

Social Work in Public Health and Hospitals



Sharon Duca Palmer
Editor

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INTRODUCTION

Social work is a difficult field to operationally define, as it is practiced differently in many settings. It is a very diverse occupation and one that can be practiced in settings such as hospitals, clinics, welfare agencies, schools, and private practices.

The main goal of all social work practice is to assist the client to function at the best of their ability and assess what their needs are. Social workers help clients with problem-solving strategies, such as defining personal goals, focusing on what is necessary to make changes, and helping them through the process.

Social work is a demanding field and is often emotional draining. Many social workers have large caseloads, limited resources for their clients, and often work for relatively low salaries. But the personal rewards can be very satisfying.

The social work profession is committed to promoting social and economic policy through helping to improve people's lives. Research is conducted to improve social services, community development, program evaluation, and public administration. The importance of research in these areas is to examine variables that can be addressed in order to resolve issues. Research can lead to what is called "best practice". By utilizing "best practice", a social worker is engaging clients based on research that is intended to increase successful outcomes.

Social work is one of the most diverse careers available. Most social workers are employed by health care facilities and government agencies. These facilities can

include hospitals, mental health clinics, nursing homes, rehabilitation centers, schools, child welfare agencies, and private practice.

Social work's interface with mental health promotion and the treatment of mental illness dates to the earliest roots of our profession. While many social workers provide mental health services in private practice settings, the majority of services are offered in community-based agencies, both public and private, and in hospitals and prisons. Social workers are the largest provider of mental health services, providing more services than all other mental health care providers combined. These workers also often provide services to those who are struggling with substance abuse.

Twenty-first century health issues are complex and multidimensional, requiring innovative responses across professions at all levels of society. Public health social workers work to promote health in hospitals, schools, government agencies and local community-based settings, making connections between prevention and intervention from the individual to the whole population.

In an ideal world, every family would be stable and supportive. Every child would be happy at home and at school. Every elderly person would have a carefree retirement. Yet in reality, many children and families face daunting challenges. For example, single parents struggle to raise kids while working. Teens may become parents before they are ready. Child social workers help kids get back on track so they can lead healthy, happy lives.

Rapid aging populations are expected worldwide. With the rapid growth of this population, social work education and training specializing in older adults and practitioners interested in working with older adults are increasingly in demand. Geriatric social workers typically provide counseling, direct services, care coordination, community planning, and advocacy in an array of organizations including in homes, neighborhoods, hospitals, senior congregate living and nursing facilities. They work with older people, their families and communities, as well as with aging-related policy, and aging research

In whatever subcategory they work, social workers help provide support services to individuals and communities by assessing their needs in order to improve the quality of life and overall well-being. This can lead to positive changes in people's environments, dignity, and self-worth. It can also lead to changes in social policy for those who are vulnerable and oppressed. Social workers change entire communities for the better.

There have been many changes emerging in the social work profession. The uses of the Internet and online counseling have been major trends. Some people are more likely to seek assistance and information first through the use of the Internet. There has also been a strong move for collaborating between professions

when providing services in order to offer clients more options for success. Keeping up to date with best practice research, licensing requirements, continuing education, and professional ethics make this an exciting and challenging time to be a social worker!

— **Sharon Duca Palmer, CSW, LMSW**

Direct Costs Associated with the Appropriateness of Hospital Stay in Elderly Population

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ABSTRACT

Background

Ageing of Mexican population implies greater demand of hospital services. Nevertheless, the available resources are used inadequately. In this study, the direct medical costs associated with the appropriateness of elderly populations hospital stay are estimated.

Methods

Appropriateness of hospital stay was evaluated with the Appropriateness Evaluation Protocol (AEP). Direct medical costs associated with hospital stay under the third-party payer's institutional perspective were estimated, using as information source the clinical files of 60 years of age and older patients, hospitalized during year 2004 in a Regional Hospital from the Mexican Social Security Institute (IMSS), in Mexico City.

Results

The sample consisted of 724 clinical files, with a mean of 5.3 days (95% CI = 4.9–5.8) of hospital stay, of which 12.4% ($n = 90$) were classified with at least one inappropriate patient day, with a mean of 2.2 days (95% CI = 1.6 – 2.7). The main cause of inappropriateness days was the inexistence of a diagnostic and/or treatment plan, 98.9% ($n = 89$). The mean cost for an appropriate hospitalization per patient resulted in US\$1,497.2 (95% CI = US\$323.2 – US\$4,931.4), while the corresponding mean cost for an inappropriate hospitalization per patient resulted in US\$2,323.3 (95% CI = US\$471.7 – US\$6,198.3), ($p < 0.001$).

Conclusion

Elderly patients who were inappropriately hospitalized had a higher rate of inappropriate patient days. The average of inappropriate patient days cost is considerably higher than appropriate days. In this study, inappropriate hospital-stay causes could be attributable to physicians and current organizational management.

Background

Ageing of the Mexican population is one of the higher impact phenomena which began manifesting during the XX Century, and which will undoubtedly be an essential element in the creation of the history of Mexico in the XXI Century. Life expectancy of Mexicans doubled during the second half of the last century, raising from 36 years in 1950 to 74 years in year 2000, and it is expected to reach 80 years in 2050 [1].

Ageing of the population will imply a greater demand of health services, as a consequence of the high rates associated morbidity. Among the diseases of the elderly population are chronic-degenerative conditions, that make them fragile and turns them into a population that utilize many health services. However, it is well known that part of the hospital resources are used inadequately, either because the patients receive assistance that does not turn into health benefits or because

care services could be provided at different institutional levels representing lower costs [2,3].

