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Children's Health In Iran

Soheila Khazaei (MD)[1*]

[1] *Professor of Pediatric Infectious Disease, Akbar Hospital, Mashhad University of Medical Sciences, Mashhad, Iran*

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ABSTRACT

Introduction: Despite the significant progress made over the past two decades in enhancing children's health both nationally and internationally, it is imperative to prioritize the well-being of children. This report provides a succinct overview of influential factors, the process of accessing healthcare services, the achievements of national and international indicators, as well as the challenges, concerns, and issues surrounding children's health and healthcare systems. It delves into identifying underlying causes and draws insights from global and national experiences to formulate solutions through a proposed national sector reform program. Finally, it outlines the expectations for the implementation of the program.

Methods: The study involved analyzing statistical reports from reputable sources regarding the health status of children in Iran, as well as examining various findings from statistical investigations and surveys conducted by the Iran Ministry of Health and Medical Education.

Results: Health encompasses not only physical well-being but also psychological, social, and spiritual aspects, rather than merely the absence of physical illness. Social and economic factors contribute to 50% of health outcomes, while access to healthcare services accounts for 25%, biological and genetic factors for 15%, and physical factors for 10%. Smooth and stable progression of development programs is crucial, as any disruption could jeopardize the progress made across various initiatives.

The 2016 Census revealed a growth trend across all provinces. Provinces such as Hamedan, Ardebil, Kermanshah, Kurdistan, Zanjan, Gilan, Lorestan, as well as east and central Azerbaijan, collectively representing 23% of Iran's population, exhibited a growth rate of less than 1%. Urbanization has steadily increased over the years; in 1976, only 47% of the population resided in urban areas, compared to approximately two-thirds in 2016. Life expectancy at birth has seen a commendable increase of 5.3 years over the past two decades, reaching 72.5 years in 2016, with men at 71 years and women at 73 years. This surpasses the regional average. Moreover, there has been a decline in infant and neonatal mortality rates from 1996 to 2015.

Conclusion: Iran has made significant strides in child health development in recent years, largely attributable to the Primary Health Care (PHC) program. This has resulted in a noticeable decrease in child mortality and morbidity rates, highlighting the effectiveness of healthcare initiatives targeted at this vulnerable demographic.

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Introduction

Iran, situated in the Middle East, has experienced a population growth rate of 1.61% as of the 2018 census. As of mid-2016, the population stood at 73,650,566. Table 1 outlines the population distribution across different

***Corresponding author:** Soheila Khazaei,*
Professor of Pediatric Infectious Disease, Akbar Hospital, Mashhad University of Medical Sciences, Mashhad, Iran
***E-mail:** khazaeish@mums.ac.ir*
***Tel:** 09128035366*

Table 1: Population according to age groups, based on 2016 census (Ministry of health and education Report)

Age(year)	Number	Proportion (%)
0-4 years	5461000	7.75%
5-9 years	5505000	7.81%
10-14 years	6705000	9.51%
15-19 years	6723000	12.38%

age groups. According to the AMAYESH land legislation and the Islamic Council of Iran, the maximum allowable population growth rate is set at 1% nationwide and 1.5% in urban areas. The 2016 Census revealed an overall growth trend across all provinces. However, certain provinces such as Hamedan, Ardebil, Kermanshah, Kurdistan, Zanjan, Gilan, Lorestan, as well as east and central Azerbaijan, accounting for 23% of Iran's total population, experienced a growth rate below 1%. Conversely, provinces like northern Khorasan, Ilam, Mazandaran, Chahar Mahal and Bakhtiari, Golestan, Fars, Khuzestan, and west Azerbaijan, constituting 26% of the population, demonstrated a growth rate ranging from 1% to 1.5%. Meanwhile, provinces including Isfahan, Kohgilouyeh and Boyerahmad, Semnan, Qazvin, Khorasan Razavi, South Khorasan, Bushehr, Qom, Yazd, Tehran, Hormozgan, Kerman, and Sistan-Baluchestan, home to approximately 51% of Iran's population, exhibited a growth rate exceeding 1.5%.

Urbanization has seen a steady increase; in 1976, only 47 percent of the population lived in urban areas, whereas by 2016, approximately two-thirds resided in urban areas (4, 5). As of the 2016 census, the crude birth rate stands at 18.67, while the crude death rate is recorded at 5.93 (2017 census). The dependency ratio, as per the 2016 census, is 43.4, and the total fertility rate is reported as 1.9 (2016 census). Population density is calculated at 41.8 people per square kilometer. Over the span of two decades, life expectancy at birth has increased by 5.3 years, reaching 72.5 years overall: 71 years for men and 73 years for women (2016 census). This figure surpasses the regional average. The adult literacy rate stands at 82.3 (2016 census), with 89.3 percent of the population having sustained access to safe water (2019 census), and 70.9 percent having access to improved sanitation (2019 census). The unemployment rate, as of 2016, is 15.9 percent, while 97.5 percent of the population has access to health services (2017 census).

A new national health system network, known as Primary Health Care (PHC), has experienced significant expansion in Iran. Presently, over 94% of the population is covered by PHC. A schematic representation of the health network in Iran is illustrated in Figure 1.

