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Elevating the primary health care system and family medicine program: Implications drawn from post-pandemic experiences of Iran

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Abstract

Introduction

The COVID-19 outbreak at the end of 2019 severely impacted global healthcare systems, especially primary healthcare services. This paper aimed to identify the implications of the strengths and weaknesses observed in Iran's primary health care (PHC) programs during the pandemic.

Methods

This qualitative study, conducted in 2021, employed content analysis methodology. 13 semi-structured interviews were held with Iranian healthcare policymakers and executive managers, selected via snowball sampling, using the World Health Organization's analytical framework. Finally, a thematic analysis was conducted on the interview data.

Results

The thematic analysis of the findings yielded five major themes: revision of healthcare financing, redefining education and research in primary healthcare, redefinition of primary healthcare, development of a new model for family medicine, and community engagement.

Conclusion

Addressing vertical inequality in Iran's healthcare system was delineated to be crucial. Meanwhile, multiple strategies including enhancing family physicians' knowledge and skills, decentralizing decision-making, empowering them, and involving communities in healthcare planning was supposed to improve PHC and family medicine. Further empirical research is warranted to delve deeper into each finding.

Keywords

Primary Health Care, Physicians, Family, COVID-19, Health Care Reform

- **What is already known on this topic**
  Identifying the strengths and weaknesses of healthcare systems and their governance, as well as their responsiveness in facing pandemics, can assist in accurately understanding the path forward and in enhancing readiness to cope with shocks and future pandemics.
- **What this study adds**
  This study provides the implications of the strengths and weaknesses observed in Iran's primary health care (PHC) programs during the pandemic. The implications are categorized into five major themes: revision of healthcare financing, redefining education and research in primary healthcare, redefinition of primary healthcare, development of a new model for family medicine, and community engagement.
- **How this study might affect research, practice and policy**
  This study presents the experiences of the Iranian primary healthcare system during the pandemic crisis for beneficiaries, including healthcare policymakers, managers, and researchers. The aim is to enhance the resilience and readiness of primary healthcare systems for future crises.

1. Introduction

The outbreak of the COVID-19 virus at the end of 2019 plunged the world into a major crisis(1). The comprehensive impact of this disease on the lives of intellectuals has led the policymakers, and healthcare system decision-makers to contemplate on whether healthcare systems have had sufficient resilience to confront a pandemic(2). Resilience can be defined as the ability of a healthcare system to prepare for and manage (including absorption, adaptation, and transformation) against the impacts of sudden events and occurrences(3). In fact, a healthcare system can only succeed in facing a crisis when, in addition to maintaining the core objectives, it can even evolve and improve; A rarely observed phenomenon during the COVID-19 pandemic which experienced the disruption of some routine healthcare services within the first year of pandemic response(4-6). Identifying the strengths and weaknesses of healthcare systems and their governance, as well as their responsiveness in facing pandemics, can assist in accurately understanding the path forward and in enhancing readiness to cope with shocks and future pandemics.

Healthcare systems worldwide have employed various strategies to contain the COVID-19 pandemic. It appears that having a coherent crisis management plan has been a determining factor among them. Countries that had comprehensive plans in this regard were able to effectively manage the pandemic and mitigate its harmful effects by implementing appropriate policies, including widespread testing and tracing, fostering public trust and transparency in communication, strengthening primary healthcare systems, implementing appropriate screening, and quarantine measures(7).

Despite scientific advancements, challenges persist, including the absence of effective pandemic control plans, service disparities, and increased mortality from chronic diseases due to healthcare disruptions. While some issues stem from pandemic consequences, the lack of a systemic pandemic management approach, disease-centric strategies, and inadequate attention to comprehensive models like PHC are notable factors. COVID-19's global lessons emphasize the need for heightened focus on global health security, public health, and PHC. Given pandemics' broad social and economic impacts, a holistic approach to healthcare, particularly emphasizing primary care, offers a fitting response to these challenges(8-11).

Evidence suggests that significant non-pharmaceutical interventions in PHC settings have been a successful strategy in controlling and managing pandemics. Essential to this approach is appropriate risk assessment within communities and pre-designed structures for community engagement in improving their health. For instance, communities with high health literacy and robust social capital demonstrate better adherence to health protocols, resulting in lower infection rates(12, 13). This underscores the necessity for proper attention and policymaking based on the fundamental principles of PHC. In this study, we tried to identify implications from the observed weaknesses and strengths in PHC programs during the COVID-19 pandemic crisis.

2. Methods

The present research employed a qualitative study design utilizing content analysis methodology in the year 2021. This study conducted semi-structured interviews using the analytical framework of the World Health Organization(14).

2.1. Research question

The research question was designed as the following: “What are the implications derived from the strengths and weaknesses observed in PHC programs in the Iranian healthcare system during the COVID-19 pandemic crisis?”.

2.2. Study sample and sampling method

Interviews were conducted with 13 policymakers and executive managers of the Iranian healthcare network. Participants were selected using snowball sampling, initially interviewing the Deputy of Health of a medical university in southwestern of Iran, who then facilitated the identification of relevant individuals in the field. The characteristics of the experts utilized within the study sample are delineated in table 1.

2.3. Data collection and inclusion criteria

Interviews were conducted face-to-face, preferably at the participants' workplace, following prior coordination. Participants were chosen based on their significant awareness and expertise in crisis management and policymaking related to the COVID-19 pandemic. MM, a male with a PhD. with multiple experiences of conducting such methodologies conducted the interviews.

At the outset of each interview, a verbal explanation regarding identity of the interviewer and the study, particularly its objectives, and the measures taken to ensure confidentiality of information was provided. Written informed consent was obtained from all participants, assuring them of their freedom to withdraw from the study at any stage. Interviews lasted a minimum of 50 minutes and were conducted solely by one of the authors. With participants' permission, interviews were recorded and transcribed verbatim shortly after completion. Interviews continued until saturation was reached, with saturation achieved after 13 interviews. The semi-structured interview guide, comprising 8 questions, was developed through a review on the literature and validated by two experts. Additionally, the face validity of the interview guide was confirmed through three preliminary interviews with participants. The semi-structured interview comprised of the following questions:

- In your opinion, what are the most important strategies and policies for strengthening the primary healthcare network system? Please explain.
- Community participation and interaction with society is one of the principles of primary healthcare. How can we achieve this important goal?
- Despite the emphasis of health policymakers at various times on the priority of prevention over treatment, especially in the discussion of resource allocation, this issue is still neglected. What are the reasons for this problem? Please explain.
- How should our education and research system be in order to achieve the goals of primary healthcare? Especially the discussion of Health Systems Research (HSR) which has been raised for years but is practically inactive.
- It seems that during the pandemic, the capacity of health and treatment networks was not used as it should have been. How should we employ this potential capacity in practice and overall, what changes and lessons can be taken from the pandemic to improve the network system?

2.4. Data analysis

To analyze the data, a five-stage framework analysis method was employed. Initially, in the first stage, the audio files from multiple sessions were listened to by the researchers to acquaint themselves with the data, and transcribed texts were reviewed multiple times. In the second stage, to identify a thematic framework, recurring ideas from the familiarization process were grouped into clusters consisting of similar ideas or codes. In the third stage, indexing was performed, identifying units or sections of the data relevant to specific codes. Following indexing in the fourth stage, the data were summarized into code tables according to the thematic framework. Finally, in the fifth stage, the data were amalgamated, and a map and interpretation were utilized to define concepts, illustrate relationships between concepts, specify the nature of the phenomenon, and provide explanations and

recommendations(15). Due to the Persian text of the interview transcripts and to enhance creativity, manual coding and classification methods were employed instead of software utilization.

2.5. Data reliability and validity

In order to enhance the accuracy and reliability of the study, data coding utilized the four criteria of Guba and Lincoln, namely, credibility, confirmability, dependability, and transferability, which are components of qualitative study reliability(16). To bolster the credibility of the study, a prolonged engagement and continuous observation approach were employed, whereby the researchers fully immersed in the research, established appropriate and meaningful communication with participants, and embraced profound concepts emerging throughout the study process. Additionally, a method combining interviews and examination of scientific texts was utilized. To increase result confirmation capability, the coded data were made available to participants for validation of the extracted findings. To enhance the transferability of study results, conditions of participant awareness and interview methodology were transparently delineated. Efforts were made to ensure the selection of sample individuals was entirely aligned with the study objectives and free from any bias. Data analysis was conducted concurrently with data collection; Meanwhile, the researchers tried to maintain a thorough understanding of the research's theoretical foundations. To reinforce result reliability, the process of coding concepts, themes, and textual and auditory information were documented. Additionally, to ensure confidence, two members of the research team (RI and MM) independently analyzed the content and engaged in discussions and exchanges of opinions to resolve any discrepancies.

