The Utilization of Hospital Resources:
A survey Study of Some Saudi Hospitals in Riyadh City

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Objectives: To assess the appropriateness of hospital resources utilization in Saudi Arabia, to determine whether utilization differs according to the type of ownership of hospitals (MOH, other governmental agencies and private sector) and to determine factors influence utilization of hospital resources.

Methods: The study employed a self-administered questionnaire to collect data from hospitals' staff (physicians, nurses and administrators) and was designed to collect data on variables relate to patients, physicians and hospitals which were thought to influence resources utilization. Descriptive statistics and analysis of variance (ANOVA) were used to determine the variables which may explain the differences among hospitals in the appropriateness of the resources utilization.

Results: The results showed that hospitals differ in their resources utilization according to their ownership. Regardless of the hospital ownership, a substantial percentage of respondents perceived that hospital resources were inappropriately utilized. However, respondents in private hospitals perceived that their hospital resources were more appropriately utilized compared to other health care sectors. The study identified a number of factors relate to patients, physicians and hospitals which have influenced hospital resources utilization.

Conclusion: The study highlighted the importance of a number of factors which influence the hospitals' resources utilization in Saudi Arabia. Understanding these factors by health decision makers is important to optimize the appropriateness of the hospitals' resources utilization. The study suggested a continuous utilization review of the hospitals resources regardless of the type of hospitals in order to enhance the appropriateness of the utilization of these resources. Further research, on a larger scale of hospitals in the Kingdom, is needed to examine the extent and the appropriateness of hospitals resources in the various regions of the Kingdom.

INTRODUCTION

Inappropriate utilization (overutilization or underutilization) of hospital resources is not a new phenomenon and has been an issue of concern to medical staff, administrators and policy makers worldwide. Hospital services are the most expensive components of modern health care systems (Panis, Gooskens et al., 2003). The utilization of hospital resources which does not result in any significant benefit for the patient, or which results in benefit which could have been obtained at a lower care level is considered 'inappropriate' (Eriksen, Kristiansen et al., 1999).

Hospital resources' utilization is increasing in most countries and the Kingdom of Saudi Arabia (KSA) is no exception. The Saudi Ministry of Health (MOH) annual statistics, for example, show that there were 2,346,186 admissions to all health care facilities in the Kingdom in 2004, of which 55.3% were in the MOH hospitals, 18.5% in other governmental hospitals and 26.2% were in the private sector's hospitals (MOH, 2004). The number of hospitalized patients rose from 2,088,006 in 2000 to 2,346,186 in 2004 (an increase of approximately 12%). Decision-makers indicate that health resources are limited and the expenditure on health care is high and still escalating.

Despite the long waiting list for admission in Saudi hospitals (Al-Omar, 1998), general hospitals in KSA have quite low occupancy rates, usually less than 63% level (MOH, 2002). Occupancy rate of 63% percent or less is only one aspect of resource misallocation. In fact, if inappropriate admissions or inappropriate discharges of patients are taken into account, the actual underutilization of the hospital resources in the Kingdom may be underestimated.

However, there is a general assumption in the literature that the growth in the cost and in the utilization of hospital resources is likely to be caused by unnecessary utilization of hospital resources. Such utilization is considered inappropriate and is known to include either overutilization or underutilization or both. Moreover, some studies have focused on identifying the extent and causes of overutilization of resources but have virtually ignored the concept of underutilization

(Backe, 2001). Whether there is overutilization or underutilization of hospital resources, appropriate interventions for managing the utilization of hospital resources are to be developed and the extent of factors associated with such utilization are needed to be determined.

Importance of the study

In Saudi Arabia, the problem of the 'inappropriate' utilization of hospital resources has not received a great deal of attention. Nearly all previous work was collected in small studies and has been done in a single health care sector (i.e. MOH hospitals). While such work is valuable, it has limited generalizability and do not provide information about other health care sectors such as the private and the "other government" health care sectors.

Research questions

1. This study addresses four basic questions:
2. What is the extent of inappropriate utilization (in terms of over- or under-utilization) of hospital resources in the Kingdom of Saudi Arabia?
3. Do hospitals in Saudi Arabia (i.e., MOH hospitals, other governmental hospitals and private hospitals) differ in the utilization of resources according to their type of ownership?
4. How do health care personnel (physicians, nurses and administrators) perceive the appropriateness of the utilization of hospital resources?
5. What are the factors most associated with inappropriate use of hospital resources?

