

EVALUATION OF THE APPROPRIATENESS OF HOSPITAL STAY IN GYNECOLOGICAL WARDS IN TABRIZ TEACHING HOSPITALS

Ouladsahebmadarek E¹, Seidhejazie M², Rashidi M³, Sahhaf F⁴, Fardiazar Z⁵

ABSTRACT

Objective: The increasing demand for health care services together with the increasing cost of providing them supports the need for a reconsideration of the existing structures. This study evaluated the appropriateness of hospital stay in gynecological wards.

Methodology: This is a descriptive-analytic study which was conducted in 2006-2007 by using modified appropriateness evaluation protocol.

Results: The average duration of hospital stay for 402 patients was 55.18±45.03 hours. The length of hospital stay was inappropriate in 61.2%. The main reasons for unnecessary stay before surgery included: no prior outpatient preparation of patients for operation, inadequate diagnostic procedures and the problems resulting from urgent admission (OR=2.91, CI=1.53-5.28, OR=1.56, CI=1.10-2.99 and OR=1.01, CI=0.08-2.58 respectively). The most important factors for inappropriate stay after surgery included: patient's home-hospital distance and delayed physician's order for discharge (OR=4.18, CI=2.57-13.20 and OR=2.06, CI=1.02-4.43).

Conclusions: Inappropriate hospital stay was 61.2%, and it could be decreased to 28.10% by using appropriate approaches.

KEY WORDS: Evaluation, Hospital, Length of Stay.

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1. Ouladsahebmadarek E,
 2. Seidhejazie M.,
Associate Prof. of Anesthesiology, Koodakan Hospital,
 3. Rashidi M,
Associate Prof. of Pharmacology,
 4. Sahhaf F,
 5. Fardiazar Z,
 - 1,4-5: Associate Professor of Obstetrics & Gynecology,
Alzahra Hospital,
 - 1-5: Tabriz University of Medical Sciences,
Tabriz, Iran.

Correspondence

Ouladsahebmadarek E,
Associate Professor of Obstetrics & Gynecology,
Alzahra Hospital,
Tabriz University of Medical Sciences,
Tabriz, Iran.
Email: elmadarek33@yahoo.com

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INTRODUCTION

During the past few years there has been a great interest in quality assurance and the setting of standards for health care to ensure that customer expectations are met. Recently the increasing demand for health care services (due to ageing population and increased prevalence of chronic disorders) together with the increasing cost of providing these services (technological advances, over specialization and in appropriate medical use) supports the need for a reconsideration of the existing practices. Furthermore greater attention has been given by health care provider to the effectiveness and quality of medical care and methods for quality improvement.¹

One of the most interesting approaches to improve the quality and efficiency of hospital use is to evaluate whether their services are used appropriately.² The assessment of hospital use is justified by awareness that some of this use may be inappropriate: patients receive either services giving no significant benefit or which would be more suitably given at a different level of care. To date, few studies have been conducted in different countries at different times to determine the appropriateness of hospital use.^{1,3,4}

Angelillo and coworker's study (2000) showed 14.2% of hospital admissions and 37.3% of number of hospitalization day were inappropriate.¹ The assessment tool of appropriate hospital use of health care services was Italian sample of Appropriateness Evaluation Protocol (AEP) that Pileggi and coworker (2004) used in emergency department of some Italian hospitals in 2003 and showed overall 28.4 and 75.7% of hospital admissions and days of stay, respectively were inappropriate.³

D'Alche-gntier and co-worker's study in France (2004) by using French Appropriateness Evaluation Protocol (FAEP) revealed that 10.9% of internal & 7% of surgical hospitalization days were inappropriate. The most frequent cause was inaccessibility to outpatient care services.⁵

Lambert and co-workers in their study in Netherland (2003) about inappropriate hospital stay of Venus thromboembolic involved patients found out 27.1% of the hospitalization for DVT were inappropriate and of the patients with pulmonary embolism 50.2% needed a hospital stay. They used the Duch Appropriateness Evaluation Protocol (DAEP).^{6,7}

Despite performing these kinds of studies at different countries, hospital use for presentation of health care services has not been analyzed documentarily in Iran. In view of the importance and necessity of healthcare services quality improvement and with a view to review, the existing structures of hospital management, Alzahra and Talegani hospitals of Tabriz Medical University were surveyed for appropriateness or inappropriateness of hospitalization for this study.

METHODOLOGY

This descriptive analytical (cross sectional) study was conducted at two specialized Gynecology and Obstetrics hospitals, Alzahra and Talegani affiliated with Tabriz Medical University during 2005-2006. Forty four days were selected with simple randomization which included four days of New Year vacations, eight ordinary days and two holidays of each season, and all the patients were discharged on these days were enrolled in this study.

Overall 402 patients were directly interviewed by two well-trained midwives at discharge time and medical files were reviewed by three gynecologists and the modified AEP based prepared questionnaires were filled. Requisite information included age, marital status, distance between home and hospital, severity of illness, type of insurance service, type of admission, hospital stay, admission indication and reasons for long hospital stay were recorded. Data were analyzed by SPSS.14/Win software using descriptive analytic, dependent sample t-test, chi-square test (X^2), regression logistic and odds ratio methods.