1. Results

The thematic analysis of the interview involved identifying 5 main themes and 17 sub-themes, as outlined in Table 2. Appendix 1 (Interview Data) presents the data regarding the interview in detail.

1.1. Revision of healthcare financing

This theme comprised of three sub-themes. The sub-themes addressed the reformation of the healthcare budgeting system, revision of payment systems and efficiency and effectiveness of healthcare services. In this context, the interview data highlighted several key points, including the allocation of funds to bolster PHC, the delegation of financial authority, the reduction of healthcare expenses, weaknesses observed in fee-for-service systems, the utilization of combination payment methods, strategic purchasing practices, and the consolidation of financial resources.

1.2. Redefining education and research in primary healthcare

This theme comprised of three sub-themes. The sub-themes addressed the revision of family medicine educational system, alignment of education with primary health care and evidence-based policymaking. In this regard, the interview data highlighted several key initiatives. These included the training of physicians in accordance with family medicine principles and PHC, the establishment of dedicated educational centers for family physician training, and the integration of parallel educational facilities. Moreover, efforts were focused on enhancing PHC through research and education, as well as ensuring the completion of Master of Public Health (MPH) courses for family physicians. Additionally, there was a strong emphasis on aligning policy-making and implementation in decisions concerning pandemics, alongside the adoption of evidence-based decision-making approaches.

1.3. Redefinition of primary healthcare

This theme comprised of five sub-themes. The sub-themes addressed the enhancement of health education, revision of treatment-oriented approach, redefining crisis management in the healthcare network system, reviewing infectious disease management, and reorganization of the healthcare service delivery network. In this context, the interview data underscored several significant areas for consideration. These encompassed the improvement of health literacy, reevaluation of PHC definitions, and the promotion of discourse surrounding primary healthcare within the community. Moreover, concerns were raised regarding excessive specialization and a hospital-centric approach in healthcare delivery. Efforts were suggested for the development of crisis-appropriate infrastructure, risk assessment, and preparation for high-risk encounters with future epidemics. Recommendations were also made for strengthening the Centers for Disease Control and Prevention (CDC), enhancing surveillance systems, and addressing the overemphasis on non-communicable diseases. Additionally, strategies were proposed for increasing the availability of health houses and active health bases in service delivery, decentralizing the healthcare network system, fostering public-private partnerships, and ensuring the appropriate staffing of organizational positions within the healthcare network.

1.4. Development of a new model for family medicine

This theme comprised of five sub-themes. The sub-themes included the systematic thinking in healthcare, family medicine improvement, integration of services, and digital health. In this context, the interview data highlighted several critical issues, including the preservation of programs and objectives amidst management changes, the confinement of the family medicine program within the health department of the Ministry of Health, identification of conflicts of interest at specialized levels, consideration of service recipients' perspectives, ensuring the provision of quality services, addressing instances of neglect within the community, demonstrating sincere commitment and confidence in the execution of family physician roles, establishing a professional association for family physicians, reviewing primary care service packages, promoting the integration of services across primary and secondary healthcare levels, revising and enhancing the referral system, integrating information systems for improved coordination, facilitating easy access to epidemiological data for researchers, ensuring staff readiness for digital health initiatives, and implementing electronic medical records within the disease care system.

1.5. Community engagement

This theme comprised of two sub-themes. The sub-themes addressed the community role in improving primary healthcare and attention to mass media. In this context, the interview data brought to light several significant findings: observations pertaining to cultural promotion initiatives, identification of social initiatives aimed at engaging public participation, consideration given to the social aspects of COVID-19, highlighting the community's role in needs assessment and prioritization of health services, concerns raised regarding the neglect of PHC in mass media coverage, and emphasis placed on the media's role in promoting the importance of family physicians.

2. Discussion

As the findings of the study delineated, the thematic analysis of the study data led to 5 major themes providing implications derived from the observed strengths and weaknesses of Iranian healthcare

system during the COVID-19 pandemic. In this section of the study, each of the themes is discussed and analyzed thoroughly.

2.1. Revision of healthcare financing

Regarding this theme, the Interview data highlighted several key points: increased PHC funding, delegated financial authority, reduced costs, identified fee-for-service weaknesses, combined payment methods, strategic purchasing, and resource consolidation.

Several studies within the literature backed our findings regarding the necessity of revision of healthcare financing after the experience of the COVID-19 pandemic; In this regard, the reports have indicated that the pandemic has had a significant impact on Iran's health system, underscoring the urgent need for flexible financing and increased resources to improve service accessibility(17). Additionally, there is a pressing need to address out-of-pocket payments and their detrimental effects on healthcare access, particularly among impoverished populations(18).

Additional reports within the literature have backed the findings of our study underscoring the difficulties encountered by healthcare centers amidst the pandemic, noting substantial shifts in financial and performance metrics, including decreased revenues and resources(19, 20). These reports have emphasized the imperative of financial assistance and sustainable resource allocation during crises(20). Moreover, they stress the necessity of implementing suitable models for service enhancement and resource sustainability during such challenging periods(19).

It is recommended that the Iranian healthcare system addresses its vertical inequity by implementing universal insurance coverage, redistributing incomes within the health sector to support low-income individuals, and strengthening health insurance schemes to enhance equity(21).

2.2. Redefining education and research in primary healthcare

Regarding this theme, the interview data underscored key initiatives, including physician training in family medicine and primary healthcare (PHC), establishment of specialized family physician training centers, and integration of educational facilities. Moreover, efforts aimed at enhancing PHC through research and education, completion of Master of Public Health (MPH) courses for family physicians, and aligning pandemic-related policy-making and implementation with evidence-based approaches were emphasized.

Multiple studies in the literature have corroborated our findings regarding the imperative to redefine education and research within Iran's primary healthcare sector. There has been an emphasize on the necessity for enhancements in planning, monitoring, and governance(22). Additionally, the pivotal challenge concerning training systems within Iran's primary healthcare, indicating the need for immediate attention, has been highlighted(23).

The literature highlights the need for comprehensive training to address deficiencies in knowledge and skills among family physicians(24, 25). In this regard, it is suggested that involving specialists in the training of generalists could enhance the ongoing professional development of family physicians, thereby ensuring the success of the Family Physician Program (FPP) in Iran(25).

2.3. Redefinition of primary healthcare

Regarding this theme, the interview data highlighted several significant areas. They included improving health literacy, reevaluating PHC definitions, and promoting discourse within communities. Concerns were raised about excessive specialization and a hospital-centric approach to healthcare. Efforts were suggested for crisis-resilient infrastructure, risk assessment, and CDC strengthening. Recommendations also addressed surveillance systems, non-communicable disease emphasis, health facility availability, network decentralization, public-private partnerships, and staffing within healthcare organizations.

Multiple studies within the literature backed our findings regarding this theme reporting the necessity of enhancing health literacy, particularly among male individuals, older adults, individuals with limited educational attainment, and those residing in rural areas in Iran(26). Meanwhile, it was reported that improved access to the internet and information and communication technologies (ICTs) can play a significant role in augmenting patients' health literacy. Additionally, the development of more effective patient education strategies is paramount to this endeavor(23).

The literature has highlighted the imperative to confront challenges within primary PHC in Iran, including a centralized decision-making process, parallel service delivery structures, inadequate understanding of health packages, disparities between current and necessary staff competencies, and delayed health needs assessments. Additionally, it has been underscored that scaling up digital health interventions and establishing suitable platforms for ongoing capacity building of healthcare professionals in health technology utilization are crucial steps forward(27).

2.4. Development of a new model for family medicine

Regarding this theme, the interview data highlighted critical issues, including program preservation during management changes, situating the family medicine program within the Ministry of Health, addressing conflicts of interest, ensuring service quality, and integrating primary and secondary healthcare services. Other concerns raised encompassed community neglect, commitment to family physician roles, professional association establishment, primary care service review, improved referral systems, information system integration, staff readiness for digital health, and electronic medical records implementation.

The literature corroborates our findings concerning the imperative need for restructuring family medicine in Iran. Various challenges pertaining to the legal framework, administrative processes, and societal structure have been documented(24). Additionally, obstacles related to organizational accessibility, financial provisions for secondary healthcare, and cultural considerations have been highlighted(28).

