

Value-based Oncology in Iran: A Scoping review

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Abstract

Introduction: Evidence synthesis about economic analysis of cancer control and management in Iran was inconsistent. The objective of this scoping review was to examine and map the rang of studies acknowledged this issue in Iran.

Methods: Several databases such as Cochrane Library, PubMed, ProQuest ,Embase ,and Google Scholar have been searched with relevant search strategy. Studies published from January 1, 2000, to January 1, 2017 were examined.

Results: Finally, forty-four articles were deemed appropriate for this study and were analyzed. Twenty-three studies had performed cost analysis, twelve cost-utility analysis (CUA), eight cost-effectiveness analysis (CEA), and only one cost-minimizing analysis. In only six articles the total cost (direct and indirect) had been evaluated. The incremental cost-effectiveness ratio (ICER) index had been measured in all eight articles on CEA. In studies on CUA, only one case had considered the disability adjusted life years (DALY) index.

Conclusion: After cost analysis which is highly popular, researchers in the field of cancer economy in Iran are often interested in CEA studies and, consequently, CUA ones. Results of the present study indicate that most analyses in this field have employed appropriate methodology, leading to accurate estimations of ICER in which can be used for appropriate meta-analysis in near future.

Keyword: Oncology, Scoping review, Economic evaluation

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Health Economics Association of Iran

1. Introduction

Cancer is the third cause of mortality in Iran. The increasing growth in the number of cancer patients has posed a serious challenge for the Iranian health system. Patients with cancer face numerous issues affecting all personal, family-related, and social dimensions of their lives (1).

Due to the high incidence rate and decreased age of onset for cancer in Iran, experts use the term “cancer tsunami” to indicate the severity of human and economic damages caused by cancer (2).

To provide care for cancer patients, prevent the negative effects of the disease, and improve the quality of their lives, numerous interventions such as screening, treatment, medication provision, surgeries, radiotherapy, and a wide range of supportive and palliative care must be employed. It is clear that the provision of such extensive services requires heavy consumption of resources which can affect the life and well-being of patients while endangering their financial security (3).

In the past two decades, the correct understanding of economic evaluations and the relative costs and benefits of novel medical interventions has become a managerial requirement in the domain of medicine. Economic evaluations have entered the field of cancer-related interventions but their effect on the quality of these interventions has been less observed compared to other fields of healthcare services (4).

The cooperation of experts has been increased in evaluating health technology and prioritization process by the formation of new interventions for cancer treatment such as the introduction of new anti-neoplastic medications. This has created a unique opportunity for governments to find an appropriate solution for patients’ access to higher quality cares by trusting scientific communities (5).

Considering the variety of services in the field of cancer control and prevention and their costly nature (4), expensive cancer-patient care following the application of novel therapies and life extension (4), the effect of considerable treatment costs on the choice of intervention (6), and the effect of economic sanctions, especially in the past 2 decades, on the health of vulnerable groups in Iran (7), one must

systematically review different types of studies on economic evaluation in this field in Iran.

Although a preliminary search for previous scoping reviews on the topic aligning to this concept was conducted, no similar holistic research has been found.

So the objective of this scoping review was to examine and map the rang of economic analyses of cancer control and management performed in Iran.

2. Methods

2.1. Inclusion criteria

Studies published from January 1, 2000, to January 1, 2017 were examined. No study was selected based on its methodological quality. First the titles, then abstracts, and then the full texts of articles (except for conference articles with no full text available) were investigated.

Persian articles were extracted from appropriate sources and entered the study based on the English keywords. Editorials or articles published in newspapers or other mass media were not included in the study.

2.2. Type of sources and search strategy

Several databases such as Cochrane Library, PubMed, ProQuest ‘Embase ‘and Google Scholar have been searched with search strategy as below:

[Cost-Benefit OR “Cost-Benefit Analyses” OR “Cost- Benefit Analysis” OR Budget-impact OR “Budget impact Analysis” OR “Budget impact Analyses” OR Cost- Effectiveness OR “Cost- Effectiveness Analysis” OR “Cost- Effectiveness Analyses” OR Cost-Benefit OR “Cost-Benefit Analysis” OR “Cost- Benefit Analyses” OR Cost-Minimization OR “Cost-minimization Analysis” OR “Cost-minimization Analyses” OR Cost-Utility OR “Cost Utility Analysis” OR “Cost-Utility Analyses” OR Cost OR “Cost Analysis” OR “Cost Analyses” OR “Economic Evaluation” OR “Economic Evaluations” OR “Marginal Analysis” OR “Marginal Analyses”]AND [Oncology OR Cancer OR Malignancy OR Neoplasm] AND [Diagnosis OR treatment OR Control OR Management OR Cure OR Prevention] AND Iran.

