

The cost of inpatient curative care by gender, age and diagnosis

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The OECD has published a manual for a System of Health Accounts (SHA). The system focuses on providers of health care, types of services and goods provided and sources of funding. Eurostat is highly involved in introducing the OECD system and supports several projects. One of the projects concerns statistics for the distribution of health expenditure by gender and age. Norway has contributed to this project by supplying data for inpatient curative care distributed on age and gender, and the data presented in this article build on this contribution. However, an additional dimension is added by including diagnosis. The framework for the project is the SHA of OECD and the principles of the system are therefore described. It is illustrated how this framework can be used to link economic data with data on demography and diseases. Norway is in an early phase of the implementation of the SHA and the results presented should be regarded as illustrative examples. The results show that even though men and women account for equal shares of the population, men constitute 44 per cent of total discharges moreover, since men are over-represented in diagnosis groups with higher weights, they carry 47 per cent of the cost. Those over 80 years represent 4 per cent of the population, 14 per cent of the discharges and due to higher DRG-weights 17 per cent of the total costs. The age group 0 - 9 years account for 14 per cent of the population. This age group represents 9 per cent of the discharged and 7 per cent of the total cost.

Introduction

Most health systems in the world are 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 are a challenge. In Norway the health expenditures are estimated to 8 per cent of Gross domestic Product (GDP) and the public financing contributes to more than 80 per cent of the total expenditures. This illustrates that expenditure on health constitutes an important part of the economy. Readily available and widely accepted statistical indicators facilitate the determination of policy objectives such as health care expenditures or cost containment. The formulation of health policies as well as accessibility to health services, the efficiency of alternative resource-use patterns, and the evaluation of the structure of the health sector, all require quantifiable and documented health-related and general economic indicators. Both economic and social data are thus essential in order to conduct an evaluation of health policies.

One way to present health statistics in a consistent way is to apply a national accounting framework. National Accounts constitute an integrated system of comprehensive, internally consistent and internationally comparable accounts. A system of health accounts or satellite accounts will share these goals as well as being compatible with other aggregate economic and social statistics as far as possible. Thus, a satellite account relates factors influencing the health care system to other macro- and micro-economic variables, and enables an evaluation of the resources allocated to health care relative to the total amount of resources available to the society. There is a growing appreciation of the key role of health accounting in understanding health system developments generally. In order to provide an adequate information policy for this new political orientation, the European Union has for example taken itself to make the European health system more comparable. This requires a comprehensive information system providing policy makers with the necessary data on which to base their information. Thus, Eurostat is highly involved in introducing OECD's system of health accounts and is supporting projects to give practical guidelines and also projects concerning comparison of implementation of the system of health accounts and the feasibility of providing expenditure distributed on gender and age (Eurostat - SHA Age and gender, 2002).

The usefulness and desirability to classify expenditure by age and gender is indicated by the potential uses of

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The Sienna group

This paper was presented on the Sienna Group meeting on Social Statistics, in London in November 2002. The purpose of the Sienna Group is the promotion and coordination of international cooperation in the area of social statistics by focusing on social indicators, social accounting, concepts and classification as well as the analysis of the linkages and framework for integrating social, economic and demographic data for the purpose of policy formulation and analysis.

age-related expenditure data. For example, it can help to:

- Estimate future resource requirements for health care;
- Assess to what extent age explains variation in health costs (as opposed to, for example, proximity to death);
- Predict future long-term costs of ageing populations and examine responsibility for financing this care;
- Monitor age-related rationing of health care

Health care statistics and the system of health accounts

A thorough evaluation of a health care system requires a range of data both on inputs (cost, employment, allocation of resources), throughputs (e.g. treatments, number of patients treated) and outcomes (i.e. the effect in the health of the population). Different approaches are possible when constructing a statistical system covering health care. It is, however, important that the statistical system provides a set of consistent data because this assures completeness. Explicit considerations must be made to the areas and scope of the data to be collected. This will also enable the statistical agency to spot and assess data gaps and data collection priorities (Wolfson, 1991). A systematic data framework also makes it possible to consider the theories that underlie the data or the analysis for which the data will be used. In order to construct a consistent data framework, data from different sources will have to be used, which means that inconsistencies between sources will have to be considered.

