Introduction

The Hospital Indicators Statistic provides a set of basic indicators that summarise the personnel resources and facilities, already installed or in operation, available to in-patient health establishments in Spain, as well as the activity, both medical as well as surgical, that is performed within them. This information is analysed bearing in mind the two main classifications of objective and functional dependency

Background

This statistic has been published since the year 1984, with the object of complementing the information provided by the In-patient Health Establishment Statistic (IHES). Since that year, date to which the first monograph published refers to, the Hospital Indicators Statistic has been the object of modifications aimed at improving the information provided.

The changes produced since then within the Public Health System, especially in relation to the structure of specialised care, which unifies the hospital with the specialities centres dependent on same, meant that it was necessary to adapt the IHES and the Hospital Indicators Statistic to the current situation, so as to be able to respond to information needs in health planning.

On the other hand, the approval in 1990 of the General Accounting Plan, and subsequently of the Adaptation Regulations of said plan into the Health Care Centres made it essential to modify the economic framework of the statistic.

For this reason, since the year 1995 a new IHES questionnaire format is being used, which did not imply a break from the format used up until then. New completion manuals were published that were delivered to all the Regional Health Ministries and health establishments with the definitions of all the characteristics appearing in same, including the most important links between the variables of the different charts.

II. Scope of the Statistic

The scope of the Statistic is national, that is it extends to all the in-patient health establishments, both public as well as private, set up within national territory.

The information unit is defined as the entity that provides the in-patient care, including outpatient care and diagnostic activity performed by personnel at said establishment, be it in the hospital itself or in the specialities centres of same.

The reference period is annual.

III Objectives

The objectives that this statistic intends to cover are the following:

1. To establish annually, a series of indicators that allows us to ascertain the different care levels and resources of Spanish hospitals, bearing in mind their different typology.

2. To provide data that facilitates making a first approximation to comparative studies on the supply of hospital resources in each Autonomous Community,

3. To ascertain the care activity in each one of the medical and surgical specialities seen in the different types of hospitals of the country and contrasting this both on a national level as well as within each Autonomous Community.

4. To create a database that allows for a study on the evolution of our hospital sector over different periods of time.

IV Definition and classification of the variables

The variables based on which the different types of indicators presented in this publication are constructed are defined below.

1 IN-PATIENT HEALTH ESTABLISHMENT

For the purposes of this statistic, they are defined as all centres which, independently of their name, have as their main objective the provision of medical, surgical or medical-surgical care to patients admitted to them. Therefore, not included are elderly persons homes, orphanages, day-care centres, psycho-pedagogical re-education institutions, ...

It is necessary to point out that the concept of in-patient health establishment was broadened due to the changes that have taken place in the public health system, especially in the structure of specialised care, which unified the hospital with the specialities centres dependent on same.

However, in the non-public health system an in-patient health establishment consists exclusively at present, of a hospital.

The statistic covers all in-patient health establishments as at 31 December, as well as all those establishments that have disappeared throughout the year and which have had hospital activity.

A health establishment may occupy only one building or, on the contrary, it may be set up within a building complex, this being the management unit that in any case, serves to identify same. Thus for example, a National Health System health complex with various buildings, maternity ward, traumatology, ... and the specialities centres dependent on same is considered one sole health establishment.

Specialities centres are understood to be those centres that have the objective of providing specialised care on an outpatient basis.

2 OBJECTIVE

The objective of the centre will be that medical speciality to which it dedicates the greater number of its functional beds. In cases where the establishment does not predominantly destine a determined number of beds to one sole speciality, it will be considered general. Hospitals and specialised centres have been classified as follows:

1. General
2. Short stay special hospitals
2.1 Medical-surgical and surgical
2.2 Children, maternity and maternal-children
2.3 Others
3. Long stay special hospitals
3.1 Geriatric and chronic illnesses
3.2 Others
4. Psychiatric Institutions

Within the category *Others* establishments dedicated to oncology, otorhinolaryngology, ophthalmology, traumatology or rehabilitation, thorax diseases, leprosy and dermatology are included and all of those which are not included in any of the remaining headings.

Up until the year 1997, each one of these hospitals were included in short or long stay, depending on whether the average stay of the patients seen during the year had been inferior to 30 days or either equal or above this limit respectively, with the exception of those dedicated to psycho-physical rehabilitation and leprosy and dermatology, which were considered long stays.

Since 1998, within the category *Other* short stays establishments dedicated to oncology, otorhinolaryngology, ophthalmology, traumatology or rehabilitation, thorax diseases and other acute ailments are included.

In other long stays the establishments dedicated to psycho-physical rehabilitation and leprosy and dermatology, and other long stays are included.

3 DEPENDENCY

This refers to the organism or legal entity on which the establishment is dependent, that is the physical or legal person that exercises most immediate hierarchical or functional power or jurisdiction over the centre.

1. Public
1.1 National Health System
1.2 Other public institutions
• Defence activities
• Autonomous Communities
•Delegation
• Town Halls and Municipalities
•Others
2. Non public
2.1 Red Cross
2.2 Church
2.3 Private charities
2.4 Private, non-charity

This classification was modified after the publication pertaining to the year 1989, adapting itself to that established in this field in the General Health Act of 25 April 1986.

