

Telepediatric assistance in Iran: Specialist and subspecialty challenges.

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Abstract

INTRODUCTION: Having justice for easy access to health services may probably be a standard feature and indisputable right of all health policies. The health policy of Iran enunciates this right. Unfortunately, as may happen in many countries, the execution of this policy depends on different factors. Among these parameters should be quoted as the suitable distribution of professionals, hospitals, and medical facilities. On the other hand, in Iran, there are many other problems linked to accessing areas with natural hindrances.

OBJECTIVE: In this study, we analyzed the primary studies that report specialty and subspecialty challenges that had been faced by Iran to improve pediatric assistance.

METHODS: Conduction of literature search in PubMed and CINAHL libraries was done, especially studies from 2010 to 2019. A Boolean operated 'MeSH' term was used for search. Newcastle–Ottawa Scale (NOS) scoring was adopted to assess the quality of each study.

RESULTS: A total of 118 studies were displayed, and among them, 102 were excluded due to duplication and study relevance. Study selection was made based on its content were classified into two groups (1) shortage and unsuitable distribution of specialist and sub-specialist physicians in Iran, and (2) studies that explain the status of degradation in different areas of Iran. Outcomes demonstrated that Iran is generally suffering the shortage and unsuitable distribution of specialists and sub-specialists. This lack is particularly crucial in deprived and far-away areas from the cities.

CONCLUSION: The present study analyzed in detail the current data regarding pediatric health services (specialist and subspecialty) and health-specific facilities distribution in the country.

Keywords: Telepediatrics, Far-Away Areas, Pediatric Assistant, Distributing Physician, Specialist, and Sub-Specialist.

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1. Introduction

Tele pediatrics consists of a broad range of therapeutic activities, including diagnosis, treatment, prevention, continuous education to health professionals [1]. It is necessary to remember that in Iran, pediatrics handles medical care offered from birth until age 18 years old.

Unfortunately, the pediatric centers are generally located in the capital of provinces, and there is a shortage of sub-specialist of pediatrics compared to sub-specialist of adults.

This information reveals that having "easy" access to health services by teenagers and children is limited, and geographical limitations and long distances of villages and underserved areas from these centers make worse the situation [2], [3]. Moreover, many of the fields related to pediatrics represent several specialty teams when the child

has a chronic disease, and under such conditions, the performance of the medical team is more complicated [4]. There is no definition of telepediatrics. Nevertheless, by using extrapolation, telepediatrics consists of delivering specialty services by using video conferences, email, or telephone.

Moreover, telepediatrics is considered as an electronic communication technology for offering health and medical services for newborns, children, and teenagers when, due to long-distance, the physician and patient and their parents are separated from each other [5]. However, the most “natural” application of telepediatrics would be the ability to use teleconference for communication of patients with pediatrics sub-specialists. The telepediatrics use was viewed as a potential solution for coping with the shortage of specialists in India [6]. Different reports have confirmed the satisfaction of this technology for both patients and physicians [7]. In the USA, children aged younger than 15 years require annually 71 million medical visits for their acute medical problems. This percentage is about 30% of the people in all range of ages [8]. In California, the number of sub-specialty of pediatrics in the rural areas of San Francisco and Los Angeles is 80% to 90% less than in urban areas [9].

In general, children residing in rural areas that require specialized medical care, have a challenge for receiving specialty and sub-specialty medical services because they need a repeated medical evaluation of their health [10]. Results of studies show that it is possible to offer specialty and sub-specialty telemedicine counseling for children requiring specific medical care who live in rural and deprived areas. This strategy leads to a high level of satisfaction among parents, supervisors, and persons offering health services. Ninety-eight percent of parents or supervisors described that receiving telemedicine counseling services may be continued instead of traveling to several specialty centers for having a face-to-face meeting [11]. Therefore, the use of telemedicine is an attractive recommendation for persons/centers offering sub-specialty service of Pediatrics [11], [12]. It should be noted that many of these services are offered through video conference (synchronous), and the patient communicates with the person offering service.

The current work has analyzed the primary studies that report specialty and subspecialty challenges that had faced by Iran to improve pediatric assistance. Besides, we figured out the solutions to overcome these issues and concerns that need to be implementing in telehealth services. The advantages of telehealth and uncertain limitations of telehealth practice were also mentioned.

