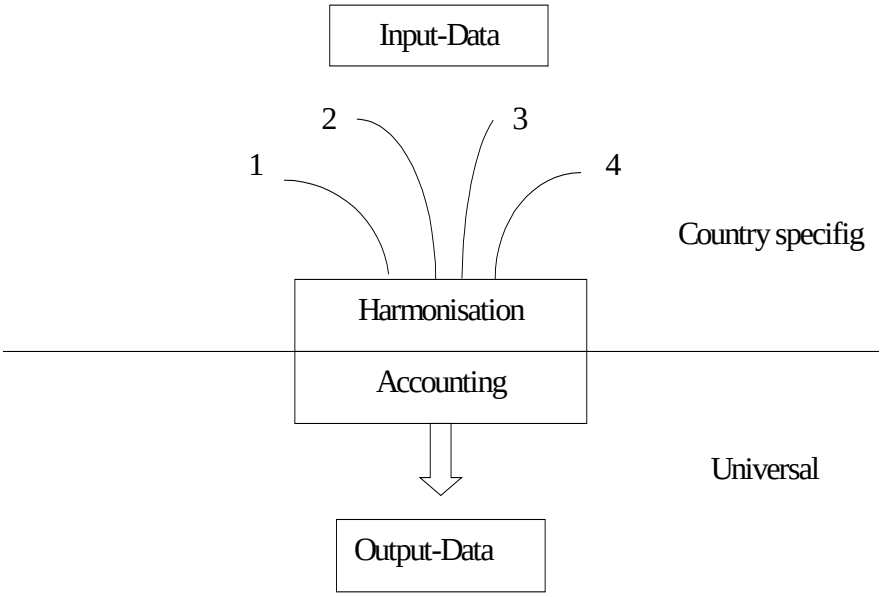
The four steps in the common methodology:

- Harmonisation of variables, classifications, measurement units and reference periods (ex-post co-ordination)
- Adjustment for (incomplete) coverage
- Verification of accounting relationships and correction of measurements errors
- Balancing of remaining (small) differences

Graph 1: Various sources of data



Graph 2: Input and output of data



Problems

- Health care workers: Sweden 19,2 pct. and
  Portugal 4,1 pct. of total employment
- Definition of physicians and nurses
- Medical specialists

References

Sundhedsministeriet (2001a), Health Care in Denmark, Health professions, www.sum.dk.

The SHA Approach: A framework for human resources in health systems (Markus Schneider)

For discussing manpower in the health sector it is prerequisite to have clear understanding of the boundaries of the health sector. These boundaries are outlined in detail in the System of Health Accounts, SHA (Manual, Version 1.0, July 2000), which provides a framework of interrelated tables for standard reporting on health expenditure and the financing sources. The SHA has been written with the dual aim of providing a framework for international data collections and as a possible model of redesigning and complementing NHA. The set of core tables in the *System of Health Accounts* (SHA) addresses three basic questions:

- where does the money come from? (source of funding);
- where does the money go to? (provider of health care services and goods);
- what kind of (functionally-defined) services are performed and what types of goods are purchased?

As consequence the SHA is organised around a tri-axial system for the recording of health expenditure, by means of a newly proposed International Classification for Health Accounts (ICHA), defining

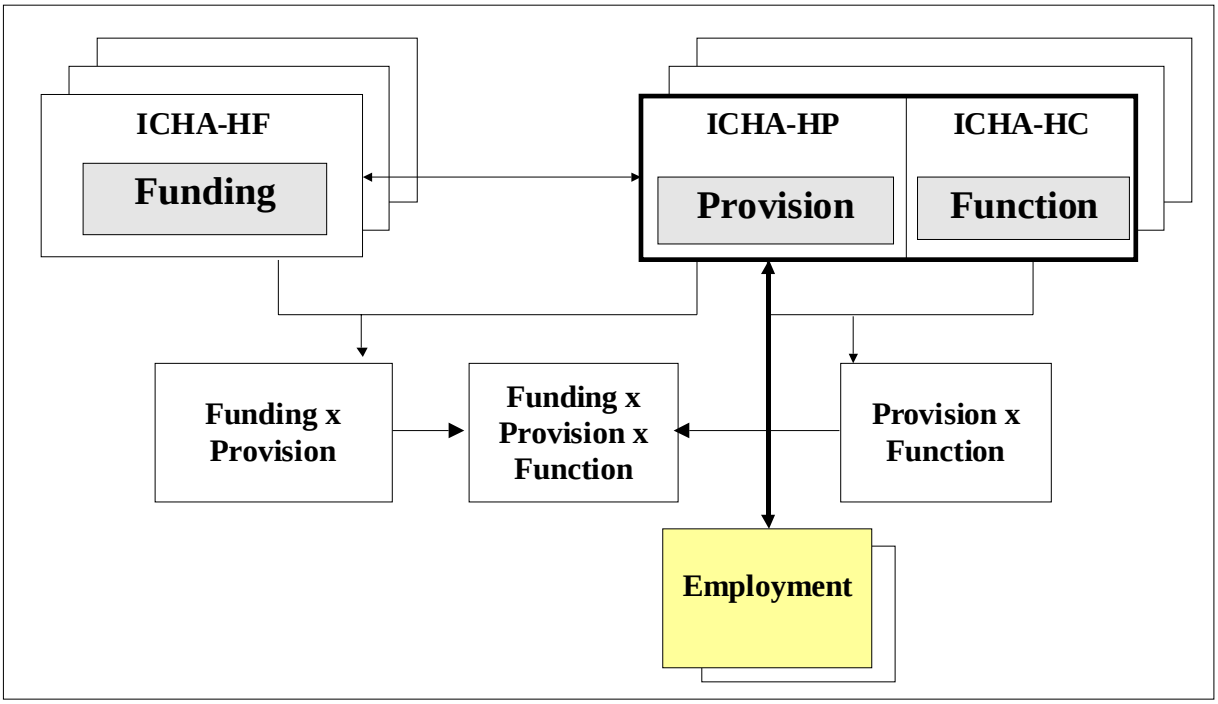
- health care by function (ICHA-HC),
- health care service provider industries (ICHA-HP) and
- source of funding of health care (ICHA-HF).

The ICHA-HP classifications of health care service provider industries include the following providers:

- HP.1 Hospitals
- HP.2 Nursing and residential care facilities
- HP.3 Providers of ambulatory health care
- HP.4 Retail sale and other providers of medical goods
- HP.5 Provision and administration of public health programs
- HP.6 General health administration
- HP.7 Other industries (rest of the economy)
- HP.9 Rest of the world

The three dimensions of Health Accounts (funding, provision and function) and the role of employment within SHA with provision and function on the output side and employment on the input side require accounting of working time as well as accounting of manpower (with SNA and SHA both being part of this 3-dimensional approach). The main characteristics of this approach is also shown in the following graph.

Graph 3: Role of Employment within SHA



Obviously, the analysis of employment is closely related to the production of health services. Between the services of health providers and employment a basic production relation exist. This basic relation can be described by the following two formula (assuming that expenditures correspond to the uses of production):

- HE = L * (HE/L)

  (with HE standing for health expenditures, L standing for Manpower in the health sector)

- HE/GDP = L/EMP* [(HE/L)/(GDP/EMP)]Expenditure Employment Productivity
  ratio(1) ratio(2) ratio(3)

  (with GDP standing for Gross Domestic Product and EMP standing for Employed Labour Force in the Economy)

The following two tables exhibit estimates for the productivity ratio of the health sector using Eurostat Key Data and National Accounts Data.

Table 1: Eurostat Key Data, year 1998

Country	HE/GDP 1)	L/EMP 2)	Productivity Ratio
EU 15	8,0	9,4	0,8511
B	7,8	10,8	0,7222
DK	8,0	17,0	0,4706
D	10,7	9,5	1,1263
EL	8,6	4,7	1,8298
FIN	6,3	14,0	0,4500
IRL	6,3	8,5	0,7412
I	7,6	6,0	1,2667
L	7,0	7,0	1,0000
NL	8,5	10,9	0,7798
UK	6,8	13,3	0,5113

1) OECD, 2) Labour Force Survey

Table 2: SNA NACE 85, (1998)

Country	HE as % of Total Value Added (1)	L as % of Total Employment (2)	Productivity ratio (3)=(1)/(2)
A	4.7	5.4	0.86
B	6.1	10.7	0.57
D	6.0	9.8	0.62
DK	10.0	15.6	0.64
GR	5.2	4.7	1.10
I	4.6	5.8	0.78
NL	7.1	12.1	0.58
SF	7.8	13.6	0.57

Productivity ratio

Lower productivity in the health sector might result from

- higher share of part-time staff
- different income and labour force structures
- different organization of health care

Table 3: SNA and SHA I

SNA (Overall economic production)	SHA (Production of health by use of health services)
- Current Accounts • Production • Use of income • Distribution - Accumulation Accounts - Balance sheets	- Current Accounts • Production • Uses • Funding
- GDP is a measure of overall economic performance	- HE are not a measure of overall performance of the health system

Table 4: SNA and SHA II

SNA (Production boundary)	SHA (Production boundary)
- Outside • Domestic and personal services produced and consumed within the same household (e.g. care of sick people • Domestic and personal services produced and consumed within the same household (e.g. care of sick people - Within • Ancillary or intermediate services are nor recorded; e.g. Occupational health activities of enterprises	- within • paid Household activity for home care • Occupational health care

Table 5: ICHA-HP versus NACE classifications

ICHA-HP		NACE
HP.1	Hospitals	8511
HP.2	Nursing and residential care facilities	8531
HP.3	Providers of ambulatory health care	8512/8513 /8514/8519
HP.4	Retail sale and other providers of medical goods	5231/5232/ 5233/5248
HP.5	Provision and administration of public health	7512
HP.6	General health administration	7512/7530/ 6603/9112
HP.7	Other industries (rest of the economy)	(9133)
HP.8	Rest of the world	

The Various Dimensions of Human Resources

Comparing the ICHA-HP classifications with classifications developed by NACE (used by national accounting systems) the dimensions of human resources include the following dimensions:

- Volume of work (head counts, part-time, FTE, hours)
- Occupation (ISCO)
- Education (ISCED)
- Activities (Functional classification)
- Working Place (Provider Classification)

In order to improve and optimise data on health care human resources, various requirements have to be met:

- Health Care Human Resources data have to be defined in the context of SHA in order to allow meaningful analysis (borderlines and structure).
- A minimum breakdown includes providers by SHA categories and professional occupation/ qualification.
- The breakdown of providers should not only include cure/care (hospitals, practices) but also prevention, administration, education, R&D and intermediate production exclusively for health care (pharmaceuticals, medico-technicals).

References

OECD (2000), A System of Health Accounts, Version 1.0, Paris.

UNESCO (1996), International Standard Classification of Education (ISCED), Revised version II, Paris.

The EUCOMP-Approach: The Actor Classification in Health Care (Cor van Mosseveld)

Introduction

With the Maastricht Treaty (1992), and its endorsement in the Treaty of Amsterdam (1996), the European Union extended its area of political co-operation. The monitoring of health status and other aspects of public health monitoring were brought under the aegis of European Union. The organisation of the health care system, however, still remains the sole responsibility of the Member States (MS). At the same time, the organisational differences among the MS will continue to exist.

In order to provide an adequate information policy for this new political orientation, the European Union has taken it upon itself to make the European health systems more comparable within the framework of the Health Monitoring Programme. The EUCOMP-project an acronym for *'Towards Comparable Health Care Data in the European Union'* was an essential precursor to provide Member States with appropriate health information in order to make comparisons and to support national health policies.

This project was critical to the aims of all three pillars of the HMP, indicators, exchange of information and analysis.

The need for the project was mentioned on various occasions, eg by OECD and WHO. The Eurostat Working Group on Public Health (WGPH) mentioned explicitly the shortcomings of the data collected in the respective databases of OECD and WHO already in its 1997 meeting. So the suggested program was endorsed by the WGPH and funded via the HMP of the EU. EUCOMP grounded its work an agreed and proposed international classifications for health care by OECD (Principles of Health Accounting for International Data Collections). It established links to the work in the LEGS framework of EUROSTAT and part of possible requirements for the HIEMS project. The EUCOMP-project built on the methodological progress of the Dutch project an International Comparison of Health Care Data and EUROSTAT project an Health Care Resources Statistics, performed by the Inspection General de la Sécurité Sociale in Luxembourg.

Project aims

One of the stated aims of the project was to set up an European system of standardised descriptions and comparisons of health care systems to create the basis of common EU health care statistics as the fundamental foundation for routine data collection and comparative analysis.

The project aimed to produce a functional breakdown of health care systems in Member States, by reference to international health care classifications, detailing health care functions performed, as well as the activities linked to these functions. On top of that the project created a standardised comparative picture of all MS's health care systems by means of country profiles. The feasibility of the system was tested by

applying it to existing national data sets relating to health care delivery in selected areas in Member States.