The idea of a systematic account in the area of social data is not new. Richard Stone developed a "system of social and demographic statistics". In this framework, the population is divided into groups by age and status (for example in labour force or in education). The system allows for both stocks (e.g. number of patients) and flows (entering hospital) to be recorded. It is also possible to link demographic data to economic data in an integrated economic framework (Stone, 1981).

Another approach, not as broad in scope as a complete system of health statistics, is the literature on the cost of illness (Cooper and Rice, 1976, Hartunian et al 1980, Rice et al 1985, quoted in Wolfson 1991).

Both the direct cost and the indirect cost of an illness, the economic value of lost output when a person is too sick to work and the non-market cost that may be imposed by family members who take care of an ill person are distinguished and measured. This field of work takes account of the impact of individuals as well as non-market factors.

Health accounts based on a National Accounting framework is another alternative. The focus is on health care, rather than the health outcome and the perspective is that of economic production and financing. This framework measures flows in common unit of accounts (e.g. Norwegian kroner) and provides information on type of institutions, type of factor input sources of revenue, purpose etc.

National accounts and satellite accounts

National accounts consist of a consistent and integrated set of macroeconomic accounts, balance sheets and tables based on a set of internationally agreed concepts, definitions, classifications and accounting rules. They provide a comprehensive accounting framework within which economic data can be compiled and presented in a format that is designed for purposes of economic analysis, decision taking and policy making (SNA, 1993 \$1). A revised manual (SNA 1993), on recommendations for recording of National Accounts, was jointly published by UN, IMF, OECD, World Bank and Eurostat in 1993. The accounts within the System of National Accounts (SNA) are designed to provide useful information about activities and processes taking place in the economy, such as production, consumption and accumulation of assets.

The SNA 1993 recognises the use of satellite accounts as an important and flexible tool building on the national accounting framework. Satellite accounts are intended for special purposes such as monitoring the community's health or environment. More specifically, three distinct purposes of a satellite account can be identified. One is to analyse the organisation, operation and financing of output of characteristic activities within the field; another is to describe and analyse the structure and financing of different goods and services or transfers allocated to various categories of beneficiaries; and lastly to measure the global efforts made by the community to finance this requirement (Pommier 1981, Teilet 1988).

Typically, satellite accounts or systems allow for (SNA, 1993 \$21.4):

- The provision of additional information on particular social concerns of a functional or cross-sector nature;
- The use of complementary or alternative concepts, including the use of complementary and alternative classifications and accounting frameworks, when needed to introduce additional dimensions to the conceptual framework of national accounts;

- Extended coverage of costs and activities of human activities;
- Further analysis of data by means of relevant indicators and aggregates;
- Linkage of physical data, to data expressed in monetary terms.

Satellite accounts are linked to the central framework of national accounts and to the main body of integrated economic statistics, but since they are more specific to a given field or topic, they are also linked to the information system specific to this field or topic.

Satellite accounts can describe fields that overlap. A given expenditure item may be entered in several accounts, according to the purpose assigned to it. Thus, expenditures for teaching in medical schools or the expenditures of school doctors and nurses are recorded simultaneously in the Satellite Health Accounts and in the Satellite Education Accounts. Since the same information can be used in different satellite accounts some overlapping can occur in coverage and in the summing of various satellite accounts data. The combined totals of two or more satellite accounts, therefore, may not be meaningful since certain activities are considered within the scope of several satellite accounts (Sunga and Swinamer, 1986).

The accounts are drawn up in the form of tables which measure the contributions made by all the agents in a given field, so as to determine who is responsible for the financial burden and who benefits from the contributions. Each field is therefore analysed not only from the perspective of the producers but also from the viewpoint of financiers and beneficiaries (Lemaire, 1987). Coherent definitions and classifications ensure comparability of the statistics of the field with other statistics and enables one to relate monetary flows brought into play to the economic evaluations of the whole economy. A real analysis of the beneficiaries requires examination of their distribution according to relevant criteria (socio-economic groups, age, sex etc). Including these factors will lead to an integration of social and economic statistics, which improve the analytical usefulness of the statistics.

The OECD manual for the System of Health Accounts (SHA)

OECD has published a manual for a System of Health Accounts (SHA) (OECD, 2000). The manual provides a set of comprehensive, consistent and flexible accounts. It establishes a conceptual basis of statistical reporting rules and proposes a newly developed International Classification for Health Accounts (ICHA) which covers three dimensions: health care by functions of care; providers of health care services; and sources of funding.

