

~~microcosting~~micro-costing the most detailed levels of virtually all components related to costs are considered [11]. On the other hand, in the top-down approach, ~~the~~ cost components take values obtained from decomposition of total unit costs, resulting in average unit costs per patient, whereas in the bottom-up approach the resources directly utilized for each patient are identified, and the cost components receive value accordingly [10, 12]. The bottom-up ~~microcosting~~micro-costing method allows for the most accurate and reliable cost evaluation, however its application is challenged by the great amount of time required, and the absence of adequate hospital information systems [13]. By contrast, the top-down approach, though not capable of tracing costs to the individual patients, enables estimation of ~~the~~ virtually all cost components for the average patient [10].

Yet another aspect of cost analysis of healthcare services is the way indirect costs are calculated. Costs of healthcare services are divided into two categories: direct costs and indirect costs [11, 14]. While direct costs ~~mostly incur by the~~ are mostly incurred by final services delivered (labor, material, and medication), ~~the~~ indirect costs incurred due to overhead and general services such as support, administration, and energy coordination. Evidence shows that ~~the~~ indirect costs comprise a considerable share of total costs in hospitals [16-18], [15-17]. ~~thus~~ Thus, their accurate evaluation is essential to valid cost analysis of unit healthcare services [10, 17]. A volume-based costing (VBC) method, is the one whereby ~~the~~ indirect costs are assigned to each cost components using a single volume-based cost driver (such as labor time hours or the number of inpatients) [14, 18-20]. Alternatively, in an activity-based method (ABC) method, all cost-making events and transactions are considered as "activities", a specific cost driver is defined for each activity, and ~~the~~ costs of ~~the~~ activities are assigned to the services by the corresponding cost drivers [18, 21, 22]. Although the latter approach has proven more accurate, it is complex, expensive, and highly time consuming, and its efficient application requires identification of all activity-based cost drivers, which is not always being convenient [18, 23]. However, the VBC method allows for a more feasible and straightforward calculation ~~of for~~ costs of unit services.

Based on ~~the~~ relative advantages of the mentioned methods, feasibility concerns given the type and quality of accessible data and the accuracy scope of this study, herein we represent the methods and results of a volume-based top-down ~~microcosting~~micro-costing of unit services for the average patient in ~~Bou Alisina~~Bou Ali Sina hospital ~~Hospital~~ of Qazvin University of Medical Science (QUMS). We attempt to show how the result can help elucidating the strengths and weaknesses of the current ~~way~~ method of resources allocation, identifying ~~the~~ inefficient cost centers, and drawing solutions for such facility's efficiency challenges.

Methods

Comment [SMM16]: Best word I can think of. You can use "imposed" here if you like.

Comment [MP2D17]: Incur is very highly frequently repeated in the text. Would you please suggest a synonym or equivalent word that can be used in finance and economy context?

Comment [SMM18]: Used the same in both singular and plural forms.

Comment [MP2D19]: I have frequently seen that Evidence is considered a plural noun. But you considered in singular. Would you please provide me some guide?

Comment [MP2D20]: I want to conjunct the two sentences. Can I write: Costs in hospitals, thus...

Comment [SMM21]: Since you are using a pronoun exactly after "thus", I'd start a new sentence.

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Comment [MP2D22]: Why not 'of'? calculation of.

Comment [SMM23]: Matter of style.

Comment [SMM24]: Considering the beginning of the sentence, it should be continued "passive". Please either restructure the sentence or tell me what you mean by the sentence in Farsi.

Comment [SMM25]: Since judging on your efforts is a decision by the reader, you must use "attempt to". The reader will decide if you have clearly shown what you have claimed to have accomplished in your research.

Comment [MP2D26]: Very useful comment. That's true but we are sometimes not certain how to apply it. And you applied it the best way.

I need you consider such notes in proof reading of all my manuscripts and in all phrases and paragraphs.