In a broader sense, the project also aimed to contribute to the development of comparable EU health care indicators and to assist Member States in health care policy making by sharing the functional descriptions of their health care systems and enabling the sharing of well-defined comparable data by Member States starting in selected areas.

Methods

The general approach of this project was based on a number of tools described as follows:

- Structured Instruments for the collection and presentation of function breakdown descriptions of health care and metadata for selected areas
- Data modelling techniques and Software, including a review of existing structured templates for health care Systems descriptions and synthesis for further development of appropriate methods into a EU framework
- Review of recent European health care glossaries and relevant classifications and the use of standard definitions where appropriate (like ESA95, MISSOC, ESSPROS, CEN/TC251, GALEN, ICD, ICIDH)

Against the background of the general approach of the EUCOMP-project the following methods and related activities were indicated:

1. Development of an electronic questionnaire to collect the functional breakdown descriptions of Member States' health care systems based an work from previous projects (see above) and international healthcare classifications as proposed by EUROSTAT/OECD research for pilot data collections
2. Collection and completion of functional descriptions by all Member States
3. Development of a data collection instrument to obtain data items from Member States for selected areas with definitions, commentary (assumptions/interpretations) and sources per item.
4. Collation, analysis, refinement and assurance of the quality of data collected by reference to international health care classifications.
5. Definition of metadata for the selected areas by reference to the draft functional descriptions and activities by using data modelling techniques and software as appropriate.
6. Development of a basic template for a data collection system for input and basic analysis of the data.
7. Development of common data definitions for the selected areas and testing by using real data, which are already used and collected in the Member States (glossary).
8. Development of guidelines for the collection of data and metadata information for data collection and build these guidelines into the system.

9. Collection of further feedback from Member States and write the final report containing the proposed comparative functional breakdown of Member States health care systems.

The EUCOMP system was started by accumulating knowledge using meta data. Fixed process elements of the EUCOMP system included functions, activities and mode of production of health care providers. Variable process elements of this system referred to providers of health care. They defined the national work sharing applied by supplying functions in general and activities in particular by modes of production.

Results

The EUCOMP project advances the process of producing truly comparable health care data forward an various levels by providing:

- A comparable functional breakdown description of the health care systems for most Member States and for Iceland and Norway at an appropriate level with detailed descriptions (essentially structured metadata) of selected health care areas as a prototype.
- A manual and glossaries (in Member States own language and in English) as practical guidelines.
- A flexible framework for the functional breakdown descriptions of health care systems in the EU which can be supplemented and expanded so as to maintain a comparative picture of health care systems in the EU in the future.

In this context, the EUCOMP project advanced the process of producing truly comparable health care data forward on various levels by

- Using well defined structure as a basis for comparison and provides the high level metadata crucial to an effective understanding of public health data in context;
- Creating clear links between a common well defined standardised set of functions (and activities linked to these) and each set of local actors or providers in the health care sphere;
- Allowing boundary issues to be explored in a way which clarifies what activities are carried out where allowing better understanding and interpretation of the data in a clear and informative context while acknowledging delivery systems differences which must be taken into account;
- Prompting areas for further research, which promises to improve existing standards and data definitions;
- Preparing the way for work an detailed data definitions and metadata, which is essential in the longer term to enable Member State's focus an the priority areas for health care.

The EUCOMP project provides a framework which encompasses data independent of the provider structures in Member States whilst still integrating with details of the organisation of health care in a way that clearly shows the impact of provider structures in each country. This will provide a context, which will allow differences apparent in

indicators relating to many areas such as hospital activity, personnel numbers and indeed in a whole range of other registers to be better interpreted and more easily understood. By creating standards EUCOMP contributed substantially to solving comparability problems since standards foster data comparability to solve comparability problems. However, the guaranteeing of completeness, consistency, common boundaries, and applying homogenous breakdowns were separate items.

However, there are still a lot of problems to be solved which derive from differences regarding national traditions, the remaining responsibility for the organisation of health care with the MS, and , therefore, differences regarding the legal basis for organising health care in the various Member States. All this results in the insufficient comparability of health care data across Europe. The solutions proposed within this project included the notion of creating a system that does not depend on National Health Care organisations, which will neither replace existing national data collections nor national definitions.

References

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IGSS (1998), Inspection Générale de la Sécurité Sociale, Health Care Resources Statistics, Luxembourg.

OECD (2000), A System of Health Accounts, Paris.

Occupational classification (ISCO): Concepts, methods and cross-national comparability (Antoni Montserrat)

Up to now, the most usual and practical way to obtain data on health professionals is the use of registers kept in the MS. However, these registers depend on administrative rules which vary between MS. In addition, these registers are not established for statistical purposes. Data about non-health professionals active in health care are scarce.

Labour Force Survey (the Community LFS)

The existing Labour Force Survey collects data on the basis of a large sample and using a common questionnaire following the ISCO codification on professions. The LFS is available for EUR-15 for the period 1983-2000 except for the following countries:

- Spain (1986-1997),
- Austria (1995-1997),
- Portugal (1986-1997),
- Finland (1995-1997),
- Sweden (1995-1997),
- Iceland (since 1997),
- Norway (1995),
- Switzerland (1996),
- Estonia (1997),
- Hungary (1996),
- Romania (1997) and
- Slovenia (1996).

The number of households covered averaged between 500.000/ 600.000 in the EU. A sampling plan guarantees that for characteristics relating to 5% of the population of working age the relative standard error at NUTS II level (or equivalent) does not exceed 8% assuming the design effect for the variable unemployment.

Perfect comparability among 12 countries is difficult to achieve, even were it to be by means of a single direct survey, i.e. a survey carried out at the same time, using the same questionnaire and a single method of recording. Nevertheless, the degree of comparability of the Community Labour Force Survey results is considerably higher than that of any other existing set of statistics on employment or unemployment available for Member States. This is due to:

a) the recording of the same set of characteristics in each country;
b) a close correspondence between the Community list of questions and the national questionnaires;
c) the use of the same definitions for all countries;
d) the use of common classifications (e.g. NACE for economic activity);
e) the data being centrally processed by Eurostat.

The Community LFS, although subject to the constraints of the Community's statistical requirements, is a joint effort by the Member States to co-ordinate their national employment surveys, which must serve their own national requirements. Therefore, in spite of the close co-ordination between the National Statistical Institutes and Eurostat, inevitably, there remain some differences in the survey from country to country.

Since 1983 improved comparability between results of successive surveys has been achieved, mainly due to the greater stability of content and the higher frequency of surveys, and this continuity has been maintained in the new series of surveys up from 1992.

However, the following factors may somewhat detract from perfect comparability:

a) the population figures used for the population adjustment are revised at intervals on the basis of new population censuses;
b) the reference period may not remain the same for a given country;
c) in order to improve the quality of results, some countries may change the content or order of their questionnaire;
d) countries may modify their sample designs;
e) the manner in which certain questions are answered may be influenced by the political or social circumstances at the time of interview.

As far as they are known, Eurostat will indicate the main factors affecting the comparability of the data for successive surveys in the publications containing the results. It is also possible that, from one year to the next, a sampling error may in certain cases exceed the magnitude of variations resulting in an estimated change which is in fact in the opposite direction to the 'true' change.

The LFS can produce reliable data for professions following the ISCO classification coded at 2 digits (ISCO Codes 22: *Life science and health professionals* and ISCO Code 32: *Life science and health associate professionals*). However, due to the size of the sample it is possible to produce representative data sufficiently desegregated by profession (doctors, dentists etc.) and by professional status (independent, salary earning) via LFS (ISCO at 3 digits). Also, the NACE codification for the group N *Health and social work sector* can provide certain figures mixing the health and the social sector which are useful for certain general purposes, but difficult to correlate with the general framework of the health accounts.

The process of harmonising occupationally classified information has long been regarded as difficult to achieve. Despite the existence of successive international standards in this area since the late 1950s, many countries of the EU had developed their own classifications of occupations, some of them without using international standards.

A study from the Institute for Employment Research from The University of Warwick (UK), under contract with Eurostat on 1997/98, summarises the differences observed on the occupational structure at the level of major groups of ISCO 88(COM), separately for males and females and within sectors of economic activity. Such comparisons served to locate significant differences between countries in their classification of broad groupings of occupations and some realignments of the correspondence between the national classifications and ISCO 88(COM) were required

in some cases. These variations were located on the level of sub-major groups (2 digit categories). It's important to take account of the fact that the Community LFS includes breakdown of the ISCO 88(COM) only at the three digits level. Nevertheless, a very important work has been implemented during the last 5 years and deviations between the national and the European classifications have been notably reduced (continuously at the 2-digit level and moderately at the 3-digit level).

The collection of data on the LFS is implemented following the NACE Rev 1 (Statistical Classification of Economic Activities) which is obligatory for the Member States since 1993. The classification includes the Section N: HEALTH AND SOCIAL WORK (before 1993, NACE Code 95, Health and veterinary services).

The natural crossing variable of health professions related to the ISCO 88 (COM) is with the sector N of the NACE. The categories potentially related to health in ISCO 88(COM) are professionals, technicians and associate professionals, office clerks, service workers and shop and market sales workers (for details see Annex, Categories related to health in ISCO 88 (COM)).

The 2001 LFS in Member States will, for the first time, require on a voluntary basis the ISCO 88(COM) on a 4-digit breakdown which can be more relevant for statistical human resources purposes (see Annex, Categories related to health in ISCO 88 (COM)).

On a voluntary basis, the Member States are required to provide NACE data at three digits. This will include the following:

- Section N Health and social work
  - 85 Health and social work
  - 851 Human health activities
  - 852 Veterinary activities
  - 853 Social work activities

The success of this future exercise is uncertain, not because of lacking availability of information at the national level, but rather because of the measures adopted for implementing good practices in the use of the ISCO 88(COM) affecting only, for the moment, the two and three digits level. A good comparability on the four-digit level will require some years of collection of data and exercises of methodological comparability of the data and practices of coding.

Cross variable data Nace N/ ISCO 88(COM) for the year 1999

A total of 13.106.794 persons declared to work in the whole European Union on the NACE sector N (health and social work) in 1999. From this total, the breakdown following ISCO 88(COM) provides the following information:

Table 6: Cross variable data Nace N/ ISCO 88(COM) for the year 1999

	Categories	Number	
	Total	13 106 794	100.0%
513	Personnel care and related workers	3 647 654	27.8 %
323	Nursing and midwifery associated professionals	2 104 965	16.1 %
222	Health professionals (except nursing)	1 517 974	11.6 %
223	Nursing and midwifery professions	941 908	7.2 %
322	Health associate professionals (except nursing)	754 888	5.8 %
346	Social work associate professionals	652 330	5.0 %
244	Social science and related professionals	459 849	3.5 %
411	Secretaries and keyboard-operating clerks	413 690	3.2 %
512	Housekeeping and restaurant service workers	389 784	3.0 %
419	Other office clerks	290 744	2.2 %
332	Pre-primary education teaching associate professionals	269 760	2.1 %
422	Client information clerks	207 669	1.6 %
321	Life Science technicians and related associate professionals	156 202	1.2 %
343	Administrative associate professionals	150 858	1.2 %
	Others		8.8 %

The desegregated data by Member State are annexed.

Some of the conclusions deriving from these figures are:

- It seems very hard the use of the Sector N of the NACE classification. Without breakdown at three-digit level the weight of the non-boundaries between social sector and health seems to be excessive and became impossible the use of these information in the framework of the new SHA;
- At the three digits level it appears very clear that employment on NACE sector N is predominately on auxiliary professions and health related professionals. The importance of traditional professions (doctors and dentists) seems to be not so important than in the past;
- Any adventure in terms of breakdown by age, sex or sub-national level will be never possible using the ISCO (88)COM as a isolated statistical tool;
- The design of the sample and the good quality and comparability of LFS can produce interesting estimative results at the four digits level. It seems to be necessary anyway a practice of contact with some experts in the National Statistical Institutes to explain and verify some strange categories (or not) working in the health sector;

- A deep study on characteristics and some definitions about national methods of coding in the 4 digit level seems to be necessary to understand the presence in the LFS at the three digits level of some astonishing categories (5 697 Writers and creative or performing artists in EU working in the health sector. At 4-digit level: How many choreographers and dancers?).

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Employment in health care: An update on recent developments on work at the OECD (Andrew Devlin)

Recent development shows an increased focus on health for the Organization. There is also a strong demand from policy makers for evidence-based analysis.