The provision of health care and its funding is a complex, multi-dimensional process. The set of core tables in the SHA addresses three basic questions:

1. Where does the money come from? (source of funding)
2. Where does the money go to? (provider of health care services and goods)
3. What kind of (functionally defined) services are provided and what types of goods are purchased?

Consequently, the SHA is organised around a tri-axel system of recording of health expenditure, by means of the propose International Classification for Health Accounts (ICHA), defining:

1. health care by function (ICHA-HC);
2. health care service provider industries (ICHA-HP);
3. sources of funding health care (ICHA-HF)

These classifications provide basic links with non-monetary data such as employment and other resources statistics.

The main purposes of the OECD System of Health Accounts are:

- To provide a set of internationally comparable health accounts in the form of standard tables;
- To define internationally harmonised boundaries of health care and basic categories thereof;
- To distinguish core health care functions from health-related functions and to emphasis inter-sectoral aspects of health as a common concern of social and economic policy in various fields;
- To present tables for the analysis of flows of financing in health care together with a classification of insurance programmes and other funding arrangements;
- To provide a framework of main aggregates relevant to provide guidance for comparative research in the meso an micro structure of health care services;
- To propose a framework for consistent reporting of health care services over time;
- To monitor economic consequences of health care reform and health care policy;
- To provide a framework for analysing health care systems from an economic point of view, consistent with national accounting rules;
- To present an economic model of supply and use of health care services – as a tool to show the conceptual links between the System of health accounts and health satellite accounts.

The SHA thus shares the goal of System of National Accounts to constitute an integrated system of comprehensive, internally consistent, and internationally comparable accounts, which should be compatible with other aggregate economic and social statistics as far as possible. The SHA is designed to meet the needs of analysts of health systems and policy makers.

KOSTRA – a partnership between local and central government

An important source in the Norwegian system for health accounts will be the reporting system developed for reporting data from local to central government (KOSTRA). A description of this system is therefore included.

Central and local government

Norway has three levels of public government: The national level, the regional level (18 counties) and the local level (435 municipalities). The regional and local authorities are governed by elected councils. Local authorities are responsible for local planning and for services for the inhabitants such as schools, libraries, health services and social work. They have most of their responsibilities defined by law. Although much of their obligation is to implement national policies they also have some degree of autonomy. Their revenue comes from local taxes, from fees for their services and from the state. The revenue from the state is of two kinds, for special tasks or for general purposes. The transfer from central government is determined by characteristics of the municipalities, for example the number of inhabitants and the amount of local tax revenue. The regional and local authorities expenditures covered about 12% of the GDP, and about 60% of total public consumption in 2000. The system for income transfers between central and local government includes a weighting factor to facilitate redistribution between rich and poor regions.

Total expenditure on health has increased from about 56 billion NOK in 1990 to almost 121 billion NOK in 2001. Measured in fixed prices this is an increase of 49 per cent for the period or an average yearly increase of 3.7 per cent. There has been an increase in the population during the same period, which implies that when measured as expenditure per capita the growth in fixed prices was 3.1 per cent per year on average. The public expenditure on health as a share of total public expenditure was 13 per cent in the 1980s and early 1990s. In 1995 this had increased to 14 per cent and by 2001 17 per cent of the total public budget was directed to health. The figures thus indicate that health has been a prioritised area compared to other areas (Health and care services, 2002).

Central and local government are responsible for the finance of current expenditure and investment in hospitals, primary health care and prevention. In addition the social security refunds a large part of the private consumption of medicines, dentists, general practitioners and so on. As a result the public sector finance more than 80 per cent of the total health expenditure. It is thus, nothing in the data that indicates that the private sector has had to finance a larger share of the expenditure due to limited public resources.

However, the data indicates that there has been a shift of financing between central and local government. The central government, including social security, financed a larger share of the expenditure at the end of the 1990s than in the beginning of the decade. In 1995 about 35 per cent of the expenditure was financed by central government, in 1998 this had increased to almost 40 per cent. This is mainly explained by the change in the financing of hospitals and increased use of earmarked grants to the municipalities (Nørgaard, 2001).

This structure for achieving a balance between local and central government incorporates several political and administrative challenges. Politicians need to monitor the overall performance of the system and the effects of redistribution between rich and poor regions. There is also a need for surveillance of the welfare of the inhabitants. This involves a description of the standard of living and the quality of the public services. Information and statistics should be available for all partners in the system.

