



An Overview of Brain Drain, Causes, and Policy Issues in Iran

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Abstract

Background: Brain drain has caught global attention due to its extensive impact on many, especially less developed, countries. The present study aims to review the existing studies on the brain drain phenomenon in Iran, the causes, and associated factors.

Materials and Methods: In this overview, several online databases (Medline, EMBASE, PyscINFO, EMBASE, Web of Science, Scopus, ERIC, and Google search engine) were searched for peer-reviewed studies on the Iranian brain drain up to February 2023. Two independent researchers conducted the search process, and a supervisor resolved possible discrepancies.

Results: Various theories have been proposed to explain the causes of elite migration, among which the pull-push factors theory is the most widely used in theoretical foundations (37.4%). The results showed that higher income and the attractions of the destination countries (pull factors), repulsive factors of the country of origin (push factors), global developments, and individual and family factors had the largest influence on elite migration. The impact of elite migration can be positive or negative depending on the country and economic and social trends and can lead to opportunities or constraints for economic, social, and human development.

Conclusion: Brain drain in Iran is in part caused by exterior persuasion (i.e., pull factors from developed countries) and domestic insufficiencies (i.e., push factors), and the emigration rates are growing rapidly. It is necessary to investigate and manage this phenomenon using the existing push-pull theories, Maslow's hierarchy of needs, and the theory of reasoned action.

Key Words: Brain drain, Causes, Elite Migration, Iran, Review.

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1- INTRODUCTION

Migration and population movements between borders have a history as long as humans. However, it has grown rapidly in the latter part of this century. International migration has been increasing since 1970, and a large number of people migrate from developing countries to industrialized ones every year. In 2015, the number of immigrants in the world reached 244 million, equivalent to 3.3% of the total population of the world (1). In other words, more than 3% of the world's population do not live in the country where they were born. Young people are a significant contributor to the recent trends of international migrations and face various opportunities and challenges in this process (2).

In Iran, internal migration is more common than international migration, but the latter is more controversial and has often been associated with more diverse and complex consequences. Iran has always been exposed to foreign displacements and migrations in its history, but the importance and complexity of international migration have increased in recent decades due to the country's young demographic structure (3, 4). The migration of elites and specialists to developed countries is another challenging issue with significant consequences for the home country (5).

Development necessitates the correct and rational use of the abilities and talents of human resources, especially skilled and educated individuals. Use of human resources in development opportunities is one of the basic indicators of human development, and many societies have realized that the growth and development of elite and talented individuals can contribute to development and progress. The professional, motivated human force is the most important capital in the preservation and development of life, and the progress and development of countries

depend on the attraction, cultivation, maintenance, and proper exploitation of elites and cultured human resources. This type of investment is possible over time by spending vast material and spiritual resources to turn specialists into national capital (6). Hakimzadeh et al. (2012) studied educational, social, and cultural factors in the tendency to emigrate among Tehran University students. They showed that cultural-social alienation and age had a significant positive correlation, and satisfaction with the educational system had a significant negative correlation with the tendency to emigrate. Also, male students were significantly more willing to emigrate, and Bachelor students were less willing than those with a master's degree and doctorate (7).

Froutan and Sheikh (2016) studied the tendency of students of Ferdowsi University of Mashhad toward international migration. They found that nearly half of the students were willing to migrate abroad. This inclination was meaningfully a function of demographic characteristics such as age, gender, and marital status. Variables such as a sense of security, religiosity, national identity, and economic and career motivations had significant administrative effects on the tendency to migrate (8).

Statistics indicate that the desire to immigrate is high in Iran. A recent study conducted by the Research Institute of Science, Technology, and Industry of the Sharif University of Technology showed that 400,000 individuals attempted to immigrate, but a much larger figure (approx. 1,800,000) intended to emigrate from the country. Also, according to other statistics, 92% of Iranian Ph.D. students who study in America intend to stay there permanently and never return to Iran (9).