LITERATURE REVIEW

Prevalence of inappropriate utilization of hospitals

Inappropriate utilization of hospital resources has been reported from many countries, irrespective of the prevailing health care system including the United States (Strumwasser, Paranjpe et al., 1990; Grimm and Gomez, 1998; Wickizer and Lessler, 2002), Canada (Lavis and Geoffrey, 1996), France (Alche-Gautier, Maiza et al., 2004), Australia (Dempsey, 2000), Netherlands (Panis, Gooskens et al., 2003), Switzerland (Kossovsky, Chopard et al., 2002), Norway (Backe, 2001), Turkey (Celik, Celik et al., 2001) and Nepal (Niraula, 1994), indicating that some of the hospital resources and services are not always used appropriately.

Thus, the prevalence of inappropriate utilization of hospital resource has been identified in a wide range of hospital settings, including both socialized and fee-for-service health care systems. This gives consistent evidence which confirms that a considerable proportion of the hospital resources are inappropriately utilized.

Studies investigating the appropriateness of hospital resources have looked at this issue in different departments within hospitals, such as acute medicine, surgery, orthopedics, neurology, gastroenterology, gynecology and geriatric departments (Mozes, Rosenblum et al., 1996). Other studies focused on this issue according to disease, such as pneumonia (Hartz, Bade et al., 1996) and stroke (Mayo, Wood-Dauphinee et al., 1997).

It is worth noting that most studies in the literature evaluate the appropriateness of hospitals utilization in terms of admission and the days spent in hospitals. One reason for the interest in inappropriate admissions has been the belief that they represent a potential for proportional cost reductions (Eriksen, Kristiansen et al., 1999; Epstein, Kaplan et al., 2001).

Utilization Management (UM) is a technique used to control costs by seeking to limit unnecessary care or to promote use of more cost-effective

services. UM includes a number of mechanisms including preadmission certification, concurrent and retrospective review, gatekeeping by primary care providers, case management for high service users and second opinion programs (Fried, Topping et al., 2000). Similarly, Utilization Review (UR) is a safeguard against unnecessary and inappropriate medical care (Spector, 2004). It allows health care providers to review patient care from perspectives of medical necessity, quality of care, appropriateness of decision-making, place of service and length of hospital stay (Spector, 2004).

UM and UR techniques were designed to influence the consumption of health care services, usually with the objective of promoting cost containment. Gatekeeping, utilization review and utilization management are based on the idea that reducing patient access to specialists and specialized services reduces the opportunity for further medical resource use and may protect patients from overtreatment (Kerr, Hays et al., 1999). These mechanisms share the common general purpose of promoting health care cost containment, although they vary in their operational characteristics (Wickizer and Lessler, 2002).

Other studies targeting the inappropriate utilization of hospital resources have used the Appropriateness Evaluation Protocol (AEP), a set of standardized criteria in order to assess inappropriate hospital use by adults, developed by Boston university researchers (Gertman and Restuccia, 1981) to identify unnecessary hospitalization and hospital stays. The protocol consists of twenty-seven criteria related to medical services, nursing or life support services and patient condition factors. If any of these criteria is met for the day under review, the day is considered 'appropriate', and if none is met, the day is considered 'inappropriate' (Celik, Celik et al., 2001).

Factors associated with inappropriate utilization

Many studies attempt to identify the factors associated with inappropriate utilization of hospital resources, in an effort to explain the phenomenon. The following section highlights some of these factors which were identified by several studies in the medical literature.

Patient factors

Patient-related factors include patient demographic, social, financial, functional and clinical factors, residence before admission and discharge destination. In the literature, clinical factors were found the most significant factors responsible for inappropriate utilization. For example, the results of one study (DeCoster and Roos, 1997) suggests common characteristics of patients whom their admissions were considered inappropriate. In that study, DeCoster and Roos reported that patients who stayed in hospital longer than 4 weeks (5% of patients) consumed 36% of the days in the study, about 75% of which were deemed inappropriate. The patient's diagnosis is another relevant characteristic: patients with nervous system, circulatory, digestive and respiratory diagnoses accounted for 60% of the admissions and 59% of the days in the study.

Socio-demographic characteristics of patients have been found influence the hospital resources utilization. For example, some authors identified that elderly people made up an increasing proportion of acute admissions and use of health services (Wolinsky, Miller et al., 1983; Fernandez-Olano, Hidalgo et al., 2005). Other authors found that gender (Anson, Carmel et al., 1991), marital status and spatial factors (Walker, 1976) and the availability of insurance (Cheng and Chiang, 1998; Harmon and Nolan, 2001) influence the use of health facilities. In general, the increasing number and proportion of elderly in the community has been found by most studies to be an important explanation for the heavy use of hospital resources and facilities.

