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# Systematic review of health policy and behavioral economics: A neglected point in health promotion

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## Abstract:

**BACKGROUND:** Health policymakers use a variety of policy tools. These policies are either based on external factors or are based on paternal considerations; people may need to have help in the selection of items that may be regretted about them in the future. However, recent research on behavioral economics shows that major decision-making mistakes are not only limited to vulnerable groups but also are ubiquitous and systematic. The purpose of this study was on health policy making with a behavioral economics approach in health promotion.

**MATERIALS AND METHODS:** The eligible studies were obtained from Medline (PubMed), Web of Science, and Scopus databases. The search strategy uses a combination of keywords in the titles. The keywords of behavioral economics along with the keyword of health have been used to find related articles.

**RESULTS:** After deleting duplicate articles, a total of 38 articles were identified. After reviewing the title and abstract, 13 studies were omitted because they did not meet the inclusion criteria. Ten articles were removed from the found articles due to the unavailability of the full text and four articles were excluded because their method was quantitative. Finally, a total of 11 articles were eligible for including this review study.

**CONCLUSION:** Recent research on behavioral economics shows that decision-making errors are not limited to vulnerable groups but are ubiquitous and systematic. Forgotten income or negligible income is very high and is reasonably explained by transaction costs. Educational interventions often have little effect and do not benefit from basic cost-benefit tests. In addition, the seemingly insignificant aspects of choice-frameworks and assumptions-often have a profound effect on behavior.

## Keywords:

Behavioral economics, health policy, systematic review

## Introduction

Policy-makers use a variety of policy tools. These policies are either based on external factors or are based on paternal considerations; people may need help in the selection of items that may be regretted about them in the future. Recent research in behavioral economics, however, shows that major mistakes in decision-making are not limited to vulnerable groups, but are ubiquitous and systematic. The purpose of this study is to address health policy with a

behavioral economics approach. For example, Kooreman *et al.* show that employees lose thousands of dollars a year by not making full use of their employers in a retirement savings plan. Donated revenues are very large, which can be explained by the cost of the transaction. Educational interventions often have little effect and do not perform the basic cost-benefit tests. In addition, the insignificant aspects of a choice-framing and default-seem to have a large impact on behavior.<sup>[1]</sup>

Behavioral economics is a discipline that describes the interaction between economics

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and psychology and has been studying the changes in health-related behaviors for more than 20 years.<sup>[2]</sup> Early works of economics can be seen in the studies of people such as Smith (multi-personality), Samuelson (time preferences), Stigler (incomplete information), and Simon (Bounded rationality).

Relying on these fundamental contributions and psychological research, the field of behavioral economics has provided a more accurate knowledge of how real behavior deviates from complete rationality. Recent theoretical studies have recognized the distinction between explicit and normative priorities, with the aim of establishing a welfare theoretical basis for libertarian paternalism. Behavioral insights help design better policies that are less costly and effective than many existing policies. More selective and more competitive policies can generally be an undesirable tool to improve consumer welfare because they confuse consumers in their choices.

Hence, something like defaults and frameworks cannot be avoided; thus, it is best to try to use them thoughtfully. Similar to any government intervention, a plan that recognizes consumer heterogeneity must be analyzed before initiating a policy by analyzing costs and benefits. Preferably, small-scale field trials should be performed before the full implementation to evaluate effectiveness.<sup>[1]</sup>

Behavioral economics is applied in health policies and leads to improved health attitudes and behaviors. In theory, small changes can lead to behavior modification. Several studies have shown that simply encouraging people to plan increases the likelihood of mental engagement in health behaviors.<sup>[3]</sup>

People in health care often make decisions that do not suit them, from not registering with the health insurance they are entitled to, to extremely harmful behaviors. Traditional economic theory provides a limited tool for improving behavior because it assumes that people make rational decisions, have the mental ability to deal with large amounts of information and choices, and that it is their personal taste and cannot be manipulated. Behavioral economics, by integrating economics with psychology, acknowledges that people often do not act economically rationally. It therefore offers a richer set of tools than traditional economic theory for understanding and influencing behavior.<sup>[4]</sup>

