





An Integrated Model for Health Insurance Fund Consolidation with Emphasis on the Experiences of Selected Countries

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ABSTRACT

Objective: The primary objective of this study is to develop an operational model for the integration of health insurance funds with a comparative approach, focusing on the experiences of Japan, Singapore, Turkey, Sweden, Norway, China, and Iran.

Methodology: This research utilizes a mixed-method approach (sequential exploratory) involving both qualitative and quantitative analyses. The qualitative phase involved a review of literature and expert interviews, which identified key indicators from the selected countries. In the quantitative phase, these indicators were tested using structural equation modeling (SEM) to quantify the proposed model. Data were collected from a sample of 20 experts through interviews, and the model's fit was assessed using various fit indices.

Findings: The study identified seven key dimensions that influence the integration of health insurance systems: structural factors, behavioral factors, environmental factors, processes, outcomes, and their respective subcomponents. The analysis revealed that these dimensions collectively explain approximately 89% of the variance in health insurance integration. The proposed model demonstrated a good fit with the empirical data, confirming the significance of the identified factors.

Conclusion: The findings suggest that the proposed model, which includes structural, behavioral, environmental, and process factors, is effective in guiding the integration of health insurance funds. The study recommends implementing policies that reduce management levels, enhance stakeholder cooperation, and continuously improve service delivery processes. The model provides a robust framework for improving the integration of health insurance services in Iran and could be adapted for use in other developing countries facing similar challenges. Further research is recommended to explore additional dimensions and apply the model in different contexts.

Keywords: Health insurance, Health insurance funds, Integration, Comparative approach.

1 Introduction

The issue of health insurance is one of the topics that has been addressed in the literature on health economics and has been a focus in various studies. Considering the experiences of different countries, particularly developed nations such as the United States, Canada, the United Kingdom, Sweden, Norway, Japan, and China, as well as developing countries like Iran, Singapore, and Turkey, health insurance has played a significant role in the path of development and progress. Undoubtedly, developed countries have managed to better capitalize on the advantages of such insurance by drafting health system laws and regulations and utilizing scientific and practical experiences (Lekkala, 2023; Park et al., 2023; Shaikh, 2023). Their experiences can offer solutions to address the challenges and issues of health insurance in developing countries like Iran.

In countries with healthcare systems similar to those of Japan, Singapore, Turkey, Sweden, Norway, and China, the government acts as the implicit insurer. Instead of collecting insurance premiums, it levies income-related taxes from the public and provides healthcare services at public health centers at minimal costs, based on the immediate needs of the patients. In contrast, in countries like the United States, Germany, and France, private insurance organizations compete with each other to attract customers, and healthcare services are typically provided at private healthcare centers under specific insurance contracts between the insurer and the insured (Barzideh et al., 2013; Dehghanpour et al., 2023; Raghfar et al., 2018). Since Iran is considered part of the first group, where health insurance organizations represent the most significant challenge to the country's health insurance system, overcoming existing issues related to the integration of health insurances is crucial. These challenges can be categorized into dimensions such as policymaking, regulations, organizational structure, and financial resource provision. Reforming the healthcare system and ultimately the health insurance system requires a combination of health-related decisions and solutions. It seems that creating a coordinated information system is the most critical infrastructure needed for the integration of health insurances in the country and, ultimately, for reforming Iran's health insurance system (Dehghanpour et al., 2023; Mehrolihasani et al., 2017). The above discussion indicates that the selected countries have efficient health insurance systems, and examining their systems can offer strategies to improve Iran's health insurance system.

The rapid growth of healthcare system costs worldwide has become a major concern for health system managers and decision-makers. The continuous expansion of new and expensive health technologies, the increasing expectations of societies from health systems, and the rise in chronic and hard-to-treat diseases among people are some of the critical reasons behind this sharp increase. Like other health systems, Iran's health system is also facing the challenge of sharply rising costs. While the overall cost index in the country has increased 30-fold over the past 20 years, this growth in the health sector's costs has been 71-fold (Mohamadi et al., 2013).

On the other hand, some countries like Japan, Singapore, Turkey, Sweden, Norway, and China have tried to overcome the mentioned challenges by improving their health insurance systems. One of the challenges these countries have successfully addressed is the integration of their insurance funds. This means that all health insurance funds operate centrally under the supervision of the main insurance organization, with uniform services and tariffs. Additionally, centralized control and supervision ensure that no insurance fund can independently pursue its activities in service delivery, which has played a significant role in improving the performance of health insurance in these countries.