The rest of the paper is as follows. Section 2 provides knowledge on methods that are used to analyze the documents and section 3 provides an adopted studies overview including its strength and limitations. Finally, section 4 summarizes the main results of the present work along with suggested measures that need to implement telepediatric services, and conclusions are well presented in section 5.

2. Methods

We consider the studies related to telepediatrics implementation challenges that had raised mainly in rural areas. The present study carried a literature review analysis in early 2020. The search was conducted using the two sources of PubMed (Medline) and Cumulative Index of Nursing and Allied Health Literature (CINAHL) with medical subject headings (MeSH) combined with Boolean operators. The search terms include “telehealth and telepediatrics” OR “challenges in pediatric assistance and measures need to follow” OR “studies related status of degradation in Iran rural areas.”

The English language studies that were published from 2010 to 2019 are considered and excluded studies related to review papers. The search process was illustrated in Figure 1. Search outcomes produced 118 studies, and two independent researchers (GB & SKT) were assessed carefully for the quality check based on abstracts. Studies that mentioned unnecessary literature on telemedicine also did not address the issues of telepediatric implementation that were excluded from the study. The quality check of each study was done by the Newcastle–Ottawa Scale (NOS) [13]. Each study quality assessment was outlined as weak (0-4), moderate (5-6), or strong (7-9). A total of 102 studies were excluded after considering the facts of the availability of full text, duplication, topic relevance, language concern, and NOS satisfaction rates. The remaining 16 studies that are in line with study objectives were further analyzed in detail.

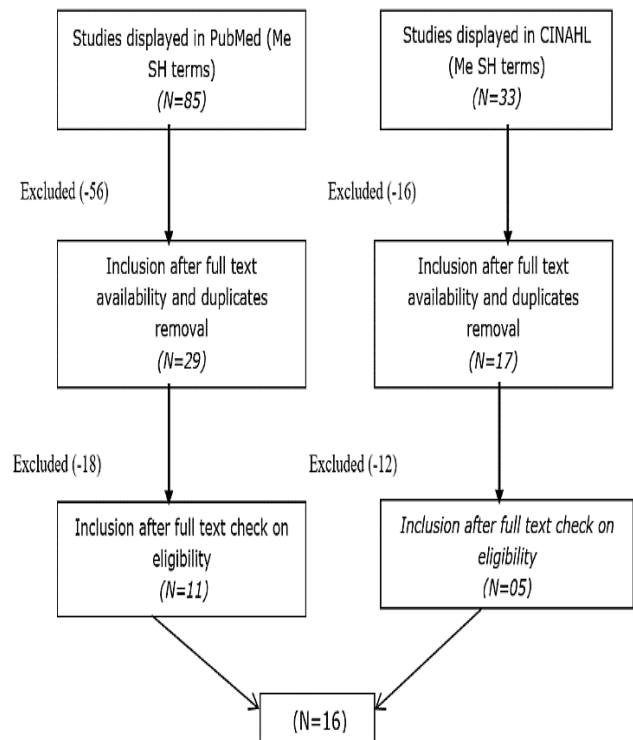


Figure 1. Study selection process

3. Results

The study selection was done based on its content and are grouped as (1) Policies and specialist distribution for pediatric assistance and (2) Health status degradation in different areas of Iran. The key findings of different studies are presented below. The main characteristics of each study (First author, year, study type, objective, strengths, and weakness) are summarized in Tables 1 and 2.

3.1. Policies and specialist distribution for pediatrics assistance

Problems in specialist consultation

Equality for distributing health resources and its influence on the quality and quantity of offered services has challenged the health policymakers. On the other hand, in the Iranian health system, the presence of specialists in different fields including internal medicine, pediatrics, gynecology, and obstetrics is mandatory [14]. The health system suffers an acute shortage of specialists in orthopedics, anesthesia, neurosurgery, ophthalmology, radiology, gynecology, otolaryngology, and general surgery, and training staff in these specialties is not feasible in the short run. Actually, in Iran, this gap mainly depended on the presence of 40% of medical graduates in Tehran that has led to a shortage of physicians in other areas [15]. Unfortunately, in Iran, there is no study performed in the field of distributing sub-specialty in pediatrics.