Along this line, the hospitals and specialities centres of INSALUD and those that were managed by the Health Services, which by virtue of the transfer process in favour of the Autonomous Communities had assumed the functions and services of INSALUD were included in the heading *National Health System*.

In those cases where the Autonomous Administration had not received these powers, even when it had constituted a Regional Health System, the hospitals and specialities centres belonging to the same appeared in the heading *Autonomous Communities.*

The process of transfers to Autonomous Communities was considered complete in the year 2002.

In the heading *Others* those hospitals whose management is shared by various public organisms, at least to a majority extent, have also been included.

Since the year 1997 in the heading *Private Charities* , apart from the Private Charity establishments, those corresponding to the Labour Accidents and Professional Illness Insurance Companies of the Social Security system are also included, which up until said date were included in the heading *private, non-charity.*

Finally, *private non profit* establishments are understood to be those that are dependent on the Red Cross, the Church or Private Charities, and *private profit* establishments are those dependent on private non-charity institutions.

4 RESOURCES

The resources that are recorded are those existing in the hospital during the reference year.

Resources allocated

Resources allocated: are those fixed resources of the centre which as at 31 December are in a condition to be used even when they do not have the necessary personnel and equipment, they are out of service because of construction work,.. .

Operating resources: are those resources that are effectively operating during the year. The annual average of those in service is considered, independently of their level of use or the occupation level reached.

1. Beds

This covers the beds for the continuous care of admitted patients, including fixed incubators. This also includes special care beds (intensive care unit, coronary unit, burns unit, ...).

This excludes emergency ward, post-surgical recovery observation beds, those for out-patient haemodialysis, those accompanying patients, pre-anaesthesia induction, those used for special explorations, those used for day hospital, those for health personnel, supplementary beds, cots of healthy new born infants and equipped beds.

2. Incubators

This includes fixed incubators, for the continuous care of admitted patients.

3. Operating theatres

Those rooms for the surgical intervention or care of the patient, equipped with an operating table and aseptic conditions, lighting,

supply of anaesthesia, ... characteristic of same are considered operating theatres.

Double or twin operating tables are considered two individual operating theatres, as long as it is possible to attend to two patients simultaneously.

4. Delivery rooms

They are the rooms destined and especially equipped for care during vaginal birth.

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5 TECHNOLOGICAL RESOURCES

The technological resources that are allocated are the resources in operation of a determined technology, both within the hospital itself as well as the specialities centres dependent on same.

1. Conventional X-ray rooms
2. C.A.T.
3. Magnetic resonance
4. Renal lithotripsy or combined with shock waves
5. Hemodynamic rooms
6. Digital angiography
7. Gammacamara
8. Mega-voltage units
9. Haemodialysis machines

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6 ESTABLISHMENT PERSONNEL

Effective personnel of the establishment existing as at 31 December and not the number of job posts that appear on the payroll are considered as such. This includes the personnel that provide their services totally or partially at specialities centres, provided they are paid for their services by the hospital on which they are dependent.

Those personnel employed by companies offering contracted services to the centre (cleaning, laundry service, ...) are excluded.

Moreover, taking into account the different dedication of personnel with regards to the number of hours worked, different weight has been assigned to personnel who work 36 hours a week or more than to those who work less than 36 hours. The participation of the latter in the index has been reduced by half.

The establishment personnel is classified bearing in mind their category or their relationship with same.

6.1 Category

The personnel categories are considered exclusive, that is each person is included in just one group.

1. Health personnel

1. Doctors

This includes doctors who provide their services in the establishment, independently of the post they hold. Clinicians and residents, nor trainees or volunteers are not recorded in this section .

In turn, doctors are classified bearing in mind the preferential type of care activity, as follows:

1.1. Internal medicine and medical specialities
1.2. General surgery and surgical specialities
1.3. Specialists in orthopaedics and traumatology
1.4. Specialists in obstetrics and gynaecology
1.5. Specialists in paediatrics
1.6. Specialists in psychiatry
1.7. Central services and departments
1.8. Specialists in intensive medicine
1.9. Rehabilitation specialists
1.10. Emergency and/or on call

The latter are exclusively used for on call and/or emergency services.

2. Pharmacists

This only includes those who render services in the pharmacy department.

3. Other advanced graduates (with health functions)

All advanced graduates, excluding doctors and pharmacists destined for the pharmacy department, who provide services within the establishment (physicists, pharmacists, biologists, chemists, ...) are included here. Those graduates who are clinicians, trainees, volunteers, administration personnel, equipment maintenance, ...are not included

4. Nursing personnel

4.1 Assistant Health Technicians and Nursing Graduates

All Assistant Health Technicians and nursing graduates except matrons, physiotherapists and occupational therapists, independently of their job post are included.

4.2 Matrons

4.3 Physiotherapists and occupational therapists

5. Other intermediate graduates (with health functions)

This includes all intermediate graduates who perform any health functions, except Assistant Health Technicians and Nursing Graduates except matrons, physiotherapists and occupational therapists who provide services within the establishment (laboratory, ...).