The statistics about Iranian immigrants in Canada, most of whom are accepted because of their work records related to their university education, indicate that

Iran is among the top ten countries with the most immigrations to Canada (ranking fourth in recent years) (10). There has been extensive research in the form of surveys, reviews, and meta-analyses on the factors affecting the migration of skilled workers abroad (4-17), but reviewing and summarizing the related studies is still important due to the significant effects and consequences of this phenomenon. In addition, each research involves one aspect of this phenomenon, and summarizing and updating the scattered information can help understand conditions that help preserve human capital. The present study aimed to review existing reviews, systematic reviews, and meta-analysis studies on the Iranian brain drain phenomenon, its causes, and associated factors.

2- MATERIALS AND METHODS

In this overview, all systematic reviews and meta-analyses, as well as review studies available in full, in Persian or English, were considered for inclusion. The search included articles from the inception of each database up to February 15, 2023. The searched databases were Medline, EMBASE, PyscINFO, EMBASE, Web of Science, Scopus, ERIC, and Google search engine. This overview focused on the brain drain phenomenon among Iranian elites. Two independent researchers conducted the search process, and a supervisor resolved possible discrepancies. The following steps were taken to develop this review: (1) identifying the research question; (2) identifying the relevant studies; (3) selecting studies; and (4) summarizing and reporting the data.

3-RESULTS

A total of four related studies, consisting of two systematic reviews, a review (content analysis), and one qualitative meta-analysis (with 130

scientific works) published between 2014 and 2021, were selected. The main characteristics of the selected studies are summarized in the following:

1. A systematic review in 2020 (including 17 studies) aimed to investigate the extent and mechanism of the impact of elite migration on the development of home countries and the opportunities and challenges for policymaking in this field. The results identified factors and variables affecting the three main issues central to migration and development: a) brain drain and development; b) the financial flows following elite migration; and c) the role of immigrant elite communities in development. Results also showed that the potential impacts of elite migration on development were complex and multidimensional, necessitating multidimensional responses from policymakers. The impacts of elite migration could be positive or negative depending on the country and its economic and social trends and could create opportunities or constraints for economic, social, and human development (16).

2. A systematic review (2014) with a qualitative method (of 68 works, including seven books, six research projects, 28 theses, and 27 scientific articles) investigated the research on elite foreign migrations and proposed suggestions for managing the brain drain phenomenon in 2013. The results showed that more than half of the studies on elite migration were only in the description section, where the researchers sought to investigate the phenomenon of elite migration and their attitudes, the tendency to leave the country, the migration process, and the elites' dispatch periods. About 16.2% investigated the variables influencing the migration of elites to understand the causes of migration, 16.2% involved the prevention of migration and recruitment strategies, 3% studied the outcomes and consequences of elite migration, and only

1% involved a critical analysis of elite migration at the level of an academic thesis. The results also showed that 75% of the studies investigated the issue of elite immigration at the macro level, 7.14% at the medium level, and only 10% at the micro level. The present meta-analysis showed that 2.32% of research was in the field of sociology, 1.22% in management, 1.19% interdisciplinary, 8.8% in economics, 4.7% in educational sciences and psychology, 5.1% in medical sciences, 5.1% in philosophy, 5.1% in law, and 5.1% in geography. Various theories have been used to explain the causes of elite migration, and the pull-push theory is the most widely used as the theoretical foundation for explaining the causes of elite migration. The variables related to the destination, i.e., the attractions and capabilities of the countries accepting immigrants, are the most important factors influencing the migration of elites with 54.2%. In the second order were the two variables related to the country of origin (i.e., driving factors) with 32.2%. Mediating factors, such as global developments and individual and family factors, are in third place with 13.6%. The results also showed that earning more income was the most important factor affecting elite migration (17).