Another limitation of health specialists in Iran, most of the physicians do not have an idea of pediatric infectious diseases (PIDs). In the study of [16], there is an extended absence of awareness on PIDs in doctors. This might be one of the significant reasons in late consultation and the postponement in satisfactory treatment falling apart from patients' morbidity and mortality. Retraining classes and re-examined teaching timetables are required as a practical methodology and improving doctors' learning about PIDs [16]. Nevertheless, according to a report published in 2016, only 25 pediatric rheumatologists are active in Iran especially in Tehran, Alborz, and Khorasan Razavi regions [17]. Therefore, other patients have no opportunity to be visited by a pediatric rheumatologist, and they have to refer to an adult rheumatologist and even face with the wrong diagnosis.

In the study of [18], despite the acceptable growth of different medical groups in the last two decades, unbalanced physicians' placement has prevented enjoying this development and promotion. Overall, in Iran, the distribution of general practitioners, specialists, and sub-specialists is unstable and may be negligent in needy areas. To overcome these issues, HTA has been built up in the human services arrangement of Iran. However, it is required that constant political will to push forward the targets of HTA in Iran. Like in other countries, advance the guideline on the selection of

new medical services to improve specialized or distribute productivity, yet additionally wellbeing value [19].

Expenditure and medical policies for medicine supply

Despite this, the study [20] on the expenditure of drug supply to Iranian urban households mentioned that medications are non-flexible and fundamental for families. This could be noticed that the health policymakers in Iran should develop proper planning to guarantee both the physical and money related sincerity to drugs by urban families. The advancement of fundamental and valuable medical coverage inclusion, particularly for poor population and urban territories where there are patients with ceaseless illnesses, can be a suitable solution for reducing barriers to securing the necessary medications [20]. At the same time, providing proper statistical methods and models for breaking down the information is undoubtedly essential to go around the issues and acquire valid model parameters to produce the accurate assessment on health burdens [21].

Influencing factors on the geographic distribution of specialists

Despite the acceptable growth of different medical groups in the last two decades, an unbalanced physician's placement has prevented enjoying this development and promotion. Specialist group geographical distribution is unbalanced across the country, and there seems to be a significant shortage in deprived areas [22]. Overall, in Iran, the distribution of general practitioners, specialists, and sub-specialists is unstable and may be negligent in needy areas. It appears that the local distribution and supply of doctors have been improved in the recent policy implementation. Different factors impact doctor decisions to remain and practice in private and rural areas [23].

The study on disparities of Iranian woman health [24], determinants like health behavior, health knowledge, and lifestyle availability were adopting the imbalance in women's health at a provincial level. Therefore, these disparities in determinants should be addressed by health policymakers to provide better medical services.

3.2. Health Policies degradation in different areas of Iran

Regardless of human wealth and personal assets, Iran still experiences elevated levels of disparity and neediness. It is one of the progressing nations where there are still huge contrasts between areas. A study performed in 2017 has classified Iran's provinces based on their development index. Eleven regions (43.85%) were among disadvantaged, eight areas (33.3%) were considered developed, and Tehran, Isfahan, and Fars were highly developed provinces [25]. In 2013, the evaluation of the development level in different -

Table 1. Study details that associate with polices and specialist's distribution.