Materials and Method

This analysis is based on research conducted

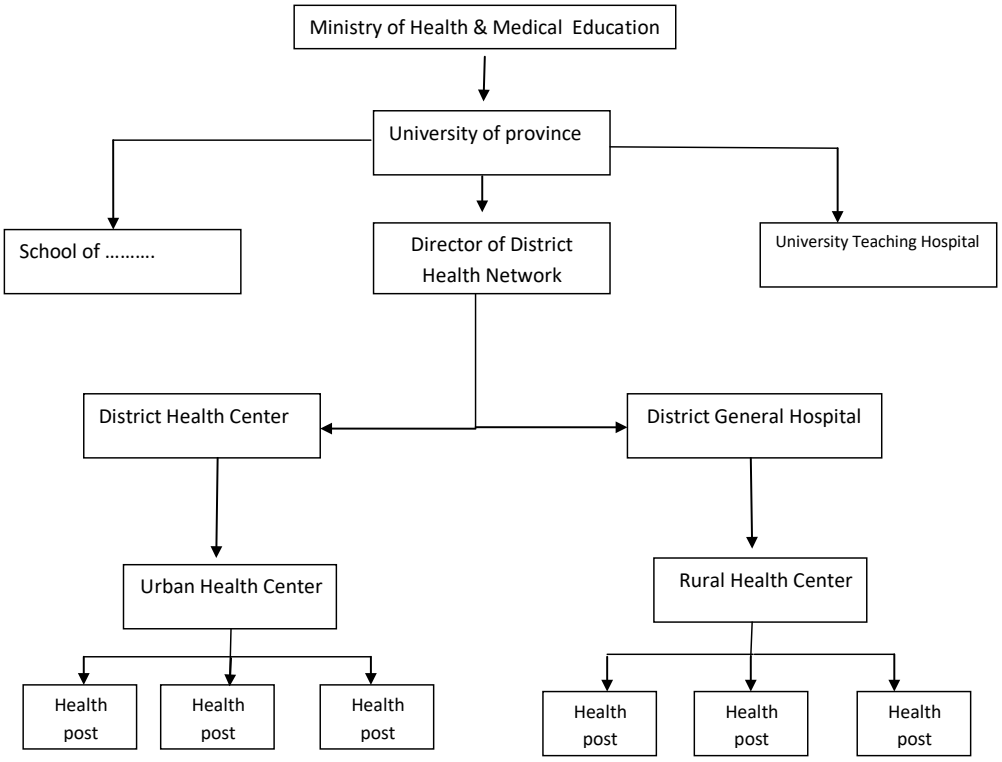

Figure 1. Schematic presentation of Health network in Iran

using statistical reports from verified sources concerning children's health in Iran, as well as findings from various statistical investigations and surveys conducted by the Iran Ministry of Health and Medical Education.

Results

Health encompasses complete physical well-being, as well as psychological, social, and spiritual wellness, rather than solely the absence of physical illness. The factors influencing health include social and economic factors (50%), access to healthcare services (25%), biological and genetic factors (15%), and physical factors (10%). Should the development programs in this country encounter obstacles and fail to progress smoothly and steadily, the current momentum of all existing programs will deteriorate.

Indices indicating the population below the food poverty level have exhibited a declining trend since 1998. In recent years, over 2% of the population has experienced health and medical catastrophes. The Gini coefficient index has revealed significant societal inequality from 1986 to 2016. While this index decreased in rural areas by 2001, it then exhibited fluctuations. Urban areas saw a declining trend in this index from 2013 to its lowest point in 2015, followed by increases in 2016 and subsequent decreases in 2017.

Comparative cost indices, reflecting income distribution between the top and bottom centiles of society, have demonstrated a continuous decline in rural areas until 2015, with fluctuations in 2016 (increase) and 2017 (decrease). Urban areas exhibited a stable trend in this index until 2012, followed by fluctuations until 2017.

The proportion of costs borne by the lowest two centiles relative to the total societal cost showed an increase in rural areas until 2013, followed by stabilization from 2014 to 2016 and subsequent increases in 2017. Conversely, in urban areas, this index remained constant until 2015 but increased again in 2016 before decreasing in 2017.

Total households covered by Imam Khomeini Charity, Welfare, and Red Crescent organizations exhibited an average annual growth of 3.24%, resulting in an increase from 1,924,654 households in 2014 to 2,174,070 households in 2017. In 2017, the Imam Khomeini Charity covered over 5,719,493 people, the Family Welfare Organization assisted 851,808 individuals, and the Red Crescent Society supported 333,456 people. From 1998 to 2017, the number of self-funding and house-funding women benefiting from charity organizations increased by 40%, rising from 761,827 to 1,122,829 people. In 2017, Imam Khomeini Charity covered 87% of this population, while the Family Welfare Organization covered the remaining 13%. Additionally, 2088 people received support from the Red Crescent Society in 2017. The orphan population receiving support from charity organizations experienced a 28% increase, growing from 644,105 people in 1998 to 459,526 people in 2017. During the same period, the number of orphans supported by family welfare organizations doubled, while those assisted by the Imam Khomeini Charity decreased by 30%.