This situation has led to significant challenges across various sectors of the health system. Despite numerous commendable efforts to develop a comprehensive national health plan, there are noteworthy aspects that, if not adequately addressed, could jeopardize its success in achieving the intended goals. Among these issues is the lack of attention to the economic aspects of the problems and the inadequate consideration of the economic aspects of the solutions. Most importantly, the plan does not clearly address the root causes of the existing deficiencies and problems. The reality is that without sufficient attention to the root causes of problems, efforts to resolve them will likely fail. Moreover, neglecting the importance of all factors essential for achieving the goals will cast doubt on the success of reaching them. In this context, the present study aims to provide an operational model for integrating health insurances in the country, considering the experiences of selected countries, including Japan, Singapore, Turkey, Sweden, Norway, China, and Iran.

2 Methods and Materials

This research employed a mixed-method approach (sequential exploratory) in both qualitative and quantitative

sections. The research domain included articles, books, and relevant websites related to health insurance in the selected countries, with keywords such as health insurance, health transformation, and health system within the timeframe of 2010 to 2022. A total of 256 sources were identified through the search. After a general review, 121 of them were excluded based on the researcher's judgment due to insufficient source credibility, leaving 144 indicators for review. From this, 62 indicators were extracted. The participants included health insurance and academic experts. The sample selection method was purposive criterion-based sampling based on the researcher's judgment. The criteria for selecting health insurance experts included more than five years of managerial experience and full familiarity with health insurance. For academic experts, the criteria included professors in insurance management with reputable publications in the field of health insurance. Sampling

continued until data saturation was achieved, resulting in a total of 20 interviews. The data collection tool was a questionnaire, with validity confirmed by expert opinions and reliability verified by Cronbach's alpha. Data analysis was conducted using structural equation modeling and thematic analysis.

3 Findings and Results

Question 1:

What are the characteristics of the health insurance fund systems in Japan, Singapore, Turkey, Sweden, Norway, China, and Iran?

To answer this question, the health insurance fund systems of the selected countries were studied. The characteristics of these funds are summarized in [Table 1](#).

Table 1

Comparative Summary of the Development Period of Universal Coverage and Social Health Insurance in Selected Countries

Selected Countries	Transition Speed	Health Insurance Development Indicators
Japan	1854–1988 (127 years)	Reduction of management levels; appropriate health insurance structure; universal health insurance coverage; all citizens covered by health insurance; restrictions on patient referrals in clinics; timely payment by insurance to specialists based on insurance contracts and family physicians; increased participation of the insured
Singapore	1963–1989 (26 years)	Review of organizational management and cost reduction; review of service packages; charging premiums from the affluent; implementation of clinical guidelines; review of universal insurance plans; health subsidies to reduce out-of-pocket payments; implementation of referral system
Turkey	Ongoing development since 1964	Review of the relative value scale; insurance institutions' obligations; use of information technologies; elimination of inefficient processes; health-oriented care; specialized management; improvement of the quantity and quality of supervision and structural reform of insurance organizations; cost management
Sweden	1953–1984 (27 years)	Transparent financial regulations for the insured; health foresight; improvement of electronic record acceptance; establishment of social equity in health; consolidation of health financial resources; provision of comprehensive health insurance coverage; standardization of policies and procedures; formation of contract centers
Norway	1901–1973 (72 years)	Formation of health records; activation of referral systems and family physicians; collaboration with all stakeholders and organizational partners; improvement of standards and relationships with a continuous process improvement approach; referral system within the national health insurance framework; quantitative and qualitative development of health insurance services; achieving universal health service coverage; equitable health service coverage; standardization of policies and procedures
China	1932–2010	Formation of contract centers; creation of health records; activation of referral systems and family physicians; reduction of the population's share; elimination of insurance overlaps; expansion of family physician programs and referral systems
Iran	1975–1994	Creation of decentralized decision-making processes; enhancement of comprehensive communication; addressing suggestions and criticisms; improvement in the quantity and quality of health insurance services; commitment to public and private sector paraclinics; appropriate service packages for different population groups; existence of insurance rewards for specialists; observance of the referral system, mandatory contracts for all government and private subspecialists

Question 2:

What are the similarities and differences in the health insurance fund systems of Japan, Singapore, Turkey, Sweden, Norway, China, and Iran?

Various differences were identified through a comparative study of the health insurance systems in different countries, as detailed in [Table 2](#).