3. A qualitative meta-analysis study in 2014 aimed to examine the general and practical results of a combination of sources and studies on attracting elites and preventing brain drain in Iran. This meta-analysis was conducted by reviewing 45 scientific studies from 2001 to 2012 and considered two dimensions of methodology and content. In the methodological dimension, the results showed that the examined studies presented a good accumulation of theoretical ideas and practical solutions but had many problems and shortcomings, such as incompatibility of goals, theoretical framework, research method,

results, and solutions, lack of use of advanced techniques of analysis, and inappropriate sample size. Regarding the content, this meta-analysis identified problems such as the inconsistency of the results with research objectives and the incoherence and the inappropriateness of the solutions with the purpose of the research in the conducted studies. In this study, it was found that 39.6% of the plans were based on the push-pull theory, and the researchers suggested that this theory has enough extent and comprehensiveness to be used for investigating the phenomenon of elite migration (18).

4. A qualitative study (based content analysis) aimed to investigate the challenges and strategies to improve the system of countering elite immigration in Iran from 1989 to 2013. The results showed that factors such as the lack of social attention to the value of scientific activities, the lack of necessary facilities for research, low salaries, and the feeling of discrimination and inequality were the driving factors (push factors) for the emigration of scientific elites (19).

4- DISCUSSION

This overview aimed to explore existing reviews, systematic reviews, and meta-analysis studies on the Iranian elite migration patterns, causes, and the associated factors. The results showed that higher income and the attractions of the destination countries (pull factors), as well as repulsive factors of the country of origin (push factors), and global developments, and individual/family factors were the most important factors affecting elite migration. The impacts of elite migration can be positive or negative depending on the country and its economic and social trends and could create opportunities or constraints for economic, social, and human development.

Mobility is a basic human phenomenon, and a certain share of the human

population has always migrated throughout history. Over the last 50 years, the share of migrants has been comparatively stable, ranging from 2 to 3.5 percent, which is remarkably low. However, the world population has grown significantly ever since, and the total number of migrants has grown from 81.5 million in 1970 to 272 million in 2019 (20). Migration is not evenly distributed among the world regions. Europe is the most “migratory” continent, with 8.4% of Europeans living outside their country of birth, followed by Latin America (5.9%), Africa (2.9%), Oceania (2.6%), Asia (2.4%), and North America (2.1%), (21).

According to Kerr et al. (2016), the trend of talent migration has been notable in the Organization of Economic Cooperation and Development (OECD) countries, including the United States, United Kingdom, France, and Germany (22). These countries attract large numbers of highly skilled workers, specifically from non-OECD countries, comprising 85% of the total migration rate at that time (23).

The effects of brain drain extend to social and national foundations. According to World Bank DRG (2019), the percentage of global migration increased from 2.8% in 2000 to 3.5% in 2018. It has been estimated that by 2030, the ratio of people aged 65 and older to 15-24-year-olds will be 3:1 in Japan, 1:7 in Nigeria, and 1:2 in India (24). The seriousness of brain drain was indicated in the U.S. migration data, when 1.5 million qualified professional workers from developing countries were found working in Western Europe, America, Australia, and Japan, and 500,000 students were studying abroad, but only one-third of them were willing to return home upon their graduation (25).

Brain drain is the exit of talent and skill from one country to another and is described as a hindrance to a nation’s social and economic development. According to Aytac and Aydin (2019), the

brain drain does not consist only of the talents lost due to migration, and the intention of fresh graduates to work or study abroad is part of the initiation of the brain drain (26). According to Boyle and Kitchin (2014), brain drain happens when the trajectory of the home country’s development is failing, prompting the idea to relocate in hopes of a better living for talented, skilled, and younger people (27).

Iran, as a developing country with a young population, many of whom are studying or university graduates, faces challenges regarding the professional affairs of specialists, including the migration of many specialists abroad to improve their educational and professional conditions (28). This trend of the departure of academics, known as elite migration or, more pessimistically, brain drain, has grown significantly in recent years. According to the statistics of Iran’s immigration yearbook, the number of Iranian students abroad has an upward trend, reaching from 19 thousand in 2003 to 56 thousand in 2018 (29).

