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REFLECTION ARTICLE

Beyond the economic uncertainty of disease

Más allá de la incertidumbre económica de la enfermedad

Javier Eduardo Bejarano-Daza[1]

[1] Universidad Nacional de Colombia - Bogotá Campus - Faculty of Medicine - Health Equity Group - Bogotá D.C. - Colombia.

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Corresponding author: Javier Eduardo Bejarano Daza. Vicerrectoría de Sede, Sede Bogotá, Universidad Nacional de Colombia. Bogotá D.C. Colombia. Email: jebejaranod@unal.edu.co.

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Abstract

The complexity of healthcare insurance market regulation —derived from the presence of monopolies in the provision of services, externalities and other flaws inherent to asymmetric information such as moral hazard, risk selection, and adverse selection— is a phenomenon found in the Colombian healthcare system that causes persistent problems of inefficiency in the management and allocation of healthcare resources, which, in turn, generates a reduction in the supply of healthcare services in the country and affects the Colombian population's access to these services. Therefore, these problems are structural to the Colombian healthcare system and need to be analyzed to determine whether greater State intervention is needed to the point of suppressing private intermediaries (Health Promoting Entities), despite the large number of norms that currently regulate the health sector.

Considering the above, the objective of this article was to analyze the failures of the Colombian health market, making a distinction between different healthcare complexity levels and taking into account the current postulates on the failures of the health market and their effects.

Resumen

La complejidad de la regulación de los mercados de aseguramiento en salud, producto de la presencia de monopolios en la prestación de servicios, de externalidades y de otras fallas inherentes a la información asimétrica como el riesgo moral, la selección de riesgos y la selección adversa, es un fenómeno presente en el sistema de salud colombiano que causa que los problemas de ineficiencia en el manejo y asignación de los recursos en salud persistan, lo que, a su vez, genera una reducción en la oferta de servicios de salud en el país y afecta el acceso de la población colombiana a estos servicios. Por tanto, dichos problemas son estructurales para el sistema de salud colombiano y requieren ser analizados para determinar si se necesita una mayor intervención del Estado al punto de suprimir los intermediarios privados (Entidades Promotoras de Salud), a pesar de la gran cantidad de normas que actualmente regulan el sector salud.

Teniendo en cuenta lo anterior, el objetivo de este artículo fue realizar un análisis de las fallas del mercado de la salud colombiano, diferenciándolo según los diferentes niveles de complejidad de atención en salud y teniendo en cuenta los postulados vigentes sobre las fallas del mercado de la salud y sus efectos.

Introduction

This article is a non-experimental theoretical approach. First, a compilation of primary and secondary academic sources of current postulates on the analysis of health market failures is made. This is followed by a reflection on how these failures affect equity in access to the Colombian healthcare system. Finally, a conceptual structure derived from the analysis of the economic uncertainty of the disease and the possible effects of increasing the regulation of the healthcare system by the State at the different levels of care by suppressing the insurer is presented.

In Colombia, most analyses of healthcare market failures have focused on the macroeconomic aspects of the healthcare system,[1] while a few have concentrated on the microeconomic aspects described by Arrow.[2] The latter derive from the concepts of uncertainty of the disease, uncertainty regarding the efficacy of treatments and uncertainty regarding the lack of consumer rationality, factors that lead to the loss of equilibrium in the healthcare market.

Arrow, as indicated by Fandiño-Rojas,[3] based his analysis of healthcare market failures on health services because they were the ones that showed competitiveness problems that prevented them from being perfect markets. He is considered the father of health economics and one of the most outstanding economists of the 20th century, as he made significant contributions to economics and other social sciences, for which he has received many awards, including the Nobel Prize in Economics in 1972. Although Arrow is categorized as a neoclassical economist and a strong proponent of welfare economics, this author did not adopt orthodox positions, and instead embraced mixed economies with an interventionist tendency.[4]