The literature proposes several strategies to improve family medicine in Iran, including clarifying the future roles and privileges of trained physicians, selecting motivated applicants to enhance educational quality, focusing on shorter, skill-focused courses to empower general practitioners, ensuring the applicability of training, and implementing continuous monitoring and evaluation to improve processes and empower physicians in providing primary prevention and healthcare services(29).

2.5. Community engagement

Regarding this theme, the interview data revealed significant findings, including observations on cultural promotion initiatives, social engagement initiatives, considerations of COVID-19's social aspects, the community's role in health service prioritization, concerns about PHC neglect in mass media, and emphasis on media's promotion of family physicians' importance.

The literature supports our observation regarding the imperative of involving communities in healthcare dialogues, as community members can offer substantial contributions to health initiatives. Engaging community health professionals from within the communities they serve has proven instrumental in fostering positive interpersonal connections between healthcare providers and clients at the primary healthcare (PHC) level. Nevertheless, it has been noted that healthcare educational platforms aimed at empowering communities are deficient in Iran(27).

To enhance community engagement in primary healthcare in Iran, multiple strategies have been proposed: involving the community in all stages of curriculum design, implementation, and evaluation; integrating social accountability into the curriculum's mission and goals; establishing a multi-specialized curriculum committee; fostering a culture of social accountability; coordinating with primary healthcare centers; engaging in community education; training faculty, family physicians, general practitioners, and primary healthcare staff to teach community-related topics; involving health promotion professionals in education; assessing public input in health policy; and recommending interventions and policy options to promote public engagement(30, 31).

3. Limitations and implications

The study had a notable limitation: it did not include the perspectives of participants in the primary healthcare system in Iran, particularly ordinary civilians. This gap should be addressed by future researchers. Nonetheless, our study offers significant implications for healthcare policymakers, administrators, and researchers in Iran and other countries with similar contexts. The findings suggest the need to revise healthcare financing, redefine education and research, overhaul the primary healthcare system, develop new models for the family medicine program, and increase community engagement in primary healthcare services. These findings can serve as primary inputs for future research to explore the strategies and effects of each implication in detail.

4. Conclusions

The findings of the study were categorized into five major themes: revision of healthcare financing, redefining education and research in primary healthcare, redefinition of primary healthcare, development of a new model for family medicine, and community engagement. Addressing vertical inequality in the Iranian healthcare system emerged as a significant implication. Proposed strategies included addressing deficiencies in knowledge and skills among family physicians, decentralizing the decision-making process, empowering family physicians, and involving the community in healthcare planning and evaluation. Further empirical research is needed to explore each finding in detail.

Statements and Declarations

Patient and public involvement

Not applicable

Ethics approval and informed consent

The research was approved by the ethical committee of Shiraz University of Medical Sciences (Ethical code: IR.SUMS.1399.1038).

Data availability

The data of the research is available through making contact with the corresponding author.

Conflict of interest

There is no conflict of interest regarding the research.

Funding

There is no funding regarding the research.

Competing interests

There are no competing interests regarding the research.

Authors` contributions

MKH conducted the search within the databases; MKH and RI extracted the data and conducted the analysis; MKH wrote the introduction, results and discussion sections; RI wrote the methods section. SMM and MAM cooperated in writing the discussion section and consulted with the authors during each phase of the study.

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Tables

Table 1. Characteristics of the study sample.

Item	Distribution
Gender	69% male, 31% female
The Deputy of Health at the University	23%
The Deputy of Technical and Operational Affairs	23%
Health Policy Maker	15%
University Professor	15%
Head of the Network Development and Health Promotion Group	23%

Table 2. Thematic analysis of the data.

Theme	Sub-theme	Code
Revision of healthcare financing	Reforming the healthcare budgeting system	Allocation of funds for strengthening PHC
		Delegation of financial authority
	Revision of payment systems	Reduction of healthcare expenses
		Weaknesses in fee-for-service systems
		Utilization of combination payment methods
		Strategic purchasing

	Efficiency and effectiveness of healthcare services	Consolidation of financial resources
Redefining education and research in primary healthcare	Revision of family medicine education system	Training of physicians based on family medicine principles and PHC
		Establishment of educational centers for family physician training
		Integration of parallel educational centers
	Alignment of education with primary health care	Enhancement of PHC in research and education
		Completion of MPH courses for family physicians
	Evidence-based policymaking	Alignment of policy-making and implementation in pandemic-related decisions
		Evidence-based decision-making
Redefinition of primary healthcare	Enhancement of health education	Improvement of health literacy
		Reevaluation of PHC definition
		Promotion of discourse on primary healthcare in the community
	Revision of treatment-oriented approach	Excessive specialization
		Hospital-centric approach
	Redefining crisis management in the healthcare network system	Development of crisis-appropriate infrastructure
		Risk assessment
		High-risk encounters with future epidemics
	Reviewing infectious disease management	Strengthening CDC
		Enhancement of surveillance systems
		Overemphasis on non-communicable diseases
	Reorganization	Increase in health houses and active health bases in service delivery
		Decentralization in the healthcare network system
		Public-private partnership
		Filling organizational positions in the healthcare network
Development of a new model for family medicine	Systemic thinking in healthcare	Preservation of programs and objectives with management changes
		Restriction of family medicine program within the health

		deputy of the Ministry of Health
		Conflicts of interest at specialized levels
	Family medicine improvement	Service receivers
		Provision of quality services
		Neglect of the community
		Heartfelt inclination and belief in family physician execution
		Formation of a family physician professional association
	Service integration	Revision of primary care service packages
		Integration of services at primary and secondary levels
		Referral system revision and improvement
	Digital health	Integration of information systems
		Easy access to epidemiological data for researchers
		Staff readiness for digital health
		Electronic medical records in disease care system
Community engagement	Community role in improving primary healthcare	Cultural promotion
		Social initiative in engaging public participation
		Social aspects of COVID-19
		Community role in needs assessment and prioritization of health services
	Attention to mass media	Neglect of PHC in mass media
		Media role in promoting family physicians

Appendix 1. Interview data.

The financial provision for healthcare services has been reformed through adjustments in budgetary allocation systems, payment system reforms, and the enhancement of service identification efficiency. Payment systems within the healthcare framework, excluding rural areas where family physicians are operational, primarily operate on a fee-for-service and fixed payment basis. Contributors to this research emphasized the inefficiencies of the current payment system. One participant with executive experience in healthcare policy and management stated:

"When we talk about primary healthcare (PHC), it means that our PHC centers should serve as hubs from which all healthcare system activities initiate, are directed, and coordinated, as they yield greater benefits. However, does our level of expertise allow this to happen? Certainly not, because we have a flawed payment system called fee-for-service, which incentivizes unnecessary treatments and neglects preventive care."

Budgetary allocation systems and expenditure allocation for primary healthcare do not fulfill the necessary effectiveness and efficiency criteria, as observed by contributors. This inadequacy stems from a treatment-oriented approach, resulting in a reduced share of health budgets allocated to preventive care, which has dwindled in recent years. A contributor in this regard stated:

"Allocations are crucial resources that must be implemented in a manner that strengthens the primary care network. We've seen numerous health deputies wanting to execute plans but lacking the necessary funding and allocation."

Furthermore:

"Our most sustainable resource is the discussion of a one percent value-added tax (VAT), initially earmarked for rural areas, towns with fewer than twenty thousand inhabitants, and subsequently for the Exchange Council and other purposes. However, if you look at its trend, this allocation has decreased annually and even received less than fifty percent of its designated funds in the past two years."

One of the issues raised in this study was strategic procurement and consolidation of financial resources. Financial resource fragmentation in Iran's healthcare system is a major financing problem, attributed to the multitude of insurance funds and their disjointedness, leading to inefficiencies in resource procurement and allocation. In this regard, one contributor stated:

"Health insurance should procure service packages based on service efficiency and effectiveness, adopting a more health-oriented approach and expanding coverage. This necessitates the

establishment of a unified electronic health record and rigorous supervision by insurance organizations. Additionally, insurance organizations, as service buyers, must actively engage in preventive measures."

The main theme of redefining education and research in primary healthcare has been identified with sub-themes including reforming the family medicine education system, integrating primary healthcare education and services, and evidence-based policymaking.