6. Health assistants

6.1 Clinical assistants

All clinical assistants, with or without first degree professional training are included.

6.2 Health technicians

This refers to personnel with second degree professional training and with care functions (radiodiagnosis, laboratory, nuclear medicine, pathological anatomy, ...).

7. Others (with health functions)

Other personnel, with health functions, not included in previous sections.

2. Non-health personnel

1. Management and administration personnel

1.1 Includes advanced and intermediate graduates dedicated exclusively to the management or administration of the establishment.

2. Social assistants

3. Professional personnel

3.1 Qualified professional personnel

Includes personnel who require second degree professional training, excluding the health branch or advanced bachelor studies (chefs, foremen, draughtsmen ...).

3.2 Unqualified professional personnel

This covers personnel who require first degree professional training (boiler technicians, carpenters, orderlies, chefs, drivers,...), excluding the health branch.

4. Other advanced graduates (without health functions)

Personnel, except management or administration personnel, who hold advanced level posts (architects, engineers, librarians, ...).

5. Other intermediate graduates (without health functions)

Personnel, except management and administration personnel, and welfare workers, who hold intermediate posts.

6. Clerks

This heading covers assistant clerks who are carrying out tasks that do not require an advanced or intermediate graduate level.

7. Other personnel

This heading covers establishment personnel that are not included in any of the above categories (religious personnel, ...).

6.2 Personnel contracted by the establishment

This refers to personnel that depend on the establishment through a contract, be it as a

civil servant, labour contract, statutory or another type.

1. 36 hours a week and more

This includes personnel contracted full time.

2. Less that 36 hours a week

This includes personnel contracted less than full time.

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7 TYPE OF CARE

This refers to the different functional areas destined for care in the health establishment.

1. Medicine

This covers medicine and specialities: Internal medicine, Allergology, Cardiology, Digestive system, Endocrinology, Haematology, Nephrology, Nephrology, Oncology, Rheumatology, Geriatrics (unit destined for acute processes or the acuteness of chronic processes, seen by specialised personnel), ...

2. Surgery

This includes surgery and its specialities (except traumatology): General surgery, Digestive system, Cardiovascular surgery, Maxillofacial surgery, Neurosurgery, Plastic and remedial surgery, Thoracic surgery, Urology, Angiology, Vascular surgery, Otorhinolaryngology surgery, Ophthalmology, Medical-surgical dermatology... .

3. Traumatology and Orthopaedics

This covers the specific activity of this speciality.

4. Obstetrics and Gynaecology

4.1 Obstetrics

This covers care during vaginal or caesarean birth and its complications.

4.2 Gynaecology

5. Paediatrics

5.1 Health

5.2 Surgery

5.3 Neonatology

Headings 5.1 and 5.2 include the medical and surgical activity (including traumatology and orthopaedics) respectively, destined for paediatric patients (up to 14 years of age) and heading 5.3 includes the care of neonatal patients, that is, between the ages from birth up to the first month.

6. Rehabilitation

This includes care destined exclusively for patients that require rehabilitation.

7. Intensive Medicine

This includes the care provided to sick patients who require intensive care and monitoring.

7.1 Intensive care unit (ICU)

7.2 Coronary unit

7.3 Intensive neonatal

7.4 Burns unit

This includes the care provided to patients with
serious burns and very serious burns.

8. Long stays

This covers the care given to patients affected by chronic processes that basically require prolonged nursing care in differentiated units or in health establishments especially destined for patients. It excludes psychiatric care, which is covered in its corresponding section.

9. Psychiatry

This includes the attention provided to psychiatric patients.

10. Miscellaneous

This covers the care provided in other specialities not considered in the previous sections, provided they are differentiated as such within the establishments: AIDS, alcohol and/or drug disintoxication units, tuberculosis, leprology, hydrology, ...

In the data on the type of care by speciality it is necessary to take into account that the most generic specialities include data that has not been broken down. Thus, for example, if the establishment does not have a neonatology department, this would be included as paediatric medicine.

8 CAUSED STAYS

A stay is understood to be - for statistical purposes - the combination of an overnight stay and the time corresponding to the provision of a main meal (lunch or dinner). Stays caused during the year by patients admitted before 1 January of the reference year are included.

It is necessary to take into account that by classifying stays by type of care, the total amount may be less than the sum of the caused stays in each of the classification headings, due to the fact that for each type of care we record both the stays genuinely caused by the patient in that department, as well as those produced by the reservation of a bed in cases where the patient has stayed a few days in intensive medicine units (intensive care unit, coronary units, neonatal intensive care units, ...).

9 DISCHARGES

This includes patients who have been discharged during the year, that is, those that have produced at least one stay, in accordance with the previous definition. When there exist establishments in which there is a fixed allocation of beds for each type of care, the sum of patients discharged for each care activity may be superior to the number of patients discharged that appears in the heading corresponding to the total, given that for each care activity it takes into account the interdepartmental discharges, while in the total for the hospital only the real number of patients discharged by the hospital is considered.

Discharges may arise:

1. Due to cure or improvement in the patients condition

This covers those discharges that have occurred due to cure or an improvement in the patients condition, including those that arise as a result of the transfer of the patient to non-hospital centres offering basic care or long term centres (geriatric homes....).