For measuring and analyzing performance of health care systems, the following issues are important:

- key areas are relevant to health policy:
- better understanding of the supply aspects and how they relate to the needs of payers
- information on "volume" of supply, but also "unit prices" and remuneration

The work also involves policy related aspects e.g. regulation, systems of remuneration and empirical aspects. Empirical aspects cover

- medical workforce (with a focus on physicians and nurses)current and future trends
- levels of remuneration and
- methodological issues.

The collaborative work should focus on the following aspects:

- Avoid duplication with existing cross national efforts
- Take into account specific existing projects
- Efforts by official statistical agencies

Building on recent methodological work includes

- SHA, proposed International classification -(Annex A.1, on *Human Resources in Health Care (HRHC)), borrowed* from the OECD/ Eurostat Canberra Manual)
- A focus on certain occupations (Medical doctors, nurses and affiliates) and certain broad activities.

In the future, certain fields of ISCO-88 and for certain activities should be considered. Furthermore, pilot studies with academic networks should be conducted.

Productivity in the Health Sector – The case of the Danish hospital sector (Morten Hjulsager)

Productivity in the Health Sector

The use of productivity analyses

- Health care as an important welfare factor
- Health care service production is a large industry of great economic significance
- Concern regarding allocation of scarce resources
- Labour productivity - capital productivity - cost efficiency
- Health care is a labour intensive sector - the functional income distribution shows a wage-ratio of ca. 95 percent

There is a national and an international dimension.

At the national level, the following instruments are used:

- instrument for keeping track of the efficiency in the production of health care services
- instrument for resource allocation between different public sectors

At the international level, the following aspects are important:

- vast international differences in the structure of the health care sector
- several similar problems and challenges in the health care sector across countries
- at the same time certain problems exists in some countries but do not occur in other
- "you can learn about your own health care system by looking at the health care system of other countries"

→ this causes the demand for international harmonised statistics

Productivity in the Danish hospital sector

- 15 January, 2001 a rapport with focus on the labour market of the health care sector was published by the Danish Ministry of Health, "Rekruttering, Fastholdelse og Faggrænser i sundhedssektoren" (www.sum.dk)
- Special focus on the hospital sector as the biggest part of the health care sector - and of big political relevance
- Special focus on doctors and nurses

•Background

- lack of personnel with certain skills and educations today; this tendency is not expected to decline
- increasing share of elderly people in the future
- decreasing share of young people in the future
- downward trend in the average age for leaving the labour market in general; also in the health care sector
- increasing average age among health personnel
- besides, an interest in looking at regional differences

•Benchmarking analysis: what is the difference between the counties of Denmark in terms of doctor-productivity

•Productivity measure: number of doctors per unit of output

•Methodological challenge

- input in terms of labour
- output in terms of production value
- internal consistency between the two

•Production value

- traditional economic statistics look at the cost-side of production; this is not sufficient
- solution: the DRG-system for Denmark
- thereby taking into account the differences in the weight of costs between different activities
- besides, homogenity in terms of resources and clinical practice

Table 7: Number of doctors relative to production value (PV) – hospital sector 1999

	Doctors (number)	PV (1.000 DKK)	Doctors per 1 mill. DKK PV	Index
Bornholms County	40	171,789	0.233	77
Viborg County	304	1,175,744	0.259	86
Ringkoebing County	305	1,177,931	0.259	86
Soenderjyllands County	286	1,091,977	0.262	87
Ribe County	266	1,008,967	0.264	87
Frederiksborg County	387	1,452,000	0.267	88
Vejle County	465	1,701,405	0.273	90
Roskilde County	304	1,036,240	0.293	97
Storstroems County	355	1,180,992	0.301	100
Aarhus County	1,124	3,715,329	0.303	100
Vestsjaellands County	374	1,231,652	0.304	101
Nordsjaellands County	751	2,445,430	0.307	102
Fyns County	842	2,711,594	0.311	103
H:S	1,649	4,958,311	0.333	110
Koebenhavns County	999	2,894,563	0.345	114
Total	**8,451**	**27,953,925**	**0.302**	**100**

Political strategy

The Four Point strategy of the Danish Government includes the following aspects:

1. Increase of the number of students in health care related studies
2. Creation of incentives to stay in the labour force
3. Import of health personnel
4. Change of working conditions to increase efficiency

Employment in National Accounts: the Norwegian Case (Tor Skoglund)

Introduction

Employment has traditionally constituted an integrated part of the Norwegian national accounts. The first comprehensive national accounts for Norway were published in 1952 with annual figures, including employment by industry, back to 1930. Employment figures were estimated as full-time equivalent employment ("man-years"). The estimation approach was only moderately changed through the following years.

In the last part of the 1980s, however, Statistics Norway introduced new employment figures in the national accounts. This project was inspired by principles and concepts from labour accounting systems (see Leunis and Verhage (1984), Harildstad (1986)).[1] These new employment figures, first published in 1989, included estimates on employed persons, full-time equivalent persons and total hours worked. The three employment concepts were classified according to industry, occupational status (employees/self-employed) and gender for all years back to 1962.

In 1995, Statistics Norway published results from a general revision of the Norwegian national accounts. This revision was rather comprehensive and included the implementation of new international guidelines from SNA 1993 (System of National Accounts) and ESA 1995 (European System of National and Regional Accounts). All national accounts figures, including employment figures, were re-estimated. The employment figures were, however, less amended than most of the other NA figures. The most important revisions of the employment estimates were due to the introduction of a new industry classification in the national accounts, based on the EU standard NACE Rev. 1. In addition, estimates on compensation of employees and wages and salaries were more closely linked to the employment estimates, and revised upwards 4 to 6 per cent for the whole economy.

Statistics Norway published revised national accounts back to 1978, including employment figures, in 1997. Revised figures further back to 1970 were published in early 2001. This means that consistent employment figures from the national accounts are available for the period 1970-2000.

Since 1997, quarterly figures on employed persons by industry have been estimated and integrated in the Norwegian quarterly national accounts. Quarterly estimates on total hours worked are published from 1999.

Employed persons by county (19 counties) and industry have been estimated in the Norwegian regional accounts. The regional accounts are published with some years of intervals. Preliminary estimates on employment and wages and salaries according to educational characteristics (5 groups) have also been carried out. Employment figures by county and education are consistent with the basic NA figures.

[1] The first plans for a labour accounting system in Norway were initiated already in the late 1970s, and preliminary work was conducted at the Division for Labour Market Statistics. Eventually, the responsibility was transferred to the Division for National Accounts.

Employment and compensation of employees, as other national accounts figures, are constructed and published in different versions. The first preliminary annual estimates, mainly based on short-time statistics, are published about 1 month after the end of the accounting year. Final figures are published about 2 years and 4 months after the accounting year.

Statistics Norway has recently started a new project, in order to improve the employment subsystem of the national accounts. The main objectives are to utilize new statistical sources which have been developed in the late 1990s in a more consistent way, to estimate the number of jobs in the system, and to develop more effective methods of calculations and computer systems. The Division for Labour Market Statistics and the Division for Income and Wage Statistics in Statistics Norway are participating actively in the project, together with the Division for National Accounts.

Definitions

The Norwegian national accounts contain three basic employment concepts:

- Employed persons
- Full-time equivalent persons
- Total hours worked

Employed persons are defined as the annual average number of employees and self-employed engaged in economic activity. Part-time workers, conscripts and persons temporarily absent from work are included. This concept is in accordance with definitions in SNA 1993 and ESA 1995.

The national accounts estimates also include foreign employees working on Norwegian ships in ocean transport. According to SNA 1993 and ESA 1995 Norwegian ships are part of the national economic territory.

Full-time equivalent persons are defined as the number of persons full-time employed, plus part-time employed converted to full-time equivalent basis. Full-time equivalent persons are useful in linking employment and wages and salaries.

Total hours worked is defined as actual hours worked by employees and self-employed, including overtime and excluding absence from work due to vacation, sick leave etc. The estimates are also influenced by calendar effects (movable public holidays, leap years). Total hours worked is considered to be the main concept for measuring the volume of "labour input", or the amount of productive services rendered by employed persons. Total hours worked, in combination with output or value added, are used in productivity studies, see Fløttum and Skoglund (1997).

Compensation of employees, and the components *wages and salaries* and *employers' social contributions*, are also defined according to SNA 1993 and ESA 1995. Wages and salaries are both in kind and in cash (including pay for overtime, and sickness and maternity allowances paid by employers).

The three basic employment concepts are specified according to occupational status (employees/self-employed), according to gender, and according to industry (about 180 industries). The three employment variables, together with variables describing

compensation of employees, are linked by a set of relationships to a consistent subsystem in the national accounts.

In contrast with international guidelines (SNA 1993 and ESA 1995), the concept *jobs* is not yet defined in the Norwegian national accounts. Employed persons who have jobs in different industries are classified by the industry of their main employment. This is obviously unsatisfactory from a methodological point of view when different sources are to be reconciled. The problem will be dealt with in the newly started development project.

Sources

Statistics Norway has conducted quarterly *Labour Force Surveys* (LFS) since 1972. Concepts and definitions are in accordance with recommendations given by the International Labour Organisation (ILO). The reference period is one week. Since 1996, all weeks in a year is covered by LFS (for earlier years only one week each month or one week each quarter). The strong point of this statistics is that total population aged 16-74 is classified as either employed persons, as unemployed persons or as persons not being in the labour force. All persons working more than one hour in the survey week, or who were temporarily absent from work because of illness, holidays etc., are classified as employed persons. Conscripts are classified as employed persons.

The estimates from LFS on total employment, calculated as annual averages, are considered to be quite reliable and are heavily used in analysing and monitoring the labour market. Besides, LFS contain information on personal characteristics like gender, age and education. The main weakness is that sampling errors may occur. The size of the sample is about 24 000 persons per quarter, about 0.75 per cent of the total Norwegian population aged 16-74 years. The statistical uncertainty may be significant when using detailed industry classifications etc. Besides, changes in definitions, estimation procedures and survey weeks have caused some breaks in the time-series.

Statistics Norway is producing statistics from *establishment and enterprise surveys* focusing on specific industries: oil and gas activities, manufacture, construction, wholesale and retail trade and business services etc. The statistics are based on Statistics Norway's Business Register, and contain data on employment, compensation of employees, output, value added etc. The data are considered to be quite reliable because a high fraction of the total number of establishments are surveyed in the industries covered (all large establishments). However, some industries are not covered at all. The main strength from a national accounting point of view is that estimates on compensation of employees and employment are quite consistent with other economic estimates.[2]

Another important source in national accounts is the *financial statistics* for central and local government. The central and local government accounts provide information in a standardized form based on the same principles and definitions as in the national

[2] These statistics have been considerably revised from 1995/96 by adapting to the EU regulations on structural statistics. The statistics are to a much larger degree than before based on the enterprises' accounts as the main information source.

accounts. The statistics comprise data on compensation of employees and wages and salaries, but not employment.

Wage statistics have been compiled from different surveys carried out by Statistics Norway and by the Confederation of Norwegian Business and Industry (CNBI). For some industry groups, especially in private services, no wage statistics have been compiled. Wages and salaries are specified per hour (manual workers on quarterly bases), or per month (other employees on annual bases). The wages statistics also provide data on overtime and absence from work. From 1998, the responsibility for wage statistics covering manufacturing, construction etc. was transferred from CNBI to Statistics Norway. This provides more consistent and complete wage statistics within Statistics Norway.

During the last years, Statistics Norway has considerably expanded the efforts on exploiting *administrative registers*. Data from a central register of wages and salaries, which is maintained by the Norwegian Directorate of Taxation, has been published since 1991. This register comprises all types of payments from employers to employees which are recorded by tax authorities. A register of employees has been used to produce employee statistics since the early 1980s. The main administrative user is the National Insurance Administration. A major weakness has been a time-lag of the employer reports to the register. Statistics Norway has however, by reconciling the register information with other statistical information, gradually improved the quality of the employment register.

There also exist registers covering employees in central government, and in local government.

Administrative institutions outside Statistics Norway are responsible for maintaining these registers, and these institutions also produce employment and wage statistics from these registers. The national accounts are mainly using information on wages and salaries and on absence from work.

Table 8: Main sources on employment and wages and salaries used in the national accounts

	Contain information on	Periodicity
Labour force survey	Employed persons/jobs Occupational status Part-time employment Working hours Gender Industry	Quarter
Establishment/enterprise surveys	Employed persons/jobs Part-time employment Compensation of employees Industry	Year
Central and local government accounts	Compensation of employees Industry	Year
Survey-based wage statistics	Average earnings per month/hour Working hours Gender Industry	Year/quarter
Register of wages and salaries	Wage totals per year Type of wages Industry	Year
Register-based employee statistics	Employed persons (employees) Gender Industry	Year/quarter
Register of employees in central and local government	Employed persons/jobs Average earnings per month Gender Industry	Year

Estimation of employed persons and full-time equivalent persons

The procedure used for the estimation of employment figures in the national accounts may be outlined as follows:

First, basic statistics of different kinds are compiled by detailed industry. Data referring to a single date are transformed to annual averages. Inconsistencies between the data sources are revealed either directly or indirectly through the use of formal relations between the variables. The estimation of employee figures is closely linked to the estimation of wages and salaries by industry. The main relations used is:

(1) number of full-time equivalent persons x wages and salaries per full-time equivalent person = total wages and salaries

(2) number of full-time equivalent persons = number of employed persons x conversion factor for part time employees

The conversion of employed persons to full-time equivalent persons is based on information on part-time employment from the Labour Force Surveys, establishment surveys, wage statistics, and registers of employees in central and local government. The conversion factor (equal to or less than 1) vary according to industry and sex.