In order to achieve the objective of this study, it is first necessary to describe the economic behavior of healthcare services. The nature of demand is based on the occurrence of irregular and unpredictable events, preventing them from being a competitive market, which results in market imbalance and failures that lead to the demand for these services being lower than the real needs.[5] Given the uncertainty of the behavior of diseases, since they are an unpredictable adverse situation, and of the costs of treatment, which depend on the progress of the patient, health systems tend to use healthcare insurance as a mechanism to disperse risk. This practice is governed by the principles of the perfect market, even if there is minimal intervention by the State.[6]

Regarding healthcare insurance, the optimality theorem states that only through the market is it possible to improve the situation of all the actors involved.[7] However, it is important to bear in mind that this postulate is proposed for a context in which all the requirements of the competitive model are met, such as consumption and voluntary and autonomous exchange of goods and services. If the opposite occurs, it is considered that there are failures in the functioning of the market that do not allow for the efficient allocation of resources and, therefore, it is necessary to introduce public policies to solve them. In this sense, if there are failures in the healthcare insurance market, they can only be resolved through State intervention.[8]

According to Arrow,[2] there is a competitive imbalance in the healthcare market that has an effect on its optimality and is caused by the uncertainty of disease as an unpredictable phenomenon, by the lack of certainty about the efficacy of medical treatments, and by the dominant position of the physician with respect to the patient. Thus, it is understood that there is uncertainty not only about the evolution of the disease, but also about the provision of the service, the diagnosis of the disease, and the future costs of the treatment.

According to this approach, the physician's dominant position with respect to the patient plays a very important role in decision making, since, based on a relationship characterized by a high level of trust[9] and in which it is expected that there are no profit interests, the patient delegates to the physician decision-making regarding their treatment.

On the other hand, and since the lack of equilibrium is the product of non-competitive markets, which in turn generates market failures, Arrow[2] also describes other non-competitive characteristics of the healthcare market, such as the fact that the market does not offer goods for commercial purposes and that there are restrictions on the entry of agents (due to the costly training required by physicians) and on price movements (due to regulations on a good of public interest such as health).

In light of the above, the objective of this article was to analyze the failures of the Colombian healthcare market, making a distinction between different healthcare complexity levels and taking into account the current postulates on the failures of the healthcare market and their effects.

Description of asymmetric information failures in the healthcare system

There are healthcare market failures caused by asymmetric information, a situation that occurs in commercial relations between economic agents when one of the parties does not have access to the same information as the other about the product or service being marketed.[10] In general, asymmetric information is one of the main market failures and, in the case of healthcare services, the patient tends to delegate decisions on consumption and use of resources to the physician, making the latter their agent.[10]

Failures due to asymmetric information generate difficulties in access to healthcare services,[11,12] which is currently evident in the Colombian healthcare system with the lower demand for services by individuals enrolled in the subsidized regime and the difficulties in accessing health services due to geographic and socioeconomic barriers.[13,14] It has been established that the decrease in the demand for healthcare services in some populations is related to the lack of knowledge of the regulations (which is considered a barrier to access to health care)[15] and to the lack of information of the user or patient on where or how to access the service required.[16,17] In this sense, the need to provide more information to vulnerable populations, including migrants, has been raised as a means of reducing their barriers to access to the healthcare system.[18] In other words, information on the supply of healthcare services should be increased in order to increase access to them.[19]

The healthcare insurance market presents several asymmetric information failures. The three main ones (adverse selection, risk selection, and moral hazard) are described below and their implications for the Colombian health system are explained:

Adverse selection

This failure stems from selection by demand and occurs because, while individuals know their health status very well, insurance companies are at a disadvantage as they do not know some of this information. Thus, people choose to take out the insurance that brings them the greatest benefits relative to the premium they have to pay,[20] and less healthy individuals are willing to pay a higher premium for a service with greater coverage. This situation leads to an imbalance in access to healthcare insurance because, if this behavior is generalized, the insurer increases the value of the premium to meet the expected costs

of caring for patients with higher risks and, consequently, this increase prevents healthier individuals from taking out preventive insurance.[21]