The access to basic primary health services in rural and urban areas stood at 93% and 100%, respectively. Safe drinking water accessibility in rural areas increased from 68.7% in 1984 to 87% in 2017. The index for home-based childcare policies rose from 0.3% in 1998 to 1.1% in 2017. Since 2011, the utilization of harm reduction services, including methadone therapy, commenced in both government and non-government sectors. The number of individuals involved in social crisis intervention centers surged more than ninefold from 1998 to 2017, reaching 26,866 people. In 2012, the number of non-campus counseling centers increased, with the country now boasting 30 government counseling centers.

Recognizing the importance of genetic counseling, medical genetic counseling centers were established within the Prevention Department of the Welfare organization (Bureau of Genetics and Prevention of Disability) in 1998. Over the period from 1998 to 2017, one center was established for every 459,526 individuals. The emergency base for emergency services expanded from 289 in 1997 to 580 in 2011, with some provinces even employing helicopters for emergency response.

Assessments of health literacy levels among adults revealed that only 40% of individuals over 18 years old in urban areas and less than 20% in rural areas possessed adequate health literacy. The maternal mortality rate declined from 90% in 1974 to 24.7 in 2017. For comparison, Egypt reported a rate of 174, Yemen 1400, Jordan 130, Saudi Arabia 18, Libya 40, Algeria 140, Lebanon 191, Iraq 130, and Kuwait 9. The highest recorded rate globally is 100.

Data from the Demographic & Health Survey (DHS) in 2000 indicated that approximately 25% of deliveries in rural areas occurred under safe conditions, with some provinces reaching about 50%. The survey also found that 5.2% of pregnant women in urban areas gave birth at home, while 25.3% preferred home deliveries. Traditional birth attendants conducted 4.5% and 21% of

deliveries in urban and rural areas, respectively.

Analysis of vital statistics on rural health transformations revealed a significant decline in unhygienic and unhealthy deliveries, although rural communities still lag behind urban areas. In 2013, trained midwives attended 47% of deliveries in Sistan and Baluchestan, 28% in Kohkyloyeh and Boyer Ahmad, and 23% in Hormozgan provinces. Conversely, traditional midwives attended 10% or fewer deliveries in 20 provinces and 3% or fewer in 11 provinces.

While vital statistics indicate a decrease in maternal mortality due to pregnancy and delivery complications across all provinces, discrepancies persist between regions. The distribution of maternal mortality rates correlates with deliveries conducted by untrained individuals on provincial maps.

Child Health Situation

Child Mortality Rate

The under-5 mortality rate has seen a steady decline in both urban and rural areas over the past two decades (from 2000 to 2020), reducing to approximately a quarter of its previous levels. However, this downward trend has slowed over the last decade (see Figure 2).

The infant mortality rate (IMR) decreased from 51 per 100,000 live births in 1984 to 26 per 100,000 live births in 2000. Iran ranks among the countries in the Eastern Mediterranean Region with the lowest rates of infant mortality.

Both the infant and neonatal mortality rates exhibited a decline from 1996 to 2015, with the neonatal mortality rate showing a less steep decrease compared to the infant mortality rate. The standard deviation of IMR during two different periods (1996-2010 and 2010-2015) did not reveal any significant differences. However, Kurdistan and Bushehr consistently had the highest rates for this index, while Tehran, Babol, Rafsanjan, and Gonabad provinces had the lowest values. Conversely, Ghazvin, Gilan, and Khuzestan provinces consistently reported higher rates. Although the neonatal death rate was initially lower by 1 to 2 standard deviations below the country's average mean, it dropped to one standard deviation below the mean in the second period. Nonetheless, the IMR standard deviation increased from 2.6 in the period 1996-2000 to 4.9 during 2010-2015, indicating a somewhat more homogeneous situation across provinces, albeit with some exceptions such as Sistan and Baluchestan.

Tables 2 and 3 provide further details on mortality rates.

Low Birth Weight Rate

There has been a concerning increase in the proportion of low-birth-weight neonates, rising from 2.9% to 4.6% over the last 13 years. Significant disparities exist between provinces regarding this index, with the central provinces of the country, particularly Isfahan, Yazd, and Semnan, reporting the highest rates.

Communicable Diseases

In 2012, the vaccination status was as follows: 92.6% completed, 0.2% no vaccination, and 7.1% incomplete.