These experiments help to better understand the concept of behavioral economics policy. The basis of medical decision-making can be found in the work of Feinstein, Lusted and Schwartz *et al.*, who were among the first researchers to examine “physicians” decisions.<sup>[5-7]</sup> In medical decision-making that focuses on

transplant decisions, there is a combination of research approaches that ignore or incorporate sociological factors (such as common diseases in the patient, age, sex, etc.). The first approach is based on theoretical (mathematical) models that try to obtain the optimal time for organ transplantation, while the second focuses on the behavioral factors influencing the transplant decision. At this time, there is no model that integrates sociological factors and transplant time considerations into one clinical decision model. We hypothesize that our synergistic efforts can fill this gap in medical decision-making by combining theoretical models with sociological factors and the regulatory environment in a coherent model.<sup>[8]</sup> Eisenberg was one of the first researchers to look at the sociological factors of medical decision making.<sup>[9]</sup>

Recent research on transplantation, focusing on sociological factors, primarily uses survey methods to achieve research objectives that is, determining the role of sociological factors in transplant decision-making.<sup>[10-12]</sup>

Although the use of behavioral economics in policy-making is a new approach, we have found articles that affect this policy in health with behavioral economics. The present study is about awareness of health policy with behavioral economics.

## Materials and Methods

### Search strategy

Searches were conducted in scientific databases, including Medline (PubMed), Web of Science, and Scopus. Studies were selected based on the search for the keywords “behavioral economic” and “health”. Due to the limited number of studies, no time limit was applied to the strategy search.

### Selecting the studies

In the first round, studies were selected based on the review of title and abstract. Duplicate articles were then excluded. In the second round, the studies were selected based on the review of the full-text, and after considering the inclusion and exclusion criteria, finally, 12 key articles were included in the review study. These steps are shown in Figure 1. It should be noted that the articles were selected independently by two individuals and in cases where there was disagreement about the selection of the article; the opinion of the third person was applied as a criterion for selecting or not selecting the article.

### Inclusion criteria

The following criteria were considered for selecting studies.

- Studies published in English
- Studies focusing on behavioral economics and health policy.

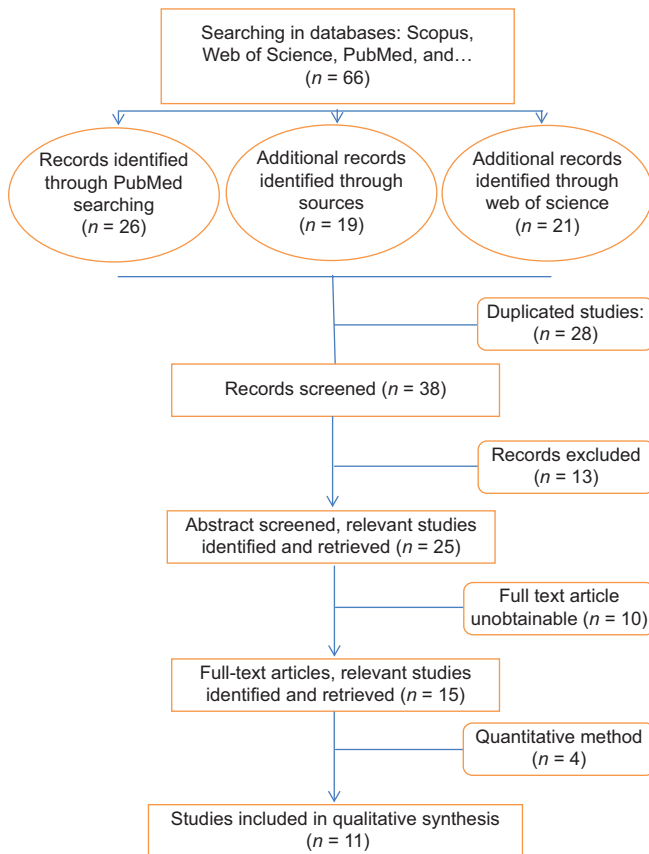


Figure 1: Search flow chart

### Exclusion criteria

- Studies for which full text was not available
- Studies that used quantitative methods
- Studies whose methodology was not explained in detail
- Studies that did not meet the needs of the present study.

Eligible studies for review were obtained from scientific databases including Medline (PubMed), Web of Science, and Scopus. The search strategy involves the use of a combination of keyword search terms in article titles. The keywords of behavioral economics along with the keyword Health have been used to find related articles.