Adverse selection as an asymmetric information failure in healthcare insurance arises when individuals choose one of the contracts offered by insurers based on the probability of use and the quality of care they expect based on their health conditions and life habits. In this sense, only one of the parties of the contractual relationship (the insured) knows important information about risk and future expenses, which results in relevant distortions in decision making that can generate a loss of economic efficiency in the system.[22-24]

In Colombia, healthcare insurance is mandatory and is regulated by the General Social Security Health System (Sistema General de Seguridad Social en Salud - SGSSS by its Spanish acronym), which is universal and solidarity-based and is derived from a market of regulated competition. In addition, the insurance plan or risk coverage, formerly known as the Mandatory Health Plan (Plan de Salud Obligatorio - POS by its Spanish acronym), currently known as the Health Benefits Plan (Plan de Beneficios en Salud - PBS by its Spanish acronym), and the capitation payment unit (Unidad de Pago por Capitación - UPC by its Spanish acronym), which is the annual payment (premium) recognized for each of the members of the SGSSS to cover the PBS benefits, are determined by the regulatory entity (the State). On this last point, this is done as a measure to control adverse selection because if the State regulates enrollment conditions and coverage rates, competition among insurers will only take place regarding the quality of care.[25-27]

The Colombian healthcare system is made up of three components. The first is managed by the Ministry of Health, an institution that, in addition to regulating the system, is in charge of financing it through a fund called the General Social Security Health System Resources Administrator (Administradora de los Recursos del Sistema General de Seguridad Social en Salud - ADRES by its Spanish acronym), which collects and distributes the system's resources obtained from general taxes and the nominal contribution equivalent to 12.5% of the salary.

The second component of the SGSSS comprises the insurance companies known as Health Promoting Entities (Entidades Promotoras de Salud - EPS in Spanish), to which all individuals must enroll through the Contributive Regime (CR) if the person has an employment contract or is self-employed, or through the Subsidized Regime (SR) for the population classified as poor according to the System for the Identification of Potential Beneficiaries of Social Programs (Sisbén in Spanish). These insurers may be public or private in both regimes and beneficiaries are entitled to choose freely. ADRES guarantees the financing of care for CR beneficiaries, but also contributes to solidarity in the SR by assuming catastrophic expenses and promoting health.

The third component of the SGSSS includes healthcare providers (clinics, hospitals, and professionals) that receive payments from the EPS or the regulatory system. These providers are known as Health Care Providers Institutions (Instituciones Prestadoras de Salud - IPS in Spanish).[28]

Therefore, it is possible to think that in Colombia the population can distinguish the different quality levels of healthcare services and adversely select the EPS to which they want to enroll.

In the SGSSS, the price of the plan is fixed by law and the EPS cannot discriminate against potential members based on pre-existing conditions or modify the PBS.[27] Thus, from the economic point of view, the Colombian State defined, through Law 100,[27] the regulations to ensure that there is a more equitable distribution of risk among the EPS (preventing adverse selection) and that users are protected from being excluded from the system (risk selection, which will be explained below).[25]

In a study conducted between 1999 and 2003, Velásquez-Velásquez & Gómez-Portilla[22] found that 62.64% of the sample based their EPS choice decision on the selection made by another person (partner, employer, family member, or other). It was also found that the most relevant quality factors to be considered by beneficiaries when choosing their EPS were the ease and agility in authorizations for any type of service, the timeliness of general practitioner consultations, the ease of procedures, and the timely delivery of medications.

When choosing the EPS, quality criteria prevail and, according to España-Espinoza & Jaimes,[29] good care (33.75%) and access to specialists (24.4%) are among the most sensitive issues when making this decision. Consequently, the quality characteristics shown by the EPS are the adverse selection criteria that influence the choice of the EPS.