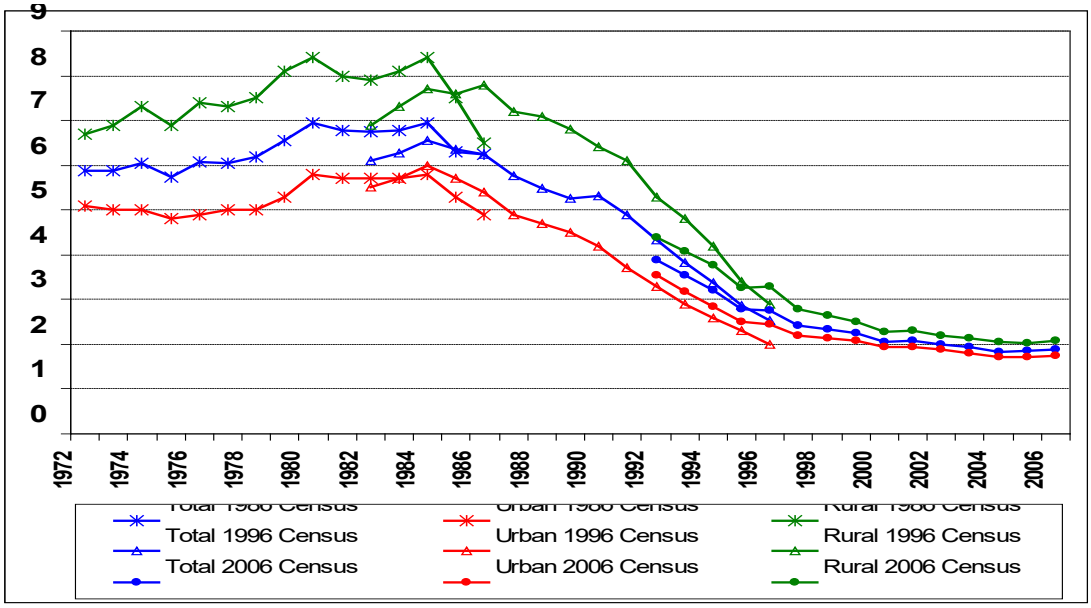

Figure 2. Child mortality rate trends(Ministry of health and education Report

Vaccination coverage has seen significant progress, increasing from 20% in 1984 to 95% in 2010, and is now approaching 100%. The average in the Eastern Mediterranean region stands at 77.5%.

1. Neonatal tetanus and leprosy have been successfully eliminated, Guinea worm disease has been eradicated, and measles, diphtheria, malaria, and tuberculosis are under control. Malaria cases have decreased from 38,000 in 1997 to 21,000 in 2000, with only 3% of the population considered at risk. However, 90% of new cases are imported from neighboring Afghanistan and Pakistan.

2. Tuberculosis cases have declined from 29 per thousand populations in 1997 to 14 per thousand in 2000, despite a global increase.

3. Polio has been eradicated, with no new cases reported in the last 3 years.

4. A 2010 study on the micronutrient status of Iran revealed that rates of short stature and low weight in rural children aged 6 years are 7.7% and 4.6% less than urban children, respectively. Repeated episodes of diarrhea and acute respiratory infections in children are attributed to poor nutrition, lack of knowledge among mothers regarding feeding practices, limited access to diverse foods, and food insecurity in rural areas.

5. Statistics indicate an increase in nurseries in rural areas. However, many children from low-income families are excluded from nursery enrollment in deprived areas.

6. Ninety-five percent of pharmaceutical needs are met through domestic production.

Other Child Health Data

- Statistics indicate a 90% increase in the number of street children referred to health centers and houses of rehabilitation for street children, reaching a total of 5840 between 1998 and 2017.

- The percentage of children suffering from underweight, according to the latest information in 2014, was over 5%.

- Approximately 88% of children under 24 months of age were breastfed (90.4% in rural settings and 87.3% in urban settings).

- The continuation of breastfeeding in children aged 12-15 months was 91.8% in rural areas and 88.2% in urban areas, while in children aged 20-23 months, it was 60.6% in rural areas and 54.5% in urban areas (IMES 2015).

- Healthy childcare services covered 98.3% of children in rural areas and 94.7% in urban areas, with 86.6% of services provided by the government sector and 9.9% by the private sector (IMES 2015).

- 11.5% of children (14.2% rural, 10.4% urban) were referred to health centers due to cough or breathing problems (IMES 2015).

- 10.2% of children (11.1% rural, 9.8% urban) were referred to health centers due to diarrhea problems (IMES 2015).

- 12.6% of children (14.5% rural, 11.7% urban) were referred to health centers due to febrile diseases (IMES 2015).

- 2.7% of children (3.1% rural, 2.5% urban) were referred to health centers due to ear discomfort (IMES 2015).

- 2.7% of children (4.6% rural, 4.4% urban) were referred to health centers due to sore throat (IMES 2015).

- 2.7% of children (4.6% rural, 4.4% urban) were referred to health centers due to weight gain disorder (IMES 2015).

- 48.7% of children (50.2% rural, 47.9% urban) were referred to health centers due to multiple symptoms (IMES 2015).

- 45.6% of parents in rural areas and 46.5% in urban areas were aware of the dangerous signs of respiratory diseases among children (IMES 2015).

- 63% of parents in rural areas and 64.9% in urban areas were knowledgeable about dangerous signs of diarrhea diseases among children (IMES 2015).

- 3.1% of children had visual problems, while the status was unknown for 2.9% of children (IMES 2015).

- 1.8% of children had hearing problems, while the status was unknown for 1.4% of children (IMES 2015).

- 2.4% of children had speech problems, while the status was unknown for 2.3% of children (IMES 2015).