(DeCoster and Roos, 1997) indicated that people living in neighborhoods with low socioeconomic status have poorer health, higher rates of admission to hospital and many more days of stay in hospital than those living in areas with higher socio-economic status. Despite evidence of their poorer health status, it has been suggested that low-income residents may overuse acute care hospitals and may be admitted for social reasons more often than for acute illness. According to DeCoster and Roos's study, as in other studies, there was a larger number of admissions and days of stay for patients in the lower income quintiles than for patients in the higher income quintiles. Moreover, other studies (Payne,

1987) reported that patient's family contributes to unnecessary utilization by pressuring the physician to admit or by delaying discharge. However, in some studies, patient characteristics such as age, sex and payer were not found to be significantly related to inappropriate utilization (Celik et al., 2001; DeCoster and Roos, 1997).

Physicians and hospital-related factors

Previous research report that physicians are a part of the inappropriate use of facilities and resources. Analysis of the factors underling inappropriate utilization in several AEP studies indicates that approximately three-fourths of the inappropriate days identified are the responsibility of the physician or hospital. The most common reasons for inappropriate admissions and inappropriate days relate to admitting and discharge practices under the control of the physician and/or the hospital (Payne, 1987).

A large number of studies have conclusively found that having more available hospital beds will increase the utilization of these beds**.** This association between supply and utilization (known as Roemer's Law) has been found in a large number of studies based in a variety of regions in a number of countries and the association has been found consistently using either adults or children as the study population (Evans, 1984). Inappropriate utilization of hospital beds has been found related to a number of factors. A critical appraisal of the literature (NZHTA, 1998) identified that factors such as dementia, or confusion, immobility, increasing age and living alone are examples of factors identified in a number of studies. However, most studies have examined these factors in isolation and not adjusted for confounding between them.

Factors related to the broader institutional setting, such as the form of organization or reimbursement and the proportion of physicians in the local area practicing in organized setting have been linked with variation in rates of hospital admission in a number of studies (Payne, 1987; Restuccia, Shwartz et al., 1996; Eriksen, Kristiansen et al., 1999). In these studies authors argue that their findings suggest possible differences in inappropriate utilization, but without further study they do not provide

definite evidence of a relationship between institutional setting and inappropriate utilization.

In fact, results regarding factors related to inappropriate utilization of hospital resources (overutilization and/or underutilization) were inconsistent across studies in the literature and comparisons can not be made because of different study designs, settings and populations. The study conducted by (Dempsey, 2000) indicated that any investigation of appropriateness of resources should be conducted within context of the health care system.

This study differs from those studies found in the literature in many ways. First, this study was conducted in three health care sectors in Saudi Arabia, thus providing data from different health care sectors with different levels of health resource utilization. Second, this study examines the influence of numerous factors on the appropriateness of hospital resource utilization. Finally, the study was conducted in the Saudi Arabian health care system which differs from those health care systems found in the literature. It is anticipated that this study will fill some of the gaps in the literature and may provide distinguished findings about the utilization of health resources in Saudi Arabian hospitals.

METHODS

Study sample and population

This study employed a self-administered questionnaire. It was carried out in five hospitals in Riyadh City. The study population comprised physicians, nurses and administrative staff who work in these hospitals during November 2005. In order to obtain a more representative sample, three MOH hospitals, three private hospitals and one military hospital were chosen randomly.

A stratified random sampling procedure was used in order to collect data from respondents of these hospitals. 700 questionnaires were distributed (100 questionnaires to each hospital), of which 572 (88%) were returned and 522 (80%) questionnaires were valid for analysis.

The questionnaire

The developed questionnaire was divided into three sections with a total of 21 items about respondents' perception on a number of items. Section I included statements on patient-related factors (5 items). Section II consisted of statements on physician-related factors (6 items). Section III consisted of statements regarding respondents' perception towards some hospital-related factors (10 items).

A 5-point Likert scale (very underutilized = -2, underutilized = -1, appropriate = 0, overutilized = 1 and very overutilized = 2) was used for questions seeking the extent of perception of the respondents about various aspects which may cause inappropriate utilization of the hospital resources. The range (maximum value – minimum value) was calculated and was found 4 (i.e. (2-(-2)); this range was then divided by the number of cells in the scale (5 cells) in order to find the cell's length (it was found 0.8). Such scoring system will give perception mean score ranging from –2.00 to 1.20 as follows (–2.00 to –1.20 = very underutilized, from –1.21 to –0.40 = underutilized, from –0.41 to 0.40 = appropriate utilization, from 0.41 to 1.20 = overutilized and from 1.21 to 2.00 = very overutilized (Al-Omar, 2004). Since there is no completely valid 'mean scoring system' about people's perception (Al-Qatari and Haran, 1999), the researchers of the present study used such scoring system, at least, to

provide a measure for comparisons between respondents about a number of aspects in the study.

Descriptive statistics and analysis of variance (ANOVA) were used to determine the variables which may explain the differences among hospitals in the appropriateness of the resources utilization.