Furthermore, as a consequence of adverse selection, the Constitutional Court continues to legislate on the administrative procedures for the recovery of health services and on the distribution of benefits resulting from *tutelas* (writs for the protection of constitutional rights). However, this is done in an inequitable manner, as it has been shown that the EPS with the highest number of *tutela* recoveries have an investment value per beneficiary that is four times higher than the average value, for example, Salud Colpatria and Sanitas.[30-32]

In the current Colombian health system, although the UPCs received by the EPS are (imperfectly) adjusted to the risks of individuals, they are calculated on the basis of the average quality offered; that is, they depend more on the quality offered and less on expenditure control.[33] According to the Ministry of Health and Social Protection,[34] this situation can be attributed to the proliferation of EPS, in the sense that the increase in the number of insurers fragments the healthcare response and encourages poor quality care for the user. Moreover, the service authorization mechanism is restrictive, which means that the quality of insurance is a parameter of risk concentration among those perceived as the best insurers and implies that the demand that each EPS has to meet is relatively inelastic in terms of quality due to two conditions: 1) the perception of quality would be the same in all EPS, and 2) medical services are purchased as part of a personal relationship, which means that health or healthcare services cannot be analyzed as a commodity to be purchased or substituted for another good.

Notwithstanding the above, the Ministry of Health and Social Protection considers that quality criteria are indeed incentives for the choice of EPS and plays a role in this decision by regulating the prices of care (UPC) to avoid the concentration of users in a few EPS.[25]

Risk selection

This failure occurs during the selection process when it is made by supply, especially on the part of the healthcare service providers. This has become a highly questioned ethical issue because, although Colombian law requires that any patient with a vital emergency must be treated, the lack of supply subsidies means that both public and private healthcare service providers must reject patients who do not have an agreement or are not covered by an EPS insurance plan, and even deny healthcare insurance to individuals.[35]

According to Musgrove,[5] supply reacts to adverse selection through risk selection. In other words, insurers differentiate and select individuals with lower risk and establish selection protocols according to pre-existing conditions and the medical history recorded in the contracts.

Moral hazard

This failure is triggered by a change in the individual's behavior in relation to their own healthcare upon learning that they are insured (ex-ante risk) and by the excessive use of the service after learning that they are insured (ex-post).[36,37]

In response to the imperfection failures of the healthcare market related to ex-post moral hazard, in Colombia the State allows the charging of moderating fees, which, although they seek to regulate the use of healthcare services and the values of the co-payments that support their financing, may impede access to healthcare because not all insured persons are able to pay them.[21]

Another of the main healthcare market failures due to asymmetric information is demand induced by consumer ignorance. This is a condition derived from the agency theory in which the physician (provider) becomes the agent of the patient (principal), and the former is expected to act in favor of the latter's interests. However, by maintaining a dual interest before the insurer, as provider and principal, the physician encourages the consumption of a certain treatment to maximize the insurer's profits.[10,37] In other words, induced demand describes a request made by a physician that a patient would not have agreed to if they had the same information. In this regard, it has been established that the increase in the supply of surgeons does not reduce the price, but rather increases the number of operations.[38,39]

Description of other types of healthcare market failures

There are other types of healthcare market failures that are not associated with asymmetric information. These include externalities, which, despite the economic imbalance they generate, are positive when the consumer receives an indirect benefit, for example when a vaccine is administered to an affected group to fight a contagious infection and the marginal and total benefit produced is undervalued. In this sense, allocative efficiency occurs when the marginal cost is equal to the social marginal benefit[40] and therefore externalities are considered a failure because the market does not adequately value all the costs and benefits derived from consumption.

Externalities then imply that the State must assign a transaction cost or incentive to the healthcare market (increased regulation) to achieve efficiency in the allocation of resources. This encourages people who have acquired or may acquire communicable or contagious diseases to get vaccinated, since the State provides vaccines free of charge.[4,41]

Other common forms of imperfect competition in the Colombian healthcare market include the formation of monopolies, the existence of public goods, and the presence of merit goods, which are described below:

Formation of monopolies

The formation of monopolies, which create barriers to access due to the lack of complete markets, is a situation aggravated by vertical integration between insurers and healthcare service providers. In Colombia, in order to prevent monopolies in the market involving EPS and IPS, the State enacted Law 1122 of 2007,[42] which restricted vertical contracting to only 30%; however, vertical integration is nowadays an ongoing practice in EPS with the largest number of beneficiaries.