2. Due to a transfer

This covers those occurring as a result of transfers to other hospital establishments for diagnosis and/or treatment.

3. Due to death

They are those that occur as a result of the death of the patient.

4. For other reasons

This includes those discharges that result as a result of circumstances not covered in the previous sections, like voluntary discharges, ...

5. Due to interdepartmental transfers

These are those that have occurred as a result of a transfer to other departments within the same establishment.

10 ADMISSIONS

This considers the number of patients admitted that result in at least one stay in the establishment during the year for diagnosis and/or treatment on an in-patient regime. Admissions will be distinguished as: Programmed, Emergencies and those occurring due to other causes.

11 EXTERNAL CONSULTATIONS

A consultation is any medical action carried out on an out-patient basis for diagnosis, treatment or monitoring of a patient.

Total consultations

This covers all the external consultations performed on patients, either first time consultations or revisions.

1. Health
2. Surgery
3. Traumatology
4. Obstetrics and gynaecology
4.1 Obstetrics
4.2 Gynaecology
5. Paediatrics
5.1 Paediatric medicine
5.2 Paediatric surgery
5.3 Neonatology
6. Rehabilitation
7. Psychiatry
8. Preanaesthesia
9. Others

12 DIAGNOSTIC TECHNIQUES

1. Imaging

1.1 X-ray Studies

This refers to every conventional radiological study, both simple as well as dynamic, with or without contrast, independently of the number of plates used.

1.2 Computerised Axial Tomography (C.A.T.)This includes the number of studies performed on the skull or body, with or without contrast, independently of the number of images obtained from each study.

1.3 Magnetic resonance studies

This includes the total number of studies performed with said technique.

1.4 Haemodynamic studies

This covers the total number of studies performed for diagnostic purposes.

1.5 Digital angiography

This includes the number of studies performed with said technique..

1.6 Scintigraphy

The number of scintigraphy studies performed, independently of their duration or number of registries are recorded.

2. Laboratory

2.1 Determinations

Each of the different parameters investigated and obtained as final results, even when they stem from the same sample.

3. Pathological Anatomy

3.1 Biopsies

This covers the total biopsy specimens and surgical parts examined. Cytologies are not included.

3.2 Necropsies

This covers the total number of necropsies performed by personnel from the centre, including those performed on patients in other centres and remitted for study.

This also includes those performed on perinatal deaths. The necropsies performed by forensic doctors for legal reasons, are not recorded.

3.3 Necropsies in perinatal deaths

13 SURGICAL ACTIVITY

This covers the number of surgical acts performed in hospital operating theatres, according to the Operating Theatre Registry.

They are classified in the following manner:

1. With hospitalisation

Surgery performed on patients previously admitted or who are admitted after the intervention.

2. Major outpatient surgery

This includes care in subsidiary surgery processes performed with general, local, regional anaesthesia or sedation that require minor and short term postsurgical care, thus not needing hospital admission and whom can be discharged a few hours after the procedure has been performed.

3. Remaining outpatient surgery

Small interventions performed on outpatients in hospital operating theatres.

14 OBSTETRIC ACTIVITY

1. Births

A birth is defined as the expulsion or extraction from the womb of the viable product of conception. A viable foetus is that which has a weight at birth that is equal to or greater than 500 gr.

1.1 Vaginal births

Total number of vaginal births.

1.2 Caesarean

Total number of caesarean births.

2. Births

2.1 Newly born

This includes the totality of live newborns, understanding as such, the expulsion or complete extraction from the mother's body, independently of the duration of the pregnancy, of the product of conception which, after said separation breathes or offers any other signal of life, such as heart palpitations, pulse in the umbilical cord or effective movements of the muscles as a result of a voluntary contraction, both when the umbilical cord has and has not been cut, and when the placenta has or has not been detached.

2.2 Newly born < 2,500 gr.

3. Deaths

3.1 Perinatal deaths

These are deaths that occur within the period of six months of gestation up until the first week of life.

3.2 Premature neonatal deaths

Of live newborns, those that have died during the first week of life.

3.3 Maternal deaths

This covers the total number of deaths during the pregnancy and up until the 42nd day after birth, provoked by causes aggravated during the pregnancy, birth or care given. Those caused accidentally, as may be the death of a pregnant woman in a traffic accident, are not considered maternal deaths.

15 EMERGENCIES

This section only accounts for emergencies produced by patients who come from outside the hospital, that is excluding are those consultations generated by patients who have already been admitted.

Patients seen in emergency rooms are classified by:

1. Discharges

This heading covers patients discharged from the emergency ward for whom it has not been necessary to admit into the institution, nor transferred to another centre, nor who have died at said department. This includes voluntary discharges.

2. Admissions

We are dealing with patients seen in the emergency ward and subsequently admitted into any of the institution's departments.

3. Transfers

This includes patients seen in the emergency ward and subsequently forwarded to another hospital establishment.

4. Deaths

Recorded here are patients whom have died in
the emergency ward of the hospital, excluding those who are dead on arrival.