Evaluation of resource use in hospital health systems allows to establish the necessary actions which will correct the identified organizational problems. Unjustified hospital admissions and stays of elderly patients, do not only increase costs but are also related to poor health service and higher mortality resulting from several complications that come together, for instance, hospital infections, pressure ulcers or venous thrombosis, among others. Thus, the permanent evaluation of hospital service utilization is an essential topic that must be considered to improve resource assignment and to increase the quality of medical assistance in institutions that render services [4,5].

There are several reports that have calculated inappropriate utilization figures. However, very few have studied the associated factors [6-8].

Finally, the economic analysis of health services provided to the elderly population was done in general terms by other researchers [9,10], concluding that the associated costs including medical assistance required by the elderly are higher in comparison to the rest of the population. Then again, the cost of appropriate and inappropriate hospital stay in the elderly population has not been identified, at least in developing countries where medical practice vary and could have important effects on the hospital budgets in comparison with other developed countries. Even if medical costs would be expected to be lower in developing countries this expenses could have a significant impact over health budgets. Previous studies of inappropriate hospital length of stay showed that this phenomenon is mainly generated by doctors whom are not required to justify individual hospital stay, and hence there is an incentive to prolong hospitalization when there are empty beds [11,12]. In addition, other researchers identified a number of key causes of inappropriate admissions and lengths of stay, including: the limited capacity of health and social care resources; poor communication between primary and secondary care clinicians and the cautiousness of clinicians who manage patients in community settings [13]. In this sense, economic literature have been elaborated in order to estimate direct medical costs of length of stay and to estimate budget impact of inappropriate hospitalizations [14,15]. The aim of this study was to estimate direct medical costs associated with inappropriateness hospitalizations days in the elderly population within a representative Mexican hospital.

Methods

A retrospective study was conducted, reviewing clinical files of 60 years of age and older patients (n = 7,540) admitted from January 1st to December 31st of 2004 within the Mexican Social Security Institute (IMSS).

The IMSS was created by law in 1943 and is funded by the government, employers, and employees. It is a social security system; therefore, the only requirement to be registered is to be employed, regardless of one's state of health. Workers, their parents, and other close relatives are assigned to a Family Medicine Unit, which is the primary health care provider. The IMSS offers a comprehensive package of benefits that include health care services at all levels of care and economic benefits such as a pension. Medical services are provided by levels of care and a reference system. Mexico City has a population of nearly 860,000 adults aged 60 years and older, 418,000 of whom (48.6%) are affiliated to the IMSS. IMSS has 16 general hospitals in Mexico City. From those, the General Hospital "Dr. Carlos Mac Gregor Sánchez Navarro" was selected. This hospital is one of the biggest hospitals in Mexico City and it has 278 total beds. A total of 465 physicians and 705 nurses work there. General services as internal medicine, surgery, intensive care, pediatrics, plus some specialized services such as hematology, nephrology integrate the services provided.

The size of the sample was estimated assuming that 10% of the hospital admissions are inappropriate [16], with an accuracy of 0.02 and a reliability level of 95%. The required sample was of 863 files, plus a 20% considering the exclusion criteria. The files were selected simply by random.

We excluded files of patients with voluntary hospital discharges, patients with illegible files, lacking information necessary for evaluation, files of patients transferred to other hospitals and those that were not found when the information was collected.

The unit of analysis was made up of the admission process clinical hospital file registries, first days and subsequent patient days to admission, with the exception of the medical discharge day. The version adapted to Spanish and validated in the elderly population by our Appropriateness Evaluation Protocol (AEP) group was used as a tool to determine hospitalization appropriateness of the study subjects [17-19]. The AEP was previously validated in elderly Mexican population in 2005 [16]. The first AEP set comprised 16 criteria that establish the need for hospitalization on the hospital admission day. The first ten criteria were related with the severity of the patient's clinical condition, while the remaining six criteria were associated with frequency with which the provided health services were utilized. The presence of at least one of these criteria on the first admission day was enough to consider it appropriate; on the other hand, it was considered inappropriate when it did not comply with any of the criteria. In addition, to determine the need for further days of stay subsequent to the admission day -with the exception of the admission day itself-, we used a second AEP set comprising 27 criteria related with medical service rendered, nursing services and the patient's clinical condition. As in the previous case, compliance with one sole criterion was sufficient to

consider the patient days reviewed as appropriate and inappropriate when it did not comply with any of the criteria. Likewise, admission causes and inappropriate patient days were reported.

A group of three nurses with bachelor degrees was previously trained in AEP handling and application. The intra-reviewer agreement of hospital admissions presented a Kappa coefficient of $>80\%$, while patient days yielded Kappa $>86\%$. Regarding to inter-reviewer agreement, the result was Kappa $>93\%$, and $>85\%$ for admission and patient days, respectively.

Age and gender were also collected as well as admission service and comorbidity. Comorbidity was defined as the presence of one or more disorders (or diseases) in addition to a primary disease or disorder.

The economic analysis consisted of an estimate of direct medical costs associated with appropriate and inappropriate assistance provided to the subjects included in the study during their hospital stay. Direct medical costs include all related costs generated during the hospitalization of patients (drugs, laboratory and radiologic exams, inter-visits to other specialists, procedures, emergency and administrative expenses). Neither out-of-pocket expenses nor indirect costs (productivity losses) are included since the perspective is from the third-party payer's.

The economic analysis procedure was realized by resource identification, measurements and valuation. Identification and measurement of the resources was carried out through a review of the clinical files to generate a listing of goods and services used in every hospital stay, identifying the headings corresponding to patient days, surgeries, special procedures, laboratory tests and office examinations, medication and inter-visits to other specialists.

Cost estimates were obtained applying the unitary costs of goods and services used in every hospital stay, which were obtained from IMSS institutional data base, accessing <http://www.imss.gob.mx> web page, as well as from the notices of IMSS Planning and Finance Division, 2006. The costs are expressed in US Dollars according to the 2006 exchange rate officially reported by Banco de México. No discount rate was applied, since the analysis horizon was within one year.