The medical education system in Iran is predominantly treatment-oriented, where physicians are trained with a hospital-centric approach. Subsequently, many of these physicians are employed in rural family physician centers. It is evident that the lack of sufficient training focused on family medicine and primary healthcare leads to insufficient efficiency among these physicians. In this regard, one contributor stated:

"We educate physicians with a treatment-oriented and hospital-centric approach, lacking fundamental education in public health and family medicine at universities. Then, we place these physicians in healthcare centers and expect them to work in line with the goals of primary healthcare (PHC). This approach is flawed; the medical education curriculum needs to be revised, or at the very least, general physicians should be trained specifically for family medicine from the outset."

One of the contributors emphasized the integration of parallel educational institutions in the Iranian healthcare system. The Health Deputy is one of the deputy ministries of the Ministry of Health and employs the majority of graduates in public health-related fields. Additionally, this deputy oversees a subset known as the Health Education Center (HEC), responsible for the training of health workers (multipurpose health workers in rural areas) since the establishment of the healthcare network. Contributors stressed the need for upgrading and improving the educational status. One contributor stated:

"In our network system, we have health education centers responsible for training health workers (multipurpose health workers of the Iranian healthcare system), which lack communication with health faculties. One fundamental change that could enhance the scientific and academic level of this group could be the integration of these educational centers into health faculties of universities. Furthermore, the Health Deputy practically has no connection with health faculties. It would be better if health ministries and their subsets were integrated into health faculties to facilitate better student involvement in fieldwork and strengthen the healthcare system."

In this context, one contributor remarked:

"Medical students are trained in a way that they become disillusioned and believe that their salvation lies in specialization and sub-specialization. Currently, family medicine specialists are trained with a highly sophisticated treatment-centric approach, which is truly a dangerous trend.

These are the issues that require careful consideration. Primary healthcare (PHC) has no place in our education and research, and these are matters that need to be addressed at the university level."

The reformation of the recruitment process for health workers in rural areas and their training methods emerged as a prominent issue in the research. In this regard, one contributor expressed:

"Previously, we utilized individuals with basic education levels for health worker recruitment, as societal and economic conditions necessitated. However, with the changing societal landscape, increased literacy, and knowledge levels, the previous recruitment and training methods for health workers are no longer adequate. It is preferable that recruitment, employment, and training procedures for health workers adapt to the evolving needs and capabilities of society."

Applied research in alignment with primary healthcare emerged as a topic of discussion. One participant emphasized the need for research centered on primary healthcare:

"Research based on primary healthcare (PHC) should be prioritized. Our Health Systems Research (HSR) units are not sufficiently active in most networks and often become merely ceremonial. It is imperative to integrate ideas for improving primary healthcare into the network's structure and research agendas."

Evidence-based policymaking was identified as a key theme. One participant advocated for the creation of a policy roadmap, stating:

"Consider the necessary actions... one of which is evidence-based decision-making. To achieve this, we need a research political mapping, essentially a scientific policy roadmap. This involves extracting specific research questions necessary for policymaking. These questions can then be transformed into proposals or Requests for Proposals (RFPs) for interested parties to engage with. Subsequently, these proposals are converted into scientific recommendations, which are then reviewed by scientific committees and transformed into policies. These policies are then deliberated at the national level and converted into decisions. This process ensures evidence-based decision-making because each entity plays a distinct role. For instance, as a researcher, I shouldn't expect all my proposals to be implemented immediately the next day, as economic and political factors also influence decision-making. It is the committee's duty to evaluate proposals from various perspectives."

The main theme of redefining primary healthcare included sub-themes such as enhancing health education, shifting from a treatment-oriented approach, revising crisis management in the healthcare system network, and restructuring infectious disease management. Contributors stressed the importance of promoting a primary healthcare discourse in society and improving health literacy:

"If health literacy in our society is low, the healthcare system must be responsive. The responsibilities within the healthcare system should extend beyond merely treating symptomatic illnesses like COVID-19, and community-centered family medicine should be fully implemented."

Efforts were made to disseminate this discourse in society through the media, exemplified by a positive initiative in Mazandaran province where family physicians engaged with the community by answering their questions. However, despite initial progress, there has been a regression to previous structures, leaving this initiative largely neglected.

Furthermore, a critical need to strengthen infectious disease management emerged, especially in the post-COVID era. It was noted that the infectious disease unit had been weakened due to various reasons, and its importance had been overlooked. Thus, strengthening infectious disease management should be prioritized in policymaking.

Family physicians are healthcare providers who focus on preventive care and healthcare discussions. However, it is observed that this aspect is not adequately incorporated into the family physician model in our country. Even in rural areas, the primary task was primarily seen as diagnosing and referring patients urgently, rather than focusing on preventive care. Primary Healthcare (PHC) should entail both skilled human resources and a robust surveillance system. Unfortunately, we lacked a comprehensive healthcare system.

Studies indicate that provinces implementing family physician programs lacked a strong healthcare system for monitoring and observing patients in the early stages. This became more evident during the COVID-19 pandemic when many cases became severe by the time they reached our healthcare system after a week or two, highlighting the lack of timely intervention. The question arises: why did this happen? Why was there a lack of communication with families so that symptoms could be identified promptly and healthcare could be provided before the condition worsened?

One participant in this discussion highlighted the adverse effects of excessive specialization and hospital-centric approaches on the failure of primary healthcare programs. Unfortunately, this trend persists in our country, and it requires a tactful and scientifically grounded approach to address it.

Reorganization emerged as one of the identified sub-themes in this research. According to participants, strengthening and redefining primary healthcare necessitate the creation of new specialist positions, including epidemiologists, activating currently inactive service centers, and completing organizational structures by hiring more human resources for primary healthcare. One contributor stated:

"If we look at the statistics, we have approximately 1000 inactive health centers and nearly an equal number of inactive urban centers in the country. One of the initial steps towards strengthening the network should be focusing on these statistics and activating these service centers."

A significant portion of secondary-level healthcare services in Iran is managed by the private sector. However, the Ministry of Health has limited oversight in this area, and collaboration between the private and public sectors has not been satisfactory. In this regard, a participant commented:

"The involvement of the private sector is another important issue. Frankly, we either fear or lack trust in the private sector. Implementing the family physician program without involving the private sector is not feasible. The private sector should assist us in screening and providing comprehensive services based on health protocols."

Developing a new model for family physician programs was one of the main themes, with sub-themes including systemic thinking, effective factors in family physician programs, digital health, and service integration. Systemic thinking is an essential and undeniable aspect of healthcare system management. Unfortunately, the structure of healthcare management in Iran undergoes significant changes with each change in government or senior management, leading to the neglect of previous management plans. This issue hampers improvement in healthcare management and policymaking. One participant expressed:

"We know all the weaknesses and strengths. Now the question is, where is the institution responsible for addressing these problems and making decisions for reform and implementation? Can governments that change every four years or health ministries that didn't know who their health minister was until a week or two ago have plans? Thinking that one person has a plan means what? Can you have a plan without a team? Can you have a plan without continuous work for years? Can you have a plan without executive and research fields that have implemented these models...

Service integration at the primary and secondary levels and having a referral system in line with standards are prerequisites for enhancing primary healthcare programs. While primary care services are somewhat uniform in our healthcare system, they still have weaknesses. However, this uniformity is not observed at higher and specialized levels due to the lack of a proper referral system and incomplete implementation of urban family physician programs. One participant stated:

Integration represents a form of coordination, even when we consider horizontal integration, which examines whether integrated services are provided at a single level. The level of coordination is such that, for example, if I require a visit to an endocrinologist and simultaneously need psychiatric care at the same level, is a neurologist truly provided in an integrated manner to an individual? If so, we would claim there is coordination between healthcare levels; however, in reality, this is not the case. There is neither vertical integration nor horizontal integration among the first, second, and third levels of healthcare.

Digital health and progress in that direction have been among the most important lessons learned from the COVID-19 pandemic worldwide. Unfortunately, in Iran, the necessary infrastructure for

moving in this direction is still lacking. Even electronic health records have long-standing issues such as lack of integration, accuracy, and timeliness of information. Regarding this, one participant stated:

"Our information systems are not interconnected and unified. The future of the healthcare system is moving towards digitization, and plans should be made so that even medical infrastructure moves towards telehealth and digitalization."

Our databases and electronic records are incomplete, and data is not collected and monitored intelligently. The design language of these systems should change so that problematic issues, which can take on an epidemic aspect, are reported as alerts. This requires changes in design, reporting, and integration with hospital systems. Currently, hospitals have their electronic records, and healthcare has its separate records, which are not interconnected, and their data cannot be properly analyzed.

