



Cost Management Strategies in Health Insurance: A Scoping Review

Ali Mohammad Mosadeghrad¹, Mahya Abbasi² and Sajad Ramandi^{3,*}

¹Professor of Health Policy, Management and Economics, Tehran University of Medical Sciences, Tehran, Iran

² Ph.D. Student in Health Care Management, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

³ Ph.D. in Health Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

* **Corresponding author:** Sajad Ramandi, Department of Health Management and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran. Email: sajadramandi@yahoo.com

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Abstract

Context: Insurance plays a significant role in health systems financing. The existence of multiple risks increases the costs of insurance organizations. The present study aimed to identify cost management strategies in health insurance.

Evidence Acquisition: A scoping review was conducted by focusing on published Persian and English studies in the field of health insurance worldwide by the end of June 2020. Valid keywords were searched in PubMed, Scopus, Web of Science, SID, Magiran, Google, and Google scholar. A list of authoritative sources and journals was also assessed. A total of 51 articles met the inclusion criteria and were analyzed using MAXQDA software.

Results: In total, 97 cost management strategies were identified and classified into 3 groups of providers, insured individuals, and insurance organizations. The most important cost management strategies in the field of insurance internal processes are modifying payment methods and monitoring provided services and prescribed medications to providers, cost sharing, deductible, consumption management, and cultivating the use of services by insured people, strategic purchasing, coverage constraints, internal controls, using risk management and employing specialized personnel. Also, other insurance supervision institutions significantly reduce costs.

Conclusion: Policymakers and managers plan and apply corrective interventions and appropriate changes to reduce the costs of insurance companies by understanding the cost control strategies of health insurance.

Keywords: Cost management, Health, Insurance, Scoping review

1. Context

The provision of high quality and safe health services is the most important goal of the health system. The rapid growth of technology and knowledge consequently increase expectations for access to healthcare services, as well as rapid urbanization and population growth which has increased the demand in the health sector and itself has led to high growth in health costs (1, 2). This has required governments to find financing and cost management solutions and respond to public demand in the health sector.

Financing is one of the important functions of the health system in addition to stewardship, resource generation, and service provision. Conventional methods of health financing include taxes, social security, private insurance, donations, and out-of-pocket payments (OOPs). Failure of governments to health financing directly puts the burden of costs on the public and forces them to create OOPs (3). Recently, the role of indirect payments of the people has increased due to the development of social and private insurance in health financing and the growth of direct payments in the health financing system of Iran (4, 5).

Treatment and receiving healthcare reimbursement are among the most important concerns in communities. Moreover, increased healthcare spending has created a huge burden for

people with moderate-to-low incomes, and many households have fallen below the poverty line due to catastrophic costs. This increases the sensitivity of having health insurance coverage. Social health insurance rarely pays the full cost of treatment and only in specific situations with many exceptions. In addition, a considerable amount of healthcare expenses will be paid by the supplementary insurer. In general, the salaries of employees constitute the financial resources of all types of insurance. In social and tax-based insurance, financial resources are directed to the government by public or social tax, whereas in commercial insurance, this money is directly paid to a risk aggregation institution (i.e., insurance companies) (6). In terms of financing, however, insurance companies have shown a lack of proper cost control. Additionally, various studies have shown that health insurances lead to increased health service demand by decreasing service costs, which ultimately results in increased total costs for the health sector (7-9).

The discipline of health insurance has always been considered an aid to the insured in dealing with risks and damages caused by health costs given the high costs of health in Iran. The majority of community members prefer to be covered by this type of insurance to be less vulnerable to danger and disease. Meanwhile, insurance companies seek to reduce loss and damages caused by providing health

insurance coverage and improve their assessment and payment methods in parallel to cost management. Therefore, balancing these two issues will greatly help both parties (10). Some of the most important macro factors which increase costs include dispersion in service delivery, administrative costs of provider, payer, and patients, lack of transparency in costs and quality, cultural weakness in service delivery, strengthening the health care market, changing medical service cost units, regulatory rules and regulations in the health system and fraud and violation of law enforcement, structure, and provision of health professionals, the process of specialization and patient access to the provider, induced demand, moral hazard, failure to take preventive measures, overuse or misuse of health services, defensive medicine, and the growth of people's expectations to meet more unnecessary needs. This increase in costs reduces financial access to health care services, people leaving insurance coverage due to inability to pay premiums, the occurrence of the phenomenon of adverse selection, suffering catastrophic costs, economic poverty, and more disease (11-13).

