

# Awareness of Surgeons in Saudi Arabia About the Surgical Costs and Investigations: Multicenter Study

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**OBJECTIVE:** To investigate the level of knowledge and awareness of the cost of the currently used blood investigations, imaging studies, admission cost, and surgical instrument among surgeons in Saudi Arabia.

**DESIGN:** It was a cross-section study conducted in Riyadh city, the capital of Saudi Arabia.

**SETTING:** Multihealth centers including main University hospital, Military hospitals, and Ministry of health hospitals. All surgeons in the health facilities were invited to participate in the study. A questionnaire has been formulated, and distributed to all participants. It was composed of 3 sections such as: demographic data, awareness about the cost, and physicians' perception about the cost and the attitude of their institution toward cost practice.

**RESULT:** Totally, 296 participants were enrolled in the study. More than half of the respondents were females (53.3%). Nearly two-thirds were in the young age group (30-40 years), 41.2% were residents. Only 4.4%, 3.4%, 8.4%, and 3.7% of the surgeons were fully aware of the cost of blood investigations, imaging studies, surgical instruments/prosthesis, and the medication that they prescribe, respectively. Most of them mentioned that their institute neither encourages them to consider a cost-effective practice (86.9%) nor monitor how cost effective is their practice (86.2%).

**CONCLUSION:** Surgeon's knowledge and awareness about the cost of different medical procedures were insufficient. Surgeons' knowledge and attitudes about costs of care can be improved through the use of audit and feedback with patient cost and charge data, which could be attained through the inclusion of audit and feedback as part of a curriculum teaching. (J Surg Ed ■■■■-■■■. © 2016

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**KEY WORDS:** surgeons, cost knowledge, awareness, cost-effective practice, Saudi Arabia

**COMPETENCIES:** Medical-Knowledge, System-Based Practice

## INTRODUCTION

Physicians play an important role in strategies to control health care spending. Being aware of the cost of prescriptions is surely the first step to incorporating cost-consciousness into medical practice.<sup>1</sup>

Getting more tests does not equate to better care. In addition to being potentially harmful, overordering tests contribute to escalating health care costs. It is not just about providing safe and high-quality care, but also being cost-effective, so the system can be sustained. Yet, most physicians do not know the cost of the tests they order, and may not fully consider the effects of overtesting on both patients and the health care system.<sup>2</sup>

When it comes to surgical practice, a lot of variation of choices regarding treatment methods would lead to a variation of the cost, starting from diagnostic tools including, blood investigations, imaging studies, till the admission type, and surgical techniques, that is, including instruments, prosthesis, and finally using the medications.<sup>3</sup>

Cost awareness is essential to both microallocation and macroallocation decisions and to the operational function of the gatekeeper practitioner. Although assessing the efficacy of diagnostic tests is a significant part of medical training, a number of studies from the United states and Europe have shown that physicians frequently have poor knowledge of the costs of these resources.<sup>4,5</sup> Allan and Lexchin<sup>5</sup> in a 2008 meta-analysis found that only 33% of cost estimates made by

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**TABLE 1.** General Characteristics of the Study Sample

	Frequency (%)
Age group	
≤30-40 years	202 (68.2%)
41-50 years	22 (7.4%)
51-60 years	54 (18.2%)
More than 60 years	18 (6.1%)
Total	296 (100%)
Sex	
Male	138 (46.62%)
Female	158 (53.37%)
Total	296 (100%)
Position	
Resident	122 (41.21%)
Registrar/fellow	88 (29.72%)
Consultant	86 (29.05%)
Total	296 (100%)

physicians were within  $\pm 25\%$  of the true cost and that underestimates were most common.

No cost awareness studies have been undertaken in our region particularly on the surgical team. The current study investigated the surgeons' knowledge and awareness about the cost of different surgical instruments, diagnostic tools and admission cost, the role of their institute, and the most important factors that might increase their awareness.

## MATERIALS AND METHODS

A cross-section study was conducted in Riyadh city, the capital of Saudi Arabia at multihealth centers, during the period February through April 2016; where surgeons from different specialists were invited to participate in the study. The health facilities included Prince Sultan Medical City, King Khalid University Hospital, King Fahad Medical City, King Faisal Specialist Hospital and Research Center, and King Abdulaziz Medical City.

A questionnaire was developed to collect the data, it was distributed to the participants in person (200 questionnaires) and through monkey survey. It comprised 3 sections and they are as follows: (1) Sociodemographic data; age, sex, professional position, and specialty. (2) Awareness regarding the cost of the currently used procedures; the cost of the blood investigation, imaging studies (x-ray, computed tomography, and ultrasound), medication, surgical instruments, and admission cost. Responses were categorized into yes aware about all of them, yes aware about some of them, and not aware at all. (3) Physicians' perception about cost-effective practice, the attitude of their institution toward this practice. This section was composed of 4 questions and their responses were yes or no. The last question was concerned with the factors that might increase their awareness regarding using cost-effective procedures.

A pilot study was conducted over 15 participants for testing the questionnaire, Cronbach's  $\alpha$  was calculated for testing its reliability, where it was 0.67.

The SPSS statistical software was used to analyze data, data expressed in the form of absolute numbers and percentage, chi-square testing was used for detecting a significant difference between different variables.

## RESULTS

Our final sample comprised 296 surgeons. Of 200 questionnaires distributed in person, 158 were returned and were complete, the remaining number (138) was collected from the monkey survey. The highest percentage of participants was the general surgeons (18.6%), followed by ophthalmologists (17.9%), then maxilla-facial surgeons (13.9%), and orthopedic surgeons (12.5%). The least participants were cardiac and neurosurgeons (3.7% and 3.4%). Nearly two-thirds of the participants (68.48%) were in the young age group (<30-40 years), the lowest percentage was for the participants aged more than 60 years (6.1%). More than half were females (53.3%), residents comprised 41.2% of our sample whereas consultants were 29% (Table 1).

Table 2 illustrates the level of participants' awareness regarding the cost of different factors related to surgical procedures. It appeared that only 4.4% and 3.4% were fully aware of the cost of blood investigations and imaging studies (x-ray, computed tomography, magnetic resonance imaging, and ultrasound) that are usually requesting, respectively.

**TABLE 2.** Awareness Regarding the Cost of Different Variables

Level of Awareness	Frequency (%)
Cost of blood investigation	
Yes (aware about all of them)	13 (4.4%)
Aware about some of them	256 (86.5%)
Not at all	27 (9.1%)
Total	296 (100%)
Cost of imaging studies (x-ray, CT, and US)	
Yes (aware about all of them)	10 (3.4%)
Aware about some of them	247 (83.4%)
Not at all	39 (13.2%)
Total	296 (100%)
Admission cost	
Yes (aware about the cost)	38 (12.83%)
No	258 (87.16%)
Total	296 (100%)
Surgical instrument/prosthesis	
Yes (aware about all of them)	25 (8.4%)
Aware about some of them	220 (74.3%)
Not at all	51 (17.2%)
Total	296 (100%)
Medication cost	
Yes (aware about all of them)	11 (3.7%)
Aware about some of them	236 (79.7%)
Not at all	49 (16.5%)
Total	296 (100%)

CT, computed tomography; US, ultrasound.

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