Each level of government needs its own sort of information, as well as providing information for each other. Official statistics have a role to play in this information system. The traditional system for official statistics for the public sector has been developed theme by theme. Themes such as child-care, education, primary health care and environmental protections have been emphasised, independent of the administrative system that produces the services. To some extent, this system mirrors the structure of central government, with separate ministries representing the different services: Ministries for Family affairs - Education - Health - Social services - Environment - Transportation. Laws governing Public education, Public Health, Social Services and so on are defining needs for control data. There is also a law governing Local Administration (i.e. how the municipalities are to be run), which defines standards for local economic accounting and for reporting on the municipality's economy. Most official statistics concerning local affairs are based both on data collected on the basis of rights specified in the laws mentioned above and on regulations in the Statistics Act.

Integrated and electronic reporting

KOSTRA is an abbreviation for "Municipality-State-Reporting". The KOSTRA-project started in 1995 as a pilot project with four municipalities as participants. This pilot developed a first version of a new system for electronic data reporting and publishing. After the first pilot the government decided that all local and regional governments should report according to the new system. After that the number of municipalities has increased gradually, and the first full scale reporting took place in March 2002.

KOSTRA focuses on several purposes (Ljones and Svinset); of which two are:

1) To give better information about the municipalities, both for the central and for the local governments. This includes a more coherent data collection, which makes it possible to combine data from many sources, for example combination of data on business accounts and data on services and personnel. The focus has also been on comparability between municipalities, to make benchmarking possible as a part of the management process. And timeliness is vital. Information is collected in February and the first figures are published in mid March. In this publishing only electronic tests check the reliability of data. Revised figures are published in mid June.

2) More efficient reporting, including lower response burden for the municipalities. All data reported from the municipalities are electronic, by use of electronic forms or file extracts. And the same data should be collected only once, even if it is used for several purposes. The publishing includes a number of fixed indicators on the municipalities' priorities, productivity and the coverage of needs. It is structured to enable the comparisons of one municipality with the average for the comparable group of municipalities, the region or the country. The publishing also includes detailed data that enables the users to construct their own indicators and tables, by use of several programmes as for example Excel or PC-Axis. Data may be presented on maps using PC-Axis in combination with PX-Map.

The cost of inpatient curative care by gender, age and diagnosis

The Eurostat project on expenditure by age and gender chose to focus on two functions in the SHA framework; inpatient curative care and pharmaceuticals. The participating countries have supplied data to one of these functions and Norway has supplied data on inpatient curative care. The project will prepare a final report, which will include recommendations for further work to improve data on health expenditure by function, age and gender, within the framework of the SHA. The final report should be completed by March-03. (Eurostat, SHA Age and gender, 2002). For the purpose of this paper, we have added the dimension of diagnosis in order to further illustrate how economic and social statistics can be integrated within the framework of the System of Health Accounts. The new KOSTRA-system enables us to collect data from general hospitals at a relatively detailed level, which will be utilised in the construction of the SHA. It is important to be aware of the fact that the total cost for inpatient curative care is an estimated figure and not directly measured. In 2000 the total current expenditures for the hospitals was 35 billion NOK and the cost related to inpatient curative care is estimated to 29,4 billion NOK.

Costs

The starting point for distributing the costs is the gross current expense from general and specialised hospitals, excluding psychiatric hospitals. The statistics are based on a total count of all general institutions embraced by the counties' health plans. These hospitals have reported using the KOSTRA system. Also included are all state and private hospitals. Gross current expenses include expenses on wages and social benefits, expenses on equipment and maintenance, other current expenses and transfer expenses. Interest, principal repayment, financing transactions such as funds, charging of accounting losses/profits as expenses and coverage of previous years' losses, are not included. The costs associated with the outpatient activity performed by the institutions are thus included in the gross current expenses. The SHA has a functional breakdown on inpatient and outpatient treatments and the first step is to distribute the gross expenses of the hospitals on these functions using available information, such as reimbursement from social security and private expenditure on outpatient treatment.

The DRG-system

The DRG system is a system for classifying hospital stays in general and specialised hospitals into groups that are medically meaningful and as homogeneous as possible regarding resources used. Based on medical and administrative information about the discharges, each hospital stay will be placed in one and only one DRG. The DRG system is used by health administrators, mainly in the Ministries in many countries, and the system is developed to finance hospitals. By implementing the DRGs it is possible to reclassify all hospital stays/discharges by DRG.