Community engagement was identified with two sub-themes: the role of society in improving primary healthcare and the role of mass media. Participants emphasized the overlooked role of primary healthcare in the mass media and the importance of cultural awareness and involving people in health-related decision-making. One participant stated:

"Involving people is very important. Unfortunately, the current interaction with society is not called community engagement. Having so many healthcare providers alone does not lead to progress. Engaging people should involve needs assessment, prioritization, evaluation, and implementation, as seen in reports from the World Health Organization. The success of the network system depends on the level of people's participation."

In the same vein:

"...Regarding the issue of service stakeholders, which are always present in planning but often ignored, I believe that if we want to have family medicine, it must become a demand of the people. There should be such strong cultural awareness and preparedness among the people that they demand it and become advocates for implementing family medicine."

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Implications Derived from the Strengths and Weaknesses Observed in Iran's Primary Healthcare Programs during the COVID-19 Pandemic: A Qualitative Interview Study

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Abstract

Background

The COVID-19 outbreak at the end of 2019 severely impacted global healthcare systems, especially primary healthcare services. This paper aimed to identify the implications derived from the strengths and weaknesses observed in Iran's primary healthcare (PHC) programs during the pandemic.

Methods

This was a qualitative study, conducted in 2021. 13 semi-structured interviews were held with Iranian healthcare policymakers and executive managers, selected via snowball sampling, using the World Health Organization's analytical framework. Finally, a thematic analysis was conducted on the interview data.

Results

The thematic analysis of the findings yielded five major themes: revision of healthcare financing, redefining education and research in primary healthcare, redefinition of primary healthcare, development of a new model for family medicine, and community engagement.

Conclusion

Addressing vertical inequality in Iran's healthcare system was delineated to be crucial. Meanwhile, multiple strategies including enhancing family physicians' knowledge and skills, decentralizing decision-making, empowering them, and involving communities in healthcare planning was presented to improve PHC and family medicine. Further empirical research is needed.

Keywords

Primary Health Care, Physicians, Family, COVID-19, Health Care Reform

Strengths and limitations of this study

- The study involved prominent healthcare policymakers and executive managers as participants.
- The study did not include the perspectives of participants in the primary healthcare system in Iran, particularly ordinary civilians.

1. Introduction

The emergence of the COVID-19 virus at the end of 2019 precipitated a global crisis[1]. The comprehensive impact of this disease on people's lives has led policymakers and healthcare system decision-makers to consider whether healthcare systems had demonstrated sufficient resilience to confront the pandemic[2].

Resilience, in the context of healthcare systems, is defined as the ability of a healthcare system to prepare for and manage—through absorption, adaptation, and transformation—the impacts of sudden events and occurrences[3]. Indeed, a healthcare system can only successfully navigate a crisis when, in addition to maintaining its core objectives, it is capable of evolving and improving. However, this outcome was rarely observed during the COVID-19 pandemic, during which the disruption of certain routine healthcare services occurred within the first year of the response[4-6]. Identifying the strengths and weaknesses of healthcare systems and their governance, as well as assessing their responsiveness in facing pandemics, can facilitate a more accurate understanding of the path forward and enhance readiness to cope with such uncertain circumstances in the future.

Healthcare systems worldwide have employed various strategies to contain the COVID-19 pandemic. It appears that having a coherent crisis management plan has been a determining factor among them. Countries with comprehensive plans were able to effectively manage the pandemic and mitigate its harmful effects by implementing appropriate policies, including widespread testing and tracing, fostering public trust and transparency in communication, strengthening primary healthcare systems, and implementing effective screening and quarantine measures[7]. In this regard, COVID-19's global lessons emphasize the need for a heightened focus on global health security, public health, and primary health care (PHC). Given the broad social and economic impacts of pandemics, a holistic approach to healthcare, particularly one that emphasizes primary care, offers an appropriate response to the challenges affiliated with the pandemics[8-11].

Evidence suggests that significant non-pharmaceutical interventions in PHC settings have been successful strategies for controlling and managing pandemics. Essential to this approach are appropriate risk assessments within communities and pre-designed structures for community engagement to improve health outcomes[12-15]. For instance, communities with high health literacy and robust social capital have demonstrated better adherence to health protocols, resulting in lower infection rates[16, 17]. This highlights the imperative for appropriate focus and policymaking grounded in the fundamental principles of PHC.

Prior to the COVID-19 pandemic, Iran had made substantial investments in its PHC system, launching a flagship program focused on disease prevention and health promotion through a comprehensive network of community health centers (CHCs) and health posts. With the onset of the pandemic, this established infrastructure was strategically leveraged by designating approximately 1,050 CHCs as specialized COVID-19 centers to manage mild cases and conduct contact tracing. This approach not only alleviated the pressure on hospitals by redirecting patient flow but also ensured the continuity of essential health services[18, 19].

Several studies have been undertaken to examine the implications of the Iranian primary healthcare system's experience throughout the COVID-19 pandemic. In this regard, one study highlighted a whole-of-government approach that strengthened primary healthcare capacity, supported the workforce, improved preparedness, ensured access to medicines and vaccines, and utilized health information systems[20]. A study conducted to assess the impact of the Healthcare Incident Command System (HICS) on district health networks (DHNs) in Iran during the COVID-19 pandemic

found that DHNs with active HICS achieved significantly higher scores in incident management and command than those without active HICS, particularly in areas such as organizational support, planning, and communication. The findings indicated that the implementation of HICS positively influenced incident management capabilities, underscoring its potential to enhance crisis management for infectious diseases and to improve the overall efficiency of primary healthcare system responses during such emergencies[21].

A review of the existing literature reveals a lack of comprehensive reports detailing the implications derived from the experiences of Iran's PHC system during the COVID-19 pandemic. Conducting such studies is of significant value for stakeholders, including PHC policymakers and managers in countries with contexts similar to Iran. The insights gained from these analyses can inform the prioritization of strategies aimed at strengthening the resilience and preparedness of PHC systems in the face of future pandemics and comparable crises.

2. Materials and methods

2.1. Study design

The present research employed a qualitative approach in the year 2021. In this regard, this study conducted multiple semi-structured interviews using the analytical framework of the World Health Organization[22].

2.2. Research question

The research question was designed as the following: "What are the implications derived from the strengths and weaknesses observed in PHC programs in the Iranian healthcare system during the COVID-19 pandemic crisis?".

2.3. Sampling method and sample size

Interviews were conducted with 13 policymakers and executive managers of the Iranian healthcare network. Participants were selected using snowball sampling, initially interviewing the Deputy of Health of a medical university in southwestern of Iran, who then facilitated the identification of relevant individuals in the field. The participants comprised 69% males and 31% females. In terms of professional roles, 23% of the participants were Deputies of Health at the university, another 23% served as Deputies of Technical and Operational Affairs, and 23% held the position of Head of the Network Development and Health Promotion Group. Additionally, 15% of the experts were Health Policy Makers, while the remaining 16% were University Professors.

2.4. Patient and Public Involvement statement

None.

2.5. Data collection and inclusion criteria

Multiple semi-structured interviews were conducted face-to-face, primarily at the participants' workplaces, in accordance with the interviewees' preferences and following prior coordination. Participants were chosen based on their significant awareness and expertise in crisis management and policymaking related to the COVID-19 pandemic. MM, a male with a PhD. with multiple experiences of conducting such methodologies conducted the interviews.

The semi-structured interview guide, consisting of five questions, was developed based on a comprehensive discussion of the results derived from the existing literature and the prior personal experiences of two of the manuscript's authors, who were specialized in the context of primary

healthcare in Iran during the COVID-19 pandemic. Subsequently, the guide was validated by two additional experts. Additionally, the face validity of the interview guide was confirmed through three preliminary interviews with participants. The semi-structured interview comprised of the following questions:

- In your opinion, what are the most important strategies and policies for strengthening the primary healthcare network system? Please explain.
- Community participation and interaction with society is one of the principles of primary healthcare. How can we achieve this important goal?
- Despite the emphasis of health policymakers at various times on the priority of prevention over treatment, especially in the discussion of resource allocation, this issue is still neglected. What are the reasons for this problem? Please explain.
- How should our education and research system be in order to achieve the goals of primary healthcare? Especially the discussion of Health Systems Research (HSR) which has been raised for years but is practically inactive.
- It seems that during the pandemic, the capacity of healthcare networks was not used as it should have been. How should we employ this potential capacity in practice and overall, what changes and lessons can be taken from the pandemic to improve the healthcare network system?