A number of steps were taken to increase the content validity of the questionnaire. Firstly, a review of the relevant literature was carried out in order to select the variables. Secondly, two specialists in hospital administration reviewed the questionnaire and their suggestions were taken into consideration. Finally, a pilot study of 30 respondents (10 physicians, 10 nurses and 10 administrative staff) was conducted. On the basis of the outcome of the pilot study, a few questions were modified and/or added. The responses of the pilot study were not included in the main survey. The questionnaire's reliability was measured using the coefficient alpha; it was found to be 80.6%.

The covering letter of the questionnaire outlined the title and the purpose of the study and the identity of the researchers. Patients were informed about the importance of the study and were encouraged to participate. All participants were informed on the issue of anonymity and no identifying information was included on the questionnaire. The data of this study were collected by a group of postgraduate students and were analyzed in a descriptive fashion using the Statistical Package for Social Sciences (SPSS).

Definition of inappropriate utilization

In the literature, there is no standard definition of "inappropriate" utilization of hospital resources. Accordingly, in this study, authors defined the inappropriate utilization in terms of either overutilization or underutilization. *Overutilization* is the care or the use of hospital resources which is of no benefit to the patient (such as staying more days after the patient has recovered enough to go home) or care which could be provided in a lower-level, less costly setting (such as in primary health care centers or outpatient clinics). On the other hand, the *underutilization* is care or the use of hospital resources which is not sufficient in type,

length, location, or intensity to meet the patient's medical need (Payne, 1987).

The literature indicates that underutilization would occur when a patient who still needs inpatient-level care is discharged or when a patient whose health status warrants treatment in an inpatient setting has a surgical procedure in an outpatient setting (Payne, 1987). Both underutilization and overutilization have implications for the cost and quality of care. Overutilization has a clear impact on health care costs: unnecessary use of the hospital instead of less expensive alternatives, such as outpatient clinics or primary health care clinics. Overutilization has important quality-of-care implications, too, since it increases the chance of hospital-acquired infections, treatment-induced side effects, or other unintended consequences of hospital care such as excessive blood tests resulting in blood loss (Mills, 1978; Payne, 1987).

RESULTS

Socio-demographic variables of respondents indicate that respondents were between 20 and 67 years old with a mean age of 35 years and 9 years of standard deviation. Their experience ranged between one year and 35 years with a mean of 9 years and 6.5 years of standard deviation. Physicians, nurses and administrators comprised the total study sample of this study (35.2%, 40.6% and 24.1% respectively). More than half (57.5%) of respondents were females and the vast majority of them were non-Saudis (69.7%).

Table 1 shows the general responses towards the appropriateness of the hospital resources utilization in all hospitals included in the study. While the majority of respondents in the MOH hospitals indicated that hospital resources are appropriately utilized, the largest proportion of respondents (approximately 65%) in the private sector indicated that hospitals were inappropriately utilized. Respondents in military hospitals were split in their perception regarding the appropriateness and inappropriateness of their hospital resources utilization. In all three health care sectors, the general response rate indicates that just above half (51.3%) of the respondents perceive that hospital resources are inappropriately utilized.

Table 1. Appropriateness of the hospital resources as perceived by respondents according to the type of the hospital

Sector (ownership)	Appropriate utilization	Inappropriate utilization
MOH	60.4%	39.6%
Private	35.1%	64.9%
Military	50%	50%
All	**48.7%**	**51.3%**

The general mean scores of the respondents' perception in each health sector and the results of ANOVA are included in **Table 2**. The table indicates that the private sector's respondents had a higher mean score (0.546) than respondents in either MOH (0.056) or military (0.328) health care sectors. Yet, the difference in respondents' perception towards

the appropriateness of hospital resources utilization between private and MOH hospitals was statistically significant (F=8.358 and P<0.001).

Table 2. General mean scores of the respondents' perception according to the type of the hospital (ANOVA test)

Sector (type)	**Mean**	**S.D.**	**F**	**P-value**
1) MOH	0.056	0.79	8.358	<0.001
2) Private	0.546	0.89		
3) Military	0.328	0.91		

Table 3 shows that respondents in MOH and private hospitals believe that "satisfying patient's request" is a cause of overutilization of hospital resources. This belief is significantly higher than that of the military hospital respondents (F=3.774 and P<0.05). Respondents in private and military hospitals think that "inability of patient's family to care of the patient" is a cause of overutilization of hospital resources. Such belief is significantly higher than that of the MOH respondents (F=10.326 and P<0.001). Similarly, respondents in private and military hospitals tend to believe that both "incorporation of patients" and "patients' refusal of discharge" are causes of overutilization of hospital resources. Such beliefs are significantly higher than that of the MOH respondents (F=9.827 and P<0.001) and (F=11.745 and P<0.001) respectively. Respondents in the private hospitals think that the "relationships between patients and hospital staff" causes an overutilization of their hospitals' resources compared to MOH and military hospitals' staff (F=9.244 and p<0.001).