Statistical Analysis

Of the total of identified hospital stays, values of the mean of the interest socio-demographic and clinical variables were obtained, and the cases corresponding to sex, age range, service to which the patient was admitted, appropriate admission, length of stay (in days) and number of comorbidities conditions were determined. Similarly, the reasons why the admission was considered as inappropriate and patient days were identified and estimated. The ratio of inappropriate days refers to

the number of inappropriate length of stay per patient measured in days divided by the number of total patient days (appropriate plus inappropriate) by 100.

Mean inappropriate days only considering patients who presented inappropriate days.

Regarding the patient days: direct medical costs per patient with their reliability intervals were estimated at 95% (95% CI). Mean costs of appropriate and inappropriate patient days were calculated from the mean cost for each group (patients). In addition, the mean costs were compared through the t-student test for independent samples, with a 95% significance level.

Finally, a multivariate analysis was performed to find out what impact do socio-demographic factors (sex and age) and clinical factors (appropriate admission, length of stay, number of comorbidities conditions and inappropriate patient days) have on the hospital stay's total cost.

The patient days cost was transformed to a natural logarithm in the multivariate analysis to reduce the variability shown by costs estimated for patients with different pathologies and several severity levels: The latter result in heterogeneous patient days and different quantities of hospital resource use. Sex and admission variables were handled as dichotomies, while age, length of stay, number of comorbidity conditions and inappropriate days variables were handled as a continuum. Variables used in the multivariate analysis were chosen from the available factors founded in the hospital clinical files for each patient.

The Ordinary Least Squares assumption evaluation was done paying special attention to the homoscedasticity (assessed with the Breusch-Pagan and White tests), as the transversal cohort of patients included in the sample presented atypical factors, such as hospital stays that lasted more than 90 days and variation in the use of resources resulting from the diversity of reasons for medical assistance.

Ethics

The research protocol for this study (2004-3607-0009) was reviewed and approved by the Local Commission of Health Research and the Sub-Committee of Ethics of the Mexican Social Security Institute, Delegation 3 and 4 in Mexico City.

Results

General Characteristics

A total of 1,036 hospital clinical files were selected, of which 31.2% (n = 312) were excluded given that they did not fulfill the age or the admission period

criteria. The final sample comprised 724 files: 51.9% females with an average age of 76.9 (± 9.2) years and the remaining 48.1% males with an average age of 73.9 (± 8.0) years.

Inappropriate Admission and Hospital Stays

The patient days mean was 5.3 (95% CI = 4.9–5.8) days, with 5.6 (95% CI = 4.9–6.3) and 5.0 (95% CI = 4.6–5.5) days for females and males, respectively.

Of the 724 hospital admissions, only 1.5% ($n = 11$) were classified as inappropriate. Those admitted inappropriately had more inappropriate patient days (17.1%), in comparison to those whose admissions were appropriate (5.0%). Among the 1.5% patients admitted inappropriately, who only required nurse assistance were 63.6% ($n = 7$). On the other hand, 27.3% ($n = 3$) of the patients required assistance from a hospital specialized in chronic diseases; and premature admission of one day or more previous to appointments for tests resulted in 9.1% ($n = 1$).

From the 724 files reviewed, 12.4% ($n = 90$) were classified with at least one day of inappropriate hospital stay. The mean of inappropriate patient days per patient of the 90 files was 2.2 days (95% CI = 1.6 – 2.7). The reasons for considering them as inappropriate stays were that there was no diagnostic plan and/or treatment, 98.9% ($n = 89$); that there was a planned discharge without written orders, 3.3% ($n = 3$); there was no work at the hospital those days (certain diagnostic procedures are not performed during the weekend or in holidays), 2.2% ($n = 2$); patient programmed for diagnostic tests or treatment (including surgery) whose appointment was cancelled due to any other reason (for instance, an emergency case is put before an elective case or essential personnel from the hospital was ill, etc.) 1.1% ($n = 1$); and, others 2.2% ($n = 2$). It is worth pointing out that five files fulfilled more than one of these causes.

Five percent (5.1%, $n = 198$) of the 3891 days of hospital stays were classified as inappropriate. Table 1 shows the ratio of inappropriate patient days according to the characteristic of the sample.

Direct Medical Costs and Associated Factors

Mean costs of inappropriate hospital days was calculated from the mean cost of 90 patients (files) founded in our sample. The mean cost for an appropriate hospitalization per patient resulted in US\$1,497.2 (95% CI = US\$323.2 – US\$4,931.4), while the corresponding mean cost for an inappropriate hospitalization per patient resulted in US\$2,323.3 (95% CI = US\$471.7 – US\$6,198.3), showing statistically

significance difference among them ($p < 0.001$). Differences are mainly explain due to the higher number of unnecessary days the patient is treated in the hospital using healthcare resources such as additional laboratory and gabinet exams (7%), inter-visits to other specialists (28%), drugs (5%) and administrative expenses (60%). Nevertheless, an inappropriate day costs 18% less than an appropriate day due is less intensive in resource use (patients are mainly in observation not treated intensively).

Table 1. Appropriate of admission and patient days.