Table1. The scope of cost analysis of cancer control and management in Iran (number of studies =23)

First author (year)	Type of cancer	Type of healthcare services	Main indicator(s)
Sarkhanlou F (2016) (8)	Leukemia	Therapy	Direct cost
Ansaripour A (2016)* (9)	Breast Cancer	Therapy	Direct cost
Foroughi Moghadam MJ (2016)* (10)	Prostate Cancer	Therapy	Direct cost
Zare F (2016) (11)	Hepatocellular Carcinoma	Diagnosis and Therapy	Total cost
Rezaei S (2012) (12)	Smoking related cancers	Prevention	Cost of productivity lost (Indirect cost)
Izadi A (2016) (13)	Gastric Cancer	Therapy	Direct cost
Karami-Matin B (2016) (14)	All Cancers	prevention	Cost of productivity lost (Indirect cost)
Sari AA (2016) (15)	Smoking attributable Lung Cancer	Prevention	Direct cost
Ansaripour A (2015)* (16)	Breast Cancer	Therapy	Direct cost
Khorasani S (2015) (17)	All Cancers	Prevention	Cost of productivity lost (Indirect cost)
Davari M (2013) (18)	Breast Cancer	Therapy	Direct cost
Bazyar M (2013) (19)	Breast Cancer	Diagnosis, Therapy and Prevention	Total cost
Rezapour A (2012) (20)	Urologic tumors	Therapy	Direct cost
Farokhi Noori MR (2012) (21)	All Cancers	Diagnosis and Therapy	Total cost
Mohagheghi MA (2011) (22)	Lung Cancer	Therapy	Total cost
Nokiani FA (2008) (23)	Cervical Cancer	Prevention	Direct cost & Incidence rate
Hatam N (2014) (24)	Breast Cancer	Prevention and Therapy	Total cost
Bazyar M (2012) (3)	Gastro-intestinal Cancers, Head and neck Cancers	Therapy	Direct cost
Bahmei J (2014) (25)	All Cancers	Therapy	Direct cost
Ghaderi H (2010) (26)	Breast cancer	Prevention	Willingness-to-pay
Akbarzadehbaghban A (2007) (27)	Lung Cancer	Therapy	Direct cost
Davari M (2015) (28)	Leukemia	Therapy	Direct cost
Hayati H (2016) (29)	Leukemia	Therapy	Total cost

*Congress abstract

Table2. The scope of cost-minimizing analysis of cancer control and management in Iran (number of studies =1)

First author (year)	Type of cancer	Type of healthcare services	Main indicator(s)
Nahvijou A (2014) (30)	Cervical Cancer	Prevention	Total cost

Table 3. The scope of cost-effectiveness analysis of cancer control and management in Iran (number of studies =8)

First author (year)	Type of cancer	Type of healthcare services	Main indicator(s)
Ansaripour A (2016)*(31)	Breast Cancer	Therapy	ICER**
Davari M (2015) (32)	Colorectal Cancer	Therapy	ICER
Barfar E (2014) (33)	Breast Cancer	Prevention	ICER
Moridi M (2013) (34)	Cervical Cancer	Prevention	ICER
Teimouri F (2012)* (35)	Skin Cancer	Therapy	ICER
Allameh Z (2011)(36)	Colorectal Cancer	Prevention	ICER
Nassiripour L (2016) (37)	Skin Cancer	Therapy	ICER
Hatam N (2016) (38)	Breast Cancer	Prevention	ICER

*Congress abstract

** Incremental cost- effectiveness ratio

After evidence collection, all studies were examined by Reviewers 1 and 2 independently and using a three-step approach. Disagreements between Reviewers 1 and 2 in the process of study selection were resolved in a session with both reviewers present. In each step, the number of excluded studies and the causes for this exclusion were recorded.

3. Results

In the preliminary search, 601 English and 26 Persian articles were retrieved. After checking for duplicates, 614 abstracts were examined, of which 567 cases were not related to cancer economic analysis. The full text of one article could not be accessed, and in two cases, the full texts did not present the economic analysis of interest. Thus, 44 articles were deemed appropriate for this study and were analyzed. All the noted points are depicted in the flowchart of Figure 1. The type of economic analysis was not specified in the title of 9 articles. Moreover, in 7 cases, the title

referred to cost-effectiveness analysis (CEA) but, in practice, cost-utility analysis (CUA) was conducted. In one case, although the title had mentioned CEA, only cost analysis had been performed. In terms of the frequency of economic analyses, 23 cases had performed cost analysis, 12 cases CUA, 8 cases CEA, and only one case cost-minimizing analysis (Figure 2). All 5 Persian articles had performed only cost analysis.