- 1.2% of children had color blindness, while the status was unknown for 3.8% of children (IMES 2015).

- 0.42% of children had autism, while the status was unknown for 9.72% of children (IMES 2015).

- 0.8% of children had goiter.

- 3.2% of children had anemia.

- 63.1% of children had dental caries.

TABLE 2: Death Indicators (Ministry of health and education Report)

Index	Value	References
Infant mortality> rate	Rural setting : 21	Vital Horoscope 2015
years mortality 5> rate	Rural settings: 25.1	Vital Horoscope 2015
years mortality 5> rate	Rural: 42.43 Urban: 39.3 Total: 40.63	Death Picture in 10 provinces: 2010

Table 3: Child mortality rate comparison (Ministry of health and education Report)

Index	World	Developed countries	Under developed countries	Asia	Iran	References
Infant mortality rate>	52	6	57	49	32	Population Reference bureau 2016
years mortality rate 5>	83	10	91	68	Boy: 36	UNFPA- 2015
	81	9	89	71	Girls: 35	

- 0.6% of children had lice infestation.
- 6.4% of children had a height-to-weight ratio below the 3rd percentile, 91.4% had a ratio between the 3rd and 97th percentiles, and 2.5% had a ratio above the 97th percentile.
- 7.3% of children had a height-to-age ratio below the 3rd percentile, 90.5% had a ratio between the 3rd and 97th percentiles, and 2.2% had a ratio above the 97th percentile.
- Among children aged 6-18 years (4 million out of 16 million reviewed), the following rates were observed: Weight Disorders: 5.7%, Obesity: 3.4%, Excess Weight: 11.3%, Scoliosis: 0.5-1%. Impaired vision: 4%, Behavior disorder: 34%, Hearing loss: 0.5%. Thalassemia incidence has decreased from 1200 to 860 and 400 in 2000 and 2007 respectively, due to thalassemia control programs implemented over the last 12 years.

Conceptual Model (Figure 3):

This schematic model illustrates that children's health and development are influenced by three levels of factors:

1. High level: Economic, social, political, religious and cultural beliefs
2. Middle level: Employment, housing, welfare facilities, social security system, education, women's health services development, entertainment, agriculture
3. Low level: Lifestyle, ethnicity, school environment, religious practices, child care, play areas, family dynamics, community characteristics

Discussion

Challenges and Problems Related to Children's Health

1. Physical Access to Services and Financing

The inflation rate in the country has increased dramatically, leading to a significant rise in tariff rates for health treatments. This disparity has negatively impacted health service delivery, with 10% of the population remaining uninsured since 2011, primarily among poor and deprived