Cullis & West[43] describe how medical treatments with low cost-effectiveness, high technical complexity and high cost due to the rare occurrence of the treated disease

are inefficient and give rise to monopolies generated by technological factors that take advantage of economies of scale in the provision of services that benefit rural areas of low population volume, since these technologies are generally found in public hospitals in Colombian departments or provinces. In this regard, State regulation should focus more on making greater investment in the supply of health services in the territories so that specialties are not centralized only in the capitals of the departments and more complete markets are generated.

Existence of public goods

This refers to the presence of non-exclusive goods, i.e., goods that are not provided exclusively to those who pay for the service, and whose consumption does not involve competition (or destruction at the moment of consumption), as in the case of preventive services.[41,44]

Presence of merit goods

This refers to the situation in which people have the autonomy to freely choose the amounts of consumption, which occurs in the vaccination and family planning campaigns carried out in the country.[41,45]

The aforementioned imperfections can cause various failures in the health care market, which makes it clear that an exclusively private provision of healthcare services is not advisable. In this sense, and adopting Enthoven's position,[46] it is necessary for the State to participate in the insurance and provision of healthcare services in such a way that their supply is mixed, since both public and private provision of goods is flawed.

Analysis beyond Arrow's uncertainty approach

From my perspective as the author of this study, it is important and interesting to broaden the analysis of the failures of the healthcare market in Colombia by levels of healthcare complexity, as proposed by Arrow,[2] considering that the efficiency of the healthcare services sector at the microeconomic level cannot be measured using equilibrium criteria due to the uncertainty and lack of rationality of the agents in this market.

As in the case of all healthcare services that have their own market characteristics, which derive from the uncertainty of the disease, uncertainty concerning the efficacy of the treatments and uncertainty regarding the lack of rationality of the consumer, in Colombia there is uncertainty at each level of healthcare, but in varying degrees.

It is important to consider that in the Colombian healthcare model, the user is usually assessed initially at the primary level of care, where a general practitioner examines them, evaluates their health condition and makes a diagnosis. If the disease or health condition exceeds the resolution capacity of the primary care level, the patient is referred to a secondary or tertiary care institution to establish the diagnosis and initiate appropriate treatment. In this way, patient care is tiered depending on the complexity of the health condition or problem, which in the Colombian healthcare system is known as continuity of health care, 1 of the 5 characteristics of the Obligatory System for Quality Assurance in Health Care.[47]

If such continuity is interrupted, there may be serious consequences for the patient in economic, social and health terms, such as the prolongation of their health problem if a diagnosis is not made and appropriate treatment is not initiated, an increase in out-of-pocket expenses (e.g. transportation to consultations), a decrease in their economic

productivity, and the social impact derived from the feeling of helplessness caused by suffering from an illness or feeling ill without even having a diagnosis.

In such a continuum of care, there is less uncertainty about the disease and about the effectiveness of a treatment if the health condition can be resolved at the first levels of care (primary and secondary). Accordingly, although 95% of patients' health problems can be resolved through assessment by primary care physicians,[48] many diseases and health conditions must be treated in secondary, tertiary or quaternary care institutions, where they are dealt with using an interdisciplinary approach and, in some cases, medical boards are required for coordinated treatment planning, which increases uncertainty regarding both the course of the disease and the efficacy of the treatment.

However, the consumer's (user or patient) capacity for rational choice has the same behavior as uncertainty because the availability of the human and technological resources that they can choose from decreases as the complexity of care increases, which has an obvious impact on the cost due to a decrease in supply. This leads us to infer that the imperfect nature of the health market described by Arrow[2] increases as the level of healthcare increases, which could also counter-argue the differentiation of health as a public or private good established by the World Bank in the sense that healthcare services at the highest levels of care (curative and rehabilitative) are those that should be offered by the private sector.[48] However, according to the analysis made in this reflection article, this would be the least optimal option, since uncertainty is greater at these levels of care and, therefore, greater State intervention is required.