	Patients n (%)	Patient days n (%)	Rate of inappropriateness days Rate (95% CI)
Total	724 (100)	3891 (100)	5.1 (3.4 – 5.9)
Sex			
Female	376 (51.9)	2118 (54.4)	5.0 (3.2 – 5.5)
Male	348 (48.1)	1773 (45.6)	5.2 (3.5 – 6.1)
Age (years)			
60–64	87 (12.0)	446 (11.5)	5.2 (3.3 – 5.8)
65–69	117 (16.2)	590 (15.2)	5.6 (3.8 – 6.1)
70–74	137 (18.9)	635 (16.3)	6.3 (4.6 – 6.9)
75–79	137 (18.9)	719 (18.5)	7.0 (5.6 – 7.4)
80–84	119 (16.4)	717 (18.4)	2.4 (1.3 – 3.2)
≥ 85	127 (17.5)	784 (20.1)	4.5 (2.5 – 5.4)
Service admitted to:			
Surgery	126 (17.4)	438 (11.3)	8.4 (6.5 – 9.2)
Internal medicine	598 (82.6)	3453 (88.7)	4.7 (4.1 – 5.3)
Appropriateness admission			
Yes	713 (98.5)	3856 (99.1)	5.0 (4.3 – 6.4)
No	11 (1.5)	35 (0.9)	17.1 (6.3 – 23.2)
Length of stay (days)			
1–2	213 (29.4)	320 (8.2)	2.2 (1.4 – 2.8)
3–4	200 (27.6)	687 (17.7)	5.7 (4.8 – 6.5)
5–6	131 (18.1)	717 (18.4)	4.0 (3.4 – 4.4)
7–8	69 (9.5)	505 (13.0)	4.0 (3.2 – 4.7)
9–10	33 (4.6)	313 (8.0)	4.8 (4.0 – 5.5)
≥ 11	78 (10.8)	1349 (34.7)	6.5 (6.1 – 6.9)
Number of comorbidities conditions			
0	125 (17.3)	488 (12.5)	5.3 (4.7 – 5.8)
1	71 (9.8)	385 (9.9)	9.4 (8.1 – 11.3)
2	169 (23.3)	938 (24.1)	5.1 (4.3 – 5.8)
3	174 (24.0)	992 (25.5)	3.1 (2.8 – 3.6)
≥4	185 (25.6)	1088 (28.0)	5.2 (4.9 – 6.3)

Table 2 shows the mean cost of hospital stay according to the sample's characteristics. When a comparison was made between the total cost means of appropriate and inappropriate stays, we noticed that there was no significant statistical difference in 70–74 year olds, 80–84 year olds and 85 or more year olds. Likewise, no significant differences were found between cost means of appropriate and inappropriate stays of elderly patients who were admitted for surgery services. Regarding appropriate admissions of elderly patients, a difference between means ($p < 0.001$) was found.

Table 2. Cost of hospital stay in the studied elderly patient sample

	Appropriate		Cost of hospital stay Inappropriate		p
	Mean	(95% CI)	Mean	(95% CI)	
Sex					
Female	1,555.6	(319.4 – 5,413.1)	2,528.0	(665.7 – 5,817.9)	p < 0.001
Male	1,432.5	(328.4 – 4,459.5)	2,132.0	(470.6 – 6,012.7)	p < 0.001
Age (years)					
60–64	1,409.4	(317.2 – 3,762.7)	2,183.2	(1,031.0 – 4,789.2)	p = 0.018
65–69	1,261.6	(314.3 – 3,105.3)	3,374.0	(481.0 – 16,991.7)	p = 0.001
70–74	1,397.5	(336.6 – 4,234.4)	1,703.3	(475.8 – 3,582.2)	p = 0.239
75–79	1,504.2	(327.5 – 5,658.4)	2,393.7	(598.0 – 7,413.3)	p = 0.010
80–84	1,679.5	(299.8 – 5,665.7)	2,395.0	(835.4 – 5,451.9)	p = 0.116
≥ 85	1,696.3	(394.6 – 4,618.6)	2,283.6	(1,002.3 – 3,887.6)	p = 0.062
Service admitted to:					
Surgery	1,191.8	(334.3 – 5,059.3)	1,611.3	(362.1 – 3,596.7)	p = 0.197
Internal medicine	1,536.0	(317.8 – 4,871.3)	2,456.2	(655.0 – 6,594.5)	p < 0.001
Appropriateness admission					
Yes	1,497.2	(323.2 – 4,931.4)	2,278.0	(763.6 – 5,942.1)	p < 0.001
No	NA		2,515.3	(363.7 – 14,772.5)	NA
Length of stay (days)					
1–2	683.0	(202.4 – 1,623.6)	365.8	(355.9 – 375.6)	p = 0.179
3–4	1,016.3	(512.2 – 1,978.7)	1,239.5	(476.1 – 2,855.7)	p = 0.020
5–6	1,548.3	(835.4 – 2,466.1)	1,403.0	(939.8 – 2,169.4)	p = 0.210
7–8	2,019.1	(1,195.4 – 2,991.3)	1,867.8	(1,181.6 – 3,145.1)	p = 0.350
9–10	2,351.6	(1,546.6 – 3,197.5)	2,398.4	(1,554.1 – 3,171.2)	p = 0.813
≥ 11	4,141.7	(2,055.5 – 7,246.8)	4,490.7	(1,935.5 – 14,042.9)	p = 0.562
Number of comorbidities conditions					
0	1,486.8	(320.6 – 4,883.8)	2,266.0	(585.1 – 6,778.6)	p = 0.038
1	1,369.7	(334.3 – 3,002.8)	2,425.8	(1,052.4 – 3,605.6)	p < 0.001
2	1,413.8	(332.2 – 4,115.5)	1,943.6	(684.3 – 4,110.3)	p = 0.010
3	1,659.6	(346.3 – 6,202.7)	2,900.7	(576.6 – 12,091.9)	p = 0.005
≥ 4	1,477.1	(282.4 – 4,272.3)	2,051.4	(600.7 – 5,048.5)	p = 0.106

NA = Not Apply

On the subject of patient days, those who remained hospitalized for three to four days showed a significant difference ($p = 0.020$) according to the appropriate-stay criterion. In elderly patients who showed four or more comorbidities conditions, no significant differences were found.