Each DRG is related to a cost weight. The cost weight defines the average cost of the specific DRG relatively to average cost at the national level (for the average patient). The cost weights are estimated on the basis of costs related to the specific DRGs. The specific DRGs are made up of four different components; costs related to average length of a stay, x-ray costs, laboratory costs and operation costs. This means that all hospitals stays will be given a weight based on the costs related to this stay.

Information from the Norwegian Patient Register (NPR) is used to distribute costs on age, gender and diagnosis. The NPR contains information on discharges and bed-days for inpatients and also on the patient's sex, age, primary and secondary diagnoses etc. In addition the NPR contains information on Diagnosis Related Groups (DRG).

In our example, the estimated costs of inpatient curative care in general hospitals have been distributed on age, gender and diagnosis by using information on DRG from the NPR. The relative DRG-weight for each year group and for both gender and each group of diagnosis is applied on total costs. We have used 5 broad categories of diagnosis:

1. Malignant neoplasms and In situ neoplasms
2. Diseases of the circulatory system
3. Pregnancy, childbirth and the puerperium
4. Injury, poisoning and certain other consequences of external causes
5. Other

We have applied the following age groups; 0-9, 10-19, 20-39, 40-59, 60-69, 70-79, 80 and above.

Results

The level of detail is large when three dimensions such as age (7 groups), diagnosis (5 groups) and gender (2 groups) are combined. In addition we use data for discharges, costs and population as a whole. In order not to get lost in the jungle of data, we have chosen to focus on three main themes:

- Men and women, costs compared to discharges
- Diagnosis, cost compared to discharges
- Age groups, costs compared to discharges

The detailed tables are presented in the appendix.

Table 1 illustrates that men and women are about equally distributed in the population. However, men constitute a lower share of total discharges, 44 per cent of the discharged are men and these carry 47 per cent of the cost. This is also illustrated in table 2, which shows the average cost per person discharged. The average cost is 42 521 kroner, the average cost for men is 44 595 kroner, while the average cost for women is 40 865. This can be explained by the fact that men are over-represented in the diagnosis groups that are given higher DRG-weights. Diseases of the circulatory system constitutes the highest share of DRGs with 19 per cent of the total DRGs, and 61 per cent in this group is men.

The table above illustrates that by adding the cost component the relative weights of the diseases are altered. For example the cost of pregnancy and childbirth constitute 6 per cent of total cost, while the group constitutes 11 per cent of total discharges. On the other side the share of malignant neoplasms and in situ neoplasms, which makes up 11 per cent of the discharges increases to 15 per cent when costs are added. Diseases of the circulatory system constitute 15 per cent of the discharges and 18 per cent of the costs. The figure below illustrates the gender dimension of the cost per diagnosis.

The youngest and oldest age groups are worth a few comments. The age group 0 – 9 years constitutes almost 14 per cent of the population, however, the share of discharges is 9 per cent, and the share of total cost is only 7 per cent. The youngest age group has average cost that is 25 per cent below the average. Of the youngest age group 51 per cent are boys and they constitute 56 per cent of the costs. On the other side the oldest age group, those over 80 years represents only 4 per cent of the population, but 14

Table 1. The distribution of cost, discharges and population by gender, per cent

	Total cost	Total discharges	Total population
	100	100	100
Men	46.6	44.4	49.5
Women	53.4	55.6	50.5

Source: Statistics Norway.

Table 2. Average cost per person discharged, Norwegian kroner

	Total	Men	Women
Average cost per person discharged	42 521	44 596	40 865

Source: Statistics Norway.

Table 3. Costs and discharges by diagnosis

Both gender	Total costs	Total discharges
All	100	100
Malignant neoplasms and In situ neoplasms	15.2	11.1
Diseases of the circulatory system	18.4	14.6
Pregnancy, childbirth and the puerperium	6.2	10.3
Injury, poisoning and certain other consequences of external causes	10.5	10.7
Other	49.7	53.3

Source: Statistics Norway.