In terms of cost analysis (Table 1), 14 articles had merely calculated direct costs. In only 6 articles the total cost (direct and indirect) had been evaluated. Moreover, in 3 articles on cost analysis, only indirect cost had been evaluated. The only article on cost-minimization (Table 2) calculated the total cost. The incremental cost-effectiveness ratio (ICER) index had been measured in all 8 articles on CEA (Table 3). In studies on CUA, only one case had considered the disability adjusted life years (DALY) index, and

Table 4. The scope of cost-utility analysis of cancer control and management in Iran (number of studies =12)

First author (year)	Type of cancer	Type of healthcare services	Main indicator(s)
Ehsani M (2016) (39)	Leukemia	Therapy	Direct cost & QALY
Nahvijou A (2016) (40)	Cervical Cancer	Prevention	ICER** per QALY
Haghighat S (2016) (41)	Breast Cancer	Prevention	ICER per QALY
Zehtab N (2016) (42)	Breast Cancer	Prevention	ICER per DALY averted
Hatam N (2015) (43)	Lymphoma	Therapy	ICER per QALY
Hatam N (2015) (44)	Breast Cancer	Therapy	ICER per QALY
Aboutorabi A (2015) (45)	Breast Cancer	Therapy	ICER per QALY
Khatibi M (2014) (46)	Cervical Cancer	Prevention	ICER per QALY
Barouni M (2013) (47)	Colorectal Cancer	Prevention	ICER per QALY
Sari AA (2013) (48)	Lung Cancer	Diagnosis and Therapy	ICER per QALY
Bastani P (2012) (49)	Breast Cancer	Therapy	Direct cost & QALY
Ahmad KA (2010)* (50)	Breast cancer	Therapy	ICER per QALY

*Congress abstract

** Incremental cost-effectiveness ratio

others had used the complex quality adjusted life years (QALY) index (Table 4).

In terms of economic analysis of healthcare provision, therapy was evaluated in 28 articles, diagnosis in 4 articles, and prevention in 18 articles.

In terms of the type of cancer and cancer care, breast cancer was evaluated in 15 cases, gastrointestinal cancers, cervical cancer, leukemia/lymphoma each in 5, and other cancers in fewer cases.

Except for 2 cases, results of other studies had been published after 2010.

4. Discussion and Conclusion

The present study shows that researchers in the field of cancer economy in Iran are mostly familiar with this new concepts and themes of health technology assessment, although they often estimate the direct cost in performing the simplest form of analysis, i.e. Cost analysis. It is evident that the importance of estimating indirect costs, especially for diseases like cancer with considerable chronicity and disability, is equal to if not higher than the importance of estimating direct costs (51). As shown by the present study, cost-benefit analysis has no place in cancer

studies due to the difficulty of estimating the benefit of interventions in monetary unit (52). After cost analysis which is highly popular, researchers in the field of cancer economy in Iran are often interested in CEA studies and, consequently, CUA ones. Results of the present study indicate that most analyses in this field have employed appropriate methodology, leading to accurate estimations of ICER. This can pave the way for future meta-analyses in this field. Furthermore, CUA which is among the best cancer economic analyses (53) has been considered in Iran. Nevertheless, researchers often perform it based on QALY due to lack of sufficient data on burden of disease and the difficulty of estimating the disability burden caused by cancer in Iran, while it is better to evaluate intervention utility using the DALY calculation approach (54). It is expected that researchers have often performed care economic analysis for most frequent types of cancer in Iran, since common cancers have a clear role in imposing diagnosis and treatment costs on the healthcare system. Naturally, healthcare policy-makers must know that they would be largely freed of the burden of costs by decreasing the incidence of these cancers.