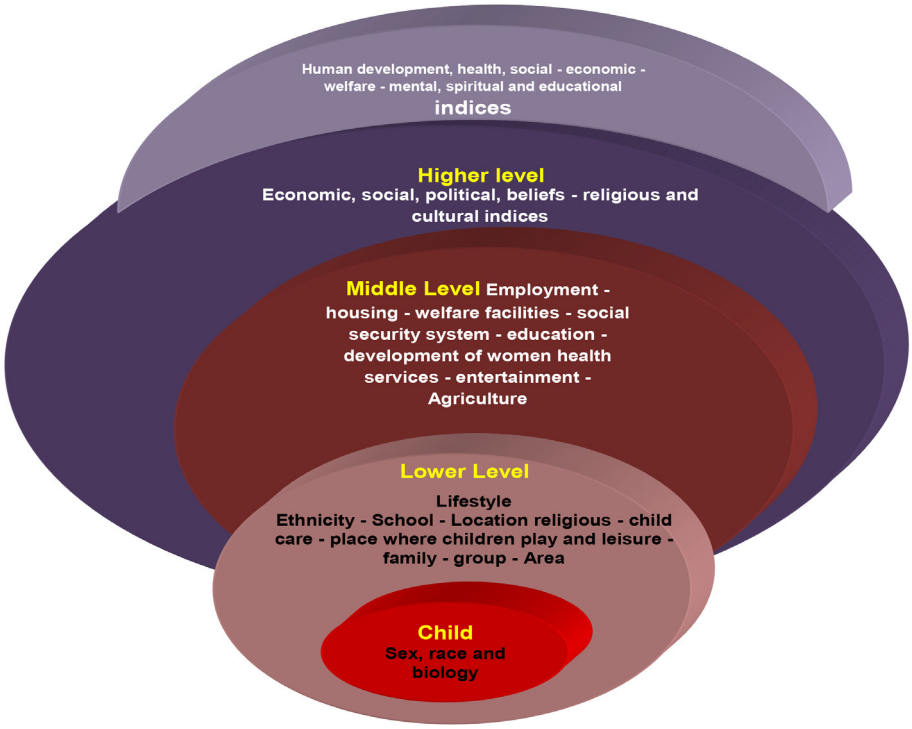

Figure 3. Conceptual Model Of Health And Development Of Children

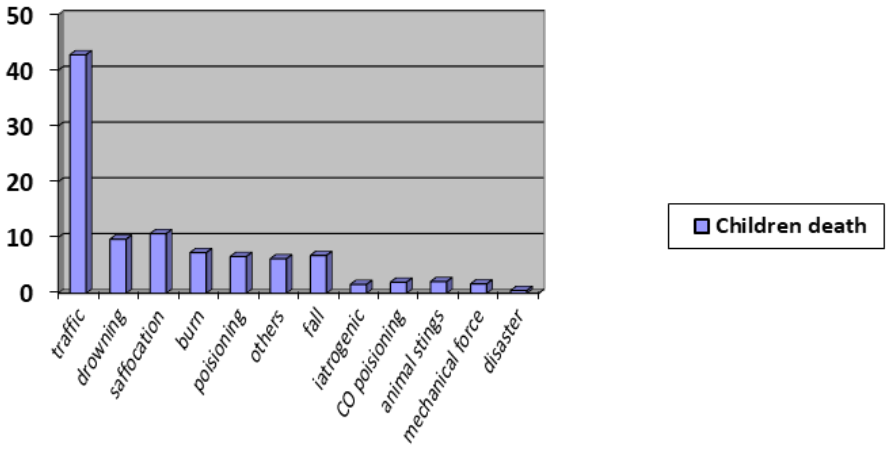

Figure 4: Children Death due to accident 2018(Ministry of health and education Report)

families, where equitable access to healthcare services remains elusive. Additionally, there is a notable absence of scientific monitoring regarding the quality of healthcare.

2. Poverty and Unemployment

With a poverty rate of 18% and an unemployment rate of 12%, poverty and unemployment pose significant threats to public health.

3. Drug Addiction and HIV/AIDS

The country grapples with a severe drug addiction problem, with approximately 1.3 million people addicted to drugs, and the age of addiction onset is decreasing. Moreover, 69% of individuals infected with HIV and AIDS are intravenous drug users, contributing to the spread of HIV/AIDS and compromising public health.

4. Literacy

A quarter of the population aged 6 years is illiterate, highlighting literacy challenges that impact health outcomes. Adult male and female literacy rates stand at 82% and 67%, respectively, with over 70% of mothers being illiterate in certain areas, exacerbating the issue.

5. Asylum Seekers

The presence of 3-2 million refugees from Afghanistan, Iraq, and Pakistan, with unrestricted movement and associated health risks, including infectious diseases such as malaria, tuberculosis, sexually transmitted diseases, and infected livestock, presents significant health challenges.

6. Demographic Changes

Despite a decline in the population growth rate, demographic shifts have resulted in a threefold increase in the population over 40 years. The urban population has increased sixfold, leading to challenges such as youth employment, marriage, and a surge in unwanted pregnancies. Additionally, the elderly population is projected to increase by 26 million in the next 50 years, comprising 23% of the population, equivalent to the populations of five European countries, including Finland, Norway, Sweden, Denmark, and Ireland.

7. Food Safety and Nutrition Security

Iran is undergoing a transitional phase, with 16.6% of women aged 15-45 suffering from iron deficiency anemia. Additionally, 15.6% of children under 5 years old (800,000 children) are malnourished and experience stunted growth due to nutritional deficiencies. Moreover, while 20% of the population struggles to afford food, 40% are affected by overeating. Limited studies on rural women around Tehran have revealed obesity rates ranging from 24% to 72%, with some studies indicating rates as high as 82%. This phenomenon contributes to health issues such as increased blood pressure, diabetes, and cardiovascular, bone, and joint diseases. Unfortunately, there is no organized system for public food safety. Examples include transporting cooking oil in fuel tankers and 25% of cattle being slaughtered outside of authorized facilities, with 80% of them deemed unhealthy.

8. Environmental Health

Approximately 25% of the population is exposed to compromised urban and rural drinking water sources and depleted natural resources. Urban areas, home to around 15 million people, face significant environmental pollution, particularly air pollution in major cities. Tehran alone releases daily emissions of 3,000 tons of CO, 500 tons of hydrocarbons, 120 tons of NO, 30 tons of SO2,

and 30 tons of particulate matter, posing serious health risks. In the workplace, approximately 100,000 chemicals, 50 types of physical factors, 200 biological factors, and an unknown number of psychological factors threaten employees' health and well-being.

9. Neonatal Mortality Rate and Unsafe Deliveries

Despite advancements, 15% of deliveries in Iran are still unsafe, increasing the risk of neonatal death and complications for mothers. Annually, approximately 20,000 infants die in the country, with no reduction in the rate over the past two decades.

10. Injuries and Accidents

Injuries and accidents are leading causes of mortality and morbidity in children.

11. Infectious Diseases

While significant progress has been made in controlling infectious diseases, challenges persist, including the reemergence of diseases such as tuberculosis and malaria. HIV/AIDS remains a concern, with 10,000 confirmed cases identified in Iran so far, primarily among intravenous drug users and individuals engaging in risky sexual behavior. Hepatitis B and C infections are prevalent, particularly among drug users and individuals involved in prostitution. While cases of cholera are reported annually in some areas, effective control measures are in place. Additionally, zoonotic diseases, including the Crimean-Congo hemorrhagic fever (CCHF), pose a potential risk to public health, with 147 reported cases, including 61 confirmed cases and seven deaths.