According to the country’s strategic document on the affairs of the elites, an elite is an outstanding person who has a significant impact on the creation and expansion of science, technology, art, literature, culture, and management of the country within the framework of nominal values, and their activities are based on intelligence, creativity, inherent motivation, and capabilities on the one hand and expertise and acquired capabilities on the other hand, to speed up the country’s progress and advancement (30).

Elite migration occurs when smart and talented people in different fields leave their countries and move to more developed countries. They have used the facilities and resources of their country of origin and have brought their efficiency to other countries, leading to a loss of profit to the country of origin and gaining profit

for the country of destination in exchange for creating some facilities (31).

The causes of brain drain vary widely, but concerns over employment opportunities and income are a substantial cause. According to Tessema (2010), diminishing economic conditions, corrupted political systems, and social instability contribute heavily to brain drain (32).

In a qualitative study, Malekpour Afshar et al. (2022) identified the reasons for elite migration as 1) push factors of the countries of origin (economic, social, organizational, administrative, and political factors), and 2) pull factors of destination countries (special conditions of destination countries and their reception of elite immigrants). The consequences of elite migration included threats and the resulting opportunities. Cases such as the loss of quality human resources, wastage of educational resources, lagging in international competition, and intensifying feelings of hopelessness and despair were cited as threats of migration were mentioned (33).

Intellectual dilution, i.e., the decline in the quality of a country's human genetic resources, is a consequence of elite immigration. The burden of the development and progress of societies is on the shoulders of the talented and elite people of every society. Therefore, when the conditions in a society are such that the elites leave it over time, their departure differentiates the society, and the genetic stock of the country deteriorates in the long run. Thus, the process of transferring high intelligence coefficients to future generations will be disrupted (34).

In a study by Heidari Sourshajani et al. (2021), better welfare and social security, job satisfaction, freedom of speech, high research credits and facilities, the absence of burdensome rules for elites, compliance with the laws and regulations, and communication infrastructure of the

destination country were the most important reasons for the elites' desire to emigrate (35).

Mousavirad et al. (2014) identified the most important reasons for the migration of elites as the low status of elites in the country of origin, inadequate communication between the industry and educational institutions, inefficient meritocracy in scientific, managerial, and governance jobs, poor educational and research connection between internal universities and the top universities in the world, the lack of research facilities for the elites and specialists, the weak governmental support for entrepreneurship and the employment of the elites, the low welfare and financial level of the elites, the low scientific level of home universities compared to the universities of immigrant-receiving countries, the existence of culture emigration in universities, and lack of job security of elites (36).

According to Docquier (2014), the migration of scientists, doctors, and engineers from developing countries (brain drain) is an inevitable byproduct of poverty (23). Within The doctrine of brain drain, multiple motivating factors lead the local talent to leave the country for better living standards and job security. This phenomenon is based on the push and pull factors of brain drain (37). According to the Oxford Reference, push-pull factors are commonly used in the study of migration. Push factors refer to the motivation to leave the country, and pull factors refer to the attractions from the destination that draws the population. Pull factors are primarily discussed based on the economic conditions that a country has to offer rather than any historical value or family connection (38). Wage differential in professional fields is another pull factor that is globally acknowledged. According to Carrington and Detragiache (1999), the wage disparity between poor and rich countries for the same job has a large gap.

Without financial stability, people reach out for better quality of life and education opportunities for the next generation in another place (39).

The push and pull factors that contribute to brain drain vary across countries. In a report on six African countries compiled by Awases et al. (2004), 50% of those interviewed expressed their desire to leave their home country due to poor healthcare and the inadequate management of health facilities, specifically with worries of HIV/AIDS at that time (40). Roudgar and Richards discussed solutions to these factors in their study of challenges to the policies regarding the global brain drain (2015). They suggested that measures should begin by providing better education in the home country and implementing incentives and remittances to encourage expatriates to return home (41).