### Results

After removing duplicate articles, a total of 38 articles were identified. After reviewing the title and abstract, 13 articles were again deleted because they did not meet the inclusion criteria. 10 articles were removed from the found articles because their full text was not available and 4 articles were excluded because their method was quantitative. Finally, a total of 11 articles were eligible for review.

### Discussion

In this study, according Table 1, eleven articles were finally found that explain how to use behavioral economics

for health policy-making. Katherine Baicker *et al.* demonstrated the available evidence on decision-making and use of insurance and used it to develop a behavioral approach to the policy problem of non-health insurance coverage and possible policy solutions to the problem. They found that evidence from behavioral economics could address both low-consumption resources and the effectiveness of the various policy leverages intended to expand coverage. They then applied these insights to policy questions on public and private insurance coverage and the implementation of recently adopted health care reforms, and focused on employment of behavioral insights to maximize the value of coverage costs. They concluded that success in health insurance reform depends on a fundamental understanding of the behavioral barriers to decision making. The approval process is driven by psychology as much as economics, and by designing behaviorally aware policies, public resources can be used much more effectively.<sup>[13]</sup>

Warren K. *et al.* consider some of the key dimensions of this discipline when making changes in health-related behaviors. Behavioral economics (1) provides new conceptual systems for the awareness of scientific understanding of health behaviors, (2) transforms scientific understanding into practical and effective behavioral change interventions, (3) uses various aspects of behavior change beyond increasing or decreasing frequency, (4) identifies and exploits post-disease processes and interventions, and (5) utilizes technology in an effort to maximize efficiency, cost-effectiveness, and accessibility. These dimensions will be examined and their implications will be discussed for the future of the field.<sup>[14]</sup> A study by Dominic King *et al.* examines the role that behavioral economics-based approaches can play in “stimulating” providers and patients in ways that can reduce the growth of health care costs.<sup>[15]</sup>

However, recent research in behavioral economics shows that significant decision-making mistakes are not limited to vulnerable groups, but are ubiquitous and systematic. Donated income is huge, which can be explained by the cost of the transaction. Educational interventions often have little effect and do not perform cost-benefit baseline tests. In addition, the insignificant aspects of a Default and framed behavior seem to have a large impact on behavior. Using these basic contributions and psychological research, the field of behavioral economics has created a more accurate knowledge of how real behavior deviates from rational constraints. Recent theoretical studies have recognized the distinction between explicit and normative priorities, with the aim of establishing a welfare theoretical basis for libertarian patriarchy. Behavioral insights help design better policies that are less costly and more effective than many existing policies. More selective and more

**Table 1: Review of the article related to behavioral economics and health policy**

Use of behavioral economics in	Year	Author	Row
Get insurance	2012	Baicker <i>et al.</i>	1
Health related behaviors	2016	Bickel <i>et al.</i>	2
Reduce the growth of health costs	2013	King <i>et al.</i>	3
Improving public health policies	2016	Matjasko <i>et al.</i>	4
English NHS	2012	Oliver <i>et al.</i>	5
Health care (enrollment in government-sponsored health insurance programs, simplifying the selection of prescription drug insurance plans, reducing tobacco use, obesity)	2013	Rice <i>et al.</i>	6
Provide health care	2017	Shuval <i>et al.</i>	7
Improve the quality of child care	2018	Rakhee Shah, Ann Hagell	8
Changing health behaviors	2019	Dominic king	9
Improving physical and mental health during the corona pandemic	2020	Dongarwar <i>et al.</i>	10
Improving the health of adults and youth	2020	Wong <i>et al.</i>	11

NHS=National Health Service

competitive policies can generally be an undesirable tool to improve consumer welfare because they confuse consumers in their choices. Issues such as defaults behavior and framing cannot be avoided, so it is best to try for employing them thoughtfully. Similar to any government intervention, before taking the initiative in politics, a plan must be drawn up, by analyzing costs and benefits, which recognizes consumer heterogeneity. Preferably, small-scale field trials should be performed before full implementation to evaluate effectiveness.<sup>[1]</sup>