16 ECONOMIC DATA OF THE ESTABLISHMENT

The source of information are the accounting records of the centre and in particular, the balances of the accounts of the new

General Accounting Plan (approved by Royal Decree dated 20 December 1990).

The numbering of the accounts corresponds to that used in the Adaptation Regulations of the General Accounting Plan of Health Care Centres, approved by the Order dated 23 December 1996 from the Ministry of the Economy and Inland Revenue (BOE number 5, dated 6 January 1997).

In those cases where the establishment does not have completely separate accounting records from the entity on which it is dependent, the costs caused by the establishment, although they are as a cost of the aforementioned entity, are imputed to the establishment irrespective of who pays them.

1. Purchases and expenses

In this section, with the exception of the heading funds for depreciation charges, the payment obligations acquired during the year for the concepts referred to are included, independently of when the establishment uses the elements acquired.

This includes the accounts of: *Purchases, stock levels, external services, Levies, personnel costs, other management expenses, financial costs, other exceptional costs, funds for depreciation charges and funds for provisions.*

2. Income and sources of financing

This covers the amounts invoiced that correspond to that financial period, independently of when payment is made.

This includes the headings of: *Revenues from the provision of care services, work carried out by the company, operating subsidies, other operating revenues, financial revenues and other revenues.*

3. Investments carried out during the year

This covers expenditure on short value durable goods, purchased with the purpose of using same cover more than one financial year.

This considers the value of the purchase of goods that may be inventoried or which are of a fixed nature carried out during the reference year independently of the moment when the payment is made effective.

This includes the headings: *establishment costs, intangible fixed assets, tangible fixed assets and other investments.*

V Collection and handling of the information

Law 4/1990, dated 29 June, pertaining to the General National Budget, establishes the obligation of providing the data that is required for the elaboration of this statistic.

The source of information of the Hospital Indicators Statistic is the In-patient Health Institutions Statistic. The latter commences when the Ministry of Health and Consumption sends the questionnaires to the Regional Health Ministries of the autonomous communities, who in turn forward same to in-patient health institutions.

The questionnaires, once completed, are returned to the Regional Ministries where a preliminary filtering process is carried out.

Subsequently, they are once again reviewed in the Ministry of Health and Consumption, and then they are processed by a computer. The Ministry of Health and Consumption issues a computer file to the INE with this information.

Once the consistency of all the information is guaranteed, the corresponding Hospital Indicators Statistic programs are applied and results tables are obtained, it being possible for there to exist slight differences in some items with respects to the data provided by the In-patient Health Institutions Statistic of the reference year.

VI. Publication of the results

The results of this statistic is published in a volume that contains indicators, both on a national as well as on an autonomous community level.

With regards to the presentation of the results tables, as from the statistics of 1995, these are modified to adapt their contents to the changes made in the questionnaire, which, as stated, has been the consequence of the adaptation of the statistic to the current situation of the Public Health System and the Adaptation Regulations of the General Accounting Plan to the Health Care Centres.

The criterion for generating the different types of national and autonomous community tables has been the type of centre (hospital and specialities centres).

Nevertheless, the characteristics of the questionnaire that is collected exclusively for the group of health establishments, without being able to distinguish which part corresponds to the hospital and which corresponds to the specialities centres, have been obtained on a health establishment level, and have been incorporated into the block of tables corresponding to hospitals.

With regards to the tables relative to the characteristics which arise both in hospitals as well as in specialities centres and which are obtained in a separate questionnaire, they have been elaborated for both hospitals as well as specialities centres except where - on the grounds of confidentiality - this has not been possible.

In these cases, tables are obtained on a hospital level so as to provide a continuity of the statistical series, given that up until the year 1994 the in-patient health establishments were identified as hospitals.

It is appropriate to offer a warning with respect to the information found in the tables of this publication which, although they provide a view of the real situation of our hospitals in the reference year, must be interpreted with caution if the objective is to establish comparisons between the different categories of hospitals, given that in each indicator there are underlying interfering effects of other variables that are not appreciated from a simple reading of the tables. For example, if we observe that operating theatre resources per 100 functional beds is lower in hospitals dependent on the National Health System than in non-public hospitals, it would be risky to conclude that the latter are better equipped for surgical activity, given that it would be necessary to take into account the possible influence of the objectives that predominate in each one of the two hospitals groups, as well as the average capacity of same, given that a large concentration of surgical hospitals in the non public sector and/or a different size with regards to the number of beds in both, could vary the results of the analysis.

The general criterion used in the calculation of the distributions and indicators was the following:

If the indicator being calculated is not a distribution and the numerator is zero, they symbol - will appear in the tables.

If we are dealing with a distribution the symbol - will appear solely if there does not exist an establishment in said heading.

On the other hand, in some cells of the tables the symbol "." appears, which must be interpreted as protected data on the grounds of confidentiality.

National Indicators

Hospital

Facilities indicators

This section is divided into three clearly delimited parts.

In the first part data is provided on the distribution of the health establishments, hospitals and functional beds, according to the classification variables (objective and dependency).