Some countries have benefited from the improvement of conditions or encouraging solutions to bring back their immigrants (34, 42-48). Reforms in the social and political structures, amending laws, strengthening the transparency and accountability of policymakers and managers, and developing the capacity of civil participation are the primary solutions to counter elite migration and reduce its negative burden. Building trust, creating political and economic stability, and strengthening hope for the future, especially among the young generation and elites, will strengthen their sense of belonging to the country and encourage them to take responsibility for its future, thus reducing their tendency to emigrate. Also, the development of international relations, especially in the scientific and cultural fields, strengthening the infrastructure, striving for international recognition in education and research to attract international students and professors, and creating opportunities for Iranian researchers to cooperate in international research teams help meet the

elites' need to interact with the scientific world to a great extent (5-10, 24).

In this regard, it is necessary to consider Maslow's hierarchy of needs (49), and the theory of reasoned action (50). Maslow's hierarchy of needs is a human motivation theory proposed by Abraham Maslow in 1943. This idea was later improved by the inclusion of innate human curiosity and by creating a pyramid classification of needs that describes the motivated behavior under five different levels of needs: physiological, safety, love, esteem, and self-actualization (**Figure 1**). The lowest fraction in the pyramid involves physiological needs, the strongest drivers that motivate the demand for basic needs such as food, shelter, water, and protection. Without fulfilling or at least partially meeting the entry level of basic needs, people cannot be motivated to another stage of needs. This theory should be widely used in the topic of elite migration (51).

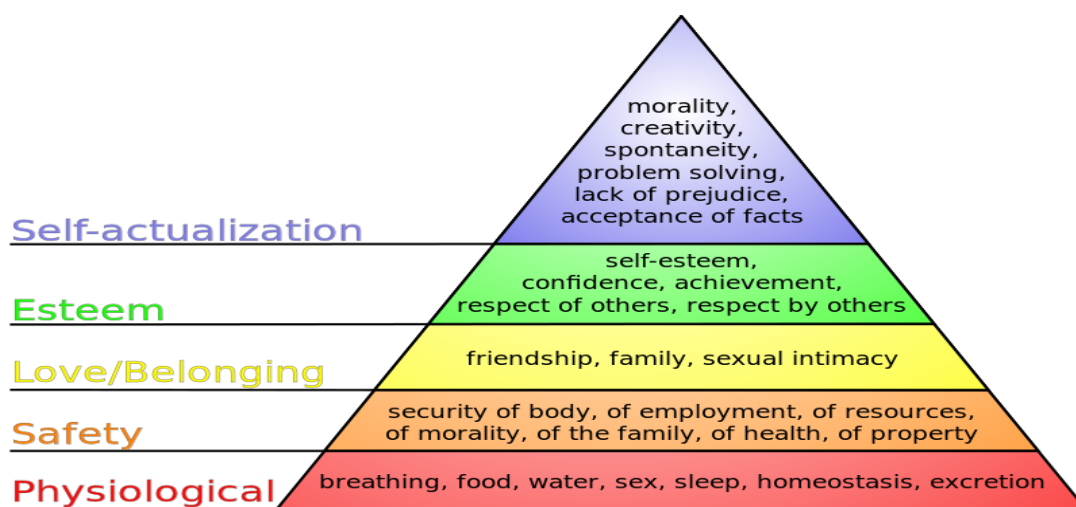
For example, in the study of brain drain in developed countries, this theory was applied to categorize the motivating factors of emigration. The result showed that dissatisfaction with society belonged to the level of self-actualization needs (52). This theory can help policymakers identify the fundamental needs and eliminate unwanted ones based on past research findings to best formulate a practical and effective resolution to the brain drain. The theory is applied in the study through a series of overviews from its preliminary level, which involves physiological (basic and survival) needs such as shelter, water, and food. Once this stage is fulfilled, these needs no longer motivate the individual.