At the outset of each interview, a verbal explanation regarding identity of the interviewer and the study, particularly its objectives, and the measures taken to ensure confidentiality of information was provided. Written informed consent was obtained from all participants, assuring them of their freedom to withdraw from the study at any stage. Interviews lasted a minimum of 50 minutes and were conducted solely by one of the authors. With participants' permission, interviews were recorded and transcribed verbatim shortly after completion. Interviews continued until saturation was reached, with saturation achieved after 13 interviews.

2.6. Data management and analysis

To analyze the data, a five-stage framework analysis method was employed. Initially, in the first stage, the audio files from multiple sessions were listened to by the researchers to acquaint themselves with the data, and transcribed texts were reviewed multiple times. In the second stage, to identify a thematic framework, recurring ideas from the familiarization process were grouped into clusters of similar ideas, or codes. In the third stage, indexing was performed, identifying units or sections of the data relevant to specific codes. Following indexing in the fourth stage, the data were summarized into code tables according to the thematic framework. Finally, in the fifth stage, the data were amalgamated, and a map and interpretation were utilized to define concepts, illustrate relationships between concepts, specify the nature of the phenomenon, and provide explanations and recommendations[23]. Due to the language of the text of the interview transcripts (Persian) and to enhance creativity, manual coding and classification methods were employed instead of software utilization.

2.7. Data reliability and validity

In order to enhance the accuracy and reliability of the study data, four criteria of Guba and Lincoln, namely, credibility, confirmability, dependability, and transferability, were utilized[24]. In this regard, to bolster the credibility of the study, a prolonged engagement and continuous observation approach were employed, whereby the researchers fully immersed in the research, established appropriate and meaningful communication with participants, and embraced profound concepts

emerging throughout the study process. To increase result confirmation capability, the coded data were made available to participants for validation of the extracted findings. To enhance the transferability of study results, conditions of participant awareness and interview methodology were transparently delineated. Efforts were made to ensure the selection of sample individuals was entirely aligned with the study objectives and free from any bias. Data analysis was conducted concurrently with data collection. Moreover, the researchers initially aimed to maintain a thorough understanding of the study's theoretical foundations to ensure a precise and valid data analysis, as prior knowledge of these foundations is considered essential—particularly during the coding process and theme development. To reinforce result reliability, the process of coding concepts, themes, and textual and auditory information were documented. Additionally, to ensure confidence, two members of the research team (RI and MM) independently analyzed the content and engaged in discussions and exchanges of opinions to resolve any discrepancies.

3. Results

The thematic analysis of the interview involved identifying five main themes and 17 sub-themes, as outlined in Table 1.

3.1. Revision of healthcare financing

This theme comprised of three sub-themes. The sub-themes addressed the reformation of the healthcare budgeting system, revision of payment systems and efficiency and effectiveness of healthcare services. In this context, the interview data highlighted several key points, including the allocation of funds to bolster PHC, the delegation of financial authority, the reduction of healthcare expenses, weaknesses observed in fee-for-service systems, the utilization of combination payment methods, strategic purchasing practices, and the consolidation of financial resources.

Iranian budgetary allocation systems and expenditure allocation for primary healthcare do not fulfill the necessary effectiveness and efficiency criteria, as observed by contributors. A contributor in this regard stated:

"Allocations are crucial resources that must be implemented in a manner that strengthens the primary care network. We've seen numerous health deputies wanting to execute plans but lacking the necessary funding and allocation."

Moreover, another contributor stated:

"Our most sustainable resource is the discussion of a one percent value-added tax (VAT), initially earmarked for rural areas, towns with fewer than twenty thousand inhabitants, and subsequently for the Exchange Council and other purposes. However, if you look at its trend, this allocation has decreased annually and even received less than fifty percent of its designated funds in the past two years."

Contributors to this research emphasized the inefficiencies of the current payment system in the Iranian healthcare system. One participant with executive experience in healthcare policy and management stated:

"When we talk about primary healthcare (PHC), it means that our PHC centers should serve as hubs from which all healthcare system activities initiate, are directed, and coordinated, as they yield greater benefits. However, does our level of expertise allow this to happen? Certainly not, because

we have a flawed payment system called fee-for-service, which incentivizes unnecessary treatments and neglects preventive care."

One of the issues raised in this study was the existence of inefficiency and ineffectiveness in the strategic procurement and consolidation of financial resources in PHC of Iran. According to the study participants, financial resource fragmentation in Iran's healthcare system is a major financing problem, attributed to the multitude of insurance funds and their disjointedness, leading to inefficiencies in resource procurement and allocation. In this regard, one contributor stated:

"Health insurance should procure service packages based on service efficiency and effectiveness, adopting a more health-oriented approach and expanding coverage. This necessitates the establishment of a unified electronic health record and rigorous supervision by insurance organizations. Additionally, insurance organizations, as service buyers, must actively engage in preventive measures."

3.2. Redefining education and research in primary healthcare

This theme comprised of three sub-themes. The sub-themes addressed the revision of family medicine educational system, alignment of education with primary health care and evidence-based policymaking. In this regard, the interview data highlighted several key initiatives. These included the training of physicians in accordance with family medicine principles and PHC, the establishment of dedicated educational centers for family physician training, and the integration of parallel educational facilities. Moreover, efforts were focused on enhancing PHC through research and education, as well as ensuring the completion of Master of Public Health (MPH) courses for family physicians. Additionally, there was a strong emphasis on aligning policy-making and implementation in decisions concerning pandemics, alongside the adoption of evidence-based decision-making approaches.

According to one of the study participants, the medical education system in Iran is predominantly treatment-oriented, where physicians are trained with a hospital-centric approach. Subsequently, many of these physicians are employed in rural family physician centers. It is evident that the lack of sufficient training focused on family medicine and primary healthcare leads to insufficient efficiency among these physicians. In this regard, one contributor stated:

"We educate physicians with a treatment-oriented and hospital-centric approach, lacking fundamental education in public health and family medicine at universities. Then, we place these physicians in healthcare centers and expect them to work in line with the goals of primary healthcare (PHC). This approach is flawed; the medical education curriculum needs to be revised, or at the very least, general physicians should be trained specifically for family medicine from the outset."

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Contributors stressed the need for upgrading and improving the educational status. In this regard, the contributor stated:

"In our network system, we have health education centers responsible for training health workers (multipurpose health workers of the Iranian healthcare system), which lack communication with health faculties. One fundamental change that could enhance the scientific and academic level of this group could be the integration of these educational centers into health faculties of universities. Furthermore, the Health Deputy practically has no connection with health faculties. It would be better if health ministries and their subsets were integrated into health faculties to facilitate better student involvement in fieldwork and strengthen the healthcare system."

In such context, another contributor remarked:

"Medical students are trained in a way that they become disillusioned and believe that their salvation lies in specialization and sub-specialization. Currently, family medicine specialists are trained with a highly sophisticated treatment-centric approach, which is truly a dangerous trend. These are the issues that require careful consideration. Primary healthcare has no place in our education and research, and these are matters that need to be addressed at the university level."

The reformation of the recruitment process for health workers in rural areas and their training methods emerged as a prominent issue in the research. In this regard, one contributor expressed:

"Previously, we utilized individuals with basic education levels for health worker recruitment, as societal and economic conditions necessitated. However, with the changing societal landscape, increased literacy, and knowledge levels, the previous recruitment and training methods for health workers are no longer adequate. It is preferable that recruitment, employment, and training procedures for health workers adapt to the evolving needs and capabilities of society."

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"Consider the necessary actions... one of which is evidence-based decision-making. To achieve this, we need a research political mapping, essentially a scientific policy roadmap. This involves extracting specific research questions necessary for policymaking. These questions can then be transformed into proposals or Requests for Proposals (RFPs) for interested parties to engage with. Subsequently, these proposals are converted into scientific recommendations, which are then reviewed by scientific committees and transformed into policies. These policies are then deliberated at the national level and converted into decisions. This process ensures evidence-based decision-making because each entity plays a distinct role. For instance, as a researcher, I shouldn't expect all my proposals to be

implemented immediately the next day, as economic and political factors also influence decision-making. It is the committee's duty to evaluate proposals from various perspectives."