The multivariate estimation by the Ordinary Least Squares model showed heteroscedasticity problems (Breusch-Pagan and White tests with $p < 0.001$), therefore Generalized Least Squares were applied. The latter involves a regression model that is worthy to identify significant associated factors of hospitalization costs. As a dependent variable the hospitalization costs (previously transformed using the logarithm method) was used and on the right side, independent variables included in the regression model were: sex, age, inappropriate admission (0 = appropriate, 1 = inappropriate), total length of stay (appropriate + inappropriate days), comorbidities and the number of inappropriate days only. Results are shown in Table 3. The significant variables ($p < 0.05$) obtained through this model were, the intercept, age, inappropriate-patient days and the total number of patient days. As was expected, the latter had the greatest impact on the hospital-stay costs. Therefore, the multivariate regression showed that the hospitalization costs are highly associated with the age, total length of stay and the inappropriate length of stay.

Table 3. Generalized Least Square model using as dependent variable the transformed logarithm of hospital costs (n = 724)

Variable	β (SD)	p-value
Intercept	-135.0 (3.3)	<0.001
Sex	12.4 (39.5)	0.712
Age	4.9 (2.2)	0.005
Inappropriateness admission	-135.0 (223.1)	0.075
Patient days	222.2 (3.7)	<0.001
Comorbidities	7.7 (14.0)	0.708
Inappropriateness days	-39.7 (12.8)	0.001

β = Parameter estimate for each variable considered in the GLS model

SD = Standard Deviation

Discussion

This study reported a 12% rate of inappropriate hospitalization use, which falls within the 5% to 74% [18,20-26] ranges reported in literature.

It is worth to mention that this study has methodological weaknesses derived from the retrospective review of the clinical files and from the quality of its design; consequently it is possible that insufficient or incomplete information could generates estimate biases. Overall resource use could be underestimated and consequently, hospital stays costs could be affected [27,28].

On the other hand the study presents a selection bias related to the design of the study. Due to feasibility, those who were not admitted to the hospital were not included. Consequently the rate of false negative could be underestimated. A second stage of this study could be to test the AEP criteria in the emergencies room [16].

In spite of its weaknesses, this study is not based on certain assumptions, such as that the assistance services are always appropriate from the viewpoint of the specialist doctor who renders them, or that some socio-economic factors and clinical circumstances affect the illness' evolution, justifying hospital admission [16,27]. To overcome these circumstances, the AEP instrument was used to collect the information. This instrument is characterized by its high reliability and adequate validity to identify inappropriate hospital use [16,17].

In our study, the cause to classify hospital stays as inappropriate were attributable to the specialist doctor and/or organizational type, and could be solved by implementing interventions in the hospital assistance process, as reported in Sweden. In a study carried out at the internal medicine services of a university

hospital, 15% of hospital stays were considered as inappropriate. In response to this, an intervention was implemented in the hospital assistance process resulting in a reduction of up to 9% of inappropriate stays [29].

Nevertheless, an important element to consider in the design of any strategy of this type is that patient days necessary for the recovery of the patient are difficult to determine. We must bear in mind that response to treatment is different in each individual and is frequently conditioned by the severity of the illness and its evolution time (which to begin with, led to the problem that caused the hospitalization), the patient's age (which in a certain way represents the individual's biological reserve), the presence and severity of comorbidities, timely medical assistance, psychological and emotional condition of the patient, as well as support of the social networks the patient has available [30,31].

In our study it was possible to identify that elderly patients admitted inappropriately had more inappropriate patient days (17.1%), in comparison to those whose admissions were appropriate (5.0%). Regarding costs, inappropriate stays were 55.2% higher than the appropriate stays. The frequency of inappropriate admissions was lower than we expected. This result can be due to the fact that a hospital with a high demand for services and with low resources, such as the hospital in which the study was carried out, would render evaluation of the pertinence of the hospital admission of an individual more rigorous. This was not a private hospital and/or one with private medical insurance so it strengthens the possibility that the hospital admissions and stays increases in those who really do need it. However, the study presents a selection bias related to the design of the study. Due to feasibility, those who were not admitted to the hospital were not included and the rate of false negative could be underestimated. Consequently our study included only appropriately and inappropriately admitted patients. A second stage of this study must be to evaluate the AEP criteria in the emergencies room to be able to evaluate patients inappropriate and appropriate non-admitted patients to the hospitalization areas.

Heterocedasticity problems of the Ordinary Least Squares regression were mainly due to the heterogeneous characteristics of the patients and the diversity of resources used when the patient days number increased. The dependent variable was transformed applying the natural logarithm, process which did not stabilize the variance. Accordingly, a Generalized Least Squares model was used to correct said heterocedasticity problems. The results show that age, number of patient days and inappropriate patient days are variables that have an effect on hospital-stay costs. Hence it was identified that every year of the patient's life tends to increase total hospitalization costs to US\$4.9, while every appropriate patient day raises them close to US\$222.2.

On the other hand, the daily cost of inappropriate hospital-stay increases the total hospitalization cost to US\$182.3. This states that daily inappropriate costs are 18% under daily appropriate costs due a lower intensive medical care. Therefore, this inappropriate patient day cost reflects the fact that, in view of a lack of an additional diagnostic and/or treatment plan in the clinical file, all the resources for patient assistance are not used as in the case of appropriate hospital-stay. This includes also other resources such as laboratory tests and office examinations, as well as inter-visits to other specialists.

This evaluation identifies that there is an inappropriate and unnecessary use of hospital service resources provided to the elderly patients. In other words, a variety of human and technical resources and infrastructure are used in circumstances where they are not indicated from a strictly medical viewpoint, leading to a raise of hospital-stay costs. Authors recommend that in the future this type of studies should be carried out for elderly patients with specific diseases.