Various studies in the world, especially in developed countries, have proposed different tools and solutions, including cost-sharing, coverage constraints, utility controls, requirement approval, purchasing management, implementation of preventive plans, development, and operation of protocols and clinical processes, management of chronic diseases, to control costs in the supply and demand aspects of insurance organizations (11-16). Nonetheless, research is limited in this area and fails to present a complete image of cost management solutions in health insurance. Therefore, collecting the results of studies published in the world seems necessary to be used by managers and policymakers of the health system in their evidence-based

decisions. The present study aimed to identify cost management strategies in health insurance.

2. Evidence Acquisition

The present study was conducted using scoping review research. Scoping review is a prerequisite of a systematic review and uses a structured process. Meanwhile, it is free of some of the limitations of systematic reviews, such as article quality assessment (17). Therefore, a wide range of studies is evaluated in a shorter period in this type of review. Scoping review is a good option for obtaining this evidence when a policymaker or manager has an urgent need for general evidence on a particular issue (18). Arksey and O'Malley's scoping review methodology (2005) was used in this study, which included six stages of identifying the research question, relevant studies, selecting the study, charting the data, collating, summarizing, and reporting results and optional negotiating and consulting the results (17).

The present study aimed to answer the question "what are the cost management strategies in health insurance?" with an emphasis on Farsi (the formal language of Iran) and English articles related to health insurance costs in the countries of the world until June 2020. PubMed, Scopus, Web of Science, SID, and Magiran were searched using the proper keywords separately and in combination with each other. The general search strategy is shown in Table 1.

Google and Google Scholar were also investigated to ensure access to appropriate articles. Moreover, a list of references, journals, and reports related to the field of health insurance was also searched. Notably, the exclusion criterion was published in languages other than Persian and English. In addition, all studies were entered into EndNote x9 software.

Overall, 933 articles were extracted among which

Table 1. Specifications of the search strategies and number of identified studies

Searching	Sources	Database /Journals	Keywords and Meshes	Publication identified	
Electronic Searching	International	PubMed	Database	("Health Insurance"[Mesh]) OR ("Medical Insurance"[Title/Abstract]) AND Risk[Mesh] OR ("Risk Management"[Mesh]) OR Cost[Title/Abstract] OR ("Cost Control"[Mesh]) OR ("Risk containment"[Title/Abstract]) OR Expense[Title/Abstract] OR Expenditure[Title/Abstract] OR ("Financial control"[Title/Abstract]) AND English[lang]	203
		Scopus	Database	TITLE-ABS/Title, abstract, keywords: "Health Insurance" OR "Medical Insurance" AND Risk* OR "Risk management" OR "Cost control" OR "Risk control" OR Cost containment" OR Expense* OR Expenditure* OR "Financial control"	246
		Web of Science	Database		53
		Google Scholar	Search engine		303
	National	Google	Search engine	- Translation of "Health Insurance" AND Risk OR Cost and their various synonyms in Farsi - All studies about health insurance AND cost in English	32
		SID	Database		71
		Magiran	Database		14
		Journal of Insurance Research	Journal	"Health insurance" and "reduction" or "control" or "management" and "risk" or "cost" and all synonyms in Farsi and English	7
		Insurance Horizon	Journal		4
		Total			