Table 2*Identified Differences from the Comparative Study*

Health Insurance Characteristics in Selected Countries	Iran	Japan	Singapore	Turkey	Sweden	Norway	China
Reduction of management levels		✓		✓		✓	✓
Appropriate health insurance structure		✓	✓	✓			
Universal coverage for all citizens	✓	✓	✓		✓	✓	✓
Restrictions on patient referrals in clinics	✓	✓		✓		✓	✓
Timely payment by insurance to specialists		✓	✓		✓	✓	✓
Increased participation of the insured	✓	✓	✓		✓	✓	✓
Creation of decentralized decision-making processes	✓	✓		✓	✓	✓	✓
Enhanced comprehensive communication	✓		✓	✓			
Addressing suggestions and criticisms	✓			✓	✓		
Improvement in the quantity and quality of health services	✓		✓	✓	✓	✓	✓
Commitment to public and private sector paraclinics	✓	✓	✓		✓	✓	✓
Suitable service packages for different population groups		✓	✓	✓	✓	✓	✓
Existence of insurance rewards for specialists		✓	✓	✓		✓	
Compliance with the referral system	✓	✓		✓	✓	✓	✓
Review of organizational management and cost reduction	✓	✓		✓	✓	✓	✓
Review of service package	✓		✓		✓		
Charging premiums from the affluent		✓	✓		✓		
Implementation of clinical guidelines	✓	✓	✓		✓	✓	✓
Review of universal insurance plans	✓	✓	✓		✓	✓	✓
Health subsidies to reduce out-of-pocket payments		✓	✓	✓		✓	✓
Implementation of referral system	✓	✓	✓		✓	✓	✓
Review of relative value scale	✓	✓	✓		✓	✓	✓
Insurance institutions' obligations			✓	✓	✓	✓	
Use of information technologies	✓		✓	✓	✓		
Elimination of inefficient processes	✓		✓	✓	✓	✓	
Health-oriented care	✓		✓	✓	✓	✓	
Specialized management	✓		✓	✓	✓	✓	
Improvement of supervision quality	✓		✓	✓	✓	✓	
Cost management	✓	✓	✓	✓	✓		
Transparent financial regulations for the insured	✓	✓		✓	✓	✓	
Health foresight	✓	✓		✓	✓		
Improvement of electronic records acceptance	✓		✓	✓	✓	✓	
Establishment of social equity in health	✓	✓		✓	✓	✓	✓
Consolidation of health financial resources		✓	✓	✓	✓	✓	✓
Comprehensive health insurance coverage	✓	✓		✓	✓	✓	✓
Standardization of policies and procedures		✓	✓	✓	✓	✓	✓
Formation of contract centers			✓	✓	✓	✓	✓
Creation of health records	✓	✓		✓	✓	✓	✓
Activation of referral systems and family physicians	✓		✓	✓	✓	✓	✓
Reduction of the population's share	✓	✓	✓	✓		✓	
Elimination of insurance overlaps	✓	✓		✓	✓	✓	✓
Expansion of family physician programs and referral systems	✓		✓	✓	✓	✓	✓

According to [Table 2](#), the most significant differences among the selected countries pertain to the reduction of management levels, appropriate health insurance structures, formation of contract centers, creation of health records, use of information technologies, and elimination of inefficient

processes. The most notable similarities are found in the increased participation of the insured, creation of decentralized decision-making processes, interaction and cooperation with all stakeholders and partners, improvement of standards and relationships with a continuous

improvement approach, achievement of equitable health service coverage, and provision of suitable service packages for different population groups.

Main Objective:

Presenting an operational model for the integration of health insurance funds with a comparative approach (Japan, Singapore, Turkey, Sweden, Norway, China, and Iran)

Based on interviews with experts, this study identified indicators that were not previously considered in the empirical literature. Subsequently, the final indicators were compiled from the selected countries and expert opinions to develop the model. These indicators are detailed in [Table 3](#).