The elderly population has been identified as the greatest consumer of health services, generating expenses which mainly arise from their hospitalization in medical centers [32]. Health Systems around the world are facing very similar challenges. Particularly in Latin America, where the demographic transition has been too fast, the increasing demand of health services by the elderly is a common issue.

It is well known that hospital resources are not used in a proper way. In some occasions, elderly patients receive services that they do not really need. Others, benefits received are not significant or the care given at the hospital could be given through other health care schemes less expensive and more appropriate such as nurses at home, day care hospitals and so on [33,34]. In that sense, our results are of interest for countries with similar social security systems. Mexico, as many other developing countries, has to move on to different organization models. Consequently, even when costs obviously can not be generalized, the whole sense of the paper can be of important for other regions.

Therefore, an improvement of elderly patient's assistance and an optimum utilization of medical assistance resources, especially of the hospitalization services, represent an important challenge for health service providers worldwide.

Conclusion

Elderly patients who were inappropriately hospitalized had a higher rate of inappropriate patient days. The average of inappropriate patient days cost is considerably higher than appropriate days. In this study, inappropriate hospital-stay causes could be attributable to physicians and current organizational management.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

JFM-Q originated the idea for this study, did the research proposal, data analysis, and prepared the manuscript. CG-P, IC-H, and TJ-C contributed to the research proposal, reviewed the analysis, and participated in the preparation of the manuscript. CE-B participated in the interpretation of the data and in the discussion of the paper. GM-C participated in the research proposal and reviewed the manuscript. SS-G designed and conducted the original proposal and was involved in the data analysis and in the preparation and discussion of the manuscript. All authors read and approved the final manuscript.

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References

1. Envejecimiento de la población en México: reto del siglo XXI [http://www.conapo.gob.mx/index.php?option=com_content&view=article&id=340&Itemid=15] CONAPO, México; 2004.
2. Lorenzo S: Revisión de utilización de recursos. Estudios realizados en España. *Rev Calidad Asistencial* 1997, 12:140–146.
3. Peiró Moreno S, Portella E: Identification of the inappropriate use of hospitalization: the search for efficiency. *Med Clin (Barc)* 1994, 103:65–71.
4. Anton P, Peiro S, Aranaz JM, Calpena R, Compan A, Leutscher E, Ruiz V: Effectiveness of a physician-oriented feedback intervention on inappropriate hospital stays. *J Epidemiol Community Health* 2007, 61:128–34.
5. Palmesano-Mills C: Common problems in hospitalized older adults. *J Gerontol Nurs* 2007, 33:48–54.

6. Navarro G, Prat-Marín A, Asenjo M, Menacho A, Trilla A, Salleras L: Review of the utilisation of a university hospital in Barcelona (Spain): evolution 1992–1996. *Eur J Epidemiol* 2001, 17:679–84.
7. Zambrana García JL, Delgado Fernández M, Cruz Caparrós G, Díez García F, Martín Escalante MD, Salas Coronas J: Factors associated with inappropriate hospitalization at an internal medicine department. *Med Clin (Barc)* 2001, 116:652–654.
8. Luquero Alcalde FJ, Santos Sanz S, Pérez Rubio A, Tamames Gómez S, Cantón Álvarez MB, Castrodeza Sanz J: Factors determining inappropriate days of stay in a third-level hospital. *Gac Sanit* 2008, 22:48–51.
9. Polder JJ, Bonneux L, Meerdink WJ, Maas PJ: Age-specific increases in health care costs. *Eur J Public Health* 2002, 12:57–62.
10. Polder JJ, Barendregt JJ, van Oers H: Health care costs in the last year of life – the Dutch experience. *Soc Sci Med* 2006, 63:1720–1731.
11. McKay NL, Deily ME: Cost inefficiency and hospital health outcomes. *Health Econ* 2008, 17:833–848.
12. Sangha O, Schneeweiss S, Wildner M, Cook EF, Brennan TA, Witte J, Liang MH: Metric properties of the appropriateness evaluation protocol and predictors of inappropriate hospital use in Germany: an approach using longitudinal patient data. *Int J Qual Health Care* 2002, 14:483–492.
13. Hammond CL, Pinnington LL, Phillips MF: A qualitative examination of inappropriate hospital admissions and lengths of stay. *BMC Health Serv Res* 2009, 9:44.
14. Drummond MF, Sculpher MJ, Torrance GW, O'Brien BJ, Stoddart GL: *Methods for the Economic Evaluation of Health Care Programs*. Third edition. Oxford: Oxford University Press; 2005.
15. Walley T, Haycox A, Boland A: *Pharmacoeconomics*. London: Churchill Livingstone; 2003.
16. Sánchez-García S, Juárez-Cedillo T, Mould-Quevedo JF, García-González JJ, Contreras-Hernández I, Espinel-Bermudez MC, Hernández-Hernández DM, Garduño-Espinosa J, García-Peña C: The hospital appropriateness evaluation protocol in elderly patients: a technique to evaluate admission and hospital stay. *Scand J Caring Sci* 2008, 22:306–313.
17. Peiró S, Meneu R, Roselló-Pérez M, Portella E, Carbonell-Sanchís R, Fernández C, Lázaro G, Llorens MA, Martínez-Mas E, Moreno E, Ruano M, Rincón A, Vila M: Validity of the hospitalization Appropriateness Evaluation Protocol. *Med Clin (Barc)* 1996, 107:124–129.