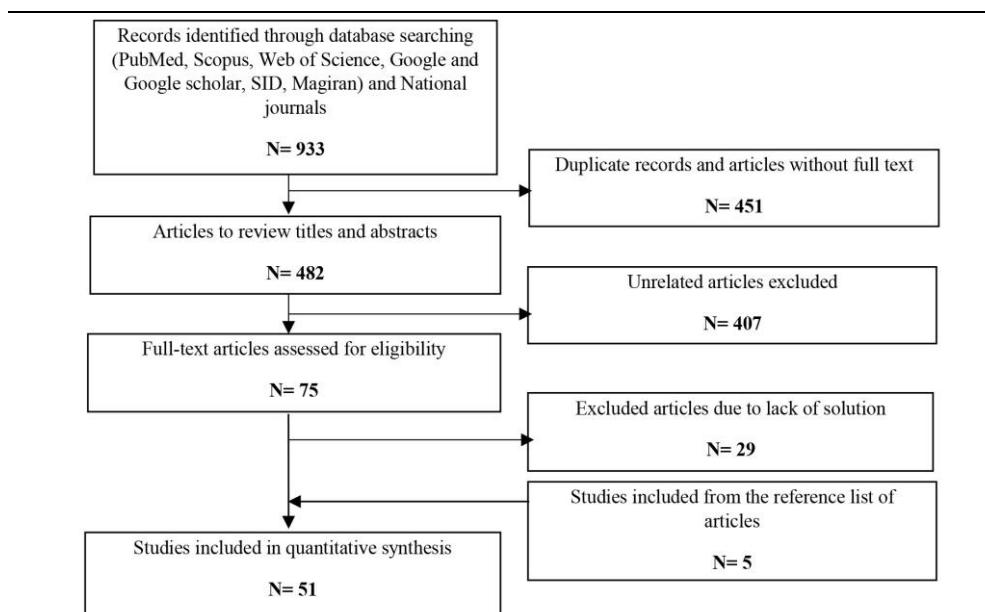


Figure 1. Flow diagram illustrating article selection and elimination

482 studies remained after eliminating duplicates and studies without a full text. Among these studies, 306 and 101 were removed after assessing their titles and abstracts, respectively. In the end, 75 articles on health insurance costs were obtained at this stage. Afterward, some articles which failed to propose management and cost reduction solutions were eliminated, resulting in 46 remaining articles. Five articles were obtained by reviewing the references and a total of 51 articles were selected for the final review. The stages of screening and selection of studies are shown in [Figure 1](#).

The content analysis method was used to analyze the data. All information was encoded in MAXQDA software and the main patterns and meanings were extracted by identifying categories, subcategories, and the relationships between them. Therefore, a variety of proposed solutions for controlling costs were obtained at this stage which is reported in the results section. It is worth noting that all ethical considerations were taken into account in reviewing articles and other research cases.

3. Results

A total of 51 articles reported cost reduction

strategies in the health insurance industry from 1980 to June 2020. The majority of articles were conducted in 2018 (16%). The studies have grown relatively well from 2014 to 2020, and about 78% of articles were written since 2014 as shown in [Figure 2](#).

In total, 31 and 20 articles were published in English (61%) and Persian (39%), respectively. The English ones were published in several journals, most of which were in the field of health economics and health promotion policy. Most authors specialized in management and economics (27%), and the majority of the cost research was based on data from the United States (43%) and Iran (41%) as shown in [Figure 3](#).

A total of 97 cost management strategies were obtained. In one group, solutions related to insurance companies, such as suggested measures to improve the internal processes of companies, those that can be taken by the insurance company on health care providers, and ones that can be done in the field of the insured, and in the other group, the strategies followed by policymakers, regulators, and organizations other than insurance companies were classified, as shown in [Figure 4](#).