In the second and third part, indicators have been obtained for the hospital groups that result from crossing the four large headings of functional dependency (National Health System, other public, private non- profit making and private profit making) with the four large categories of objective (General hospitals, special short stay hospitals, special long stay hospitals and psychiatric hospitals).

In the second of these a series of indicators of the degree of use of the installed equipment is provided, by linking the functional resources with the resources installed in hospitals, be they beds, operating theatres, delivery rooms or incubators, and in the third part other resource indicators are provided, using functional beds as a reference.

For each one of the components of the functional resources of the centre, like operating theatres, delivery rooms, incubators, X-ray rooms, C.A.T. equipment, magnetic resonance equipment, lithotripsy equipment, haemodynamic rooms, digital angiography equipment, gammacamara equipment, megavoltage equipment and haemodialysis machines, indicators have been obtained as weighted averages in the hospitals belonging to a certain group. Each one of these groups or categories is formed by a group of centres that have the same objective and dependency. The weights used for each index are the functional beds of each one of the hospitals that form part of the group.

In other words:

n = nº of hospitals of the group or category being studied.

W_i = nº of functional beds in the hospital i of said category.

X_i = nº of resource elements (for example operating theatres) functioning or installed in the hospital i of said category.

In effect, starting with the general formulation of the index:

$$I = \sum_{i=1}^{n} I_i \alpha_i$$

where $I_i = \frac{X_i}{W_i} x100$

is the individual index of the general hospital i

$$\alpha_i = \frac{W_i}{\sum_{i=1}^{n} W_i}$$

is the corresponding weighting.

We have:

$$I = \sum_{i=1}^{n} I_i \frac{W_i}{\sum_{i=1}^{n} W_i} = \frac{\sum_{i=1}^{n} I_i W_i}{\sum_{i=1}^{n} W_i} =$$

$$= \frac{\sum_{i=1}^{n} \frac{X_i}{W_i} \times 100 W_i}{\sum_{i=1}^{n} W_i} = \frac{\sum_{i=1}^{n} X_i}{\sum_{i=1}^{n} W_i} \times 100$$

As a measure of the variability of each indicator its corresponding variation coefficient is obtained.

$$C.V. = \frac{S}{I}, \quad where$$

$$S^2 = \frac{\sum_{i=1}^{n} (I_i - I)^2 \, W_i}{\sum_{i=1}^{n} W_i} = \sum_{i=1}^{n} (I_i - I)^2 \, \alpha_i$$

It is necessary to take into account that the variation coefficient, obtained for each indicator, reflects the variability of same within the population of hospitals belonging to the group being dealt with and not due to errors in the sample, given that the In-patient Health Establishment Statistic, from where the information is obtained, has a census nature.

Hospital personnel indicators

The indicators pertaining to hospital personnel are presented in four differentiated groups in the table, bearing in mind on the one hand, the categories of personnel studied and on the other, the reference variable that may be the functional bed or used bed.

These indicators are calculated by taking into account the different dedication of contracted personnel with regard to the number of hours worked, assigning different weight to the personnel who work 36 hours or more a week than those who work less than 36 hours, reducing by half the participation of the latter in the index and excluding habitual collaborating personnel given that they do not have any type of contract with the establishment.

In the first part data is provided on the distribution of personnel according to the different classification variables (category, objective and dependency).

The second group offers information that attempts to outline the personnel resources linked to the centre by functional bed.

These indices have been obtained, for each personnel category, as weighted averages, using functional beds as the weight.

Thus, for any of the categories into which personnel is divided and for hospitals with the same objective or dependency, the index would be:

$$I = \frac{\sum_{i=1}^{n} X_i}{\sum_{i=1}^{n} W_i} \times 100$$

where; for example,

n = Nº of general hospitals

X_i = (Personnel with 36 hours or more a week in a general hospital i + ½ of Personnel with less that 36 hours a week in a general hospital i).

W_i = Functional beds in a general hospital i.

Then,

$$I_i = \frac{X_i}{W_i} \times 100$$

would represent the individual index of the hospital i, and the global index for all the hospitals of the group would be:

$$I = \sum_{i=1}^{n} I_i \alpha_i$$

where:

$$\alpha_i = \frac{W_i}{\sum_{i=1}^{n} W_i} \qquad \text{and} \qquad \sum_{i=1}^{n} \alpha_i = 1$$

As a measure of the variability of each indicator its corresponding variation coefficient is obtained.

$$C.V. = \frac{S}{I}, \qquad where$$

$$S^2 = \frac{\sum_{i=1}^{n} (I_i - I)^2 W_i}{\sum_{i=1}^{n} W_i} = \sum_{i=1}^{n} (I_i - I)^2 \alpha_i$$

It is necessary to take into account that the variation coefficient, obtained for each indicator, reflects the variability of same within the population of hospitals belonging to the group being dealt with and not due to errors in the sample, given that the In-patient Health Establishment Statistic, from where the information is obtained, has a census nature.

A third group of important interest is that which offers detailed information on the different medical specialities with respect to the functional beds corresponding to the type of care that is characteristic of same.

In the case of internal medicine doctors and medical specialities, the index is calculated by the sum of beds in the following types of care; internal medicine and medical specialities, long stays and others.

