

## Abstract

**Background and Objectives:** Every country is facing life-threatening risks and major diseases that some of which are known and the others have not been investigated yet. Nowadays, Coronary Artery Disease (CAD) is the major health concern and is predicted by 2030 seven out of ten deaths worldwide is a result of chronic diseases related to cardiovascular disease. Despite the increasing burden of CDA and dearth of suitable resources in developing countries, there is little information about the cost and effectiveness of this treatment in these countries. So, this study endeavors to conduct cost-utility analysis of Coronary Artery Bypass Grafting (CABG) and Percutaneous Coronary Intervention (PCI) through drug-eluting stent with Quality Adjusted Life Years (QALYs) index in Shiraz hospitals.

**Methods:** This cross-sectional analytical study was administered to analyze the cost-utility of percutaneous coronary intervention using drug-eluting stent and the coronary artery bypass surgery via QALY index. To that end, at first, the sample size was randomly selected from among those patients who had CABG and PCI in the Hospitals of Shiraz University of Medical Science in the year 2014 (viz. from May 2014 until December 2014); that being so, 200 patients were selected for each treatment method. Data for measuring utility of the intervention methods were garnered through Short Form-36 (SF-36) questionnaires, namely general questionnaire for evaluating Quality of Life (QoL) and specific questionnaire for evaluating the QoL among CAD patients, that is to say, Seattle Angina Questionnaire (SAQ). Data related to the cost were collected through medical bills, debriefing the patients or their companion(s), revenue accounting unit of the hospitals, cost accounting, as well as trustee of the properties and foundations of the hospitals. In effect, cost of this study was estimated from the perspective of the patients and the service providers. It is of note that, the patients who were not interested in participating in the study were excluded. For analyzing the data related to quality, SPSS 20 was run. Likewise, descriptive and inferential statistics such as frequency, percentage, mean, standard deviation (SD), paired samples t-test, Kruskal-Wallis, Mann-Whitney, Analysis Of Variance (ANOVA), Spearman correlation, as well as Pearson were employed. To analyze the cost data, SPSS version 20 along with descriptive statistics were used. For analyzing cost-utility, Markov Model was initially depicted for the two types of applied intervention. Afterwards, the collected data on utility and cost of collection after slotting in the Model were analyzed through the medium of *TreeAge* (2011). In this study, one-way and two-way sensitivity analyses of the parameters were utilized to test the accuracy and robustness of the results.

**Results:** The results revealed that 'Intervention' is the only effective factor in score change in the QoL (p value for the intervention factor in SF-36 was 0.04 and in SAQ was 0.002). Also, the QoL before and after intervention indicated that the score change in the QoL, taking into account the types of intervention and instrumentation, was significant. In addition, both intervention types promoted the patients' QoL ( $p < 0.05$ ). Average length of stay in CABG patients was  $8.05 \pm 5.438$  (days) and in PCI patients was  $3.19 \pm 2.843$  (days), respectively. The results of this study indicate that both the utility and the cost of CABG is much than PCI. However, from the perspective of the patient and using the SAQ, each unit increase in utility person, in CABG, 3435127.26 rials will be sought cost of PCI. From the perspective of the patient and using the SF-36, each unit increase in utility person, in CABG, 145922679.96 rials will be sought cost of PCI. The sensitivity analysis disclosed that the possible changes, the costs and the utility, have no significant impact on the obtained result.

**Conclusion:** The results show that both the utility and the cost of CABG is more than PCI. For the meantime, sensitivity analysis disclosed that the possible changes, the costs and the utility, have no significant impact on the obtained result.

**Keywords**

Cost-utility, Quality of life, Quality Adjusted Life Years, Cost, Coronary Artery Bypass Grafting, Percutaneous Coronary Intervention



**Cost-Utility Analysis of Coronary Artery Bypass Grafting and  
Percutaneous Coronary Intervention by Drug Eluting Stent Using  
QALY Index in Hospitals of Shiraz, 2014-2015**

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