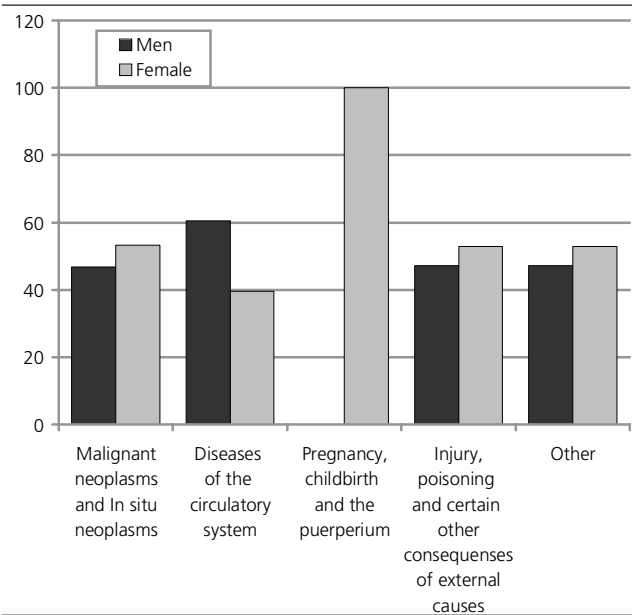
Table 4. The distribution of costs, discharges and population on age groups

Age	Cost Per cent	Discharges Per cent	Population Per cent	Average cost per person discharged in each age group, kroner
Age	100	100	100	42 521
0-9	6.8	9.1	13.5	31 743
10-19	2.9	4.5	12.4	27 621
20-39	16.5	22.8	28.6	30 883
40-59	21.4	20.6	26.2	44 082
60-69	14.4	11.7	7.8	52 142
70-79	21.2	17.0	7.0	53 246
80 +	16.8	14.4	4.4	49 603

Source: Statistics Norway.

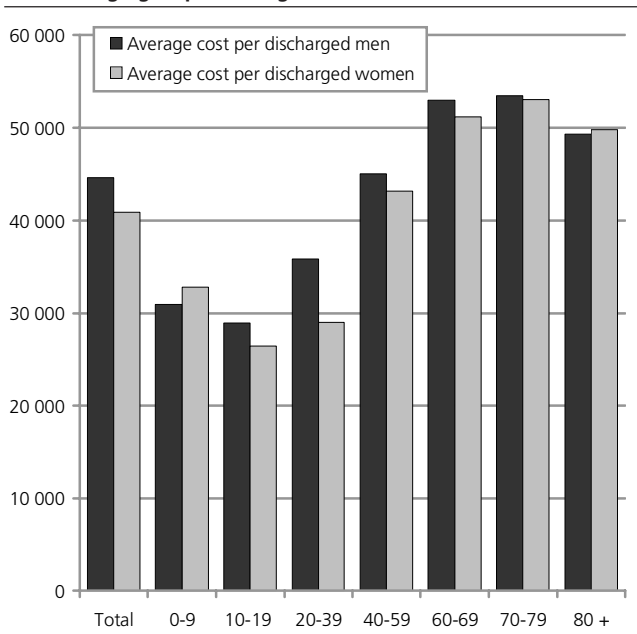
per cent of the discharges and due to higher DRG-weight, 17 per cent of the total cost. From the age of 60 years and above, women constitute a larger share of the population than men. Men, however, are more frequently hospitalised and make up more than 50 per cent of the discharges and also the associated costs. In the eldest age group, those 80 years and above, 67 per cent are women. However, the gender distributed costs show that women over 80 years old constitute 61 per cent of the cost associated with this age group. The only age group where women are more in hospitals than men, relatively speaking, are those between 20 and 39, where 72 per cent of the discharges are women and they constitute 68 per cent of the costs.

Figure 1. The distribution of cost of diagnosis on men and women, per cent



Source: Statistics Norway.

Figure 2. Average cost per man or women discharged in each age group, Norwegian kroner



Source: Statistics Norway.

This can largely be explained by hospitalisation due to pregnancy, childbirth and the puerperium.

It has been argued that the elderly part of the population is over-represented in the more expensive part within each DRG group. If this is the case the DRG weights will to some extent underestimate the cost of the elderly. The DRG system has also been criticised for not measuring adequately the cost associated with chronic cases and complex diagnosis. It is sometimes

argued that the elderly is over-represented in these categories. Also in this case the DRG system will underestimate the cost of the elderly. However, we do not have information that confirms these arguments.

Figure 2 shows that the average cost per discharged man is higher than the average cost per discharged woman in all age groups except the age group 80 years and above.