3. Identifying ~~the~~ costs of each input: ~~all~~ All resource cost items were outlined based on available accounting documents. The cost of personnel was calculated by summing up ~~the~~ staff ~~basic~~ base salaries ~~and~~ overtime and wages, and taking into account the insurance, ~~task~~ tax and deductions. The costs of material and equipment were outlined based on ~~the~~ available accounting data. The costs of depreciation was calculated according to ~~the~~ straight-line method as follow:

$$DC = A - B/C \quad (1)$$

where DC is the depreciation cost; A is current value of asset; B is estimated dismantled value of asset; and C is the useful life of asset.

4. Grouping and allocating ~~the~~ directly relevant costs: ~~some~~ Some costs could be directly assigned to their relevant cost centers [14]. For instance, costs of vehicle and fuels were related to ~~the~~ transport department ~~in~~ the general/overhead services category. Similarly, costs of laboratory material/equipment, drugs and ~~food~~ stuff foodstuff were directly assigned to the corresponding cost units ~~in~~ the intermediate sector. ~~Also~~ In addition, because ~~the~~ distribution of human resources over cost centers ~~were~~ was available from ~~the~~ accounting system, the cost of personnel were prorated over these three ~~high~~ high-level categories ~~accordingly~~.
5. Assigning costs of overhead/general services to intermediate cost centers: ~~the~~ indirect costs were assigned to intermediate cost centers ~~by~~ using a step-down allocation approach. Based on the breakdown measures suggested by Shepard [14] (Table 1), the overhead/general services costs were prorated among the intermediate centers in a stepwise manner. ~~A~~ In addition, uni-directional flow of resources ~~in~~ through the hierarchy of cost centers was assumed, which implies that the ~~upper~~ upper-level centers do not receive resources from (impose cost to) ~~the~~ lower lower-level departments centers.
6. Assigning costs of general/overhead and intermediate services to final cost centers: ~~the~~ The costs of ~~the~~ resources ~~directly~~ flowing directly from ~~general/overhead/general services cost centers~~ to the final units cost centers were assigned to the ~~medication departments~~ final units as indirect costs. The portions of direct costs ~~arising due to from~~ the use of intermediate resources/services were also assigned to the final units. ~~Like~~ Similar to step 4-four, a ~~step-wise~~ unidirectional down-flowing allocation of resources ~~were~~ was applied.
7. Calculating the cost and revenue of service unit: ~~based~~ Based on the data of ~~the~~ active beds, ~~the~~ bed-day capacity, and the occupied and empty bed-day ~~indices~~ of the individual medication ~~wards~~ units were calculated. The bed-day rate of each ward was obtained by dividing the occupied bed-day by ~~the~~ total bed-day. The cost of final unit

Comment [SMM34]: ?

Comment [MP2D36]: منظور مالیات است. مالیات از جمع حقوق و مزایا کسر شده است.

Comment [MP2D36]: Here you allowed using 'in the' but in the sentence above you substituted in with 'associated to'. Indeed the phrase 'in the' is closer to my mean.

Comment [MP2D37]: In or through?

Comment [SMM38]: Matter of style

Comment [MP2D39]: Similar to?

Comment [SMM40]: Jargon. Please find a better word based on your desired meaning.

Comment [MP2D41]: Some changes was applied. Please re check the paragraph.

Comment [SMM42]: Check correct use of term

Comment [SMM43]: "Indices" is the original Latin nominative plural of "index" (nominative singular), a word taken directly from Latin.

Compare:
appendix--appendices, matrix--matrices
phenomenon--phenomena (Greek),
medium--media, bacterium--bacteria.
"Indexes" seems to be becoming more acceptable these days.
Indices is more common, I would say, at least in the scientific and math-related fields. Those are really the main classes I've heard it used in.

Comment [MP2D44]: Index seems to be a 'heavy' word for here. I think index is usually used for large scale and complex calculation, isn't it?
If it is true is there a more proper word to substitute?