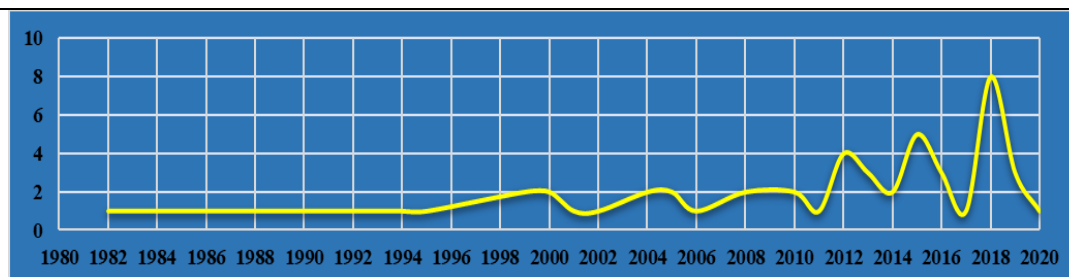


Figure 2. Distribution of data usage in different years in the reviewed articles

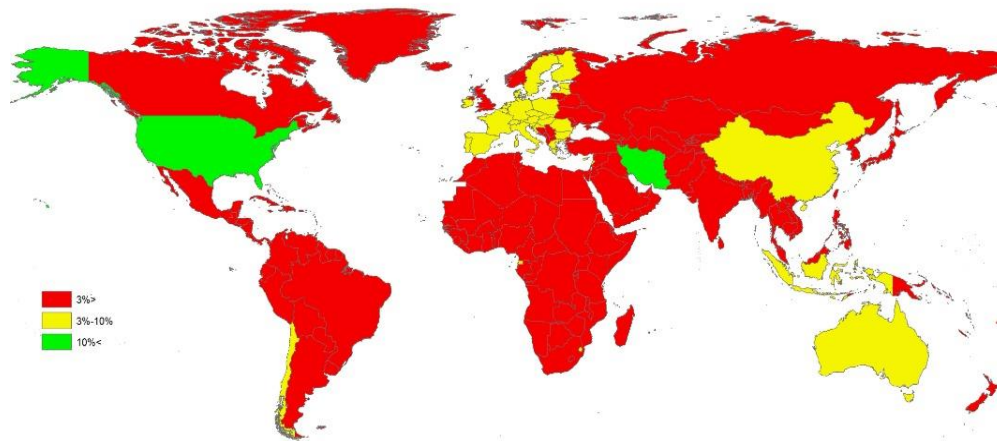


Figure 3. Frequency distribution of articles by country

Cost control by insurance organizations	Insurance companies	<ol style="list-style-type: none"> 1. Preventing the irrational transfer of senior managers 2. Caring in employing expert staff and managers and knowledgeable strategic management 3. Creating a risk management unit 4. Familiarizing managers with risk management 5. Creating an information system for strategic management in companies and holding workshops and training programs with a focus on cost control 6. Determining research axes in relation to the subject of cost and risk management 7. Applying supply chain strategy 8. Using the benefits of information technology 9. Participatory management 10. Considering the calculation of treatment consumption patterns, determining the financial burden of health insurance, and studying the power of the insured in the economic calculations of health insurance 11. Paying attention to the goals and demands of employees in formulating organizational goals 12. Encouraging employees to implement corporate strategies 13. Creating various channels for selling insurance policies and receiving insurance premiums 14. Reducing overhead and administrative expenses 15. Developing and implementing quality standards, internal control, and simplification of complex processes 16. Improving marketing practices 17. Employing a trusted doctor to review patients' files and approve medication 18. Considering the routine medications with high consumption and low cost 19. Using reinsurance 20. Renewable contracts 21. Leveling the cost to a certain extent of participation 22. Using risk transfer securities 23. Prospective repayments 24. Creating a mechanized system for issuing smart treatment cards 25. Applying different tariffs according to geographical areas with different consumption 26. More payment rates for generic medications 27. Risk adjustment with age, gender, occupation, residence, usage, and medical history 28. Receiving a fee from the government for the subsidy of each insured per year 29. Removing the restriction coverage for the treatment of certain diseases, some ages 30. Investigating limitation of coverage 31. Establishing working groups for continuous monitoring of global changes and developments, as well as the technologies used by foreign insurance companies 32. Conducting econometric studies in determining the optimal amount of cost-sharing 33. Strategic purchasing 34. Reference pricing
	Health service providers	<ol style="list-style-type: none"> 1. Supervising the performance of pharmaceutical companies 2. Injecting medications in medical centers and under the supervision of a hospital supervisor 3. Controlling medications or chemotherapy sessions 4. Providing a second opinion request before elective surgeries 5. Applying confirmation of need 6. Determining the day of hospitalization with payment ceiling 7. Confirmation of care except for primary care 8. Eliminating unnecessary hospital admission coverage programs on holidays 9. Investigating lack of coverage of prescription by doctor Non-contractors 10. Restrictions on prescribing medications and paraclinical tests by physicians 11. Using a provider fraud and abuse prevention system 12. Monitoring the relationship between physicians and paraclinical institutions 13. Supervising providers to approve services and preparing and sending performance reports to physicians 14. Monitoring costly centers 15. Using fixed payment methods 16. Educating health care providers on the operation of insurance plans 17. Using protocols and clinical guidelines
	Insured people	<ol style="list-style-type: none"> 1. Accelerating the handling of complaints 2. Accelerating the handling and payment of damages to the insured/3. 3. Applying the waiting period 4. Determining the ceiling of service consumption (utilization control) 5. Consumption management and culture building in consumption 6. Applying deprivation period in the first month of hospitalization 7. Deductible 8. Applying special cost-sharing according to the type of service, multi-percentage cost-sharing with fixed ceiling 9. Requesting empty pockets of some special medicines 10. Performing routine physical exams 11. Receiving premiums based on income 12. Paying attention to culture and improving the lives of the insurer as a social responsibility to promote the health of the community and reducing damages 13. Increasing the level of general information of the insured 14. Educating the insured about the ethical considerations of using the services 15. Using a system to prevent fraud and misconduct of the insured 16. Maintaining health and paying attention to health, and implementing preventive plans 18. Observing restriction of access and free choice of provider
	Cost control by policy makers /other	<ol style="list-style-type: none"> 1. Improving patient safety 2. Reducing medical errors 3. Observing effectiveness in medical care 4. Improving preventive and health-oriented care 5. Improving lifestyle and health 6. Improving interactions between providers and patients 7. Reducing moral hazards and induced demand in the health system 8. Implementing family physician and referral system 9. Expanding primary care network 10. Consolidating insurance funds 11. Educating the community about prevention 12. Creating a better government system for monitoring health insurance costs 13. Unifying and stabilizing the cost of medicines and treatment procedures 14. Reforming health financing and payment methods 15. Realizing tariffs and per capita rights 16. designing appropriate insurance mechanisms, according to the requirements of the country by health policymakers 17. Creating health insurance risk models and risk management training in the field of health and insurance in the country 18. Periodic medical examinations and free screening 19. Creating an electronic health record 20. Creating a single database in the country and strengthening information technology 21. Reorganizing and rationalizing hospital care 22. Creating new mechanisms for compensation 23. Reviewing existing insurance rules and regulations by specialized working groups in consultation with insurance companies 24. Reforming extra-organizational policies such as a tax on harmful substances 25. Reforming composition of the members of the Drug Pricing Council 26. Modernizing equipment and use of advanced technologies 27. Determining the criteria for preventing unprincipled actions without rational justification of some insurance companies by the supervisory bodies of the insurance industry 28. Clarifying cost control policies, consumption reduction policies