Table 3

Identified Indicators for Iran Based on Expert Opinions and the Health Systems of Selected Countries

Indicators	Expert Opinions	Health Systems of Selected Countries
Job security creation	✓	
Increased managerial trust-building		✓
Understanding employee problems by managers	✓	
Clarification and specification of workflow	✓	
Meritocracy and fair performance evaluation	✓	
Employee participation in decision-making and suggestions	✓	
Enhancement of universal coverage		✓
Creation of legal obligations towards insurers		✓
Supervision and control by the Ministry of Health		✓
Commitment of public and private hospitals to the family physician referral system		✓
Adequate provision of physicians and health care workers for the family physician program	✓	
Commitment of public and private sector specialists	✓	
Increased per capita healthcare	✓	
Commitment of public and private paraclinics	✓	
Provision of suitable service packages for different population groups		✓
Existence of insurance rewards for specialists		✓
Compliance with the referral system, mandatory contracts for all subspecialists		✓
Review of organizational management and cost reduction	✓	
Charging premiums from the affluent		✓
Health-oriented care provision		✓
Specialized management		✓
Improvement of supervision quality and structural reform of insurance organizations		✓
Cost management	✓	
Transparent financial regulations for the insured	✓	
Increased service coverage	✓	
Organizational process reform	✓	
Strengthening information dissemination	✓	
Strategic health services purchasing		✓
Increased population coverage		✓
Reduction of inpatient copayments	✓	
Creation of uniformity and standardization of service packages and insurance obligations	✓	
Active participation of insurers in accrediting public and private hospitals		✓
Reallocation of targeted program resources to increase funding for new insured costs		✓
Health services management research		✓
Health foresight		✓
Improvement of electronic record acceptance		✓
Establishment of social equity in health		✓
Optimal consolidation of health financial resources	✓	
Provision of comprehensive health insurance coverage	✓	
Standardization of policies and procedures	✓	
Formation of contract centers		✓

Creation of health records		✓
Activation of referral systems and family physicians		✓
Reduction of the population's share	✓	
Elimination of insurance overlaps	✓	
Expansion of family physician programs and referral systems	✓	
Continuous improvement of service delivery processes to the insured		✓
Organization structure improvement		✓
Improvement of the health insurance economic system		✓

The identified indicators were then categorized under the main dimensions, as shown in Table 4.

Table 4

Qualitative Analysis

Description of Factors	Subcomponents
Structural Factors	Reduction of structural management levels
	Decentralization of health insurance management structure
	Determination of the insured's position in the health system structure
	Implementation of structural restrictions for patient referrals in clinics
	Improvement of the insured's participation structure in the health system
	Creation of decentralized decision-making processes
	Enhancement of structural and comprehensive communication
	Clarification of the system for addressing suggestions and criticisms in the insurance structure
Behavioral Factors	Clarification of service structure for health insurance
	Timely and appropriate employee encouragement
	Organizational honesty
	Increased managerial trust-building
	Understanding employee problems by managers
	Clarification and specification of workflow
	Meritocracy and fair performance evaluation
Environmental Factors	Employee participation in decision-making and suggestions
	Legal support for enhancing universal coverage
	Creation of legal obligations towards insurers
	Supervision and control by the Ministry of Health
	Commitment of public and private hospitals to the family physician referral system
	Adequate provision of physicians and health care workers for the family physician program
	Commitment of public and private sector specialists
	Attention to per capita healthcare
	Commitment of public and private paraclinics
	Provision of suitable service packages for different population groups
Processes	Mandatory contracts for all subspecialists
	Review of organizational management and cost reduction
	Review of service package delivery process
	Charging minimal premiums from the affluent
	Review of clinical guidelines
	Review of the universal insurance plan introduction process
	Health subsidies to reduce out-of-pocket payments
	Implementation of referral system
	Review of relative value insurance
	Insurance institutions' obligations
	Use of information technologies in processes
	Elimination of inefficient processes
	Health-oriented processes
	Process and system management
	Clarification of cost processes
Transparent financial regulations for the insured	
Improvement of service coverage processes	

Outcomes	Organizational process reform Accurate information dissemination Strategic health services purchasing Increased population coverage Reduction of inpatient copayments Creation of uniformity and standardization of service packages and insurance obligations Active participation of insurers in accrediting public and private hospitals Reallocation of targeted program resources to increase funding for new insured costs Transparency in health service delivery Health foresight Improvement of electronic record acceptance Establishment of social equity in health Optimal consolidation of health financial resources Provision of comprehensive health insurance coverage Standardization of policies and procedures Formation of contract centers Creation of health records Activation of referral systems and family physicians Interaction and cooperation with all stakeholders and organizational partners Improvement of standards and relationships with a continuous process improvement approach Improvement of the referral system within the health insurance framework Quantitative and qualitative development of health insurance services Achievement of universal health service coverage Achievement of equitable health service coverage Reduction of the population's share in insurance premiums Elimination of insurance overlaps Expansion of family physician programs and referral systems Continuous improvement of service delivery processes to the insured Organization structure improvement Improvement of the health insurance economic system
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Table 5*Examination of Mean and Standard Deviation of Model Dimensions*