In industries with many statistical sources, consistency is obtained mainly by adjusting employment rather than wages and salaries. The adjustments are rather comprehensive in manufacturing and central and local government industries. The assumption is that employment data normally are more inaccurate than data on wages and salaries. In some industries, like agriculture, information on total wages and salaries is not available from establishment surveys, but estimated by relation (1) and (2).

The estimates for all industries are then derived as a first step, as a compromise from the information available. This process is heavily based on detailed quality assessments of the different sources.

Next, detailed estimates are aggregated to main industries and to national totals. The number of persons employed according to the Labour Force Surveys is then compared to these aggregates. The reason for making these comparisons for aggregated industries is that detailed LFS estimates may be biased by sampling errors or measurement errors. Besides, the definition of employment in general government is not consistent in LFS and national accounts.

Discrepancies lead to adjustments on the detailed industry estimates. The adjustments are not implemented as an automatic procedure, but mainly directed to industries with weak statistical information on employment. For industries covered by establishment surveys, the employment estimates are normally adjusted upwards. The main reason for this is that employees with short hours of work are not always reported by the establishments (but are covered by LFS). The process of adjustments is repeated until the result is considered to be acceptable, which means that the total estimates of employed persons in the national accounts (minus foreign employees on Norwegian ships) and LFS are approximately equal. For the main industries, deviations in the figures are accepted to some extent.

The main reason for using Labour Force Surveys as the frame of total employment estimates in national accounts is that the definition is harmonised in SNA 1993/ESA 1995 and ILO/LFS (with the exception of foreign employees). Besides, LFS provide consistent estimates of employed and unemployed persons in the economy.

Table 9: Number of employed persons in national accounts and Labour Force Surveys. 100

	1997	**1998**	**1999**	**2000**
National accounts	2213	2266*	2281*	2291
Labour Force Surveys	2195	2248	2258	2269
Foreign employees on Norwegian ships	25	26*	27*	25*
Remaining discrepancy between NA and LFS	-7	-8	-4	-3

* Preliminary figures

This process of reconciliation between Labour Force Surveys and other data sources is conducted separately for employees and self-employed. Industry data for self-employed persons are rather weak and the estimates for this category are based more directly on LFS.

The distribution of employment figures by gender is estimated from different sources, LFS being the most important. Since the tendency of part-time employment is considerably higher for women than for men, it is important to have a consistent treatment of the sex dimension in all parts of the accounting system.

As mentioned above, Statistics Norway has recently conducted a general revision of the national accounts. In revising the estimates on employment and wages and salaries, register based statistics are used more extensively than before. Especially for private service industries not covered by establishment surveys, the registers on employees and on wages and salaries have played a central role in the estimation process.

Estimation of total hours worked

Labour Force Surveys and some other sources contain data on actual hours worked. However, our experience has been that these data are more influenced by measurement errors than other data. The approach used in the national accounts is to estimate total hours worked from information on standard hours of work in each industry, according to legislation and agreements, and adjust for overtime and absence from work. The main relation used is:

(3) total hours worked = number of full-time equivalent persons x standard hours of work per year

x (1+ rate of overtime - rate of absence from work)

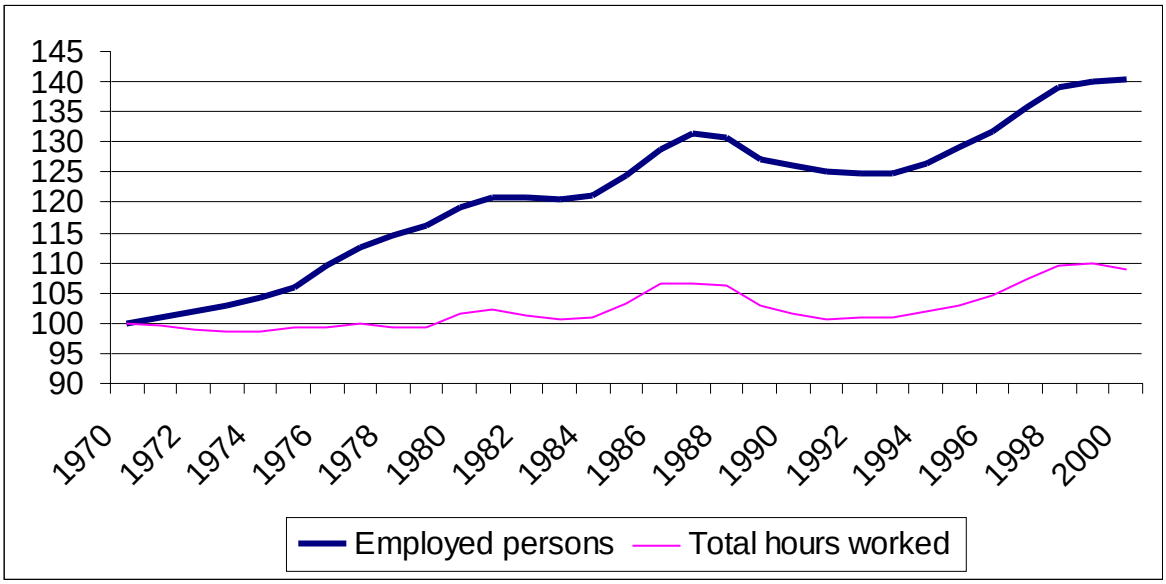
An average number of holidays in a year (resulting in 230 working days and 46 working weeks), combined with a standard working week of 37.5 hours, will yield 1725 hours of work per year. Owing to year-to-year variation of movable public holidays, the standard hours of work per year has in the last years ranged from 1718 to

1740, this means 1.3 per cent. However, some industries and groups of employees (employees above 60 years of age etc.) have shorter standard hours of work per year.

Special calculations are carried out for employees with shift or rotation jobs. These employees, which we mainly find in oil industries, some manufacturing industries and health care, have also shorter standard hours of work per year than other employees.

Overtime and absence from work are estimated from varies sources: wage statistics from the Confederation of Norwegian Business and Industry, the register of employees in central and local government, the Labour force survey etc. The estimates are most uncertain for private service industries.

Graph 3: Employed persons and total hours worked 1970-2000*. Indices. 1970=100



* 1998-2000 Preliminary figures

Since 1970, growth of total hours worked has been considerably lower than the growth of the number of employed persons. This is shown in figure 1. In the period 1970-1999, total hours worked increased by 10 per cent, while number of employed persons increased by 40 per cent. The most important reason behind this is that average hours of work in a full-time equivalent man-year have decreased. The standard working hours per week were reduced from 42.5 to 40 hours in 1976, and further to 37.5 hours for many groups of employees in 1987. In 1982, the standard number of vacation days per year increased by one day (from 20 to 21).[3]

The parental leave facilities have also been strongly extended during the last 30 years, from 12 weeks in 1970 to 42 weeks today (with full wage compensation).

The reduction of the average annual hours worked per employed person is shown in table 2. Females have considerably lower average working hours in a year then males,

[3] The standard number of vacation days will increase by 2 days in 2001 and 2 more days in 2002.

mainly due to more part-time employment among women. The female per cent of employed persons increased from 33 in 1970 to 47 1998.

Table 10: Average annual hours worked per employed person

	1970	1998*	Changes as % 1970-1998
Total	1775	1400	-21.1
Males	1898	1625	-14.4
Females	1459	1140	-21.9

* Preliminary figures

Quarterly estimates on employed persons and total hours worked

The Norwegian quarterly national accounts are compiled by using indicators to extrapolate annual figures from a base year, which is t-2. The number of employees in market production is estimated by combining quarterly information from the Labour Force Surveys and the register-based employee statistics. Register-based employees by industry are reconciled with total number of employees from LFS by proportional adjustments. The number of employees in non-market production, including central and local government, are calculated by using quarterly estimates on compensation of employees and average wages and salaries in these industries. The number of self-employed by industry is estimated from LFS.

Total hours worked per quarter and by industry is estimated on the basis of figures for employed persons and estimates on changes in average working hours. The estimation method is in principle the same as that applied for the calculations of the annual national accounts. Average working hours in a quarter are influenced in part by the calendar (number of public holidays etc.), and in part by absence and overtime. Absence due to vacation is assumed to have a stable quarterly pattern, with the exception of the timing of Easter which occurs in turns in the first or second quarter. Absence due to vacation is estimated on the basis of LFS. Estimates for other types of absence and overtime are based on information from the Confederation of Norwegian Business and Industry, wage statistics from Statistics Norway etc. Since quarterly information on absence and overtime is not available for many industries, the quarterly estimates on total hours worked are rather uncertain for these industries.

The Norwegian approach compared to a general LAS-structure

Labour accounting systems (LAS) have been developed in Netherlands, Denmark and a few other countries. The principles of LAS are described in Hoffmann (1999), International Labour Organisation (1992), Leunis and Altena (1996) and Statistics Netherlands (1999).

As outlined above, the Norwegian approach focuses on *employed persons*, while the concepts *jobs* and *filled posts* are not used. This means that we, in contrast with a general LAS-structure, have no explicit treatment of persons with more than one job.

The main reason for this simplification has been shortcomings in the statistics. Another consequence of the Norwegian approach is that characteristics like shift work system, pay system and amount of compensation of employees are related to employed persons and not to posts or jobs.

The labour accounting system in the Norwegian national accounts does not comprise *unemployed persons* and *persons outside the labour force*. However, consistent estimates for these concepts are provided by the Labour Force Surveys. This link is utilised in labour market analyses.

Statistics on the number of *vacancies* are compiled by agencies outside Statistics Norway. No attempt has been made to overcome the inconsistency problems involved in utilising these data in the labour accounting system.

As mentioned above, the Norwegian approach contains estimates of total hours worked, in agreement with the general LAS-structure. The aim is to estimate hours actually worked, but we do not make a clear distinction between hours worked and hours paid for.

The only demographic variable introduced in the Norwegian employment figures is gender. In the national accounts statistics by county, which has been constructed with 2-4 years intervals, regional breakdowns of employed persons are compiled.

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Part B: Overview and developments in participating countries

Austria: Manpower statistics in the health sector published by Statistics Austria (Richard Gisser)

Sources of data/ institutions

Statistics Austria (formerly Austrian Central Statistical Office) publishes annually statistics on human resources in the health sector. These tables contain data on health professional and paramedical staff as well as data on staff employed in hospitals. The following list provides an overview on the main items published:

- number of active doctors by disciplines, provinces (Bundesländer), age, and sex
- number of nurses and midwives
- physicians in hospitals by qualifications
- staff in hospitals by disciplines, sex and provinces

Classifications

Doctors are classified by using the national terminology of the Austrian medical Association.

For the industrial classification the Austrian version of the NACE Rev.1 (ÖNACE 1995) is used. This classification system completely corresponds with the NACE Rev.1 at the 4-digit level.

Discussion

At present, there is no comprehensive approach on labour accounting in the health sector applied in Austria. Austria is planning to develop a system of register statistics. This aims at a better exploitation of similar data available from labour force service records (data from the Social Security System, the Tax System and information on the volume of work, and data from the Medical Professional Associations).

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Belgium: Manpower accounting (Joszef Pacolet)

Sources of data/ institutions

The Belgian Ministry of Public Health (Ministère de la Santé Publique) publishes annually statistics on human resources in the health sector. These tables contain data on health professional and paramedical staff as well as data on staff employed in hospitals. The following list provides an overview on the main items published:

- number of active doctors by disciplines, sex and regions
- pharmacists by practices
- number of nurses, physiotherapists, midwifes, and hospital staff.

Classifications

In Belgium for the industrial classification the Industrial Short-Term Indicators (ISTI) is used based on NACE Rev.1. This classification system completely corresponds with the NACE Rev.1 at the 4-digit level and ISIC Rev.3 at the 2-digit level.

Discussion

For Belgium, satellite accounts (on the regional level due to regional responsibility) for the health sector are published in June 2001.

For the manpower planning (1995 – 2000 – 2010 – 2020) supply of labour force (education, diplomas, profession), assessment of health, and projection cohorts according to age, sex and diploma is necessary.