3.3. Redefinition of primary healthcare

This theme comprised of five sub-themes. The sub-themes addressed the enhancement of health education, revision of treatment-oriented approach, redefining crisis management in the healthcare network system, reviewing infectious disease management, and reorganization of the healthcare service delivery network. In this context, the interview data underscored several significant areas for consideration. These encompassed the improvement of health literacy, reevaluation of PHC definitions, and the promotion of discourse surrounding primary healthcare within the community. Moreover, concerns were raised regarding excessive specialization and a hospital-centric approach in healthcare delivery. Efforts were suggested for the development of crisis-appropriate infrastructure, risk assessment, and preparation for high-risk encounters with future epidemics. Recommendations were also made for strengthening the Centers for Disease Control and Prevention (CDC), enhancing surveillance systems, and addressing the overemphasis on non-communicable diseases. Additionally, strategies were proposed for increasing the availability of health houses and active health bases in service delivery, decentralizing the healthcare network system, fostering public-private partnerships, and ensuring the appropriate staffing of organizational positions within the healthcare network.

Regarding this theme, the study contributors stressed the importance of promoting a primary healthcare discourse in society and improving health literacy:

"If health literacy in our society is low, the healthcare system must be responsive. The responsibilities within the healthcare system should extend beyond merely treating symptomatic illnesses like COVID-19, and community-centered family medicine should be fully implemented."

He stated further:

"Efforts were made to disseminate this discourse in society through the media, exemplified by a positive initiative in Mazandaran province where family physicians engaged with the community by answering their questions. However, despite initial progress, there has been a regression to previous structures, leaving this initiative largely neglected."

According to one of the study participants, a critical need is to revise the treatment-oriented approach. In this regard, the participant stated:

"Family physicians are healthcare providers who focus on preventive care and healthcare discussions. However, it is observed that this aspect is not adequately incorporated into the family physician model in our country. Even in rural areas, the primary task was primarily seen as diagnosing and referring patients urgently, rather than focusing on preventive care. Primary Healthcare should entail both skilled human resources and a robust surveillance system. Unfortunately, we lacked a comprehensive healthcare system."

Another participant highlighted the adverse effects of excessive specialization and hospital-centric approaches on the failure of primary healthcare programs. The participant stated:

"Unfortunately, this trend persists in our country, and it requires a tactful and scientifically grounded approach to address it."

Reorganization emerged as one of the identified sub-themes in this research. According to participants, strengthening and redefining primary healthcare necessitate the creation of new specialist positions, including epidemiologists, activating currently inactive service centers, and completing organizational structures by hiring more human resources for primary healthcare. One contributor stated:

"If we look at the statistics, we have approximately 1000 inactive health centers and nearly an equal number of inactive urban centers in the country. One of the initial steps towards strengthening the network should be focusing on these statistics and activating these service centers."

According to one of the study participants, a significant portion of secondary-level healthcare services in Iran is managed by the private sector. However, the Ministry of Health has limited oversight in this area, and collaboration between the private and public sectors has not been satisfactory. In this regard, the participant commented:

"The involvement of the private sector is another important issue. Frankly, we either fear or lack trust in the private sector. Implementing the family physician program without involving the private sector is not feasible. The private sector should assist us in screening and providing comprehensive services based on health protocols."

3.4. Development of a new model for family medicine

This theme comprised of five sub-themes. The sub-themes included the systematic thinking in healthcare, family medicine improvement, integration of services, and digital health. In this context, the interview data highlighted several critical issues, including the preservation of programs and objectives amidst management changes, the confinement of the family medicine program within the health department of the Ministry of Health, identification of conflicts of interest at specialized levels, consideration of service recipients' perspectives, ensuring the provision of quality services, addressing instances of neglect within the community, demonstrating sincere commitment and confidence in the execution of family physician roles, establishing a professional association for family physicians, reviewing primary care service packages, promoting the integration of services across primary and secondary healthcare levels, revising and enhancing the referral system, integrating information systems for improved coordination, facilitating easy access to epidemiological data for researchers, ensuring staff readiness for digital health initiatives, and implementing electronic medical records within the disease care system.

According to one of the study participants, systemic thinking is an essential and undeniable aspect of healthcare system management. In this regard, the structure of healthcare management in Iran undergoes significant changes with each change in government or senior management, leading to the neglect of previous management plans. This issue hampers improvement in healthcare management and policymaking. The participant expressed:

"We know all the weaknesses and strengths. Now the question is, where is the institution responsible for addressing these problems and making decisions for reform and implementation? Can

governments that change every four years or health ministries that didn't know who their health minister was until a week or two ago have plans? Thinking that one person has a plan means what? Can you have a plan without a team? Can you have a plan without continuous work for years? Can you have a plan without executive and research fields that have implemented these models..."

According to one of the study participants, service integration at the primary and secondary levels and having a referral system in line with standards are prerequisites for enhancing primary healthcare programs. While primary care services are somewhat uniform in our healthcare system, they still have weaknesses. However, this uniformity is not observed at higher and specialized levels due to the lack of a proper referral system and incomplete implementation of urban family physician programs. The participant stated:

"Integration represents a form of coordination, even when we consider horizontal integration, which examines whether integrated services are provided at a single level. The level of coordination is such that, for example, if I require a visit to an endocrinologist and simultaneously need psychiatric care at the same level, is a neurologist truly provided in an integrated manner to an individual? If so, we would claim there is coordination between healthcare levels; however, in reality, this is not the case. There is neither vertical integration nor horizontal integration among the first, second, and third levels of healthcare."

According to one of the study participants, digital health and progress in that direction have been among the most important lessons learned from the COVID-19 pandemic worldwide. Unfortunately, in Iran, the necessary infrastructure for moving in this direction is still lacking. Even electronic health records have long-standing issues such as lack of integration, accuracy, and timeliness of information. Regarding this issue, the participant stated:

"*Our information systems are not interconnected and unified. The future of the healthcare system is moving towards digitization, and plans should be made so that even medical infrastructure moves towards telehealth and digitalization."*

3.5. Community engagement

This theme comprised of two sub-themes. The sub-themes addressed the community role in improving primary healthcare and attention to mass media. In this context, the interview data presented several significant findings: observations pertaining to cultural promotion initiatives, identification of social initiatives aimed at engaging public participation, consideration given to the social aspects of COVID-19, highlighting the community's role in needs assessment and prioritization of health services, concerns raised regarding the neglect of PHC in mass media coverage, and emphasis placed on the media's role in promoting the importance of family physicians.

Regarding this theme, the study participants emphasized the overlooked role of primary healthcare in the mass media and the importance of cultural awareness and involving people in health-related decision-making. One participant stated:

"Involving people is very important. Unfortunately, the current interaction with society is not called community engagement. Having so many healthcare providers alone does not lead to progress. Engaging people should involve needs assessment, prioritization, evaluation, and implementation, as

seen in reports from the World Health Organization. The success of the network system depends on the level of people's participation, a phenomenon which can particularly addressed by the mass media throughout the country."

Another participant stated:

"...Regarding the issue of service stakeholders, which are always present in planning but often ignored, I believe that if we want to have family medicine, it must become a demand of the people. There should be such strong cultural awareness and preparedness among the people that they demand it and become advocates for implementing family medicine."

4. Discussion

As the findings of the study delineated, the thematic analysis of the study data led to five major themes providing implications derived from the observed strengths and weaknesses of Iranian healthcare system during the COVID-19 pandemic. In this regard, most of the study findings, including those related to management, financing, workforce, digital health, education, and community engagement, were consistent with the existing literature [25-31]. Meanwhile, certain study findings were considered novel within the literature, particularly those related to policy making and systematic thinking. More importantly, the data reported in our study is considered to be rich in insights and detail in comparison with the existing literature. In this section of the study, each of the themes is discussed and analyzed thoroughly.

4.1. Revision of healthcare financing

The studies within the literature backed our findings regarding the necessity of revision of healthcare financing after the experience of the COVID-19 pandemic; In this regard, the reports have indicated that the pandemic has had a significant impact on Iran's health system, underscoring the urgent need for flexible financing and increased resources to improve service accessibility[32]. Additionally, there is a pressing need to address out-of-pocket payments and their detrimental effects on healthcare access, particularly among impoverished populations[33]. In this regard, it is recommended that the Iranian healthcare system addresses its vertical inequity through implementing the following strategies:

- Universal insurance coverage[34].
- Redistributing incomes within the health sector to support low-income individuals[34]
- Strengthening health insurance schemes to enhance equity[34].