Figure 4. Cost management strategies in health insurance

4. Discussion

The present study aimed to identify the cost management strategies in health insurance. In total, 51 studies were conducted to propose cost-control strategies in the health insurance industry. The insurance industry plays a supportive and compensatory role in the economy of any country. Insurance plays an undeniable role in financing the health system and preventing the heavy costs of medical services. However, the success of this

industry depends on the cooperation of various organizations and individuals, at the top of which are insurance companies, the insured, service providers, and policymakers. Therefore, the intertwining of multiple risks by the institutions involved in this area has increased the need to categorize different cost management strategies in insurance.

Studies have shown that various risks in insurance companies (e.g., financial and operational risks, competitor risks, environmental risks, strategic risks, and other emerging risks) have imposed huge

costs on insurance companies (19, 20). In general, the risk is identified as a combination of high-risk situations and the possibility of change in the expected benefits for a decision, event, and state in the future, which can be assessed by possibilities (15) and increase the costs of insurance institutions. Therefore, the application of risk management principles in these organizations is inevitable to decrease costs (21-23) and requires a board of directors joined by special people with unique characteristics and capabilities in identifying, evaluating, controlling, and dealing with risk and implementing new risk management methods (19, 24). According to Dehghani and Shahriar, the establishment of a risk management system in insurance companies is a necessity and requires the deployment of eight elements, including governance structure of institution risk management, risk identification and measurement, risk management policy, statement of insurer risk tolerance and acceptance, feedback loop, assessment of financial wealth and risks under ownership and sustainability analysis, and the role of an insurance supervisor in institution risk management (22). In another study, Ghasemi presented a model for risk management training in the insurance industry, which included factors such as principles of educational management, familiarity with the risk management system, environmental factors, organizational resources, organizational learning, social capital, and organizational culture by considering the relationships between components that can significantly decrease risks in the insurance industry (21). In a research conducted by Campbell to assess the risk management status in the Health Insurance Scheme in Nigeria among Health Maintenance Organizations (HMOs), the rate of use of standard risk management strategies by these organizations was about 50% (23). In the present study, 97 cost management strategies were obtained in the insurance industry, which is classified into two groups of cost control strategies by insurance companies, including actions to be taken on providers, policyholders, internal processes of insurance organizations, and solutions that can be used by policymakers, regulators, and other organizations. Modification of methods of payment to providers and their supervision to approve services and prescribe medications and tests in the field of providers, franchising, first payment, and consumption management and culturalization in using services and consumption of medications in the field of insured, strategic purchasing, limiting the coverage and application of internal controls and paying attention to and using new tools and principles of risk management and employing specialized personnel in the field of internal processes of insurance companies were among the most important cost management strategies.