18. Booth BM, Ludke RL, Wakefield DS, Kern DC, Burmeister LF, Fisher EM, et al.: Nonacute days of care within department of veterans affairs medical centers. *Med Care* 1991, (suppl 29):AS51-AS63.
19. Restuccia JD, Payne S, Lenhart G, Fulton J: Assessing the appropriateness of hospital utilization to improve efficiency and competitive position. *Health Care Manage Rev* 1987, 12:17-27.
20. Bare ML, Prat A, Lledo L, Asenjo MA, Salleras L: Appropriateness of admissions and hospitalization days in an acute-care teaching hospital. *Rev Epidemiol Sante Publique* 1995, 43:328-336.
21. Santos-Eggiman B, Paccaud F, Blanc T: Appropriateness of utilization: an overview of the Swiss experience. *Int J Qual Health Care* 1995, 7:227-232.
22. Fellin G, Apolone G, Tampieri A, Bevilacqua L, Meregalli G, Minella C, Liberati A: Appropriateness of hospital use: an overview of Italian studies. *Int J Qual Health Care* 1995, 7:219-225.
23. Bentes M, Gonsalves ML, Santos M, Pina E: Design and development of a utilization review program in Portugal. *Int J Qual Health Care* 1995, 7:201-212.
24. Lorenzo S, Sunol R: An overview of Spanish studies on appropriateness of hospital use. *Int J Qual Health Care* 1995, 7:213-218.
25. Hwang JI: Characteristics of patient and healthcare service utilization associated with inappropriate hospitalization days. *J Adv Nurs* 2007, 60:654-662.
26. Ingold BB, Yersin B, Wietlisbach V, Burckhardt P, Bumand B, Büla CJ: Characteristics associated with inappropriate hospital use in elderly patients admitted to a general internal medicine service. *Aging* 2000, 12:430-438.
27. Suárez García F, Oterino de la Fuente D, Peiró S, Librero J, Barrero Raya C, Parras García de León N, Crespo Pérez MA, Pérez-Martín A: Factors associated with the use and adaptation of hospitalization in people over than 64 years of age. *Rev Esp Salud Publica* 2001, 75:237-48.
28. Ramos-Cuadra A, Marión-Buen J, García-Martín M, Fernández Gracia J, Morata-Céspedes MC, Martín-Moreno L, et al.: Use of the appropriateness evaluation protocol: the role of medical record quality. The effect of completeness of medical records on the determination of appropriateness of hospital days. *Int J Qual Health Care* 1995, 7:267-275.
29. Kossovsky MP, Chopard P, Bolla F, Sarasin FP, Louis-Simonet M, Allaz AF, Perneger TV, Gaspoz JM: Evaluation of quality improvement interventions to reduce inappropriate hospital use. *Int J Qua Health Care* 2002, 14:227-232.

30. Perlado F: Capítulo 5 “Geriatría Hospitalaria” en Teoría y Práctica de la Geriatría. In 1a Edic. Madrid: Ediciones Díaz de Santos; 1995.
31. Foucault M: Capítulo 5 “La lección de los hospitales” en El nacimiento de la clínica. Una arqueología de la mirada médica. Ciudad de México: Editorial Siglo XXI 1996.
32. Peleg R, Press Y, Asher M, Pugachev T, Glicensztain H, Lederman M, Biderman A: An intervention program to reduce the number of hospitalizations of elderly patients in a primary care clinic. *BMC Health Serv Res* 2008, 8:36.
33. Elkan R, Kendrick D, Dewey M, Hewitt M, Robinson J, Blair M, Williams D, Brummell K: Effectiveness of home based support for older people: systematic review and meta-analysis. *BMJ* 2001, 323:719–725.
34. Steeman E, Moons P, Milisen K, De Bal N, De Geest S, De Froidmont C, Tellier V, Gosset C, Abraham I: Implementation of discharge management for geriatric patients at risk of readmission or institutionalization. *Int J Qual Health Care* 2006, 18:352–358.

The Use of Edinburgh Postnatal Depression Scale to Identify Postnatal Depression Symptoms at Well Child Visit

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ABSTRACT

Objectives

1) to evaluate the role of the pediatrician in detecting postnatal depression (PD) symptoms by the Edinburgh Postnatal Depression Scale (EPDS); 2) to detect factors increasing the risk of PD and, 3) to assess the importance of scores gained from fathers' questionnaire.

Methods

We surveyed 1122 mothers and 499 fathers who were assessed using the EPDS during the first well-child visit. After 5 weeks, high scoring parents, completed a second EPDS. High scoring parents were examined by a psychiatrist who had to confirm the PD diagnosis.

Results

26.6% of mothers and 12.6% of fathers at the first visit, 19.0% of mothers and 9.1% of fathers at the second visit, gained scores signaling the risk of PD. Four mothers and two fathers had confirmed PD diagnosis. Younger maternal age, non-Italian nationality and low socio-economic condition were related to higher EPDS scores.

Conclusion

PD is common in the average population. Using a simple and standardized instrument, pediatricians are able to detect parents with higher risk of suffering from PD.

Background

Postnatal depression (PD) is the most common disorder following childbirth and a social problem for public welfare: ten to fifteen women out of one hundred suffer from this disorder [1]. PD is a severe condition that has been described as “a thief who steals maternity”; up to 50% of the cases are diagnosed, and approximately 49% of women who seek help feel desperately depressed [2]. If untreated, a large number of these mothers continue to be depressed until the end of the first and the second postnatal years.