Author (Year)	Study Type	Objectives	Strengths	Weakness
Doaee S. H (2013) [19]	Policy study	Health technology assessments (HTA)	Generating localization for fundamental HTA in the Iranian health system In medical universities, for M.sc, Ph.D. degrees, design policy in HTA subject	There is no clear government policy to move forward the HTA objectives in Iran
Karami Matin (2015) [20]	Analytical Descriptive study	Finding the key factors which affect the expenditures of pharmaceutical products by municipal houses	For poor people, designing and development of primary and supplemental insurance coverage can be a suitable solution to avoid barriers of drug available for patients with chronic diseases	Health policymakers in Iran are not ready to take steps to ensure physical and financial access to drugs
Bayati M (2017) [24]	Original Study	Framework for women health determinants	At a provincial level, determinants like health behavior, health knowledge, and lifestyle availability were adopting the imbalance in women's health at a provincial level	Too many provincial disparities of Iranian women were found. Health policymakers should address these disparities in determinants
Haghdooost A (2010) [22]	Survey	Geographical distribution of specialist and medical experts in Iran provinces inequalities	The country is more specialized in different medical subgroups, and other provinces still require specialist medical personnel	Specialist group geographical distribution is unbalanced across the country, and there seems to be a significant shortage in deprived areas.
Parsaeian M (2014) [21]	Original study	Provide remedies to overcome the burden of disease and geographical inequalities of Iran	Relating various available data sources and generate reliable and precise evidence for the Iranian burden of diseases and its risk factors	Not identified
Nourijelyani, K (2012) [16]	Experimental	Assessment on the Iranian general practitioners (GP) knowledge and pediatricians about Primary immunodeficiency diseases (PIDs)	Reconsidering educating schedules and Training classes is necessary to improve physician's knowledge about PIDs.	There is an impressive absence of awareness on PIDs in doctors
Aeenparast A (2012) [15]	Cross-sectional	determine the waiting time in doctor workplaces in Tehran, Iran	The normal waiting time in this research was not exactly seven days for specialists and just about seven days for subspecialists	The Iranian health system has not set up a complete referral framework and with this circumstance, waiting time may strongly affect the patient health
Rashidbeygi M (2013) [18]	Experimental	Finding the knowledge of physicians towards evidence-based medicine (EBM)	Information and frame of mind of young doctors were progressively founded on EBM contrast with old doctors	A huge contrast in information mean score of doctor demonstrates that the EBM is still new in Iran
Keley E (2016) [17]	Cross-sectional	The connection between doctors' attributes and their desire to practice in rural areas was analyzed	It appears that expanding the enrolment of specialists from a rural background in residency projects may overcome the issue of uneven dissemination of specialist physicians in Iran	Not Identified
Ravaghi H (2015) [23]	Qualitative	Investigate the factors affecting the distribution of expert doctors in Iran	The territorial distribution and supply of specialists of Iran have been improved in the light of the executed policies in recent years	students with a rural background selection and steady measures for doctors working in deprived regions were suggested

Table 2. Studies that explain health status degradation in different areas of Iran.

Author (Year)	Study Type	Objectives	Strengths	Weakness
Ghaderi M (2017) [25]	Survey	Impact factors on the management of regional development in Iran	Produce solutions to reduce regional imbalances	Policies proposed in this study increasing imbalances and threatening disorder of whole Iran
Rasoolimanesh S (2013) [26]	Qualitative	Assessment of existing urban planning system of Iran	Findings causes for poor urban plan management	Poor implementation
S Emangolipor sefiddashti (2017) [27]	Cross-sectional	Ranking the countries based on access to health sector indicators	Produce a report on the need for a specialist in Iranian provinces	Healthcare expenditure not yet successful in Iran
Abolhallaje M (2014) [29]	Cross-sectional	In terms of access to health care, ranking the towns of the province has done	Policymakers should come forward to bridge the gap between in distribution of health services in Markazi	The large gap for healthcare provision in towns of Markazi province, Iran
Baigi V (2018) [30]	Survey	Assessment of socioeconomic inequality in various health domains and self-rated health (SRH)	Socioeconomic inequalities were found out in various health domains in favor of improved socioeconomic status groups	Not identified
Lotfi F (2018) [31]	Retrospective	Examining the equality of resource distribution between Iran provinces in 2014	Proposing suggestions to policymakers to make much focus on resource distribution-based health requirements of patients	Not identified

Iranian big cities (216) demonstrated that this level for most of them (64%) was lower than the medium level. Among these 216 cities, 95 were classified within relatively disadvantaged, 85 as underprivileged, and 36 cities were categorized as very disadvantaged. Study findings suggested that poor implementation policies affecting the urban planning systems of Iran [26].

In further research, 30 Iranian provinces were examined from the viewpoint of their access to health care services. The results of this research have evidenced that among these 24 provinces, there were ten developed, seven semi-developed, and seven underdeveloped [27]. Moreover, another study showed that 64.2% of Iranian cities were among underdeveloped areas [28].

According to the studies performed in Markazi province in Iran, there are high imbalances in the dispersion of health services facilities in the Markazi area. Researchers suggesting that policymakers decide resource allocation needs as indicated by the level of improvement for appropriate and equivalent dissemination of medicinal services facilities [29]. Study outcomes of [30] mentioned that substantial financial imbalances were seen in various wellbeing areas for gatherings of better financial status. Because of these outcomes, policymaking planned for handling disparities should focus on various wellbeing spaces just as to overall health.