Table 3. ANOVA results of respondents' perception towards patient-related items according to the type of hospitals

Factor	Sector (ownership)	Mean	S.D.	F	P-value
Satisfying patient's request	1) MOH 2) Private 3) Military	0.481 0.763 0.276	1.026 1.018 1.361	3.774	0.024
Inability of patient's family to take care of the patient	1) MOH 2) Private 3) Military	0.189 0.949 0.448	1.266 1.084 1.259	10.326	0.000
Patients are uncooperative.	1) MOH 2) Private 3) Military	0.453 1.062 1.017	1.122 1.008 1.034	9.827	0.000
Patients refuse discharge.	1) MOH 2) Private 3) Military	0.302 0.931 1.010	1.079 1.177 1.074	11.745	0.000
Relationships between patients & hospital staff	1) MOH 2) Private 3) Military	0.189 0.814 0.138	1.131 1.158 1.263	9.244	0.000

Table 4 shows that respondents in private and military hospitals believe that physicians' unwillingness to change practice is a cause of underutilization of hospital resources. This belief is significantly higher than that of the MOH respondents ($F=8.056$ and $P<0.001$). Respondents in the private sector think that "insufficient or absence of medical training" causes an overutilization of their hospitals' resources compared to MOH and military hospitals' staff ($F=17.907$ and $P<0.001$). Though private and military staff think that "insufficient or absence of non-medical training" causes an overutilization of hospital resources more significantly than their counterparts in the MOH, results of ANOVA show that such belief is higher among the private hospital staff than the case in the military hospitals ($F=23.503$ and $P<0.001$). "Conducting more investigations and research" was found to be a cause of overutilization in both private and military hospitals; such results were significantly higher than the case in the MOH ($F=8.222$ and $P<0.001$). Moreover, the results reported here indicate that respondents in the private hospitals think that the "absence of physician autonomy in decision making" causes an

underutilization of their hospitals' resources. Such belief is significantly higher than the situation in both MOH and military staff (F=5.398 and P<0.001). Yet, results show that all respondents in the three sectors think that "little physician-experience" is neither causing overutilization nor underutilization of the hospital resources.

Table 5 shows that although respondents in private and military hospitals tend to believe that the "length of discharge procedures" is a cause of overutilization of the hospital resources more significantly than their counterparts in the MOH, results of ANOVA show that such belief is higher among the private hospitals' staff than the case in the military hospitals (F=8.702 and P<0.001). Similarly, respondents in private and military hospitals tend to believe that "dealing with follow-up patients as new patients" causes overutilization. However, the difference in this belief is only significant between private and MOH respondents (F=6.142 and P<0.01).

Though respondents in private and military hospitals think that aspects such as the "absence of solid health information", "absence of clinical guidelines" and "poor medical record system" cause an overutilization of hospital resources more significantly than their counterparts in the MOH, results of ANOVA show that such beliefs is higher among the military hospital's staff than the case in the private hospitals (see **Table 5** for ANOVA results). Moreover, though respondents in private and military hospitals believe that "frequent technical errors" cause overutilization of hospital resources more significantly than their counterparts in the MOH, results of ANOVA show that such beliefs is higher among the private hospitals' staff than the case in the military hospitals (F=19.121 and P<0.001).

While respondents in both MOH and private hospitals tend to believe that "absence of contracting with health insurance companies" and "depending only on clinical examinations" were neither cause overutilizaion nor underutilization, respondents in military hospital significantly believe that these two aspects cause underutilization of their hospitals' resources (see **Table 5** for ANOVA results). "Absence of quality management department" was thought to cause an overutilization

of hospital resources by the military hospital's staff. The difference among the three hospitals in this respect was statistically significant (F=8.358 and P<0.001). Yet, results show that all respondents in the three sectors think that "disability of utilization review committee to perform its roles" is neither a cause of underutilization nor underutilization of the hospital resources.