Additional reports within the literature have backed the findings of our study underscoring the difficulties encountered by healthcare centers amidst the pandemic, noting substantial shifts in financial and performance metrics, including decreased revenues and resources[35, 36]. In this regard, the following points are emphasized:

- Financial assistance and sustainable resource allocation during crises[36].

- Implementing suitable models for service enhancement and resource sustainability during such challenging periods[35].

These findings indicate that healthcare policymakers and managers must implement effective models of healthcare delivery networks within their respective organizations. In doing so, they should carefully consider the essential resources required to respond adequately to crises and disruptions in the standard healthcare service delivery processes.

4.2. Redefining education and research in primary healthcare

Studies in the literature have corroborated our findings regarding the imperative to redefine education and research within Iran's primary healthcare sector. There has been an emphasize on the necessity for enhancements in planning, monitoring, and governance[37]. Additionally, the pivotal challenge concerning training systems within Iran's primary healthcare, indicating the need for immediate attention, has been highlighted[38]. These findings underscore the importance of prioritizing education and research within healthcare systems to improve preparedness for crises.

The literature highlights the following points to address such challenges:

- The need for comprehensive training to address deficiencies in knowledge and skills among family physicians[39, 40].
- Involving specialists in the training of generalists which can enhance the ongoing professional development of family physicians, thereby ensuring the success of the Family Physician Program (FPP) in Iran[40].

4.3. Redefinition of primary healthcare

The literature supports our findings regarding this theme reporting the necessity of enhancing health literacy, particularly among male individuals, older adults, individuals with limited educational attainment, and those residing in rural areas in Iran[41]. Meanwhile, it is reported that improved access to the internet and information and communication technologies (ICTs) can play a significant role in augmenting patients' health literacy. Additionally, the development of more effective patient education strategies is paramount to this endeavor[38]. These findings highlight the importance of emphasizing population health literacy and the utilization of digital tools to enhance the preparedness of healthcare systems during crises.

The literature has also highlighted the imperative to confront challenges within primary PHC in Iran, including a centralized decision-making process, parallel service delivery structures, inadequate understanding of health packages, disparities between current and necessary staff competencies, and delayed health needs assessments. Additionally, the following implications have been underscored to be significant steps forward:

- Scaling up digital health interventions[42].
- Establishing suitable platforms for ongoing capacity building of healthcare professionals in health technology utilization[42].

4.4. Development of a new model for family medicine

The literature has corroborated our findings concerning the imperative need for restructuring family medicine in Iran. Various challenges pertaining to the legal framework, administrative processes, and societal structure have been documented[39]. Additionally, obstacles related to organizational accessibility, financial provisions for secondary healthcare, and cultural considerations have been highlighted[43]. These findings emphasize the vital role of family medicine in primary healthcare services during crises, which healthcare policymakers and managers should carefully take into account.

The literature has proposed several strategies to improve family medicine in Iran:

- Clarifying the future roles and privileges of trained physicians[44].
- Selecting motivated applicants to enhance educational quality[44].
- Focusing on shorter, skill-focused courses to empower general practitioners[44].
- Ensuring the applicability of training[44].
- Implementing continuous monitoring and evaluation to improve processes and empower physicians in providing primary prevention and healthcare services[44].

4.5. Community engagement

The literature is in line with our observation regarding the imperative of involving communities in healthcare dialogues, as community members can offer substantial contributions to health initiatives. Engaging community health professionals from within the communities they serve has proven instrumental in fostering positive interpersonal connections between healthcare providers and clients at the PHC level. Nevertheless, it is noted that healthcare educational platforms aimed at empowering communities are deficient in Iran[42]. Overall, the findings have underscored the significant role of communities in enhancing the readiness of primary healthcare systems for crises.

To enhance community engagement in primary healthcare in Iran, multiple strategies have been proposed:

- Involving the community in all stages of curriculum design, implementation, and evaluation[45, 46].
- Integrating social accountability into the curriculum's mission and goals[45, 46].
- Establishing a multi-specialized curriculum committee[45, 46].
- Fostering a culture of social accountability[45, 46].
- Coordinating with primary healthcare centers[45, 46].
- Engaging in community education; training faculty, family physicians, general practitioners, and primary healthcare staff to teach community-related topics[45, 46].
- Involving health promotion professionals in education[45, 46].
- Assessing public input in health policy[45, 46].
- Recommending interventions and policy options to promote public engagement[45, 46].

5. Implications

Our study offered significant implications for healthcare policymakers, administrators, and researchers in Iran and other countries with similar contexts. The findings suggested the need to

revise healthcare financing, redefine education and research, overhaul the primary healthcare system, develop new models for the family medicine program, and increase community engagement in primary healthcare services. These findings can serve as primary inputs for future research to explore the strategies and effects of each implication in detail.

6. Conclusions

The findings of the study were categorized into five major themes: revision of healthcare financing, redefining education and research in primary healthcare, redefinition of primary healthcare, development of a new model for family medicine, and community engagement. Addressing vertical inequality in the Iranian healthcare system emerged as a significant implication. Proposed strategies included addressing deficiencies in knowledge and skills among family physicians, decentralizing the decision-making process, empowering family physicians, and involving the community in healthcare planning and evaluation. Further empirical research is necessary to explore each finding in greater detail.

Statements and Declarations

Patient and public involvement

Not applicable

Ethics approval and informed consent

Informed consent was obtained by all of the study participants. The research was approved by the ethical committee of Shiraz University of Medical Sciences (Ethical code: IR.SUMS.1399.1038).

Data availability

The data of the research is available through making contact with the corresponding author.

Conflict of interest

There is no conflict of interest regarding the research.

Funding

There is no funding regarding the research.

Competing interests

There are no competing interests regarding the research.

Authors` contributions

MM conducted the data gathering, with RI validating the process. RI then conducted the data analysis, which was validated by MM. MS contributed to both data gathering and analysis. MK wrote the discussion section and revised the manuscript. The guarantor is RI.

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Tables

Table 1. Thematic analysis of the data.

Theme	Sub-theme	Code
Revision of healthcare financing	Reforming the healthcare budgeting system	Allocation of funds for strengthening PHC
		Delegation of financial authority
	Revision of payment systems	Reduction of healthcare expenses
		Weaknesses in fee-for-service systems
		Utilization of combination payment methods
	Efficiency and effectiveness of healthcare services	Strategic purchasing
		Consolidation of financial resources
Redefining education and research in primary healthcare	Revision of family medicine education system	Training of physicians based on family medicine principles and PHC
		Establishment of educational centers for family physician training
		Integration of parallel

		educational centers
	Alignment of education with primary health care	Enhancement of PHC in research and education
		Completion of MPH courses for family physicians
	Evidence-based policymaking	Alignment of policy-making and implementation in pandemic-related decisions
		Evidence-based decision-making
Redefinition of primary healthcare	Enhancement of health education	Improvement of health literacy
		Reevaluation of PHC definition
		Promotion of discourse on primary healthcare in the community
	Revision of treatment-oriented approach	Excessive specialization
		Hospital-centric approach
	Redefining crisis management in the healthcare network system	Development of crisis-appropriate infrastructure
		Risk assessment
		High-risk encounters with future epidemics
	Reviewing infectious disease management	Strengthening CDC
		Enhancement of surveillance systems
		Overemphasis on non-communicable diseases
	Reorganization	Increase in health houses and active health bases in service delivery
		Decentralization in the healthcare network system
		Public-private partnership
		Filling organizational positions in the healthcare network
Development of a new model for family medicine	Systemic thinking in healthcare	Preservation of programs and objectives with management changes
		Restriction of family medicine program within the health deputy of the Ministry of Health
		Conflicts of interest at specialized levels
	Family medicine improvement	Service receivers
		Provision of quality services
		Neglect of the community
		Heartfelt inclination and belief in family physician execution

		Formation of a family physician professional association
	Service integration	Revision of primary care service packages
		Integration of services at primary and secondary levels
		Referral system revision and improvement
	Digital health	Integration of information systems
		Easy access to epidemiological data for researchers
		Staff readiness for digital health
		Electronic medical records in disease care system
Community engagement	Community role in improving primary healthcare	Cultural promotion
		Social initiative in engaging public participation
		Social aspects of COVID-19
		Community role in needs assessment and prioritization of health services
	Attention to mass media	Neglect of PHC in mass media
		Media role in promoting family physicians