Another retrospective study [31] on resource distribution between Iran provinces in 2014, mentioning that the dissemination of the health policy segment assets between Iran areas was moderately equivalent. In this manner, health policymakers need to be centered on different parts of availability, for example, circulation of assets as indicated by health needs, distribution of resources within the provinces, and quality of services provision.

4. Discussion

The issue of justice in the distribution of specialist medical workforces is at the center of attention in most countries. It is necessary to prepare the basics for having justice in the distribution of human resources [32]. The number of workforces in the health system of different countries at one hand and fair distribution of health services in various areas of a country, in compliance with its demographic, epidemiologic, and etiologic properties is another aspect that should be considered [33], [34].

In the Iranian health system, there is a strong focus on improving the health services quality and access to them, in particular for the deprived social classes [35]. Physicians are unsuitably distributed in different cities, and there are a limited number of physicians in rural areas. The absence of enough physicians in rural areas represents a severe problem for the Iranian Health Ministry. In general, the health of rural

people are a category considering and necessary for the development strategy from below [36]. Access to health service depends on many factors; nevertheless, the most fundamental of them is the presence of operators offering health support. Overall, the main problem in rural areas is an unsuitable distribution of physicians.

In a study that was performed to describe a method of supplying and distributing active clinical physicians in the USA in 2005 by focusing on rural areas, unbalanced distribution of physicians in city-village and diversity of distribution of physicians in rural areas were observed and the total ratio of specialist/population in rural areas was reduced [37]. Moreover, native and non-native workforces, with equal rates, were asked to be transferred from disadvantaged areas. This trend has demonstrated that the policies of educating indigenous specialist forces did not lead to maintaining specialist physicians in deprived areas [37], [38]. Only 9% of physicians work in non-urban areas where 20% of the USA population lives [39]. Differently, persons residing in rural areas have equal right for benefiting high-quality health services as persons living in the cities.

World Health Organization (WHO) believes that public access to motivated, active, and skillful health workforces, especially in rural areas, is the necessary condition for better understanding health, human rights, and social justice [40]. In 2010, the support for patients and cost-effective medical care were implemented for all US citizens. However, it is not possible to reach the goals of this law until there is not balancing between offering and using global health services [40], [41].

Traveling to a specialty center is problematic for families since it disturbs the regular daily schedules of family, education, and leads to absence from the workplace for adults [42]. Such lack of access to sub-specialty of pediatrics, particularly for children in the emergency ward of rural areas, could lead to unnecessary reception of patients by using expensive methods, including an air ambulance [43]. Tele pediatrics is commonly applied to children in different rural communities, and it is often focused on children with specific medical and health requirements [43], [44].

The impediments created for rural societies have led to the different medical care of children. These imbalances caused low access to newborns and children to health services. According to the census in 2010, nearly 20% of the USA population is residing in rural areas, and thus, many children have to face shortages for obtaining important health and medical services [45]. These hindrances include geographical ones, relative scarcity and unsuitable

distribution of general and subspecialty pediatricians, and socioeconomic impediments for traveling. These obstacles may endanger children's health. General practitioners that work in villages often have barriers for accessing to sub-specialty of pediatrics.

5. Conclusion

All the studies mentioned above suggested that a telemedical strategy, using medical informatics and other advanced systems, may offer many advantages for the people that live in underprivileged areas where the pediatric population tends to more vulnerable.

On the other hand, health professionals (physicians, nurses, etc.) formation and distribution represent an important challenge for all countries. This problem hits significantly Iran notwithstanding they used many resources to increase the number of health professionals, the latter prefer to stay in big cities and to litter remote areas. However, this shortage should be covered and in particular when these regard pediatric services because the pediatric population needs both care services and prevention services. Governments and health policymakers also need to take the initiatives on the source distribution and funds allocations on health care development especially for people living underprivileged areas. But in the meantime, the development and use of a telehealth system become crucial to help these populations.

Conflicts of interest

The authors declare no conflicts of interest.

Author contributions

Conceptualization-S.M.M. and S.S.M.S.; Methodology-G.B.; Formal analysis-G.B.; Investigation-S.M.M. and S.S.M.S.; Resources- G.B.; Data curation-G.B.; Writing original draft preparation- S.M.M., S.S.M.S., and G.B.; Writing review and editing-G.B. and S.K.T.; Supervision-S.K.T., and F.A.; Project administration-S.K.T. and F.A.; Funding acquisition- S.K.T. and F.A.

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