Table 4. ANOVA results of respondents' perception towards physician-related items according to the type of hospitals

Factor	Sector (ownership)	Mean	SD	F	P-value
Little physician experience	1) MOH 2) Private 3) Military	-0.132 -0.124 -0.259	1.043 1.423 1.562	0.222	0.801
Absence of physician autonomy in decision making.	1) MOH 2) Private 3) Military	-0.160 -0.680 -0.172	1.147 1.311 1.216	5.398	0.005
Physician is unwilling to change practice.	1) MOH 2) Private 3) Military	-0.028 -0.557 -0.724	1.000 1.361 1.225	8.056	0.000
Insufficient or absence of medical training.	1) MOH 2) Private 3) Military	0.038 0.959 0.103	1.218 1.117 1.180	17.907	0.000
Insufficient or absence of non-medical training.	1) MOH 2) Private 3) Military	0.019 1.144 0.569	1.265 1.051 1.171	23.503	0.000
To conduct more investigations or researches.	1) MOH 2) Private 3) Military	0.208 0.814 0.569	0.943 1.139 1.171	8.222	0.000

Table 5. ANOVA results of respondents' perception towards hospital-related items according ownership of hospitals

Factor	Sector	Mean	S.D.	F	P-value
Lengthy procedure of discharge	1) MOH 2) Private 3) Military	0.311 0.938 0.448	0.989 1.179 1.157	8.702	0.000
Follow up patients are normally treated the same as new patients in terms of diagnosis or prognosis	1) MOH 2) Private 3) Military	0.198 0.753 0.448	0.950 1.208 1.273	6.142	0.002
Absence of solid health information system.	1) MOH 2) Private 3) Military	-0.160 0.412 0.621	1.367 1.456 1.105	7.757	0.001
Absence of clinical guidelines.	1) MOH 2) Private 3) Military	-0.019 0.979 1.052	1.171 1.099 1.033	26.691	0.000
Poor medical record system.	1) MOH 2) Private 3) Military	-0.094 0.412 0.431	1.151 1.427 1.126	5.272	0.006
Frequent technical errors	1) MOH 2) Private 3) Military	-0.070 0.887 0.483	1.071 1.088 1.173	19.121	0.000
Absence of quality management department.	1) MOH 2) Private 3) Military	-0.302 -0.258 0.466	1.062 1.364 1.273	8.358	0.000
Absence of contracting with health insurance companies.	1) MOH 2) Private 3) Military	-0.350 -0.206 -0.655	1.351 1.486 1.018	3.261	0.029
Depending only on clinical examinations without documentation.	1) MOH 2) Private 3) Military	-0.283 -0.247 -0.931	0.974 1.414 0.989	7.434	0.001
Disability of utilization review committee to perform its roles.	1) MOH 2) Private 3) Military	-0.547 -0.722 -0.793	1.015 1.231 1.151	1.071	0.344

DISCUSSION

The prevalence of inappropriate utilization

The results of this study show that regardless of the hospital type (or ownership), a substantial percentage of respondents perceive that hospital resources are inappropriately utilized. In fact, more than half of respondents in the three health care sectors indicate that the utilization of hospital resources is inappropriate. However, these results were based on the assessment of some of the health staff and it could be argued that the rate of inappropriate utilization of hospital resources would have been different if it had been based on the patients' own assessments. The justification for our approach was that inappropriate utilization is the results of decisions made by health care providers. Accordingly, these assessments are relevant measures in investigations aiming to study the utilization of hospital resources. In the Kingdom of Saudi Arabia, a major national health policy objective is to improve the efficiency of hospital utilization.

The prevalence of overutilization and/or underutilization of hospital resources reported in previous studies is inconsistent and have produced a wide variation in their estimates of the percentage of such utilization. While some studies estimate the percentage of inappropriate utilization at about 7%, other studies (DeCoster and Roos, 1997) report the percentage of inappropriate to be estimated at 51% of the admissions and 67% of the days of stay for adults with medical conditions. Comparing the results reported here with international studies is difficult due differences in health care systems, differences in study designs and the absences of a clear-cut of definition of what constitutes 'inappropriate' utilization of hospital resources. Despite these differences, one consistent finding from these studies is the existence of a substantial amount of inappropriate utilization. The results emerged from the present study are towards the high end.

In this study, the fact that respondents in the private hospitals had a significant higher mean score regarding their perception about the utilization of hospital resources than respondents in the MOH hospitals is probably not surprising. Private hospitals depend, mostly, on fee-for-

service for their survival and accordingly they utilize the hospital resources more than other types of hospitals in order to maximize financial earnings. Moreover, it is possible that since resources are limited in such types of hospitals, decision makers in these hospitals invest more on these resources. Finally, since private hospitals are in direct competition with their counterparts in the public sector, it is possible that the quality and the speed in providing services encourage the general public to use them. Previous research indicates that hospital type such as ownership and teaching status may influence the utilization of hospital resources (Payne, 1987). In fact, MOH annual reports indicate that there is an increase in the use of private health resources. For example, the number of visits to the private sector rose by approximately 23% between 2000 and 2004 while the number of visits to the MOH facilities rose by less than 10% during the same period (MOH, 2002).