Some of the most important factors that impose huge costs on insurance companies include moral hazard, as well as fraud and violation by insurers and insureds (25, 26). However, these risks frequently occur in commercial insurance, due to issues such as non-specialized insurance, their business approach, covering expensive diagnostic services, increased patient referral, lack of close supervision, especially on prescriptions and inpatient and outpatient services, lack of facilities to monitor the accuracy of physicians' instructions, medical complexity, information asymmetry between a service provider and recipient, clinical uncertainty, misconceptions in the public, uncommon clinical guidelines, weakness in the educational system and ignoring medical ethics. Supplemental insurance can induce demand when they only seek their benefits (27, 28). In a study, Cronin assessed people aged 19-64 years in the United States, who received insurance coverage from their employer, reporting that about 53.1% of the total annual medical costs are caused by moral hazard, which increase or decrease based on various features (29). Induced demand generally leads to longer hospital stays. Unnecessary hospital stays waste hospital resources. A study estimates that 4.2% of hospital days were unnecessary (30). Since moral hazard can occur between the service consumer and the presenter, it is necessary to focus on increasing the knowledge of community members, managing consumption, and building the related culture, especially in terms of medication use, strengthening the knowledge of presenters, especially in implementing insurance plans, monitoring presenters to confirm services, limiting the prescription of medications and paraclinical tests by physicians, and restricting access and free choice of service providers by the insured. Moreover, financial incentives of health service providers should be controlled by proper policy-making and payment methods reform, and clinical guidelines should be used as a powerful tool to monitor the performance of physicians (23, 31-33).

According to previous studies, determining the level of service use, receiving a fee from the government for the subsidy of each insured per year and franchise (a few percent with a fixed price ceiling, depending on the type of consumer services, stepwise) play an important role in managing insurance costs (19, 32, 34). The franchise cover is the share of the insured from the payable damages, the amount of which is determined based on private terms of the insurance policy. Studies have shown that increasing the amount of insurance coverage and reducing franchises leads to moral hazard (35, 36). Nonetheless, the insignificant franchise of patients encourages the improper use of services or the user of more expensive ones. However, determining the optimal amount of franchises requires econometric studies so that patients face no financial problems

and receive no unrealistic services. The franchise which is paid by the insured before the start of the commitments of insurance companies can reduce the costs of the institution.

Consideration of the objectives, demands, and needs of the workforce and customers during developing organizational objectives and attention to the lifestyle of insurers will be a low-cost and social responsibility for reducing the costs of insurance companies (37). In a study, Abtahi marked that insurance companies should not involve in business games to reduce their losses and their main goal should be to meet the needs of customers. In addition, the attention of insurance service providers to culturalization and improvement of lifestyle as a low-cost and social responsibility can lead to a sustainable competitive advantage in the long term and ultimately decreases insurance losses by improving the health level of the community (37).

Health system financing includes three dimensions collection, accumulation, and purchase of services. Collected revenues are allocated to organizational or individual providers for providing a specific or unspecified set of health services. In this regard, the most important role of insurance is strategic or active purchasing. In general, strategic purchasing is defined as the constant search for the best purchase of services (what? how? from whom? for whom) (38). As mentioned earlier, service providers can prescribe unnecessary services that can impose huge costs on the insurance company, which is not in line with the definition of strategic purchasing. In this respect, issues related to induced demand and the provision of unnecessary services by service providers in the health system are highlighted. In addition, changing the prevailing payment system in the country (fee-for-service), which strongly encourages the provision of induction services by the provider, and setting a specific ceiling for the number of services each provider is allowed to provide will reduce costs.