RESULTS

From 402 patients 140 (34.8%) were from Talegani and 262 (65.2%) from Alzahra Hospital. 12.9% of patients were discharged at holidays, and 87.1% at non-holidays. Admissions were 17.4% at spring, 20.4% at summer, 29.4% at fall and 32.8% at winter. About 39.3% of patients were supported by urban health insurance, 21.9% rural health insurance, 17.9% social insurance and 11.9% without insurance. 66.7% of patients were from surrounding towns, 23.9% from Tabriz city and 9.5% from rural areas. The mean interval between home and hospital by motor vehicle was 63.7 minutes (range: 5-300 minutes). For half of patients this was more than 40 minutes. Average age of patients was 34.97 ± 11.3 years, (range: 18-76 y) and half of patients were under 33 years old.

Average hospitalization from admission to discharge was 55.18 ± 45.03 hours, (range: 3.7-331.16 h) and half of patients stayed more than

Table-I: Hospital stay and type of operation

Type of operation	Medium (minute)	Standard deviation	The least(m)	The most(m)
Minor	2107.62	1749.92	222	14160
Moderate	2852.71	1175.64	1337	5762
Major	5769.03	3035.18	12.70	18600

46.75 hours. For minor surgical operations, average hospital stay was 35.13±29.16 hours, (range: 4-236 h) included 208 patients (51.7%) and for moderate operations average hospital stay was 47.55±19.59 hours, (range: 22-96 h) included 76 patients (18.9%) (Table-I). Sixty eight patients (16.9%) who underwent major surgery had mean hospital stay of 96.15±50.58 hours (range: 21-310 h).

Results of unilateral variance analytic test showed, difference between patients average hospital stay related to type of operation was significant ($p < 0.0005$ $F(173.2)=44.4$). Discharge order to credit clearance interval took 3.87±1.98 hours and in more than half of patients it was beyond four hours, (range: 0.5-21.16 h). The mean insurance proficient visit to credit clearance interval was 2.81±2.03 hours (range: 0-21.83 h). Admission to discharge interval was 51.32±43.05 hours in average (range: 3.7-310 h) which 14.07±17.45 hours belonged to before and 31.70±30.65 hours to after operation. Diagnostic and laboratory approaches before admission was in 27.9% complete, 37.5% incomplete and in 73.2% nothing had been done. 11.1% of patients were consulted before and 23.9% (82 patients) after admission. From those 73.2% had internal medicine, 4.9% cardiac and 22.1% other consultations. 38.8% of hospital stays were appropriate and 61.2% inappropriate.

Inappropriate hospital stay in 50.45% has been related to before operation and in 68.29% to after operation. Admission in 30.3% was emergency and the remaining were elective. There were no difference between two hospitals for

hospital stay days ($t=0.953$, $df=199$, $p=0.342$), discharge in holidays or nonholidays ($X^2=0.822$, $df=1$, $p=0.365$), operation to discharge interval ($t=0.182$, $df=164$, $p=0.856$), hospital stay appropriateness ($X^2=0.006$, $df=1$, $p=0.652$), but as regard insurance proficient visit to credit clearance intervals, ($t=3.291$, $df=170$, $p=0.001$) and discharge order to credit clearance intervals ($t=2.913$, $df=199$, $p=0.004$), in two hospitals we observed significant difference.

Appropriateness of hospital stay was not affected by type of insurance ($X^2=5.15$, $df=4$, $p=0.272$), season of admission ($X^2=1.70$, $df=3$, $p=0.635$), place of residency ($X^2=0.977$, $df=2$, $p=0.614$), distance from home to hospital ($t=0.186$, $df=197$, $p=0.852$), emergency or elective admission ($X^2=2.69$, $df=1$, $p=0.11$), medical illness history ($X^2=4.99$, $df=1$, $p=0.715$), and type of hospital ($X^2=0.006$, $df=1$, $p=0.652$). Inappropriateness of hospital stay did not have significant relation to age ($X^2=5.62$, $df=3$, $p=0.131$), type of hospital ($X^2=1.60$, $df=1$, $p=0.287$), type of insurance ($X^2=5.63$, $df=3$, $p=0.732$), season of admission ($X^2=1.83$, $df=3$, $p=0.609$), place of residency ($X^2=1.68$, $df=2$, $p=0.430$). However it had significant relation to type of admission (elective of emergency) ($X^2=40.95$, $df=1$, $p < 0.0005$), incomplete diagnostic approaches ($X^2=49.11$, $df=4$, $p < 0.0005$) and far distance from hospital to patient's home ($X^2=5.62$, $df=3$, $p=0.131$) (Table 2 & 3).