Responsibilities and Duties

The responsibilities within the health system include:

1. Responsibilities of the Ministry of Health:

1.1 Setting policies for public health.
1.2 Establishing priorities.
1.3 Conducting planning initiatives.
1.4 Ensuring standardization to uphold quality.
1.5 Managing health information systems.
1.6 Facilitating inter-sectoral cooperation.
1.7 Formulating rules and regulations.
1.8 Monitoring and evaluating programs.

2. Responsibilities of the health delivery system (public and private sectors):

2.1 Empowering individuals to manage their own and their children's health, involving them in planning, implementation, monitoring, and evaluation.

2.2 Establishing appropriate structures to deliver necessary services with a focus on quality, efficiency, and cost-effectiveness nationwide.

2.3 Ensuring accountability and responsiveness to the public.

2.4 Developing mechanisms for collaboration with other sectors and community involvement.

2.5 Providing comprehensive health service packages.

2.6 Training human resources according to future needs.

2.7 Conducting research and innovation tailored to community needs.

2.8 Generating employment opportunities and deploying trained personnel effectively.

2.9 Mitigating adverse effects of epidemics and disasters.

2.10 Implementing effective, dynamic, and reliable management practices.

2.11 Offering necessary knowledge and technology to meet current and future demands.

2.12 Promoting environmental sanitation.

2.13 Establishing health information systems.

2.14 Enforcing fair compensation systems.

2.15 Utilizing appropriate technologies for healthcare delivery.

Deficiencies In The Health System

1. Equity in Health System Delivery:

- Unequal access to healthcare services, both in terms of physical availability and financial affordability.
- Disparities in payment systems between private and state sectors.
- Inadequate coverage under comprehensive insurance plans.
- Insufficient provision of financial assistance to ensure access to healthcare services for economically disadvantaged individuals.
- Shortage of healthcare professionals, including physicians and nurses, leading to overworked staff in some areas while other regions face a lack of qualified personnel, resulting in unemployment among medical professionals.

2. Efficiency:

- The healthcare system fails to utilize resources in an effective and efficient manner.
- The hospital bed occupancy rate is only 53 percent.
- Enhance the efficient utilization of available resources.

3. Structure:

- The current centralized structure lacks clarity in defining responsibilities and accountability

among various sectors and peripheral entities.
- Ensure transparency in assigning responsibilities at different administrative levels.
- Discourage physicians from undertaking multiple roles, such as working simultaneously in both public and private sectors.
- Implement a referral system to minimize unnecessary visits.
- Streamline the process of rebuilding medical files/records.
- Avoid a patient-driven approach to treatment, which often leads to excessive use of medications, tests, and radiography equipment, resulting in increased costs and decreased service quality. For instance, approximately 70 percent of children with respiratory infections and diarrhea in the country are prescribed antibiotics unnecessarily, indicating inappropriate medication usage.

The relationship between different levels of service:
Establish a coherent connection between patient referral and feedback mechanisms.

Monitoring and evaluation
Monitoring beyond the initial level is either not conducted or is done using outdated methods.

Payment method
- Offer preventive and health promotion services tailored to various demographic groups.
- Construct a framework that aligns with emerging requirements and needs.
- Foster greater collaboration with other sectors that impact health outcomes.
- Dedicate more resources to enhancing public health capacity and engagement in programs.
- Minimize reliance on costly technologies.
- Enhance patient and physician confidence in healthcare services.

Overprescription of medication and associated issues
Approximately 95 percent of required medications are domestically manufactured, a significant increase from the 20-25 percent figure before the revolution. The expenditure on imported drugs rose from $123 million in 1989 to $245.3 million in 2011. It is observed that subsidies should be limited solely to imported drugs.

Environmental Health and Food Safety:
There are 730,000 public establishments selling food, with 5,239 functioning as producers. Analysis of licensing data reveals that there were 432 licenses issued in 1994 for 716 production items, which has since risen to 16,691 licenses. To ensure quality, it is recommended to increase the employment of experts at food production sites.

4. Health Information System
Crucial data for decision-makers includes:
- National health accounts detailing healthcare costs and funding sources by service type.
- Information regarding resource utilization, such as hospital bed occupancy rates, average patient stay, admission rates, per capita hospitalization days, in-patient and outpatient visits per capita.
- Detailed statistics on mortality and morbidity.
- Status of insurance coverage.
- Data on the private sector.
- Information on service quality and consumer satisfaction.
- Utilization of information technology in a notably weak and inefficient manner.
- Lack of transparency in financial information within the health system.
- Absence of reliable data on resources (physical, human, and financial).
- Insufficient data based on needs assessment.
- Inadequate registration of activities, programs, and experiences, indicating a severe deficiency in system documentation.

The flow of information within the system is notably deficient.