- Regional dimension
- Demographic development
- Working-time on average
- Labour market participation of men and women according to age
- Details of different services
- Profession available
- Inflow of nurses, confronted with demand

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Denmark: Human Resources Statistics (Morten Hjulsager)

Sources of data/institutions

- sector specific sources (questionnaires and public register data)
- future statistical development: wage and labour register

Classifications

- current statistical status
    - persons and FTE's
    - division by age, sex, function, sector, unit and region
    - hospital and primary sector by national boundaries
- future statistical development
    - consistency between labour and wages
    - hours worked
    - international boundaries to a wider extend

In Denmark for the industrial classification the Dansk Branchekode 1993 (DB 1993) is used. This classification system completely corresponds with the NACE Rev.1.

Discussion

In Denmark the general unemployment rate has dropped from 15% in 1980 to about 5% in the late nineties whereas the health sector – and in particular doctors – shows an unemployment rate of 0% during this period. At the same time, there has been a constant increase in the employed number of doctors.

At the same time productivity analysis for the hospital sector shows limited growth rates in productivity, but with relatively large differences across counties.

References

Statistics Denmark, Statistisk Årbog 2000, Kobenhavn.

Ministry of Health (2001), Rekruttering, Fastholdelse og Faggrænser i sundhedssektoren, Kobenhavn.

Finland: Health Care Manpower Statistics (Reijo Ailasmaa)

Sources of data/ institutions

Stakes 1992

Man power statistics (Health Care *and Social welfare*)
- Health Care (specialised healt care; in-patient)
- Social Care
    a. institutional care
    b. housing services
    c. also every two year out-patient data on Social Care

Man Power statistics in Finland (= registers)

Statistics Finland collects all data for Labour in Finland
1. Public Health and Social Welfare (municipalities) is 80 % of the total
    a. yearly register April/May; year+1
2. Population Statistics - Employment
    - register July/august; year+2
    - based on several registers (income, tax, unemployment, education)
3. Labour Force Survey

Table 11: Finland: Public and Private Health and Social Care (3/3)

1999	**Health Care**	**Social Welfare and Social Care**	**Total**
total	***149,000***	**142,000**	**291,000**
public sector	126,000	110,000	236,000
private sector	23,000	32,000	55,000
total employment	2,133,000	2,133,000	2,133,000
total	**149,000**	**142,000**	**291,000**
public sector	85%	77%	81%
private sector	15%	23%	19%
of total employment	**7.0%**	**6.7%**	**13.6%**
public sector	5.9%	5.2%	11.1%
private sector	1.1%	1.5%	2.6%

Classifications

- PIN
- register -> flow and stock analysis
    - profession, education, institution,(employer, company),
    - location - etc
    - classifications: ISCO-88, ISCED 1997, NACE, NUTS

In Finland for the industrial classification the Finish Standard Industrial Classification 1995 (SIC 1995) is used. This classification system corresponds with the NACE Rev.1 at the 3-digit level with a few exceptions and ISIC Rev.3 at the 2-digit level.

Outlook

ICHA-HP:

link from NACE to HP ??

- Health Care versus Social Care?
- ISCO ”Nurses” ?

References

STAKES, Facts about Finnish Social Welfare and Health Care, National Research and Development Centre for Welfare and Health, Helsinki.

France: Manpower statistics

Sources of data/ institutions

The French Ministère de L'Emploi et de la Solidarité (DREES) and Caisse Nationale d'Assurance Maladie des Travailleurs Salariés (CNAMTS) annually publish statistics on human resources in the health sector. These tables contain data on health professional and paramedical staff as well as data on staff employed in hospitals. The following list provides an overview on the main items published:

- number of active doctors by disciplines, sex and regions
- pharmacists
- number of nurses, physiotherapists, midwifes
- hospital staff .

Classifications

The current statistical status on the number of physicians is given in full-time and part-time equivalents.

In France for the industrial classification two types of industrial classifications are used:

- Nomenclature d'Activité Française (NAF-1993), and
- Classification des Produits Français (CPF-1993).

There is complete correspondence between NAF and NACE Rev.1 and ISIC Rev.3.

Discussion

References

CNAMTS, Carnets Statistiques, Médecins, Chirurgien-dentistes, Sage-femmes, Laboratoires, Auxiliaires médicaux, Le Secteur Libéral des Professions de Santé, Carnets Statistiques, Paris.

INSÉE, Annuaire Statistique de la France, Paris.

Germany: The (New) Concept of Labour Accounting in the Health Sector (Natalie Zifonun)

In Germany, a new concept has been worked out. We have results on health personnel for the year 1994, which can be found in the health report for Germany.

Sources of data/ institutions

The data sources used include:

The "Mikrozensus" results of the German Statistical Office (Statistisches Bundesamt, StBA) as starting point, it is an annually 1% survey of the German population which provides information on age, sex, profession etc.

The other sources used are necessary to group the Mikrozensus results into the different providers or institutions of health care.

These data sources include additionally

- statistics of the central employment agency
- retail trade statistics
- wholesale statistics
- statistics of personnel in health professions (StBA)
- statistics of employers mutual insurance association
- statistics on long-term nursing care homes
- statistics of physician and dentist associations
- cost structure statistics (StBA)
- special surveys

The Mikrozensus results are used as a basis and the other results as information on quotas for splitting up the Mikrozensus results. Then get the health personnel for providers and professions.

Classifications

The classifications used in the new German concept include:

- classification of providers (classification of the new German health accounts)
- classification of health professions

The health personnel is classified according to the classification of providers of the new German health accounts to the classification of health personnel (physicians, nurses and so on).

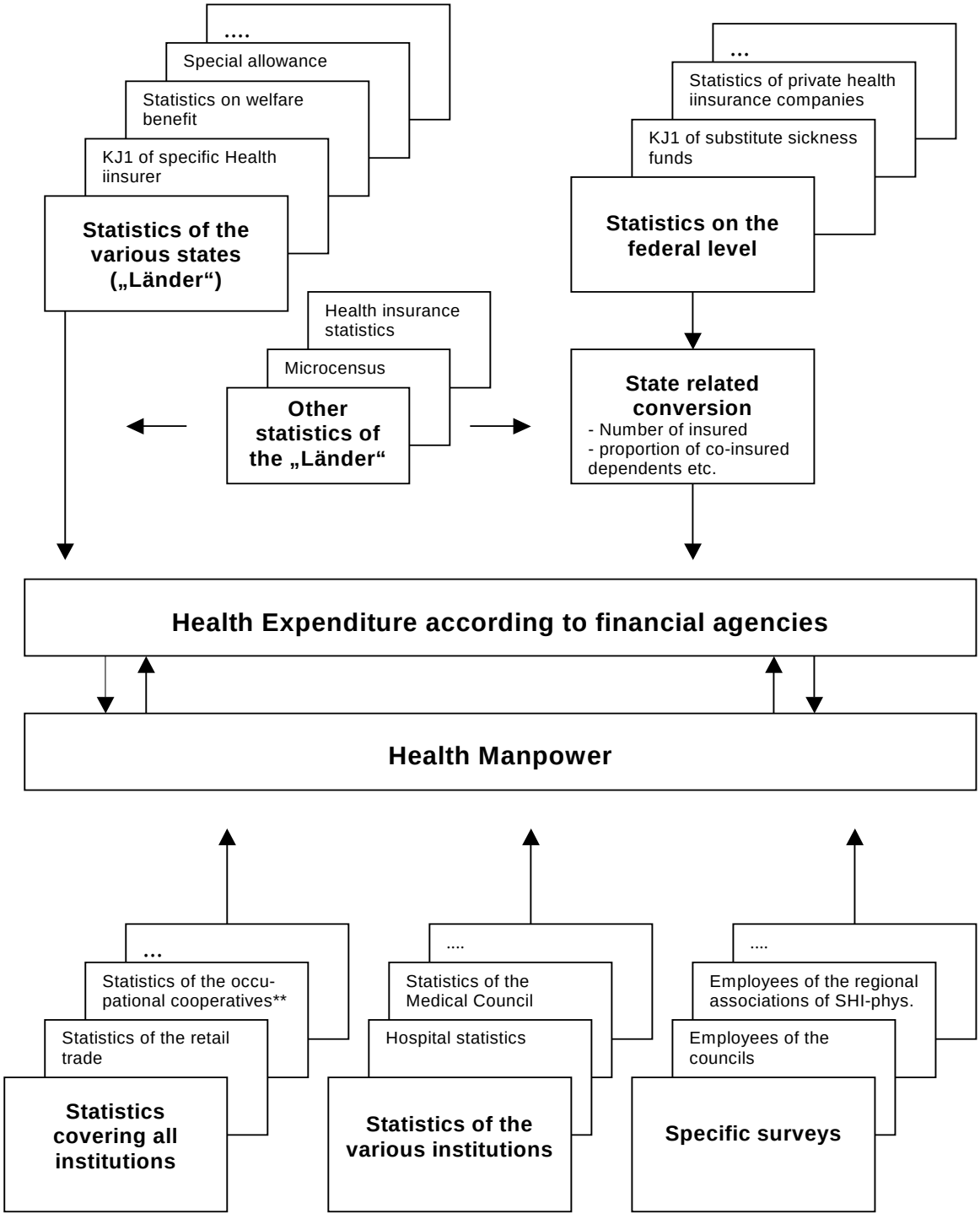
The health personnel itself can be divided into two groups: the first group covers the health personnel in a more narrow sense. This includes health personnel in the core

health institutions like offices of physicians, hospitals and all other in-patient and out-patient care facilities. Plus personnel of emergency rescue, health protection and administration.

The second group is called „personnel in the health industry“. Included is personnel in pharmaceutical and medical industry and also personnel in the wholesale trade of medical products.

- health personnel in a more narrow sense:
  in-patient and out-patient care, transport/emergency rescue, health protection and administration
- personnel in the health industry:
  pharmaceutical and medical industry and wholesale of medical products

Graph 4: The German Concept



* AOK, Betriebs-, Innungs- und Landwirtschaftskassen (ABIL-Kassen)
** Berufsgenossenschaft für Gesundheit und Wohlfahrtspflege

Discussion

The concept BASYS used on national level was also established on the regional level. The work force was calculated by BASYS according to this concept for three federal laender (Bundesländer): Rhineland-Palatinate, Saxony, and North Rhine-Westphalia. Within this context the relation to the health accounts is important since for some providers the number of employees are not complete. In order to fill these gaps the employees could be estimated by the expenditures of the providers and the income of the employees.

References

Bundesanstalt für Arbeit, Sozialversicherungspflichtig Beschäftigte, Nürnberg.

*Hofmann, U., Mill, D., Schneider, M (1998),*Beschäftigte im Gesundheitswesen 1996, Untersuchung für das Ministerium für Gesundheit, Augsburg.

Statistisches Bundesamt (1992), Personensystematik, Klassifizierung der Berufe - Systematisches und alphabetisches Verzeichnis der Berufsbenennungen, Ausgabe 1992, Metzler-Poeschel, Bonn.

Statistisches Bundesamt (1998), Gesundheitsbericht für Deutschland, Metzler-Poeschel, Stuttgart.

Greece: Manpower statistics

Sources of data/ institutions

The National Statistical Service of Greece publishes annually statistics on human resources in the health sector. The following list provides an overview on the main items published:

- number of doctors by speciality and dentists by geographic region and department
- number of nurses and midwives by speciality.

The number of doctors by specialty and dentists by geographic region and department originate from the annual survey on doctors and dentists. The number of medical and nursing personnel, originate from the annual census of hospitals by the Health, Welfare and Social Insurance Section.

Classifications

In Greece for the industrial classification the STAKOD 1980 is used. This classification system completely corresponds with ISIC Rev.2. STAKOD 1991 will be used for indices with base year 1993. The STAKOD 1991-classification system completely corresponds with the NACE Rev.1.

Nurses are classified by speciality and nurses who have

- complete university education
- technological education
- secondary education and
- compulsory education.

Discussion

References

National Statistical Service of Greece, Statistical Yearbook of Greece, Athens.

National Statistical Service of Greece, Monthly Statistical Bulletin, Athens.

Iceland: Data on Health Manpower and the role of the Directorate Health

Sources of data/ institutions

The Director of Health (division of health statistics) is responsible for producing health statistics, including statistics on health manpower.

There is, however, a number of other important sources of information, e.g.

- The Ministry of Health and Social Security (licenses, future development)
- The Ministry of Treasury (personnel and costs in the public sector)
- Statistics Iceland (labor market surveys)
- Trade unions (employees outside institutions)

The following table gives an overview of the various sources of information and related aspects on health manpower.