Factors associated with inappropriate utilization

Among patient-related factors, respondents reported that satisfying patient's demand, inability of patients' families to care for their patients, staff-patient relationship and un-cooperation of patients were the most important factors causing overutilization of private hospital resources. These results are in line with previous research which reported that the patient or the patient's family can contribute to unnecessary utilization by pressuring the physician to admit or by delaying discharge. In addition, although not examined in this study, patient characteristics such as lack of family support, age and lack of a health post-discharge influence inappropriate hospital utilization (Payne, 1987). Other studies, however, indicate that the patient and the patient's family are relatively insignificant contributors to inappropriate utilization (Restuccia et al., 1996). In these studies authors examined inappropriate days and concluded that a maximum of only four percent of the inappropriate days were attributed to the patient or his/her family.

With regards to physician-related factors, the results reported here tend to support previous studies in highlighting the importance of physician-related factors in the utilization of hospital resources. In this study, respondents of the three health care sectors identified physician's experiences, training, the way he or she is practicing his or her profession and the absence of physician autonomy in decision making as the most

influential factors in the hospital resources utilization. These findings are consistent with other studies (Payne, 1987) which reported that a significant percentage of the inappropriate days of care were attributed to the physicians working in hospitals**.**

Previous research carried out in Saudi Arabia reported similar findings (Umeh, 1996; Abd El-Bagi, Al-Damegh et al., 1999; Abd El-Bagi and Al-Kuhaimi, 1999) which suggest that there is an excessive use of hospital resources. The literature indicates that the overutilization of hospital resources may be attributed to the fact that the training of doctors influence the way physicians utilize hospital resource. Other doctors may sometimes practice defensive medicine where they order investigations (e.g. lab tests and x-rays, more procedures) to protect themselves in case of law suits or to satisfy the patient (Bener, Sankaran-Kutty et al., 1998).

Characteristics of the hospital are among the factor most consistently associated with inappropriate hospital resources utilization. Respondents in this study reported that frequent technical errors, absence of guidelines and procedures, poor health computing systems and the absence of quality management department were among the important factors influencing the utilization of hospital resources. These findings are in line with previous research. For example, (Panis, Gooskens et al., 2003) reported that 20% of the hospital stay was inappropriate and that 45.1% of this inappropriate stay was due to internal hospital procedures, such as delay in discharge or delay in therapy and diagnostics. In fact, it has been reported that, unlike public hospitals, private hospitals in the Kingdom provide outstanding services and some patients prefer to utilize such services. For example, one study (Umeh, 1994) comments on the quality of health services and reports that the private sector in Saudi Arabia provides hotel-like accommodation and amenities and extra ancillary and diagnostic services to attract patients use their services.

Our results indicate some significant differences among hospitals according to their type or ownership. These findings support previous research. For example, in their study, (Epstein, Kaplan et al., 2001) indicated that characteristics such as ownership of the hospital (e.g., public or private), teaching status (e.g. university or community) and bed

supply were found influence the utilization of hospital resources. Although not examined in our study, research indicates that hospital size or number of beds, length of stay, internal and external systems' policies, processes and resources were found significantly related to inappropriate utilization of hospital resources. For instance, some studies (Harris, 1975; Payne, 1987; Kiran and Vijaya, 2003) reported that having more available hospital beds will increase the utilization of these beds.

In Saudi Arabia, the government spends a significant proportion of its national budget on health care services. In 2003, approximately 6.5% of the government's budget was allocated to the MOH alone. This percentage is even higher when taking into account the money allocated to the "other" governmental agencies and the financial support and free-interest loans provided to the private sector. Planners of health care express widespread concern that costs and demand on services may reflect an inappropriate use of hospital facilities. In order to contain these costs, the Saudi government in its Five-Year Development Plans aims to improve the efficiency of the health care services by reducing the costs of these services and by proposing different financing schemes. In fact the proposed health insurance scheme and the debate about the privatization of health sector in the Kingdom are among the available options to contain the rising health care costs.

CONCLUSION AND RECOMMENDATIONS

While several studies in different countries have described the problem of inappropriate utilization of hospital facilities, no previous studies in the Kingdom of Saudi Arabia appear to have discussed this issue other than the present one. The findings of this study show that there is inappropriate of hospitals in all three health care sectors (MOH, military and private). Such use may be tracked down by understanding the factors associated with such utilization. If overutilization or underutilization continues in this vein, it will markedly increase the burden on these hospitals and adversely affect the delivery of health services to the Saudi population.

Based on the results of this study, the prime target for intervention should be the patients (or their families), physicists and hospital organization (e.g. admission and discharge procedures). Probably educating patients or their families about the disadvantages of overutilization of hospital resources may help in rationalizing the utilization of such resources. Interventions to reduce inappropriate utilization at the provider or organizational level may include monitoring the appropriateness of the admission and readiness for discharge and establishing guidelines for inpatient admissions. Providing physicians with continuous reports about the utilization rates may help to minimize unnecessary utilization of the hospital resources.