Model Dimensions	Mean	Standard Deviation
Structural Factors	2.876	0.5674
Behavioral Factors	3.543	0.6543
Environmental Factors	3.2875	0.7222
Processes	3.662	0.6722
Outcomes	3.9855	0.3655

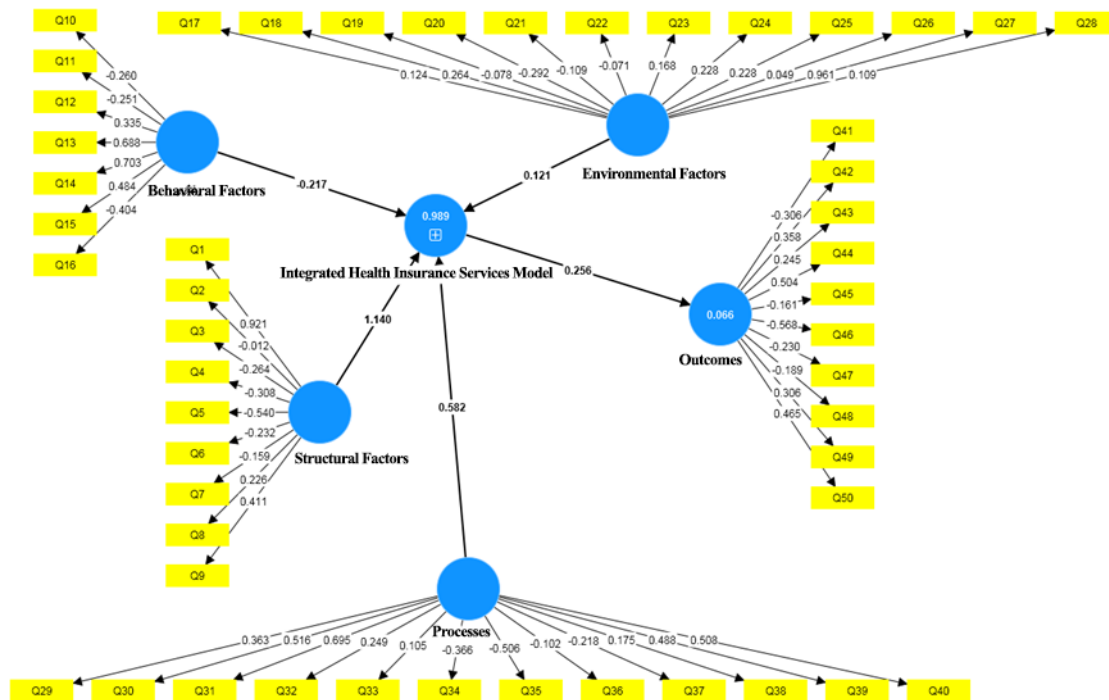
To assess the model's quality, redundancy index and determination coefficient were used. Positive values indicate appropriate model quality. The primary criterion for evaluating the structural model is the determination coefficient, which indicates the percentage of changes in the dependent variable caused by independent variables. The determination coefficient results show that 77.6% of model changes are predicted by independent variables (model dimensions). A redundancy index greater than zero implies

that observed values are well-reconstructed, and the model has predictive capability. In this study, this index for the variable of integrated health insurance services is zero.

Given that the conceptual model has been defined, the sample size is appropriate, and all identified dimensions affect the model, the partial least squares (PLS) technique was used to quantify the model, with results shown in [Figure 1](#).

Figure 1

Structural Model with Standard Coefficients



According to Table 6, all structural, behavioral, environmental, process, and outcome factors have a positive and significant impact on the integrated health insurance

services model, confirming the causal relationships in the research model.

Table 6

Path Test Results

No.	From	To	Standard Path Coefficient	t-value	Result
1	Structural Factors	Integrated Health Insurance Services Model	0.990	3.95	Confirmed
2	Behavioral Factors	Integrated Health Insurance Services Model	0.180	3.27	Confirmed
3	Process Factors	Integrated Health Insurance Services Model	0.187	3.87	Confirmed
4	Environmental Factors	Integrated Health Insurance Services Model	0.286	4.34	Confirmed
5	Outcomes	Integrated Health Insurance Services Model	0.514	4.91	Confirmed

Model fit refers to the extent to which the proposed model is applicable and appropriate for an organization or country. Structural equation modeling uses fit indices such as chi-square to degrees of freedom, goodness of fit index (GFI), adjusted goodness of fit index (AGFI), root mean square

residual (RMR), normed fit index (NFI), non-normed fit index (NNFI), incremental fit index (IFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). Table 7 shows the range of fit indices, where the obtained values are greater than the desired thresholds.