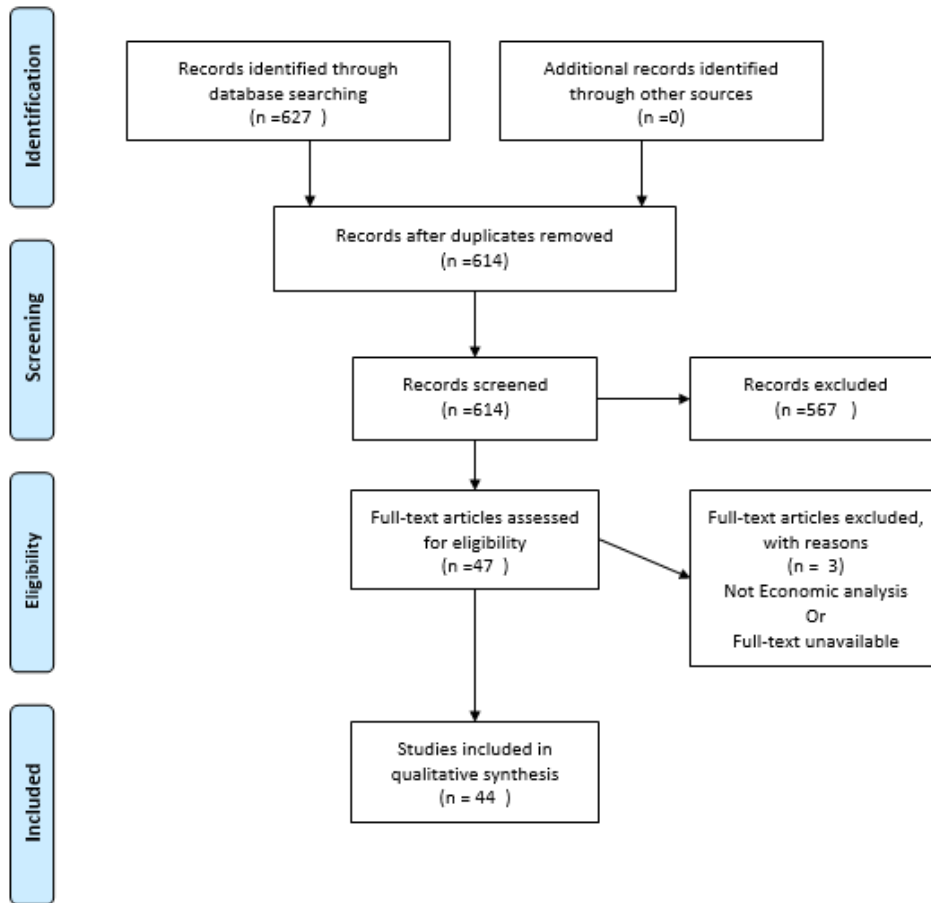


Figure 1. PRISMA Flow Diagram for this scoping review process.

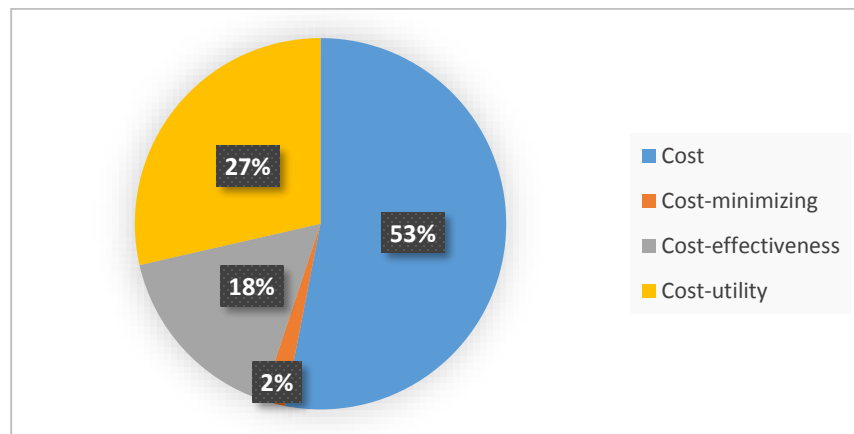


Figure 2. Frequency distribution of the most common economic analyses of cancer control and management in Iran.

Of various domains of cancer care, Iranian researchers have considerably focused on cancer prevention economic analysis. The majority of studies have performed the economic evaluation of screening for common types of cancer and, in few cases, have considered the control of cancer risk-factors (12,15). Of course, it is of special importance that researchers focus on the economic analysis of quaternary prevention since useless and expensive interventions are highly frequent in cancer care (55). Similar to other review studies, the present study was limited by lack of access to all appropriate resources and complete dependence on the research question at the outset of study. Still, researchers believe that its results can help develop the best cancer economic analysis studies in Iran. Furthermore, systematic review studies or meta-analyses can be designed based on the range of studies introduced here. It is clear that an economic approach to cancer care can greatly assist researchers in making evidence-based clinical decisions. Results of the present study indicate that most analyses in cancer economy in Iran have employed appropriate methodology, leading to accurate estimations of economic indices such as direct cost and ICER in which can be used for appropriate meta-analysis in near future.

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