Conclusions

This paper has illustrated that the System of Health Accounts is a suitable framework for the integration of economic and social statistics. Costs of inpatient curative care, which is a function in the SHA, have been distributed on age, gender and diagnosis. The main results can be summarised as:

- Men and women account for equal shares of the population. While 44 per cent of the discharged patients are men, they are over-represented in the diagnosis groups with higher DRG-weights, consequently they carry 47 per cent of the cost related to inpatient curative care.
- Adding the cost component alters the relative weights of the diseases. For example, pregnancy and childbirth constitute 11 percent of total discharges, but only 6 per cent of the total cost.
- The age group 0 - 9 years accounts for 14 per cent of the population. This age group represents 9 per cent of the discharged and 7 per cent of the total cost. The cost of the youngest age group is 25 per cent below the average cost.
- Those over 80 years represent 4 per cent of the population, 14 per cent of the discharges and due to higher DRG-weights 17 per cent of the total cost.

Health accounts can provide an “anchor” to which a variety of disaggregated sub-estimates can be linked. Specialised accounts fulfil a variety of informational needs. Health accounts by age, may help policymakers to focus on the different national expenditure, use, access and financing mechanism available to various age groups. Policymakers may therefore use the accounts when health care needs and objectives for health care planning are specified. The accounts may provide a tool for evaluating the effects of different policy options and may also be used to assess the cost of various health care programmes within a consistent framework.

References

Cooper, B.S. and Rice D.P. The Economic Cost of Illness Revisited. Social Security Bulletin, February 1976.

Eurostat - SHA - Age and gender. Project carried out by Luxembourg’s Centre for Research on Population, Poverty and Public Policy Studies (CEPS) and Luxembourg’s General Inspectorate of Social Security (IGSS), supported by members of Eurostat’s Task Force on Health.

- Hartunian, N.S., Smart, C.N. and Thompson, M.S., The Incidence and Economic Cost of Cancer, Motor Vehicles Injuries, Coronary heart Disease and Stroke: A Comparative Analyses, *American Journal of Public Health*, 70 (12), 1980
- Helse- og omsorgstjenester (Health and care services), *Statistiske Analyser nr 56*. Statistics Norway 2002.
- Lemaire, M. Satellite Accounts, A relevant framework for analysis in social fields. *Review of Income and Wealth*, Series 33, no.3, September 1987.
- Ljones, O and Svinset A. B. KOSTRA - A Model for Official Statistics Built on a Partnership between Local and Central Government. Paper presented on the 53d ISI session.
- Nørgaard, E, Finansiering av helse- og sosialutgifter I Norge 1990-1998. *SSB Rapporter 2001/18*,
- OECD, A system of health accounts - Version 1.0, OECD 2000.
- Pommier, P, Social Expenditure: Socialisation of expenditure? The French experiment with Satellite Accounts. *Review of Income and Wealth*, Series 27, no.4, December 1981.
- Rice, D.P, Hodgson, T.A. and Kopstein, A.N., The Economic Cost of Illness: A Replication and Update. *Health Care Financing Review* 7 (1), 1985.
- Specialist Health Services, 1990 - 2000. *Official Statistics of Norway C699*. Statistics Norway, 2001
- Stone R. The relationships of Demographic Accounts to National Income and Product Accounts in K.C. Land and F.T. Juster (eds), *Social Accounting Systems, Essays on the State of the Art*, Academic Press, 1981.
- Sunga, P.S., and Swinamer, J. Health care accounts – A conceptual framework and illustrative example. *Canadian statistical Review*, September 1986.
- System of National Accounts (SNA), joint publication from UN, IMF, OECD, World Bank and Eurostat, 1993.
- Teillet, P, A concept of satellite account in the revised SNA. *Review of Income and Wealth*, series 34, No.4, December 1988.
- Wolfson M.C. A System of Health Statistics, toward a Conceptual Framework for Integrating Health Data. *Review of Income and Wealth*, series 37, No.1, March 1991.