Table 7

Model Fit Index Values and Results

Index Value	Desired Value	Fit Index
1.22	<3.00	χ^2/df
0.93	>0.90	GFI
0.94	>0.90	AGFI
0.03	<0.05	RMR

0.93	>0.90	NFI
0.91	>0.90	NNFI
0.93	>0.90	IFI
0.91	>0.90	CFI
0.083	<0.08	RMSEA

After evaluating the model's measurement and structural sections, the overall model fit was assessed using the GOF (Goodness of Fit) criterion, which measures the model's ability to predict endogenous variables. GOF ranges from zero to one, with values close to one indicating high model quality. The calculated GOF for this study is 0.76, demonstrating a strong overall model fit. As the GOF value is greater than 0.36, the model is considered to have a good fit. Therefore, it can be concluded that all paths are significant at a 95% confidence level, and the seven dimensions and their associated subcomponents are confirmed.

4 Discussion and Conclusion

Based on the qualitative findings, the characteristics of health insurance funds include:

Structural Factors: (Reduction of structural management levels, decentralization of health insurance management structure, determination of the insured's position in the health system structure, implementation of structural restrictions for patient referrals in clinics, improvement of the insured's participation structure in the health system, creation of decentralized decision-making processes, enhancement of structural and comprehensive communication, clarification of the system for addressing suggestions and criticisms in the insurance structure, clarification of service structure for health insurance).

Behavioral Factors: (Timely and appropriate employee encouragement, organizational honesty, increased managerial trust-building, understanding employee problems by managers, clarification and specification of workflow, meritocracy and fair performance evaluation, employee participation in decision-making and suggestions).

Environmental Factors: (Legal support for enhancing universal coverage, creation of legal obligations towards insurers, supervision and control by the Ministry of Health, commitment of public and private hospitals to the family physician referral system, adequate provision of physicians and health care workers for the family physician program, commitment of public and private sector specialists, attention to per capita healthcare, commitment of public and

private paraclinics, provision of suitable service packages for different population groups, mandatory contracts for all subspecialists).

Processes: (Review of organizational management and cost reduction, review of service package delivery process, charging minimal premiums from the affluent, review of clinical guidelines, review of the universal insurance plan introduction process, health subsidies to reduce out-of-pocket payments, implementation of the referral system, review of relative value insurance, insurance institutions' obligations, use of information technologies in processes, elimination of inefficient processes, health-oriented processes, process and system management, clarification of cost processes, transparent financial regulations for the insured, improvement of service coverage processes, organizational process reform).

Outcomes: (Accurate information dissemination, strategic health services purchasing, increased population coverage, reduction of inpatient copayments, creation of uniformity and standardization of service packages and insurance obligations, active participation of insurers in accrediting public and private hospitals, reallocation of targeted program resources to increase funding for new insured costs, transparency in health service delivery, health foresight, improvement of electronic record acceptance, establishment of social equity in health, optimal consolidation of health financial resources, provision of comprehensive health insurance coverage, standardization of policies and procedures, formation of contract centers, creation of health records, activation of referral systems and family physicians, interaction and cooperation with all stakeholders and organizational partners, improvement of standards and relationships with a continuous process improvement approach, improvement of the referral system within the health insurance framework, quantitative and qualitative development of health insurance services, achievement of universal health service coverage, achievement of equitable health service coverage, reduction of the population's share in insurance premiums, elimination of insurance overlaps, expansion of family physician programs and referral systems, continuous improvement of service delivery processes to the insured, organization

structure improvement, improvement of the health insurance economic system).

These findings align with the results of various studies (Barzideh et al., 2013; Dehghanpour et al., 2023; Hashemi & Marzban, 2015; Mehrolhassani et al., 2017; Mohamadi et al., 2013; Park et al., 2012; Raghfar et al., 2018; Ruger & Kress, 2007; Suphanchaimat et al., 2014). Based on the findings, recommendations include the consolidation of health insurance structures, the reduction of management levels, the enhancement of cooperation among stakeholders, and the continuous improvement of processes and outcomes. The overall fit of the proposed model was confirmed, and it is aligned with the results of various studies.

Finally, it is recommended to conduct further research on the impact of other dimensions of health insurance integration based on models from other experts and to use international databases for comparative studies.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

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