Hence, the hierarchy of needs should be viewed in sequential order. If one level is not satisfied, it is not possible to move to the following stage. The second level involves safety and security. Regarding brain drain, safety belongs to stability in

social and political environments. The third level involves social needs, such as friendship and family. In this case, family Self-respect. The pinnacle of the pyramid belongs to self-actualization or self-transcendence, which means the realization of one's potentialities and the drive to be better. In the brain drain phenomenon, this level may correspond to high-skilled workers who are competent but non-complacent to their current work environment and wish to undertake higher, more rewarding experiences by working in foreign countries.

The theory of reasoned action (TRA) is an extension of planned behavior developed by Fishbein and Ajzen (1975) to explain human behavior motivated by the exchange of values. This theory describes how intention affects behavior, while the behavior is the initiated action once the intention is set, which is the positive

ties could be a motivating factor in the brain drain. The fourth level involves esteem, consisting of respect from others attitude after realizing the beneficial side of the exchange (43). For example, an individual decision to emigrate is due to the interchanging benefits between the host countries (e.g., receiving human capital) and the emigrant (e.g., receiving higher pay or career opportunities) in the brain drain context. This theory can be implemented in the study of migration and, in this case, brain drain, as it can accentuate the potential pull factors that policymakers should notice. In other words, positive attitudes are the first step when one realizes the benefits in exchange for working and living abroad, hence stimulating the intention to leave for what is considered the second phase. The last step happens when actual behavior (action) is taken, i.e., emigration.



Source: Benefader, V., & Boer, K. D. (2006). To move or not to move, that is the question! International Business Programme.

5- CONCLUSION

Various theories have been used to explain the causes of brain drain. The theory of pull-push factors is the most widely used in theoretical foundations to explain the causes of elite migration (37.4%). Based on the results, earning more income, the attractions of the

destination countries (pull factors) and repulsive factors of the country of origin (push factors), as well as intermediary factors (such as global development or individual and family factors) had the largest influence on the brain drain. The results also showed that variables affected the three main issues central to migration and development: a) brain drain and

development, b) financial flows as a result of elite migration, and c) the role of immigrant elites in development. The impacts of elite migration can be positive or negative, depending on the country and its economic and social trends, and can create opportunities or constraints for economic, social, and human development. In the methodological dimension, the results showed that the reviewed studies presented a good accumulation of theoretical ideas and practical solutions but had many problems and shortcomings, including the incompatibility between goals, theoretical framework, research method, results, and solutions, not using advanced analysis techniques, and inappropriate sample sizes. Based on the results, brain drain in Iran is in part due to exterior persuasion (i.e., pull factors from developed countries) and domestic insufficiencies (i.e., push factors), which have accelerated emigration rates. Hence, Iran should not ignore the occurrence of brain drain.

It is necessary to consider Maslow's hierarchy of needs and the theory of reasoned action to plan to reduce the brain drain phenomenon and to improve the existing push-pull theories. Without fulfilling or at least partially meeting the entry level of basic needs, it is impossible to motivate people to another stage of needs. Therefore, this theory should be widely used in managing elite migration. The theory of reasoned action describes how one's behavior is influenced by intention. Targeted studies can be conducted to understand the intention of elites to migrate and the associated factors to help the country's officials with targeted action plans to manage it among the elites. This theory seeks to understand and predict the elites' voluntary behavior to explain their action. The brain drain is a global phenomenon. The authorities in charge and policymakers should revise the salary placement for young graduates,

provide higher remittances to encourage the elites' return, distribute additional funding for start-ups to create more job opportunities, and improve work environments to adapt to the new work etiquette for young graduates.

5- AUTHORS' CONTRIBUTIONS

Study conception or design: SV and MM; Data analyzing and draft manuscript preparation: SV and MM; Critical revision of the paper: SV; Supervision of the research: SV and MM; Final approval of the version to be published: SV, and MM.

6- CONFLICT OF INTEREST: None.

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