Appendix

Table A1. Population distributed on age and gender, 2000

Age groups	Total	Men	Women
Total	4 503 436	2 231 301	2 272 135
0-9	609 102	312 893	296 209
10-19	559 289	286 645	272 644
20-39	1 286 377	655 625	630 752
40-59	1 181 561	601 332	580 229
60-69	353 115	170 838	182 277
70-79	317 091	138 259	178 832
80 +	196 901	65 709	131 192

Source: Statistics Norway

Table A2. Discharges, both gender, 2000

ICD10 / age groups	Total	0-9	10-19	20-39	40-59	60-69	70-79	80 +
Total	691 974	62 705	30 807	157 449	142 857	81 010	117 331	99 815
Malignant neoplasms and In situ neoplasms	76 796	2 216	1 417	5 562	22 317	15 226	19 037	11 021
I00-I99 Diseases of the circulatory system	101 051	310	358	3 477	21 379	18 805	30 717	26 005
Pregnancy, childbirth and the puerperium	71 036	.	1 602	67 405	2 029	.	.	.
Injury, poisoning and certain other consequences of external causes	74 312	5 611	7 737	17 461	14 393	6 011	9 731	13 368
Other	368 779	54 568	19 693	63 544	82 739	40 968	57 846	49 421

Source: Statistics Norway

Table A3. Discharges, men, 2000

ICD10 / age groups	Total	0-9	10-19	20-39	40-59	60-69	70-79	80 +
Total	307 288	35 979	14 542	43 556	71 605	43 432	58 957	39 217
Malignant neoplasms and In situ neoplasms	35 351	1 131	746	2 339	7 990	7 631	10 150	5 364
Diseases of the circulatory system	58 308	152	179	1 945	15 178	12 694	17 545	10 615
Pregnancy, childbirth and the puerperium
Injury, poisoning and certain other consequences of external causes	37 984	3 320	4 772	11 571	8 487	2 932	3 589	3 313
Other	175 645	31 376	8 845	27 701	39 950	20 175	27 673	19 925

Source: Statistics Norway

Table A4. Discharges, women, 2000

ICD10 / age groups	Total	0-9	10-19	20-39	40-59	60-69	70-79	80 +
Total	384 686	26 726	16 265	113 893	71 252	37 578	58 374	60 598
Malignant neoplasms and In situ neoplasms	41 445	1 085	671	3 223	14 327	7 595	8 887	5 657
Diseases of the circulatory system	42 743	158	179	1 532	6 201	6 111	13 172	15 390
Pregnancy, childbirth and the puerperium	71 036	.	1 602	67 405	2 029	.	.	.
Injury, poisoning and certain other consequences of external causes	36 328	2 291	2 965	5 890	5 906	3 079	6 142	10 055
Other	193 134	23 192	10 848	35 843	42 789	20 793	30 173	29 496

Source: Statistics Norway

Table A5. The distribution of costs, both gender, 2000

Mill kroner	Total	0-9	10-19	20-39	40-59	60-69	70-79	80 +
All	29 424	1 990	851	4 862	6 297	4 224	6 247	4 951
Malignant neoplasms and In situ neoplasms	4 476	108	71	284	1 257	918	1 175	664
Diseases of the circulatory system	5 405	13	17	162	1 139	1 103	1 708	1 262
Pregnancy, childbirth and the puerperium	1 833	0	36	1 744	53	0	0	0
Injury, poisoning and certain other consequences of external causes	3 088	130	182	539	537	295	571	835
Other	14 622	1 740	546	2 134	3 312	1 907	2 793	2 191

Source: Statistics Norway

Table A6. The distribution of costs, men, 2000

Mill kroner	Total	0-9	10-19	20-39	40-59	60-69	70-79	80 +
Men	13 704	1 113	421	1 562	3 222	2 302	3 150	1 934
Malignant neoplasms and In situ neoplasms	2 091	55	37	121	482	466	624	308
Diseases of the circulatory system	3 268	6	8	92	833	774	1 025	529
Pregnancy, childbirth and the puerperium	0	0	0	0	0	0	0	0
Injury, poisoning and certain other consequences of external causes	1 457	80	119	376	320	141	210	210
Other	6 888	972	257	974	1 587	920	1 292	887

Source: Statistics Norway

Table A7. The distribution of costs, women, 2000

Mill kroner	Total	0-9	10-19	20-39	40-59	60-69	70-79	80 +
Women	15 720	877	430	3 300	3 075	1 922	3 097	3 018
Malignant neoplasms and In situ neoplasms	2 385	53	34	163	775	453	551	356
Diseases of the circulatory system	2 137	7	9	71	305	329	683	733
Pregnancy, childbirth and the puerperium	1 833	0	36	1 744	53	0	0	0
Injury, poisoning and certain other consequences of external causes	1 631	50	63	162	216	154	361	625
Other	7 734	767	289	1 160	1 725	987	1 502	1 304

Source: Statistics Norway