Any approach in reducing inappropriate utilization of hospital resources must depend upon having some objective criteria. Therefore, it could be argued that the available strategy for minimizing inappropriate use of hospital resources would be an effective application of the Utilization Management (UM) techniques reported in the medical literature (Payne, 1987; Strumwasser, Paranjpe et al., 1990). These techniques have been found valid and reliable in evaluating the utilization of hospital resources. Each technique consists of sets of objective criteria for judging the medical necessity of hospital utilization and is based on the severity of illness of the patient and the level of service provided. The techniques differ from each other in their organization and in the number and content of the criteria included, but the goal is to encourage

appropriate utilization of hospital resources while reducing unnecessary utilization.

It should be noted that although UM is largely aimed at overutilization of services, it is important to consider underutilization because this is one measure of unmet need. UM approach, if implemented, should take into account differences in hospital settings in the Saudi context. Without acknowledging differences among health care system it might be impossible to address this issue. Finally, until efforts to reduce inappropriate utilization of hospital resources are made, inappropriate use of such resources may continue and not much can be done to utilize the health resource appropriately.

Limitations and further research

Despite the important issues highlighted by this study, there are several limitations that must be considered. First, the findings reported here may be influenced by the study design and the available data. Nevertheless, it is believed that the results provide a valuable insight into some of the factors which appear to influence the utilization of hospital resources in Saudi Arabia. The second limitation concerns the definition of what constitutes ‘’overutilization’ or/and ‘underutilization’. Respondents reporting on the degree of ‘overutilization or underutilization’ was not based on any objective standards, but was based on the judgment of the respondents. However, no valid or reliable criteria have ever been set up to define these terms. In the absence of a clear-cut definition, and in order to obtain an estimate of the prevalence of the problem for this preliminary study, the judgment was left to the respondents.

The results in this study are based on information provided by health personnel and are subject to the usual problems of bias associated with the accuracy of recalling and reporting on health care events. Finally, due to financial and time resources, this study took place in a limited number of hospitals in Riyadh City. Accordingly, the study does not claim to be comprehensive and the results may have limited applicability. Thus, further investigation, perhaps of a large number of

hospitals, might elicit a greater volume of information concerning the utilization of hospital resources in the Kingdom.

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استخدام موارد المستشفيات:
دراسة ميدانية على بعض المستشفيات السعودية في مدينة الرياض

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الأهداف: تحديد مدى حسن استخدام موارد المستشفيات في المملكة العربية السعودية، تحديد ما إذا كان هذا الاستخدام يختلف تبعا لنوع ملكية المستشفى (وزارة الصحة، جهات حكومية أخرى، قطاع خاص) وتحديد العوامل المؤثرة في استخدام موارد المستشفيات.

الطريقة: استخدمت الدراسة الاستبانة لجمع البيانات من موظفي المستشفيات (الأطباء، هيئة التمريض، المدراء) وتم تصميمها لجمع بيانات عن بعض المتغيرات (ذات العلاقة بالمرضى، الأطباء، والمستشفيات) التي يمكن أن تؤثر في استخدام الموارد. تم استخدام الإحصاء الوصفي وتحليل التباين لتحديد المتغيرات التي يمكن أن تُظهر بعض الفرق بين المستشفيات في مدى صحة استخدام الموارد.

النتائج: أظهرت النتائج أن هناك اختلافا بين المستشفيات في استخدام الموارد حسب نوع ملكية المستشفى، و بغض النظر عن نوع ملكية المستشفى، فإن هناك نسبة مرتفعة من الليين الذين يعتقدون أن موارد المستشفيات تستخدم بطريقة غير صحيحة. يعتقد الليون في المستشفيات الخاصة أن موارد مستشفياتم يتم استخدامها بطريقة صحيحة وذلك مقارنة مع القطاعات الصحية الأخرى. أوضحت الدراسة بعضا من العوامل ذات العلاقة بالمرضى، الأطباء، والمستشفيات التي تؤثر في استخدام موارد المستشفيات.

الخاتمة: تبين الدراسة أهمية بعض العوامل التي تؤثر في استخدام موارد المستشفيات في المملكة. إن التعرف على هذه العوامل من جانب متخذي القرار هو أمر في غاية الأهمية و ذلك من اجل تحسين استخدام موارد المستشفيات. تقترح الدراسة عمل مراجعة دورية لاستخدام موارد المستشفيات بغض النظر عن نوع ملكيتها، وذلك من اجل الرقي بحسن استخدام هذه الموارد. تقترح الدراسة إجراء مزيدا من الدراسات المماثلة على نطاق أوسع وذلك لاختبار مدى صحة استخدام موارد المستشفيات في مختلف المناطق بالمملكة العربية السعودية.