Also, the entrance of companies other than the insurance company in the area of insurance cost reduction is worth noting. In the present study, 28 cost management strategies were identified through policy-making institutions and other related ones. For instance, the dispersion of various insurance organizations, the existence of multiple booklets for each person in the health system, or the lack of a single database in the country which facilitates fraud and misconduct impose unnecessary costs on insurance organizations. Therefore, establishing a complete referral system, family physician, and general reforms in health system financing, especially in the field of payments, will reduce the costs of the health system and insurance companies. In a study, Collins evaluated reforms in the structure of medical services and their impact on reducing insurance administrative costs and risks in the United States, which had the largest share

of insurance administrative costs among all industrial companies (39).

In these reforms, choosing a public-private approach has reduced the estimated administrative costs from 12.7% of the claimed losses to an average of 9.4%, which is equivalent to \$265 billion in savings through reduced insurance administrative costs, including the cost of insurance, marketing, the cost of examining claims, time taken to announce payment rates and standardize insurance brokers' fees over ten years. Notably, the corrective measure includes institutional funds to exchange costs, which significantly affects the costs of risks associated with insurance administration (39).

Policymakers and supervisors of the insurance industry play a significant role in reducing costs and risks of insurance companies by setting criteria to prevent unprincipled actions without rational justification of some insurance companies, reviewing existing insurance laws and regulations by specialized working groups in consultation with insurance companies, creating tax incentives in the use of full private health insurance, creating new cost compensation mechanisms and clarifying health insurance cost control policies (19, 20, 32). The process of reforming the regulations of the insurance industry in the world indicates that various countries are moving from a tariff system in insurance regulation and government intervention to solvency and risk management, as well as greater participation of private stakeholders in formulating regulations and policies. These corrections lead to providing higher quality insurance services and lower direct and indirect costs by the insurance companies (40). Meanwhile, the involvement of Central Insurance as a supervisory body to provide the necessary preparations and bases for establishing the management system of insurance companies and the efforts of the government and supervisory institutions to use risk-based legislative approaches and formulate the necessary regulations can reduce the costs of insurance companies based on internal control mechanisms (24).

According to the results, while several studies have been conducted in the field of health insurance, few studies have comprehensively assessed the causes of increased costs in these organizations and proposed solutions. Also, the effectiveness of the solutions has not been assessed in various studies. Therefore, more attention is recommended to be paid to the issue of health insurance costs and to evaluate the effectiveness of cost management strategies. Numerous studies in this field will provide valuable information to policymakers and managers of the health system and insurance organizations.

To the best of our knowledge, this is the first scoping review in the health insurance industry that focuses on cost control strategies. Many studies in the health insurance industry have not directly

mentioned cost control. Therefore, researchers had to review all related studies.

5. Conclusion

Based on the results of this review, many studies have been conducted around the world, however to the best of our knowledge, no study has reviewed their results. The present study aimed to investigate the cost control strategies in health insurance companies. A total of 69 cost management solutions were introduced by insurance organizations, which were classified into 3 groups: providers, insured individuals, and internal processes of insurance organizations. The most important cost management strategies in the field of health insurance internal processes include modification of payment methods to providers and observation of provided services, medications, and tests in the field of providers, cost sharing, deductible and consumption management, and culture building in using services and using medications of insured individuals, strategic purchasing, coverage constraints and application of internal controls, using new tools and principles of risk management and employing specialized personnel. Other institutions that are in charge of policymaking and supervision of the insurance industry play a significant role in reducing health insurance costs in various ways.

Also, understanding the effective cost control strategies in health insurance helps policymakers and managers to plan and apply corrective interventions and appropriate changes to reduce the costs of insurance companies.

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Footnotes

Conflicts of Interest: The authors declare that there is no conflict of interest regarding the publication of the present study.

Author Contributions: SR and AM developed the review protocol and designed search criteria and strategy. SR and MA contributed to searching, performing the title/abstract screening of the records, extracting data, and writing the manuscript. AM provided general supervision on all the stages and commented on the paper draft. "All authors have read and approved the manuscript".

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