Women who suffer from PD are exposed to an increased risk of future depression, relapses, thoughts of abusing their children, and face difficulties in the child-mother relationship [3]. Maternal Depression (MD) may have a strong negative impact on the social, cognitive and behavioral development of children, including an increased rate of behavioral problems at school [4,5]. The obstetrician should be the first to identify those mothers who risk developing depression, but this can be quite difficult as symptoms often appear after the routine 4 to 6 week postnatal examination. Moreover, mothers with PD often do not recognize the symptoms of depression. This is a result of the difficulty in identifying the following signs as symptoms of PD: weight loss, irritability, crying fits and fatigue (often considered as the physiological adaptation to life with a newborn child). This is the reason why many women do not receive an immediate diagnosis or an

appropriate treatment program [6]. Pediatricians may be the only medical workers that are routinely met by mothers during the first twelve months of the baby's life [7]. A self-report rating scale routinely administered in pediatrics could be a useful tool to recognize the risk of PD. The Edinburgh Postnatal Depression Scale is the most widely used screening scale for PD [8]. It has been validated in Holland, Australia, Portugal, Sweden, Italy, Spain, United Arab Emirates, France and India [6,8-15].

The EPDS has already been administered in a pediatrics setting at the University Rochester Medical Centre (NY), although the impact of this screening instrument on the visit time was not assessed. However, the length of the visit is an important factor to take into consideration when working in a busy pediatric clinic. As a matter of fact, if we extend visit times, we risk reducing the total number of daily visits.

In this research project we focused on PD risk in mothers who have recently given birth. Many studies highlighted that the most significant risk factors for PD are: young maternal age, absence of a social support, immigration, and lack of a supporting spouse [16]. In addition, we also took into account what the outcome would be if new fathers were evaluated as well. To date, only a few studies have investigated PD risk in fathers, and no study has been conducted in Italy. Men who have manual or working class occupations and low social integration are more likely to become depressed [9]. In this study we will refer to parents at both low and high risk of suffering from depression on the basis of the EPDS score. In fact, a high EPDS score does not mean postnatal depression but only a high risk of suffering from PD. A psychiatrist was involved to confirm the diagnosis of PD. The aims of our study were: 1) to check the feasibility of assessing the risk of PD in parents using the EPDS; 2) to provide correlations between PD risk and socio-demographic information, both in mothers and in fathers; 3) to check correlations between high EPDS scoring fathers in couples with EPDS positive mothers and high EPDS scoring fathers in couples with EPDS negative mothers.

Methods

Setting

The study was conducted at the Pediatric Clinic of the Policlinico A. Gemelli, Catholic University Hospital, Rome.

This clinic admits 4000 patients a year, and it is a teaching site for pediatric residents and medical students.

Participants

Our team included: a senior pediatrician, two pediatric residents, two psychologists, and two psychiatrists. The EPDS was proposed to all parents, regardless of age and nationality, at the first postnatal check-up within the first year of baby's birth. Unmarried women were also included. Postnatal check-up examinations were carried out by the senior pediatrician with the aid of pediatric residents.

Research Tools

EPDS is a paper-and-pencil self-reporting questionnaire composed of 10 questions and a 0-3 point scale. The cut-off score is 9 for women and 7 for men [11,17,18].

Procedure

EPDS was proposed by a pediatrician, before clinical examination. The informed consent was obtained by explaining the meaning of the EPDS and we asked participants to complete questionnaires, without any help, and to answer according to their feelings during the previous seven days. In the case of high scores, the EPDS was repeated after five weeks, especially when we visited babies in the first 15 days of life, as, after delivery, many women experience 'baby blues.' Baby blues is considered a normal stage of early motherhood, usually disappearing some days after delivery.

The EPDS was translated and validated into several languages (Italian, French, Spanish, English, Arabic, and Punjabi) for parents who did not understand Italian. We translated the EPDS into Singhalese and used it, although this version was not officially validated.

Whenever our test results were rated as 'high,' we told mothers or fathers or sometimes both parents, to undergo a psychologist-psychiatrist examination. Without an appropriate psychiatric evaluation, a high EPDS score does not mean PD. Sometimes, in the self-reporting test, people report anxiety, mood instability, depressed mood, and other transient emotional disturbances which disappear within a few hours or days. A PD diagnosis requires a woman to be experiencing dysphoric mood and several other symptoms such as appetite, sleep or psychomotor disturbances, excessive feeling of guilt, fatigue and suicidal thoughts for a minimum of two weeks.

Study Population

This cross-sectional study started in January 2005 and ended in November of the same year. 1130 infants were examined at the first postnatal check-up (median 17 days, range 15-20 days). We proposed the EPDS to 1628 parents; 1621 subjects, 1122 mothers of the 1127 (99.6%) and 499 fathers of the 501 (99.6%) completed the EPDS and were included in this study. Five mothers with previous depression symptoms and two fathers who did not complete the EPDS were excluded. The male group was smaller than the female one, due to the fact that fathers were investigated only from August onwards and mothers often attended the clinic alone.

We excluded mothers with a history of depression since we intended to check only symptoms of PD, which is a perinatal pathology, not to be confused with depression.

Statistical Analysis

To evaluate the feasibility of assessing postnatal depression symptoms, we calculated by how many minutes (average and range) the completion of the questionnaire extended the visit time, and the percentage of compilers.

The prevalence of the risk of PD was calculated as the percentage of mothers who scored ≥ 10 and as the percentage of fathers who scored ≥ 8 . The characteristics of subjects at high PD risk and at low PD risk were compared using the Chi-squared test for each following characteristic: maternal and paternal age, marital status, employment, educational level, nationality, nursing, number of pregnancies, gestational age, delivery, mother's and father's pathologies, baby's weight at birth, gender, infant hospitalization and pathologies, and the season of the interview. Crude odds ratios (OR) were also calculated for all variables and adjusted OR were also calculated for variables where the univariate analysis showed a statistically significant association (p-value for Chi squared test < 0.05). Adjusted OR were calculated with the construction of a multivariate logistic regression model using the backward elimination method. The fit of the model was assessed using the Hosmer-Lemeshow test.

Results

Length of the Visit

The time range taken to complete the test was 2-7 minutes, with a mean of 3.28 minutes for women and 3.22 minutes for men. Less time was employed if parents