Finally, to be able to carry out an analysis of the comparative situation of the different types of hospitals with regard to personnel resources, according to their objective or dependency, we have calculated in a fourth group the relation with respects to beds really used throughout the year that may not coincide with the number of functional beds.

Used bed = functional bed x occupancy index.

where:

$$\text{Occupancy index} = \frac{\text{Caused stays}}{\text{Functional beds x 365}}$$

In short, beds used is obtained as the quotient between caused stays and the 365 days of the year. For this, in practice the weighting used in the indicators for this group of tables is the number of caused stays

With regards to the classification of the personnel category that is used in the tables corresponding to hospitals, the following has been considered:

Health personnel:

– Doctors:
• Internal medicine and medical specialities
• General surgery and surgical specialities
• Specialists in orthopaedics and traumatology
• Specialist in obstetrics-gynaecology
• Paediatrics specialist
• Psychiatric specialist
• Central services and departments
• Specialists in intensive health
• Rehabilitation specialists
• Emergency and/or on call
– Pharmacists
– Other advanced and intermediate graduates
– Nursing personnel:
• ATS -DUE
• Matrons
• Physiotherapists and occupational therapists
– Health assistants
• Clinical assistants
• Health technicians
– Other

Non health personnel

– Management
– Social assistants
– Other advanced and intermediate graduates
– Clerks
– Others

The heading *Others* in non health personnel includes professional personnel and other personnel.

Functioning indicators

The aim is to provide a internal view of the manner in which the hospital operates with regards to the movements of patients, the use of beds, and the number of consultations performed, This functional activity is reflected through the presentation of distributions of the patients that have been discharged, stays, functional beds, patients admitted and external consultations carried out in the hospital according to different classification variables (objective, dependency, type of care, ...) and by means of the following indicators:

1. .EM = average stay

$$\frac{\text{Caused stays}}{\text{Patients discharged}}$$

It reflects the average stay of a patient in each of the analysis categories considered (objective, type of care, ...). The weighting used in obtaining the index is the discharged patient.

This indicator is more adequate the more the number of patients discharged approximates the number of patients seen in each of the groups of hospitals considered.

On the other hand, its meaning is distorted as both figures distance themselves. This effect may arise, for example, in the type of psychiatric care.

2. Turnover index

$$\frac{\text{Discharged patients}}{\text{Functional beds}}$$

This represents the number of patients whom have occupied the same hospital bed throughout the year. Functional bed is used as the weighting.

3. Percentage of occupancy

$$\frac{\text{Caused stays}}{\text{Functional beds x 365}} \text{ X 100}$$

This provides a measure of the degree of use of the functional beds of the hospital. The weighting used in obtaining the index is the functional bed.

As a measure of the variability of each indicator its corresponding variation coefficient is obtained.

$$C.V. = \frac{S}{I}, \qquad \textit{where}$$

$$S^2 = \frac{\sum_{i=1}^{n} (I_i - I)^2 \, W_i}{\sum_{i=1}^{n} W_i} = \sum_{i=1}^{n} (I_i - I)^2 \, \alpha_i$$

As occurs with resources and personnel indicators, it is necessary to take into account that the variation coefficient, obtained for each indicator, reflects the variability of same within the population of hospitals belonging to the group being dealt with and not due to errors in the sample, given that the In-patient Health Establishment Statistic, from where the information is obtained, has a census nature.

Diagnostic technique indicators, surgical and obstetric activity and emergency services

This section is divided into four clearly delimited parts.

In each one of these the corresponding distributions are provided, according to the objective and/or dependency and a series of strictly speaking indicators.

In the first part, moreover, indicators are presented that reflect the degree of use of the image equipment, by linking the activity carried out with respect to the resources being used in the hospitals, be they X-ray equipment, C.A.T., ... Moreover, the necropsies index per 100 deaths in the hospital is calculated. All these are provided by objective and dependency.

In the second part indicators are obtained on the degree of use of the functional operating theatres.

The third section refers to obstetric activity. The rate of perinatal mortality is among the indicators provided.

$$\text{Rate of perinatal mortality} = \frac{\text{Perinatal deaths X 1,000}}{\text{R.n.} + \text{perinatal deaths -premature neonatal deaths}}$$

Lastly, in the fourth section the indicators pertaining to the emergency services are provided.

All the indicators of this section, in contrast to the sections pertaining to resources, personnel and functioning, have been obtained by the aggregation of the data of each of the group of establishments studied, without individually weighting any of them, given that due to the peculiarity of some of the centres it is not possible to define all the individual indices necessary for applying the weighted average method. This is due to the non-existence of some data, like for instance births in psychiatric establishments, ...

This method for the calculation of the indicators, which is equivalent to the weighted average, as is outlined in the formula developed above in the chapter on resources, does not allow however, the attainment of variation coefficients that would be significant for measuring the differences between the two establishments. Thus they have not been considered.

Basic indicators

The indicators outlined in this section attempt to reflect in a synthetic manner the situation with regards to resources, care activity, personnel and economic activity of the hospitals of the country.