Matjasko *et al.* outline the key concepts of behavioral economics that are most important to public health policy. They include preferences inconsistent with time, bounded rationality, status quo bias, framing effects, innovative, and social norms available.<sup>[16]</sup> study conducted by Adam Oliver shows that these three concepts (objectivity, inconsistency, and exaggerated decline) explain success or other factors in the NHS market and policy goals over the past two decades, and some proposals suggest how policy may be useful in the future design. Of course, the important point is that if people follow the moral principles of politics, they will be more motivated. The threat of loss is usually more responsive than the promise of profit, and the “immediate moment” is very important to people, so policies that require human action must be designed to make that moment as enjoyable as possible. Behavioral economics communication is relatively contextual, and the knowledge that the discipline can provide is used on a case-by-case basis. It means that behavioral economics provides a library of tools to choose from when related. The purpose of this article is to provide some insights into how these three tools work-objectivity, inconsistency, and exaggerated decline, which may be used to assist in the design of policy tools and may assist in efforts to explain success or other policy initiatives related to goals and markets. In his study, Thomas Rice finds different perspectives on what motivates human behavior. First, compared to what traditional economic theory predicts in decision-making, people are more inclined to the present

and not to the future. They are more concerned with losing what they already have and are aware of gaining what they have not experienced. They are very sensitive to monetary incentives, especially the ones that are most tangible. Second, individuals are cognitively limited. As a result, instead of using all possible options, they use exploratory methods or thumb rules to make the complex decisions necessary in everyday life. They are influenced by the framework of choices, and because too much choice leads to decision fatigue, their decisions may not be consistent. Third, people’s priorities are changeable. Not only do they evolve over time, but they are strongly influenced by the environment through advertising. All of these features make real-world decision-making not based on the prediction of economic theory, but can even contradict economic theories, especially in the areas of health and health care.<sup>[4]</sup>

Shuval *et al.* review related articles in the fields of medicine/public health and economics/psychology to suggest a comprehensive approach to physical activity counseling at the primary care level. They first examined the public health approach to physical activity counseling and then offered theories of behavioral economics, which is an emerging field that combines psychological and economic principles. Behavioral economists focus primarily on the cost (such as time and energy) and the benefits of physical activity (such as improving health), so physical activity can be considered an investment in health. People who want to “immediately pay” for physical activity in exchange for future health should be given priority. Briefly, having patient time preferences (rapid treatment of the disease), the ability to delay rather than quickly satisfy, higher education and income, more financial savings in retirement, better preventive health behaviors (e.g., exercise, healthy food, and not using tobacco) improves health (e.g., normal weight status). In general, most people are looking for an immediate conclusion, but the degree of patience varies from person to person. It should be noted that there is an inherent complexity when measuring intermediate

costs and benefits associated with physical activity. Some of the immediate costs of physical activity are obvious (e.g., “I will sweat and get tired”) but other costs occur with uncertain probability, such as the possibility of injury from exercise, which is often unknown. In comparison, the health benefits of physical activity are almost always present and documented in studies (e.g., improved mental health). In addition, the decision to do physical activity is relatively risky. People who are more tolerant of risk seem to participate more in physical activity.<sup>[17,18]</sup>

In a study performed to evaluate the impact of behavioral economics on children’s general health, Shah *et al.* stated that understanding the principles of behavioral economics is important for pediatricians because behavioral economics offers ideas to help improve the quality of child care. It can also be used to inform health interventions/policies at the population level. This study summarizes key behavioral economics concepts such as bounded rationality, limited willpower, and community impact, and explains how they can be used to shape healthy behaviors in children and adolescents. Unhealthy behaviors in children and adolescents include obesity, smoking and not exercising. Studying economics requires understanding how and why people make decisions, and therefore helps us understand behaviors that affect health. Sometimes, parents make decisions that are not in the best interest of their teen’s long-term health, such as refusing vaccinations. Pediatricians can use the understanding of behavioral economics techniques to influence parental decision-making and develop effective interventions to promote healthy behaviors among children and young adults.