Table 12: Current Status of Information on Manpower

Institution	Source of data	No.	FTE	Update	Classification	Access
Directorate of Health*	All institutions +	Yes	Yes	Annual	Occupation/ education	Time-consuming
Directorate of Health	All licensed physicians	Yes	No	Continually	All specialities	Adequate
The Ministry of Health	All issued licenses	Yes	No	Continually	According to law	Time-consuming
Some trade unions	Registered members	Yes	No	Continually	Specialities if applicable	Different
The Ministry of Treasury	All personnel in the public sector	Yes	Yes	Continually	Profession	Under observation
Statistics Iceland	Labour market surveys	Estimates	Estimates	Continually	Economic activity	Good

* Data is collected by a questionnaire sent annually to all health institutions. The data includes number of employees by institutions and occupation (or education) and the number of full time equivalents. This information is supplemented by data from trade unions to include individuals outside health institutions.

Future development

- The entire data collection system and data processing is currently under scrutiny including data on health manpower
- The Directorate of Health, the Ministry of Health and trade unions are planning to join their forces in registration of health manpower. The idea is to create one central database at the Directorate of Health. The above institutions will be able to access the database (or certain parts of it) through a web interface and register

relevant information. Statistical analysis will be carried out at the Directorate of Health.

- The possibility and feasibility of obtaining data on health personnell from the Ministry of Treasury is under observation.

Classifications

For the industrial classification the Icelandic Standard for Industrial Classification is used (ÍSAT 95). This classification system corresponds with NACE Rev. 1 at the 4-digit level with some exceptions. A few 4-digit numbers have been omitted and the 5th digit is frequently added.

In its annual data collection the Directorate of health classifies health manpower by occupation/education (i.e. physicians, qualified nurses, licensed practical nurses etc.). The data could be coded according to the Icelandic version of ISCO-88 (ÍSTARF 95).

Discussion

Problems regarding the current data collection:

- Lacking in certain areas, i.e. private sector outside institutions.
- Chance of double counting when individuals are employed by two or more institutions
- Timeliness
- Demographic factors – age, gender
- Projections

References

Hagstofa Íslands (1994): Íslensk starfaflokkun, ÍSTARF 95, Reykjavík.

Hagstofa Íslands (1994): Íslensk atvinnugreinaflokkun, ÍSAT 95, Reykjavík.

Landlæknisembættið (2000): Heilbrigðisskýrslur 1993-1994, Reykjavík.

Ireland: Manpower statistics

Sources of data/ institutions

The Irish Department of Health publishes statistics on human resources in the health sector. These tables contain data on health professional and paramedical staff as well as data on staff employed in hospitals. The following list provides an overview on the main items published:

- number of doctors by disciplines
- number of nurses
- hospital consultants by health board area and specialty
- non-consultant hospital doctors
- pharmacists.

Classifications

The number of doctors and pharmacists participating in the Choice of Doctor Scheme is given by the health board area. A break-down by health board and grade is provided for dentists employed on a whole-time basis by the health boards. Public health nurses employed on a whole-time basis by the health board are grouped into:

- public health nurses
- senior public health nurses and
- superintendent public health nurses.

The non-consultant hospital doctors are analysed by grade within the public health service.

In Ireland for the industrial classification the NACE 70 (NACE Rev.1 will be available) is used. This classification system corresponds with ISIC Rev.2.

Discussion

References

Department of Health, Health Statistics, Dublin.

Central Statistical Office, Ireland - Statistical Abstract, Dublin.

Department of Social Welfare, Statistical Information on Social Welfare Services 1992, Dublin.

Italy: Employment Data in the Health Sector (Alessandra Burgio)

Sources of data/ institutions

The National Accounts Data

Italian National Accounts represent a very important source of information on employment. Estimations are currently carried out to relate production activities to the work productive factors, using the same concepts suggested by the SNA and ESA.

In Italy, there are no sources to calculate hours worked and then figures on this item are not available. FTE units are obtained by transforming the total number of jobs into full-time jobs. Finally, estimates of employed people, jobs[4] and full-time equivalent units are currently published.

Last data have been estimated choosing a base year (1991) and calculating time series starting from the employment levels set for this year. Estimates for the following years are updated using all the information obtained with different sources on employment (censuses, sample surveys, administrative data). This methodology implies a hard work of harmonisation of various information. Sources that contribute to the estimation of the work input are classified on the basis of the statistical unit that supplies data: on the demand side (enterprises and institutions) and on the supply side (households).

Final estimates of regular and irregular employment in terms of employed people, jobs and full-time equivalent units are obtained by labour accounts.

- Harmonising different data deriving from various sources.
- Comparing information from the demand side with those from the supply side, in order to identify specific employment segments (regular and irregular workers).
- Estimating aggregates that are not directly measurable: non resident and irregular foreign workers, multiple jobs, not working people stating to have done hours of job, employment in the informal sector.

Ministry of Health Data

Since 1994 the Ministry of Health provides information on human resources working inside the National Health System (NHS). With this information it is possible to calculate figures by professional and by institution as shown in table 2.

[4] Jobs are given by the sum of the primary jobs and the multiple jobs, regardless of the number of hours worked.

Ministry of Treasury Data

The Ministry of Treasury provides information on employment in the Public Administration and on personnel costs. The main aim of this administrative source is to monitor the expenses for personnel. Data refer to about 10.000 institutional units of the Public Administration, but they are published by aggregated sectors. With this information it could be possible to calculate figures by professional and by institution as shown in table 3 (see Annex).MISSING

INPS (Social Security Institution)

INPS data are useful to have information on the private sector. Every person working in the private sector as employee or self-employed must be registered in INPS archives. However, many doctors are not registered in this administrative archive because they have their own social security fund (ENPAM - social security fund for doctors and dentists). Only doctors working as self-employed must be registered to INPS.

Registries for physicians, dentists, pharmacists and Associations for nurses and paramedical personnel

Doctors, Dentists and Pharmacists after graduating must be entered in provincial registers to practise.

Figures deriving from registries refer to all doctors, dentists and pharmacists entitled to practice, including unemployed, retired and people working outside the health sector. The sector of activity is not available. The distribution of physicians by specialisation is not available but it could be obtained by analysing provincial registers (103 units).

Qualified *nurses and midwives* are entered in registries, which refer to all nurses who attended a course of at least three years. Like physicians these registries include people unemployed, retired and working outside the health sector. The sector of activity is not available.

As concerns *paramedical personnel* the situation is more complicated, because there are no registries. Many of them are joined in associations. The number of associations is rather large and often they don’t have statistical information.

Population and Economic Censuses

Information deriving from population and economic censuses are already used for estimations of National Accounts data.

Labour Force Survey

This sample survey is repeated every three months. It concerns about 73,000 households and 200,000 individuals (in Italy there are about 21 million households and

57 million inhabitants). Estimations are available at regional level and the number of people employed or unemployed is available also at provincial level. Information on professions have only been included into the questionnaire since 1992.

Like for economic censuses information deriving from labour force survey are already used for estimations in National Accounts data.

Classifications

Data of the Ministry of Health

As concerns institutions, data refer to people working in public hospitals, in private "accredited" hospitals (operating inside the NHS) and in Local Health Units (public local services including laboratories, out-patient departments, residential and semi-residential facilities).

With reference to professions, data refer to GP's (family doctors including paediatricians), First aid doctors (working in first emergency facilities different from hospital first aid departments), physicians, dentists, other graduated personnel, nurses, paramedical personnel, technical personnel (statisticians, engineers, etc.) and administrative personnel. Medical and paramedical personnel is distinguished by qualification (first level, second level, etc.).

- These data are available only in head-count units.
- Physicians and graduated personnel are classified by open-ended contracts and fixed contracts.
- Nurses and paramedical personnel are classified by full-time contracts and part-time contracts.
- Other personnel is classified by employed and self-employed workers.

Data of the Ministry of Treasury

The public health sector is sub-classified in Local Health Units, Independent Hospitals, Public Research Hospitals. Information derived from these data concern:

- Stock and flows of the personnel by type of profession and qualification (first level, second level, etc.).
- Distribution by sex and educational level.
- Annual expenses for personnel.

As concerns professions, data refer to physicians, dentists, other graduated personnel, nurses, paramedical personnel, technical personnel (statisticians, engineers, etc.) and administrative personnel. Personnel is distinguished in:

- open-ended or fixed contracts;
- full-time or part-time jobs;
- employees or self-employed people.

INPS (Social Security Institution)

Information on the type of institution where people are active are registered (classified by economic activity), but very few information are available on professions. Only a rough classification of workers is used distinguishing apprentices, workers, clerks and managers.

Labour Force Survey

The profession variable is coded

- using the Italian version of the ISCO-88 classification (International Standard Classification of Occupations)
- with 4 digit codes,

However, it is still of poor quality because in many cases generic expressions don't allow attributing a precise code. Because of the size of the sample it is not possible to have estimations by profession at 4 digits, but at 2 digits at last.

Information on economic activity is available:

- classified using Italian ATECO 1991 classification (that is very close to ISIC, International Standard Industrial Classification).
- registered using 4 digit codes,
- estimations available only at 2 digit level (because of the size of the sample).

Discussion

Problems regarding data provided by the Ministry of Health:

- Data cover only partially the private sector: private out-patient departments, private studios, self-employed personnel not working in the NHS are not included.
- As concerns Local Health Units (LHU), there are not separate information for non inpatient care (out-patients departments, laboratories, residential facilities).
- Double counting is possible because people could work as an employee for one institution and, at the same time, as a self employed for another institution.
- Data in FTE units are not available, but could be estimated.

Problems regarding data provided by the Ministry of Treasury Data:

- The advantage to use this source with respect to the Ministry of Health one is that combining information on the date of start and the date of end of jobs and on costs, it could be possible to calculate FTE units.
- Data refer only to the public health sector.
- As concerns Local Health Units (LHU), there are no separate information for inpatient institutions, out-patients departments, laboratories, residential facilities.

Problems regarding INPS-DATA:

- The classifications of professions used in these administrative sources are not sufficiently detailed.
- The classification of economic activities could be too generic to have information on providers.

Problems regarding registries of various medical professions (doctors, dentists and pharmacists):

- It is not possible to calculate the number of people working in the health sector.
- It is not possible to calculate FTE data.
- Double counting is a risk because doctors graduated before 1985 could be registered twice (in the register of doctors and in the register of dentists).
- Nevertheless, this information could be useful because, using other sources and formulating additional hypothesis, an estimation of people working in private sector could be obtained.

Problems regarding registries of various medical professions (nurses and midwives):

- It is not possible to calculate the number of people working in the health sector.
- It is not possible to calculate FTE data.
- Nevertheless information could be used, like those for doctors, to estimate figures.

Problems regarding the population census:

- It is repeated every ten years;
- Classifications change over time;
- In the last census (1991) information on professions was coded using only 3 digits of the Italian version of the ISCO-88 classification. Population Census 2001 should guarantee higher quality of this variable because automating coding will be used to have 4 digit codes.

Problems regarding Labour Force Survey Data:

- The sample size provides estimation by economic activity and by profession at two digit level.
- Very poor quality of data by profession.

References

ISTAT, Annuario Statistico Italiano, 2000, Rome.

ISTAT, Conti economici nazionali. Collana Informazioni, numeri vari. Roma. Data available on the Internet web site www.istat.it.

ISTAT, Forze di lavoro - Dati congiunturali media 1999. Collana Informazioni congiunturali. Roma, 2000. Data available on the Internet web site www.istat.it.

ISTAT, Sistema sanitario e salute della popolazione. Indicatori regionali. Collana Informazioni, n.16. Roma, 2000. Data available on the Internet web site www.istat.it.

Ministry of Health, Attività gestionali ed economiche delle USL e Aziende ospedaliere. Annuario Statistico del Servizio Sanitario Nazionale. Anno 1998. Data available on the Internet web site www.sanita.it.

Ministry of Treasury, Conto annuale. Anno 1999. Rome.

Luxembourg: Statistical Sources of Health Employment (Marianne Scholl)

Sources of data/ institutions

Social Insurance data

- Employment statistics
- Restrictions: no details concerning professions except self-employed persons (doctors)
- *incomplete data* (problem of outsourcing in hospital domain mainly concerning ancillary services)

Ministry of Health statistics

- Register of the health professionals (doctors, nurses, midwives, pharmacists)
- Break down by
    - persons allowed to exercise
    - specialisation
    - active persons (however not for all professions)
    - gender
    - year

Health insurance

- Statistics on doctors (statistical year book)
- 2 different databases:
    - Ministry of Health: counting persons (also doctors working for administration)
    - Health insurance: statistics focusing on medical activity

Important aspect of health employment: increase in half-time jobs

Classifications

In Luxembourg for the industrial classification the NACELUX is used. This classification system corresponds with the NACE Rev.1 at the 5-digit level (additional) and ISIC Rev.3 at the 2-digit level.