It is necessary to take into account that the data provided in these tables refer to the hospital with the exception of those that refer to economic activity which, due to the fact that it is not collected in a disaggregated manner by type of centre (hospital and specialities centres), refers to the totality of health establishments.

Therefore, the tables that appear below gather together a series of indicators already provided in previous tables and others like the average capacity of the hospitals and a series of indicators on the type of care, economic indicators, resource indicators, ...

Average capacity is defined as

$$\text{Average capacity} = \frac{\text{Installed beds}}{\text{Number of hospitals}}$$

Specialities centres

In this block a series of indicators have been calculated exclusively referring to the specialities centres dependent on the hospitals.

It provides distributions of the number of specialities centres, of their linked personnel and of the total number of external consultations performed, classified according to the large headings of functional dependency or objective.

In the tables relative to linked personnel and taking into account the different dedication of personnel with regards to the number of hours worked, different weight has been assigned to personnel who work 36 hours a week or more than to those who work less than 36 hours, reducing by half the participation of the latter in the index.

With regards to the classification of the category of personnel that is used in the tables corresponding to specialities centres, the following has been considered:

Health personnel:

– Doctors:
- Internal medicine and medical specialities
- General surgery and surgical specialities
- Specialists in orthopaedics and traumatology
- Specialist in obstetrics-gynaecology
- Paediatrics specialist
- Psychiatric specialist
- Central services and departments
- Rehabilitation specialists

– Pharmacists

– Other advanced and intermediate graduates

– Nursing personnel:
- ATS - DUE
- Matrons
- Physiotherapists and occupational therapists

– Health assistants
- Clinical assistants
- Health technicians

– Other

Non health personnel

– Management
– Social assistants
– Other advanced and intermediate graduates
– Clerks
– Others

The heading *Others* corresponding to non-health personnel includes professional personnel and other personnel.

The classification used in the tables relative to external consultations in the specialities centres is the following:

Health
Surgery
Traumatology
Obstetrics-Gynaecology
Paediatrics
Rehabilitation
Psychiatry
Others

The heading *Others* includes the activity in preanaesthesia and others.

Autonomous Indicators

On an autonomous level, the same groups of indicators is used as for all the hospitals in the whole country are presented.

However, bearing in mind the objective of providing useful information so as to be able to establish comparisons between the different Autonomous Communities, the majority of the indicators with the exception of personnel, average stay, turnover index and percentage of occupancy, have been obtained by referring to the populations of each Autonomous Community and not as weighted averages of the unitary indices of each hospital belonging to a group.

In effect, the different types of existing hospitals, bearing in mind the two basic classifications of dependency and objective, lose their usefulness in this case as a reference point for a comparative analysis, contrary to what occurs on a national level, given that the distribution of these categories of hospitals within each Autonomous Community is very heterogeneous and does not obey in the majority of cases, predetermined criteria.

Resources indicators

They provide information on the distribution of the health establishments, hospitals and functional beds and on the number of resource units that are functioning and the number of installed beds available per inhabitant in each Autonomous Community, in the hospitals situated within them.

The study has been carried out separately for each one of the basic classifications that has been used in this publication.

Personnel indicators

Indicators similar to those calculated on a national level are presented, that is, for each type of hospital, bearing in mind their dependency or objective, a link is established between the different personnel categories, functional beds or beds in use.

Functioning indicators

For each type of care provided in the hospitals, the same functioning indicators that have been outlined in the first part of this publication, dedicated to information on a national level, have been elaborated, and three more indicators have been added regarding the proportion of functional beds, patient discharges and total consultation with respect to the population of each Autonomous Community.

The reference population used in the calculation of each indicator is that which potentially, might request the corresponding care activity.

Thus, to measure the functioning of the branches of medicine, surgery and traumatology, the indicators have referred to the populational group of persons over the age of 15.

In the case of obstetrics, they have been linked to women within a fertile age (15 to 49 years of age).

For cases of gynaecology, only women above 14 years of age have been considered.

Paediatrics is studied for minors under the age of 15.

The activities of rehabilitation, intensive medicine, psychiatry and others have been linked to the total number of inhabitants. In this chapter the heading others includes the activity in consultations carried out in the care activity others and that corresponding to preanaesthesia.

Finally, in the case of long stays, only the over 65 age group has been considered.

To conclude, this chapter offers tables on hospital revenues per inhabitants.

Diagnostic technique, surgical and obstetric activity and emergency services indicators

For this group information is provided on an Autonomous Community level, similar to that appearing on a national level and - as in the previous case - each indicator refers to different population groups, according to the type of technique or activity being dealt with.

Within the obstetric activity indicators, apart from providing information on a national level, the fertility rate is also provided.

$$\text{Fertility rate} = \frac{\text{Newborns x 1,000}}{\text{Females in a fertile age}}$$

Basic indicators

The indicators outlined in this section attempt to reflect in a synthetic manner the situation with regard to resources, care activity, personnel and economic activity of the hospitals in the country.

The tables include indices already provided in previous tables and others such as the average capacity of the hospitals and a series of indicators on the type of care, economic data, resources, ...

Average capacity is defined as

$$\text{Average capacity} = \frac{\text{Beds installed}}{\text{Number of hospitals}}$$