Furthermore, having an understanding of behavioral economics techniques can help us monitor the behavior of health care professionals to improve clinical outcomes and the quality of care provided. There are several ways to apply concepts to children. These are related to the health care environment, methods of communicating with patients, methods of providing information, other elements of medical counseling, and selection of various interventions. A true understanding of some people’s reasons for making specific decisions can help health-care professionals to change unhealthy behaviors in children and young adults. This is especially important since some of the consequences related to children’s health-related behavior remains weak.<sup>[19]</sup>

In a study conducted for evaluation of the impact of financial incentives, or behavioral economics, on health behaviors, Vlaev *et al.* stated that incentives are important in economics and are used to influence behavior in the public and private sectors. Recently, interest in use of financial incentives to promote good

health behaviors and avoid unhealthy behaviors has been shown. Behavioral economics integrates psychological insights with the laws of economics and offers a number of powerful psychological phenomena that help better explain human behavior. Financial incentives are increasingly seen as an important tool that can make changes in behavior that can lead to a healthier lifestyle. For example, financial incentives for healthy behavior are used by employers or health insurance providers. For example, if patients do not participate in health-care screenings, do not make medical appointments, do not take their medications, and do not adhere to health improvement programs as planned by their health care providers, patients’ benefits in some US states are reduced or eliminated. The US government also passed a law that employers could use workers’ financial rewards and penalties with up to 50% health insurance as an incentive to quit smoking, exercise, eat healthy, lose weight, and lowering cholesterol and blood pressure. Employers can use the principles of behavioral economics in this study to improve the effectiveness of such programs.<sup>[20]</sup>

In their study, Wong *et al.* conducted an integrated review of how economic behavioral phenomena are used to motivate adolescents and young people to change health-related behaviors. We examine these phenomena in the individual and social environments related to adolescents and young adults (AYAs) and the neurodevelopmental changes they undergo, and highlight opportunities for intervention in specific areas of AYAs. Our review of studies shows that behavioral economic phenomena using social choice are particularly promising for the health of adolescents and young people. Behavioral economic interventions that use the learning and development of adolescents and young people can have a positive impact on the health and well-being of young people throughout life.

Every day, AYAs decide to do something that will affect their current and future health. Behavioral economics is a way to examine the reasons for decision-making among adolescents and young people and to support the availability of social media and digital health software among adolescents and young people, provision of a ready-made information platform for deploying and testing interventions, and provision community-based analysis of behavioral economics decisions. Advances in technology (for example, high-speed internet and mobile devices with wide access) have provided everyone with an unprecedented level of awareness of world events. This constant access to information undoubtedly shapes attention, information processing and decision making. Finally, behavioral economic interventions are compatible with other evidence-based frameworks, such as the health belief model, and can

reinforce interventions to overcome weaknesses and increase effectiveness.<sup>[21]</sup>

Dongarwar *et al.*, in a study on the impact of behavioral economics on the mental health of employees during quarantine, stated that prolonged quarantine at home during COVID-19 can have negative psychological and physical consequences, which in turn, leads to reduce productivity among people who work remotely. We tried to identify the behavioral economics factors that employers should consider for their employees working during the current COVID-19 epidemic. Physical and mental well-being is intertwined and is directly related to high productivity in the workplace. By integrating behavioral economics factors into work culture, companies reduce work-related stress that leads to improved mental and physical performance. Therefore, it leads to increased productivity. Access to mental health professionals, yoga or meditation instructors to improve mental well-being, and creation of a virtual team happy remote activities lead to improved mental abilities. This can lead to better mental health outcomes such as increased concentration, energy and excitement about daily activities, etc., and can help increase productivity such as improved team spirit, multitasking, stress management and so on. By integrating behavioral economics factors into work culture, companies reduce work-related stress, which in turn improves mental, physical, and social performance and ultimately leads to increased productivity.<sup>[22]</sup>

## Conclusion

Recent research in behavioral economics, however, shows that significant decision-making mistakes are not limited to vulnerable groups but are ubiquitous and systematic. The proceeds donated are very large, which can be explained by the cost of the transaction. Educational interventions usually have little effect and do not pass the basic cost-benefit tests. In addition, the insignificant aspects of a choice-framing and default-seem to have a large impact on behavior.

## Ethical considerations

Ethical issues (including plagiarism, informed consent, misconduct, fabrication or falsification of information, republishing or reposting, redundancy, etc.) have been widely observed by the authors. Ardabil University of Medical Sciences ethical committee was approved this research. (IR.ARUMS.REC.1400.169)

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## Conflicts of interest

There are no conflicts of interest.

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