DISCUSSION

The usual policy to confidence gaining of reliability of measures is repetition and evalua-

Table-II: Factors related to appropriateness of hospital stay

Factor	OR	Confidence interval (95%)
Monitoring and nursing cares	4.94	1.1-24.8
Serum or I.V drugs infusion	1.21	1.13-1.31
Supervision or clinically control	1.82	1.05-3.16
Critical position	3.62	1.05-9.74

Table-III: Factors related to inappropriateness of hospital stay

Factor	OR	Confidence interval (95%)
Long distance from hospital to home	2.06	1.02-4.43
Discharge process hadn't been done by physician timely	4.18	2.57-13.20
Out patient preoperation preparation	2.91	1.53-5.28
Inadequate outpatient diagnostic approaches	1.56	1.10-2.99
Patient age	1.01	0.08-2.58
Urgent admission problems	1.047	1.007-1.088

tion of the proximity level of results obtained (precision) which is inter rater reliability considered in this study.

The most usual value used for agreement level between appropriateness and inappropriateness of hospital stay is KAPPA statistic. This study showed prevalence and reasons of hospital stay inappropriateness at Alzahra and Talegani hospitals during 2006-2007 and gave important information about utilization of modified AEP in Iran. Utilization of this protocol enabled us to know how much of hospital expenses are available. As per this study prevalence of inappropriate hospital stay in gynecological wards of Alzahra and Talegani hospitals was about 61.2%. According to previous studies the least statistical report was 17.6% in Spain and the most 54% in Czech.^{8,9}

The similar studies have reported inappropriate hospital stay in Italian hospitals (18.9%-37.3%), Switzerland 28%, Portugal 27.3%, England 45%, Denmark 32.1%, Turkey 21.3% and Germany 28%.^{1,10-16} Inappropriate and long hospitalization days in half of patients was before operation (50.4%) and in 68.29% after surgery.

The most important factors which caused long hospitalization before surgery were absence of outpatient preoperative bowel preparations (OR=2.91, CI=1.53-5.28), inadequate outpatient diagnostic approaches (laboratory and consultations) (OR=1.56, CI=1.10-2.99), and admission related problems (OR=1.01, CI=0.08-2.58). The most important factors which resulted in long hospital stay from surgery to discharge were long distance from hospital to patients' home (OR=4.18, CI=2.57) and delay in discharge by physician (OR=2.06, CI=1.02-4.43). Absent 30.3% of admissions were in emergency and 27.86% of all urgent admissions were inappro-

priate for hospital stay and the main reason was delay in discharge by surgeon.

In another study at four teaching hospitals in Italy the important reasons for inappropriate admission at medical wards, were long distance from hospital to patient's home, planned admissions and admission over a week.¹ In a Spanish study inappropriate days were associated with the weekend (OR=2.1), hospitalization more than one week (OR=2.3), and inappropriate admission (OR=2.1).⁸ In Germany three factors, unavailability of other care facilities, delay in discharge and delay in diagnosis and therapy were the important causes of inappropriate hospitalization days.¹⁷

In Swiss inappropriate hospital days were more frequent among patients whose admission was inappropriate (OR=5.3) and among patients above 80 years old (OR=3.6).¹¹ In comparison to European countries, inappropriate admission due to inappropriate indications in our hospitals is not an important cause (only 3%). In England study (2000), there was a significant difference in the number of elderly patients admissions in Christmas period to ordinary days 43% vs 34% (p=0.02) and days of hospitalization increased from 10% on ordinary days to 20% in Christmas period (p=0.02).¹⁸ In this study discharges on official holidays were 12.9% of which 53.84% of them were inappropriate for the hospitalization days, whereas from 87.1% of discharges at ordinary days, 62.28% were inappropriate, (p=0.410)

As regards this study total hospitalization for 402 patients was 2188.932 hours equivalent to 924.53 days. Inappropriate hospital stay in gynecologic wards was 61.2% during 2006-2007, which resulted in great expenditure to health care system. According to findings of this study,

we could reduce the hospitalization days as much as 2551.32 hours equivalent to 106.292 days, by giving preoperative bowel preparations at home and admission of elective and uncomplicated patients at least two hours before surgery, in 118 patients. Discharge was possible for 126 patients in the evening the day they were operated. Considering the six hours interval between operation and discharge, we could decrease 1671.66 hours equivalent to 69.64 days. More over at least one day earlier discharge was possible for 36 patients, if physicians had ordered on time and by this way we could have decreased at least 36 days of hospital stay. So, from 924.5 days of hospitalization in a year, at least 259.8 days are excess and available (28.10%) resulting in saving a minimum of US\$ 78,000 in costs.

SUGGESTIONS

1. Outpatient bowel preparation solutions be available at hospital's drugstore and be available for patients, who are candidate for elective surgery.
2. All patients are admitted after doing complete laboratory tests and medical and anesthetic and other needed consults.
3. Scheduling of admission for surgical wards be done by a trained secretary, thus patients can be admitted at hospital at least two hours before surgery.
4. Discharge process should be completed six hours after operation for uncomplicated minor surgeries.
5. Insurance proficient be accessible in hospital when needed.
6. Hospital laboratory should be able to give test results within shortest possible time for emergency patients and those from rural areas and townships. An internist should also be present at hospital all the time.

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