Discussion

Limits of our statistics:

- Most of the data are based on acute care hospitals
- Long term care activities data are missing

In 2000, long term care insurance will allow us to get data from social insurance data base. Our demand:

try to get harmonization for demand on basic data (OECD, Eurostat, ILO)

Our objective:

recognize national statistics and publications in order to allow international comparisons

References

Statec, Annuaire Statistique Luxembourg, Luxemburg.

Netherlands: Human Resources (Cor van Mosseveld)

Data Sources: Internal

For the collection and creation of statistics on human resources available in the institutions providing health care Statistics Netherlands can use both internal and external sources. Internal sources to be used can be divided in sources available for all economic activities and sources specially developed for a single area or purpose. In the general applicable internal sources the most well-known and most important one is the labour force survey, conducted on a personal basis, but with possibilities to link the data to economic units. Of course other national surveys van be used in the health care area as well. Just as important as the general internal sources are the specific internal sources, that are the questionnaires sent to institutions in the health care area. These questionnaires are performed on an institution basis, with a very high response.

Data Sources: External

Besides internal sources the statistical office has the opportunities to use external sources supplying information on the labour market, to either complement existing internal sources or as an unique source in case no internal enquiries are performed.

These external sources can be divided in two groups. The first group contains administrative records, meaning that these sources were not created for statistical purposes, but for some administrative reason. One important source to be mentioned in this category is the tax-register. The tax-register could be used to supplement information on self-employed professionals in the health acre sector. The use of the tax-register, however, is limited because the occupation included in the records is not checked for consistency. Another disadvantage is that only a selection of records of the tax-register are available, which makes the sample very small for the purpose needed.

The second category of external sources contains registers. Registers can be distinghuised in registers specific for the sector in study and registers owned by special research isntitutes. National health associations, like the organisation of general practititoners, the ordre of medical specialists, the national organsiation of physiotherapists, etc, all have very detailed and rather conplete lists of professionals. These registers could in theory be used for statistical purposes. The second class of registers are held by special research institutes. The use of these registers can be very restricted, and are only mentioned for completeness.

Discussion and Future

During the last decades of the last century, especially since 1995, the amount of data to be supplied by all economic units was high. By a large number of people and institutions it was seen as too high. Reductions in the number of enquiries were requested. In Statistics Netherlands the ideas of lowering the nurden of enquiries were put high on the agenda. So a lot of statistics were reduced, some even deleted

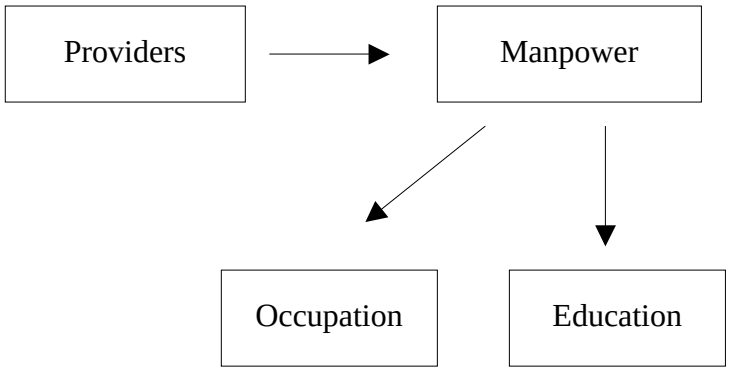
completely. In some of the cases the lack of own data were supplemented by the use of additional data from other external sources.

Another item linked to the reductiuon of data enquiries, was the one-number-philosophy, meaning that for every statistic item published by Statisticvs Netherands ideally only one number should be published and available for the public. This idea was launched to diminish the uncertainty for the users of the various statistics on which data ti use. Of course it is still the case that different uses and diffderent users having different goals need different data on the same topic.
Following the inbe-number-philosophy the data resulting from the labour accounts were completely integrated in the natrional accounts. If seperate number on labour statistics are presented theses data have to be in accordance with the data presented in national accounts.

In the area of health care Statistics Netherlands the department of health and social care statistics is using the manpower data available from various sources, both internal and external. It is aimed for in the next few years to include all the manpowr data into the framework of Care Statistics (including health care) using the methodology of the System of Health Accounts, presenteed by the OECD.

Iln the Care Statistics framework the starting points are the health care providers. For every provider the internal manpower data available are going to be linked to the actor and supplemented by data from other sources. The resulting data by actor will be divided into information by occupation as well as information by education.

Graph 5: SHA systematic used in manpower



In the next years discussion will be held on the reduction in the burden of enquiries in relation with the quality of the information as well as the infortmation needs. At the same time discussions will take place on the one-number-philosophy. In a lot of cases it is not possible to serve all purposes and questions with only one set of data.

References

CBS, Statistical Yearbook of the Netherlands, SDU, Den Haag.

CBS, Vademecum of Health Statistics of the Netherlands, SDU, Den Haag.

Norway: Health Resources: Overview and Development (Ann Lisbet Brathaug)

Sources of data/ institutions

Questionnaire to all health and care institutions and to municipalities

- data on number of employees/man years
    - by institutions/providers (also self-employed)
    - split into functions (curative, rehabilitation, laboratory etc, psychiatry for adults, psychiatry for children, joint services, long term care, care received at home, prevention etc.)
    - by the 31.12.
    - full-time and part-time (receive the part-time share and can thus estimate man year)
    - by education/occupations
- compensation of employees by the same functional breakdown

Local government register (PAI)

- coverage of most of the workforce in the health sector
- information on part time share, overtime work and wage rates
- information on certain reasons for being out of work
- total wages during the year
- combined with wage rates it is possible to estimate hours worked

Future statistical development

- registers and administrative records will to a larger extent be used to collect information on employees
- the registers shall be based on individual information
    - gender, education, occupation
    - establishment/institution/industry
    - data for weekly working hours (contract based)
    - start and stop date of the employment contract

Classifications

- Data on number of employees/man years
    - by institutions/providers (NACE-classification) (also self-employed) split into functions (curative, rehabilitation, laboratory etc, psychiatry for adults, psychiatry for children, joint services, long term care, care received at home, prevention etc.)
    - full-time and part-time (for the estimation of man year)
    - by education/occupations
- compensation of employees by the same breakdown
- consistency between employees and wages

This provides the possibility to calculate/analyse the compensation of employees/man year by institutions/providers and by functions.

Definition of Man year

- Paid man year
  - directly related to the compensation of employees
- Man year actually worked
  - by the number of hours worked
  - definition of input of human recourses into the production process
- Contract man year
  - will often be close to paid man year, but one can work hours that are not agreed on (extra, overtime work etc)
  - it is also possible to have contract hours that is not paid for (special leaves without pay)

Estimation of employed persons and full-time equivalent persons

- number of full-time equivalent persons x wages and salaries per full time equivalent person = total wages and salaries
- number of full-time equivalent persons = number of employed persons x conversion factor for part-time employees
- total hours worked = number of full-time equivalent x standard hours of work per year x (1 + rate of overtime - rate of absence from work)

"Helsemod" - Health Model

- planning model developed by Statistic Norway
- projections of the future demand for man years in the health sector (physicians, nurses, midwifes etc)
- both supply and demand of man years

Supply of health personnel

- three main sources
- education register give information on the population's highest education
- authorised/licensed health workers
- employer/employee register (health personnel statistics based on data from the institutions is used as a control factor)
- information from these sources will be linked and give the supply of man year in the base year
- the supply will be related to NACE industries
- future growth in the supply
- based on information on persons in the education system

Demand for personnel based on

- users by age and gender of the different activities in the base year (establish the standards)
- any new reforms planned will be taken into account
- future growth mainly based on assumptions about the demographic and economic changes

Meaningfulness of the model

- Discrepancies between supply and demand
- Are we educating too many or too few to meet the future demand for health personnel?
- Which education groups are the critical ones?
- In which activities (areas) will there be problems?

Discussion

Advantages using the registers:

- lower the response burden
- collect data in an unique way for all institutions (ex. same definition of man year/hours worked etc)
- registers/administrative records can also give consistent data on wages and compensation of employees
- possible to link different registers
- cover all industries, thus possible to answer the question "Where have all the nurses gone"?

Problems related to using the registers:

- Difficult to have the information related to functions (curative care, prevention, psychiatry etc)
- Give data by institutions, which again is coded to the NACE-classification
  - the institutions often use a wrong establishment/enterprise number, thus, making it difficult to have the correct NACE-classification
- Timeliness (updating of the register)

References

Johnsen, R. and *K.A. Holtedahl* (1997), "Arbeidstid og produksjon av kurative tjenester i allmennpraksis i 1993", *Tidsskrift for Den norske lægeforening*, 117:1489-1492.

Rønningen, L. (1997), "*Personellinnsatsen ved de somatiske sykehusene*", *Samdata sykehus. Rapport 6/97*, SINTEF Unimed Norsk Institutt for sykehusforskning. Trondheim.

Portugal: Selected aspects of manpower statistics (Miguel Pereira)

Currently, the work regarding the project of creating a Portuguese System of Health Accounts (implemented by the Health Ministry and the National Institute of Statistics) is just beginning. The future national system of health accounts must be standardized with the European systems of health accounts. In this project, the question of the human resources in the health system has particular importance.

Source of Data/ institutions

In Portugal, the National Institute of Statistics collects (in the department including the Health Statistics Area) physical data relating the number of health staff registered in guilds, trade unions and professional associations.

Mostly, data are collected by gender. Data by ages are only available for physicians. We have data of non specialized physicians and specialized physicians (by specialties).

Not all the health staff has to be registered. The registered health staff can be in activity or not (the retired health staff, or those who never executed the health profession concerning their academic title, can be registered, too).

The spatial available distribution (most of it by the stage of «concelho», agreeable to the NUTS) are not related with the places of exercise of the activity, and there are not normalized criteria in the methods of obtaining the data.

Annually, the National Institute of Statistics collects data concerning the registered number of the following health staff (available data - updating from 2001):

- physicians (specialist and non specialists); *source:* Guild of the Physicians;
- dentist physicians; *source:* Guild of the Dentist Physicians;
- odontologists; *source:* respective trade union;
- pharmaceutics; *source:* Guild of the Pharmaceutics;
- pharmacy staff; *source:* Institute of the Pharmacy and the Medicament;
- nurses; *source:* Guild of the Nurses;
- paramedical technicians; *source:* respective trade union;
- veterinarians**;** *source:* Guild of the Veterinarians;
- social welfare technicians; *source:* respective trade union.

2.1 - MÉDICOS, MÉDICOS DENTISTAS, MÉDICOS VETERINÁRIOS, ENFERMEIROS, FARMACÊUTICOS, PROFISSIONAIS DE FARMÁCIA, PROFISSIONAIS DO SERVIÇO SOCIAL, ODONTOLOGISTAS E TÉCNICOS PARAMÉDICOS, POR DISTRIBUIÇÃO GEOGRÁFICA (NUTS I/DISTRITOS) E SEXO

1999 Unidade: n.º

DISTRIBUIÇÃO GEOGRÁFICA		MÉDICOS	MÉDICOS DENTISTAS	MÉDICOS VETERINÁRIOS	ENFERMEIROS (*a*)	FARMACÊUTICOS		PROFISSIONAIS DE FARMÁCIA	PROFISSIONAIS DO SERVIÇO SOCIAL	ODONTOLOGISTAS	TÉCNICOS PARAMÉDICOS
						TOTAL (*b*)	DE OFICINA				
1		2	3	4	5	6	7	8	9	10	11
	HM	**31 758**	**2 676**	**2 303**	**32 984**	**7 114**	**4 111**	**6 130**	**195**	**328**	**2 140**
PORTUGAL	**H**	**17 720**	**1 384**	**1 414**	**5 600**	**1 412**	**792**	**x**	**4**	**309**	**491**
	M	**14 038**	**1 292**	**889**	**27 384**	**5 702**	**3 319**	**x**	**191**	**19**	**1 649**
CONTINENTE		**30 943**	**2 598**	**2 214**	**30 784**	**6 982**	**3 984**	**5 929**	**189**	**319**	**2 014**
AVEIRO		1 121	132	94	1 319	370	292	419	5	14	110
BEJA		196	12	65	475	83	60	106	2	4	31
BRAGA		1 223	187	66	1 744	279	198	521	1	8	101
BRAGANÇA		188	17	33	549	59	41	138	-	2	36
CASTELO BRANCO		293	19	43	752	121	83	102	4	5	36
COIMBRA		3 198	119	89	2 831	464	229	550	2	12	301
ÉVORA		297	12	83	587	101	71	114	2	5	12
FARO		831	99	73	988	200	140	167	5	14	54
GUARDA		246	24	38	541	90	67	180	1	2	26
LEIRIA		621	60	66	1 049	265	190	204	2	13	71
LISBOA		11 762	738	846	7 920	2 610	1 170	1 020	98	150	344
PORTALEGRE		211	15	44	461	70	52	83	1	2	24
PORTO		7 196	791	171	6 074	1 173	667	1 116	46	30	515
SANTARÉM		643	56	155	1 080	282	168	215	3	12	56
SETÚBAL		1 560	166	171	1 869	433	283	333	11	28	120
VIANA DO CASTELO		415	52	29	697	97	70	189	3	7	39
VILA REAL		344	53	74	824	92	64	203	1	5	66
VISEU		598	46	74	1 024	193	139	269	2	6	72
R. A. AÇORES		**374**	**33**	**66**	**935**	**60**	**60**	**136**	**2**	**7**	**61**
R. A. MADEIRA		**441**	**45**	**23**	**1 265**	**72**	**67**	**65**	**4**	**2**	**65**

Origem: Ordens e sindicatos respectivos.