Notwithstanding the above, although this analysis does not include the macroeconomic factors of the healthcare services and insurance sector in terms of supply and demand, given the current situation of the healthcare system in Colombia, it is possible to conclude that, first, the healthcare model has been efficient in terms of coverage (universalization in health insurance of the population) but insufficient or inefficient in terms of the supply of services and the financial sustainability of the system, and, second, laws or regulations, rather than fiscal policies, are the most appropriate strategies to improve the efficiency of the system and reduce the barriers to access to healthcare services.

Based on this statement, it is advisable that the provision of services at the primary level of care (where there is less uncertainty about the behavior of the disease, greater consumer rationality, and greater economic optimality) should be private. However, at the same time, the analysis of externalities, public goods and merit goods described above makes it advisable for the State to intervene more at the primary care level, especially with preventive interventions. In order to settle this contradictory position, it is necessary to maintain the mixed nature assurance of State-regulated competition.

The healthcare system in Colombia has been efficient at the middle level of care because it has achieved an increase in hospital access indicators and a reduction in mortality from chronic noncommunicable diseases. In this sense, most of the goals established in the Ten-Year Public Health Plan 2012-2021 have been achieved efficiently, and with a limited budget, with a favorable impact on almost the entire population.[49]

In the case of tertiary and quaternary care services (considered catastrophic), their provision or regulation should also be the responsibility of the State due to their high level of uncertainty.

Conclusions

In order to make healthcare market conditions more efficient and optimal, Colombia has increased regulation, and the State has become the majority funding provider in the

current healthcare economic model. However, there are still flaws derived from imperfect competition among actors in the healthcare market that make the healthcare insurance model inequitable and less efficient.

In Colombia, the problems of inefficiency in the management and allocation of healthcare system resources persist due to the complexity of the regulation of healthcare insurance markets, which is caused by the existence of monopolies in the provision of services and other failures due to asymmetric information such as moral hazard, risk selection, adverse selection, among other structural problems. These problems continue to affect universal access to healthcare services and the quality of healthcare despite the fact that the country has a large number of laws and resolutions that regulate the healthcare sector through market intervention.

Therefore, taking into account the above, it is necessary to develop public policies that not only guarantee the efficient use of resources among the actors involved with optimal results for the healthcare services market, but also ensure universal and equitable access to these services.

Likewise, it is important to mention that the healthcare services sector exhibits imbalances that prevent it from being an optimal and efficient sector in microeconomic terms according to Arrow's current postulates.[2] These imbalances continue to affect access and sustainability of the Colombian healthcare system, which is why greater State regulation is required. Nevertheless, it is necessary to reevaluate the relevance of increasing State regulation in the healthcare system to the point of weakening the role of healthcare insurance intermediaries (EPS) or eliminating them at all levels of care, since their participation in each of these levels has a certain relevance.

The analysis of the healthcare market, carried out differentially according to the levels of care, leads us to advise against an exclusively private provision of healthcare services at the primary and tertiary/quaternary levels due to the greater risk of uncertainty. In any case, it should be noted that, so far, the Colombian healthcare system has shown to be efficient and to have greater coverage at the secondary level of care.

From this situation it could be concluded that the role of State regulation may be smaller at the secondary level of care, since private intermediaries (EPS) have proven to be efficient there and also that State intervention and provision should be increased at the primary level and in the care of high-cost diseases (tertiary/quaternary level), where intermediaries could be excluded in order to achieve greater efficiency and equity of access to these healthcare services in the country.

Note: This reflection article is based on the doctoral thesis entitled *Estudio del universalismo como principio del sistema de salud colombiano: una propuesta desde el ámbito económico del liberalismo igualitario* (Study of universalism as a principle of the Colombian healthcare system: a proposal from the economic perspective of egalitarian liberalism).[50]

Conflicts of interest

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