Future Strategies For Improving Child Health
Strategy 1: Direct services to children.
Strategy 2: Support and train caregivers of children.
Strategy 3: Promote societal development centered around the child.
Strategy 4: Strengthen national resources and capabilities aligned with children's needs.
Strategy 5: Enhance demand for and awareness of child healthcare.
Strategy 6: Develop national policies addressing children and families.
Strategy 7: Establish supportive regulatory frameworks.
Strategy 8: Foster stronger national and international cooperation.
Below is a simplified paradigm for childcare. As illustrated in this figure, physical health, emotional and social development, community and family support, are critical factors in children's healthcare. (Figure 5).

RECOMMENDATION:
Establish global partnerships with organizations such as UNICEF, UNESCO, the World Bank, various funds, and the World Health Organization. Foster communication among the Millennium Development Goals to integrate these efforts into national policies, support the

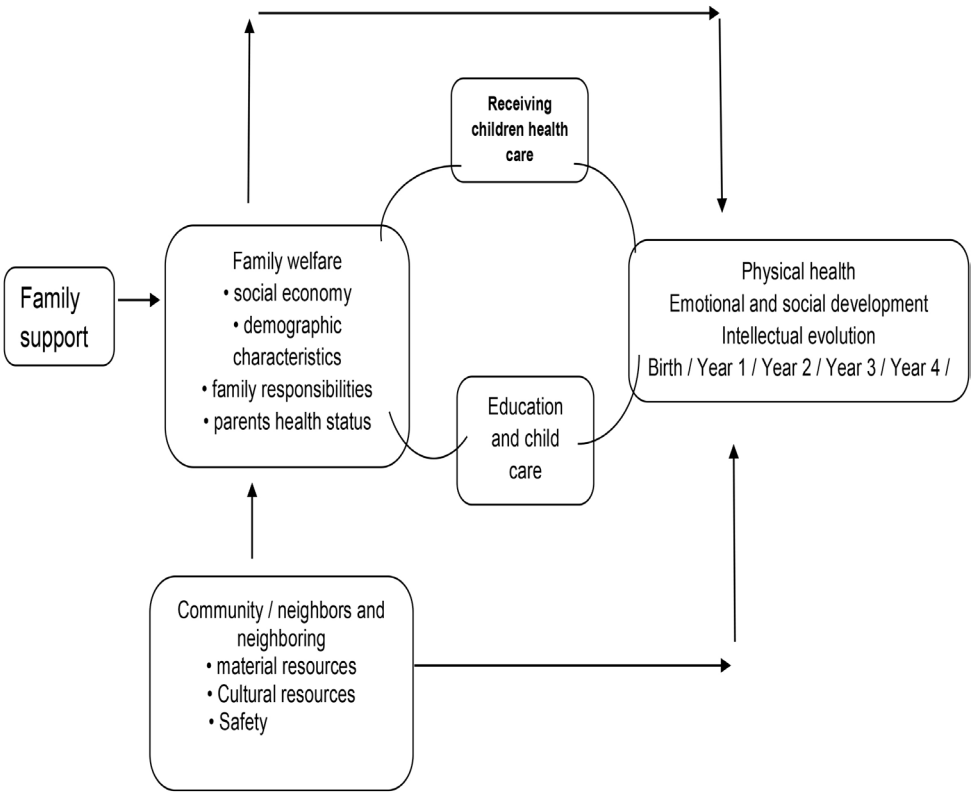

Figure 5. A Simple Paradigm for child care

implementation of simple interventions and community health initiatives, and evaluate the benefits and costs of such programs.

1- Obligations across multiple levels of society:

Governments at the local, regional, and national levels must enact policies pertinent to this field. Comprehensive understanding of the subject matter is imperative. Mobilization efforts to garner support in this domain are essential, including engaging the planning departments of governments, the Department of Economics, and the media. Promoting awareness of children's rights, implementing pilot initiatives, and educating families, communities, service providers, and policymakers about early childhood development rights should be key objectives.

2- Necessary structures for implementation:

Governments should establish a policy framework among ministries delineating roles, responsibilities, and interactions. Clear protocols should be established to ensure effective collaboration among different departments. Governments should also convene regular meetings to ensure decisions are made regarding this issue. Resources must be reallocated to reduce disparities in access to Early Childhood Development (ECD) programs and ensure service quality. Policies fostering family-friendly and child-friendly environments, including those ensuring adequate income for all families and supporting maternal interests, are crucial.

3- Deployment strategies:

Implementing programs for child survival and equitable access to healthcare is paramount. Emphasize the establishment of cost-effective healthcare systems at both national and local levels to instill a sense of accountability and ensure sustainability.

4- Monitoring and Evaluation:

There is an urgent need to develop evidence-based policies. The universal goal is to ensure every child has access to healthcare services, parental and caregiver support, nutrition, social assistance, primary healthcare, and primary education. Governments and community services must implement monitoring programs to ensure quality assurance, evaluate obstacles hindering goal attainment, and foster collaboration to reduce inequities.

Conclusion

Based on the findings of this research, following action items are proposed:

1. Conduct more research to gain a better understanding of the reciprocal influence between the environment and biology.

2. Utilize available information to shape measures and strategies, particularly targeting upper primary levels.

3. Enhance cooperation among different components of the healthcare system.

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Conflict of interest

The authors declare no competing interests.

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