(*a*) Total de enfermeiros inscritos: 34 691. Enfermeiros não contabilizados por falta de caracterização das instituições onde trabalham: 1155. Enfermeiros inscritos sem exercerem a actividade: 552.

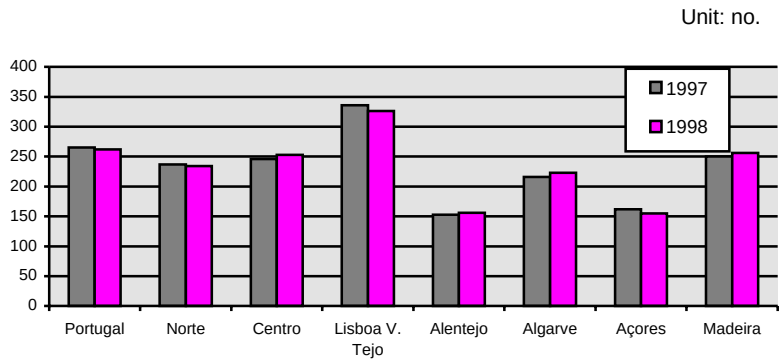
(*b*) Este total de farmacêuticos (7114) não contempla os casos dos que, embora inscritos na Ordem dos Farmacêuticos, não indicaram a área e o local de actividade (683).

Basically, there are three types of oral health staff in Portugal: stomatologists (physicians registered in the Guild of the Physicians); dentist physicians (registered in the Guild of Dentist Physicians); odontologists (oral health staff non-physician, registered in a trade union).

Using specified national surveys, the National Institute of Statistics obtains data relating the number of health staff working in hospitals and official centers («centros de saúde»).

Physicians employed in hospitals and official centres per 100 000 inhabitants and region (NUTS II)

(last available aggregated data)



In the ending of 1998, there were in Portugal 263 physicians employed in hospitals and official centres per 100 000 inhabitants.

Classifications

According to the Portuguese Classification of the Economic Activities (CAE, reporting to the NACE), and under the methodology of these surveys: «hospital» is a health establishment with in-patient facilities, official (public or non public – military, paramilitary and prison) or particular (with or without lucrative objectives); «official center» is a public ambulatory health establishment, directed by departments of the Health Ministry, able to give first health cares and to promote health prevention, diagnosis and treatment of the diseases, connecting its activity in the individuate, the family an the community. It can have in-patient facilities.

Discussion

Data obtained by this way aren't directly comparable with those concerning the registered health staff, because the inquired professions are not the same, and especially because a great part of the health staff working in hospitals and official centers can do it in both establishment, and in private cabinets.

Data concerning the number of health staff registered are available since the sixteen'; data relating health staff working in hospitals and official centers, collected by national surveys, are available since 1995.

These data can be analyzed with others of economic and financier character already available or to be obtained by the National Institute of Statistics/Ministry of Health in the health sector.

References

Instituto Nacional de Estatística, Portugal - Estatísticas da Saúde, Lissabon.

Instituto Nacional de Estatística, Portugal - Anuário Estatístico de Portugal, Lissabon.

Spain: Health Personnel Statistics (Rosa Mataix)

Sources of data/ institutions

Instituto Nacional de estadistica (INE):

It provides statistics on

- Physicians and stomatologists
- Dentists (odontologists and stomatologists)
- Certified nurses
- Pharmacists

by using various statistical sources such as Provincial Councils of Physicians, National council of Odontologists and Stomatologists, National Council of Nurses and National Council of pharmacists. These statistics refer to professionals with an University Degree.

Surveys on active population

- Information on physicians and odontologists, certified nurses, pharmacists, other health and non-health personnel
- Institution: Instituto Nacional de Estadistica (CNO-94)
- Figures refer to professionals with practice; related with ISCO-88 mayor group 2 (only 3 digit level)
- Permits to get information related to female professionals with practice

Complementary information

- Institution: Ministry of Health
- Administrative database of Physician Specialist Training Program: figures refer to physicians who apply for the Specialist Training Program; since 1995 application is compulsory
- Administrative database of General Practitioner Certification: figures refer to physicians who apply for the General Practitioner Certificate. This certificate is compulsory for physicians who had their degree before 1995.
- Institutions: Ministry of Health
- Encuesta Nacional de Hospitales
- Source: In-patient care institutions statistics (annually)
- Figures refer to health an no-health personnel currently working in hospitals

Classifications

For the industrial classification in Spain the Clasificacion National de Actividades Economica (CNAE-1993 is used. This classification system corresponds with the NACE Rev.1 at the 2-digit level and ISIC Rev.3 at 2-digit level.

Discussion

No exact numbers of physicians can be provided in Spain (50 regional professional councils!). This is illustrated by the fact that there is 15% difference between two register regarding the number of physicians

Series provided by the Instituto Nacional de estadistica (INE)

- are about certified persons, not professionals with practice
- provide no possibility to get further information (females, general practitioners, specialists, private practice).

Surveys on active population do not permit to split:

- General - specialist practice
- General - specialist dentists
- Age – sex
- Specialities

References

Instituto Nacional de Estadistica, Anuario Estadistico de España, Madrid.

Martinez Zahonero, J.L. and *N.R. Navarro* (1988), Publico-Privado en el Sector Sanitario, Colegio de Economistas de Valencia, Comision de Economistas de la Salud, Valencia.

Sweden: Information on Human Resources of the Health Care System (Sören Lindroth)

Sources of data/ institutions

The National Board of Health and Welfare (NBHW)

- responsible for supervision, evaluation, and follow-up regarding Social Services and Health Carethe Division for qualification and Training within the National Board of Health and Welfare provides database on Health Care Personnel: 17 registered professions, Specialty certificates*The Federation of Swedish County Councils (FSCC)*
- Employs the majority of the Health Care Personnel: 18 County Councils, 2 Regions, 1 Municipality*The Swedish Association of Local Authorities (SALA)*
- produces statistics on Health Care Personnel employed by local authorities
- Works together with SFCC and has similar classification system

Statistics Sweden (SCB)

- Statistics based on registered education and
- information given by the employers

Classifications

The Federation of Swedish county Councils does not use the same classification as does the Ministry of Health. The Swedish Association of Local Authorities (SALA) has the same classification as the county councils.

For the industrial classification the Swedish Standard for Industrial Classification 1992 (SE-SIC 1992) is used. This classification system corresponds with the NACE Rev.1 at the 4-digit level and ISIC Rev. 3 at 2-digit level.

Discussion

No information on institutions and employment (under- and over-employment)

Problem:

- Shortage on doctors and nurses due to migration and shift to private firms hired by county councils

References

SCB, Hälsan i Sverige, Hälsostatistisk årsbok, Stockholm.

SCB, Statistical Abstract of Sweden, Stockholm.

Swedish Medical Association (2000), Sveriges läkarförbund: Physicians in Sweden 2000, Stockholm.

Switzerland: Overview on manpower statistics (Raymond Rossel)

Sources of data/ institutions

The following statistics on human resources in the health sector are annually published:

- number of active doctors by discipline, canton, and sex, FMH Swiss Medical Association
- number of active dentists by canton, Swiss Federal Statistical Office
- number of employees (FTE) in hospitals, nursing homes and in-patient institutions, Swiss Federal Statistical Office

Classifications

La Nomenclature Générale des Activités économiques 1995 (NOGA). This classification system completely corresponds with the NACE Rev.1 at the 4-digit level and ISIC Rev. 3; ISCO 88

Discussion

At present, there is no comprehensive approach on labour accounting in the health sector applied in Switzerland. However, the framework of health accounting (OECD methodology) already in use could be adequately developed as a module of human resources or labour forces statistics in the health sector, starting from the classification of the providers.

In the SHA the expenditures for provisions are often estimated with a combination of employment statistics and financial data, either from loss-profit accounting from a sample of providers or aggregated administrative statistics/accounting data from financing agencies, especially social insurance. The same principles could be applied in a module of manpower statistics linked to health accounting, mostly for small categories of providers where representative data are not available.

Problems

- The availability of data is different for each category of provider and may also not be stable over the years.
- Physicians and dentists: the number of active professionals doesn't give sufficient information on labour forces (FTE ,numbers of staff employees);
- Hospital statistics provide only poor information on occupation and education;
- Business surveys remain the best general source of data, especially for small categories of providers, however with well known weaknesses (no annual data, no information on individual employees);

- Insufficient breakdown of providers in the data of labour force surveys due to the size of the sample; a planned extension of the sample could provide more detail information;
- Measurement of manpower within production of medical goods (estimation of human resources in intermediate production)

References

Bundesamt für Statistik (1995), Kosten des Gesundheitswesens, Ergebnisse 1995-1992 und Entwicklung in der Periode 1960-1990, Bern.

Bundesamt für Statistik, Statistisches Jahrbuch der Schweiz, Bern.

FMH, Schweizerische Ärztezeitung, Bern.

United Kingdom: Human resources in health (Phillip Lee)

Sources of data/ institutions

UK Census

- near-complete enumeration of both public and private sectors
- wide range of information
- not designed specifically to capture employment information
- conducted only once every 10 yesrs

Sample surveys of businesses and of households

- designed specifically to capture information on employment
- relatively frequent (typically quarterly)
- detailed analyses not possible where sample sizes are small
- issues remain over data on industry from household surveys

Health Ministries

- designed specifically for the health sector
- complete enumeration, but for public sector only
- separate systems for England, Wales, Scotland, Northern Ireland
- issues remain over agency staff and staff with more than one contract

Classifications

Surveys use the 1992 Standard Industrial Classification (SIC 1992), which corresponds to the NACE Rev.1 at the 4-digit level. Health Ministries use a classification designed for purpose.

Discussion

What interest is there in measuring health employment?

- is labour productivity changing over time?
- do changes in the levels of staffing affect health care provision and outcomes?
- do changes in the balance of types of health staff & capital affect health care provision and outcomes?
- is there/will there be spare labour capacity or under-capacity in the system?
- what training requirements are there?

What issues are there?

- Headcounts or volume? For analyses of labour inputs, hours is appropriate measure. For analyses of training requirements, heads is appropriate measure.
- How to reconcile employment data available from several sources?
- What categories should be delineated – medical versus non-medical, or something more detailed?

Conclusion

The presentations given by the country participants revealed that there is already a lot of experience in the field of statistics on human resources made in the various countries, but at the same time it became evident that the situation varies a great deal from country to country regarding the availability and quality of statistical data. Therefore, further steps to be taken by the various countries in order to foster harmonisation and comparability of data on human resources are very diverse.

Some countries have a high know-how and a high availability of information; in this case actions required are limited to the coordination of the national data according to the definitions and classifications established. In other cases it is necessary to implement statistical methods to do estimations on the lacking information. For some countries none of these approaches seem to be adequate risking of not being able to provide any data according to the requirements.

At the same time it is important to underline the increasing interest in the evaluation of human resources in the health sector not only from an economic but also from a social perspective. Solutions how to meet the health needs of the population has become more and more relevant in politics, especially against the background of deep social, economic and demographic changes.

Moreover, designing possible future scenarios based on reliable and comparable international statistics in order to put into action adequate planning programmes has become increasingly relevant (analysis of the past and the present is considered to be reductive and not sufficient to correspond to actual requirements).

Human resources in the health sector can be analysed from different ankles using different variables and dimensions (numbers, volumes, distributions by sex and age, by type of profession or by education). This, however, implies the setting of priorities.

One of the problems clearly emerging from the contributions made is the type of classifications to adopt: due to the different organisation and structure of the health care sector as well as the education systems throughout European countries, there is a strong variability of data between the various countries and the different sources available within a country. This issue constitutes one of the most delicate aspects of the project.

Closely related to the problem of variety of definitions and classifications of data is the problem of heterogeneous sources of data.

On one side there is the need of having an unique figure for a phenomenon, that is having a single number in correspondence of a single item; on the other side eliminating deviations of data raises various difficulties connected to the application of methodologies that could lead to statistical artifices.