Research Paper
Developing National Minimum Data Set for Primary Health Care Record in Iran

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ABSTRACT

Background: The health information system is an essential part of the health system and has a vital role in increasing the efficiency and effectiveness of the health system, especially in primary health care (PHC). This study was conducted to determine the minimum data set required in the electronic health record (EHR) for primary health care (PHC) in the health system of Iran as an example of a low-middle-income country.

Methods: This study is a combination of qualitative and quantitative methods conducted from 2021 to 2022, and includes three main stages, reviewing the theoretical foundations of research and designing the main framework of interview guide questions, a qualitative study through an interview with 42 managers of the health system at the national level to determine the minimum data in the electronic health, and determine the validity of the data via Delphi method using SPSS software, version 15.

Results: After reviewing the minimal data set in EHR in seven selected countries, and during the interviews conducted with specialists, 7 main concepts and 5 sub-concepts were extracted from the interviews. Based on this, 159 information elements were included in the survey, and in two Delphi rounds, 145 information elements in seven sections of children, mothers, mental health, elderly, para-clinic, medicine, and vaccination were agreed upon by the experts.

Conclusion: To standardize the data structure, it is necessary to create a database of national health information in the country's EHR. The existence of a standard minimum data set can lead to the access of accurate and unambiguous information to the service recipient. It is essential to pay more attention to mental health programs and the elderly and use the latest information in the design of the minimum data set in the health system.

Keywords: Electronic health record (HER), Primary health care, Minimum health data collection

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Introduction

Primary health care (PHC) is the mainstay of the health care system, and primary caregivers need valid and comprehensive information to coordinate their activities [1]. In every country, the health information system is an essential part of the health system, used to formulate and monitor policies, evaluate effects, and select priorities [2, 3]. National health information infrastructure design plays an essential role in increasing the quality of data and health knowledge [4]. A critical step in reforming the health information system is to identify information and consensus on a series of data designed to be meaningful, pragmatic, and appropriate to the country's situation [5]. The most significant inefficient factor in healthcare organizations is the need for more shared information between healthcare buyers and users [6]. The history of the e-healthcare system in developed countries dates back two decades ago, and its use is experienced, especially in health and PHC [7]. All healthcare systems emphasize creating an electronic health record (EHR). The basis of the EHR is a health record that shows information about patients referred to healthcare centers, hospitals, and physicians' offices. The critical element in designing an EHR is to determine the type of data, the level of data collection, the responsibility for data collection, and the purpose of reporting this data [8]. Minimum health data sets is a minimum of variables related to a person's health status, including demographic-clinical data and patient care plans that facilitate proper communication between healthcare providers and timely decision-making for managers [2]. Iran's experience in this field is to create a centralized system with full capability that can provide all the information needs of different levels of management in one software, including the experience of Iranian health system [r1]), comprehensive software for all hospitals in the country (Takfab project [r2]), electronic file project (Shahab Health) [9], which failed despite of high costs for various reasons, such as centralized management and monopoly, lack of work experience of contracting companies in the health sector, low rate of managers' acceptance [10]. In this regard, one of the most significant information technology (IT) projects in the field of health in Iran-under the title of gratitude-is pursued. This project was defined and implemented in the statistics and information technology office of the Ministry of Health and Medical Education in 1988 consistent with the e-health project [2], and all the information related to households, the type of healthcare services required in the health centers, and bases of
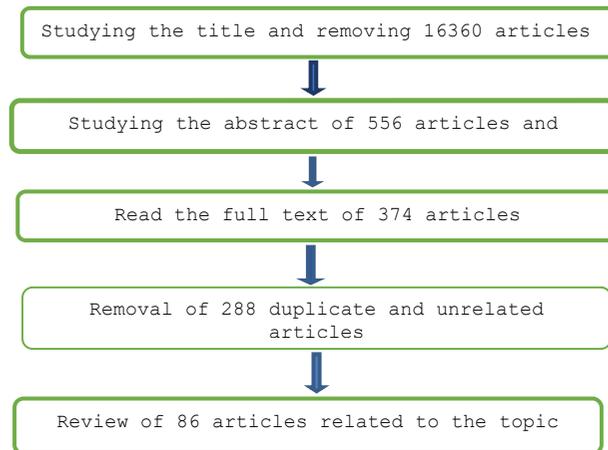
the community, and the health centers are entered and registered, and this is also the type of effort in the field of health. However, establishing such a system requires the creation of an integrated infrastructure tailored to the social and cultural conditions of the country and the ability to exchange information at different levels of service delivery [11]. In other words, one of the crucial issues in health information technology is sharing practical clinical and managerial information. For this purpose, a data structure should be considered that can be used in different organizations and heterogeneous communications [12]. Another issue is data integrity. Therefore, designing and determining the minimum data set is an essential step in the national information registration system that allows a medical institution to identify patients from each other and meet government requirements and internal needs. Ultimately, the medical community is satisfied [13]. In addition, the existence of a minimum set of health data is a standard method for collecting, storing, and distributing key and standard data elements. A study conducted by Ahmadi et al. showed that the data currently collected in Iran does not meet national needs, nor is it consistent with international recommendations [2].

Since the current health system in different areas (health, treatment, and insurance), health information is collected in a scattered and non-integrated manner in different sectors, and it is necessary to determine the standard data elements for the better design of the EHR system. Paying attention to the importance of the PHC information system in increasing efficiency and effectiveness, more rational use of health resources, reducing health care costs, improving PHC, increasing satisfaction, and ultimately improving community health, the present study was conducted to determine the minimum data required to design the healthcare information system in Iran.

Methods

This study combines qualitative and quantitative research conducted in 2021 and 2022. The steps of this study are as follows:

In the first stage, the desired studies and research were selected based on the protocol developed by the researcher. At this stage, the researcher tried to search all the research and articles conducted in the field of minimum data used in the EHR using the banks and information sources and related studies conducted in this field and based on a comprehensive review. Also, to complete the information, field research was conducted on the

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Studying the title and removing 16360 articles
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Studying the abstract of 556 articles and
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Read the full text of 374 articles
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Removal of 288 duplicate and unrelated
articles
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Review of 86 articles related to the topic
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Figure 1. The process of investigating and finding research

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systems running at the national level (Apple) and Sina and Nab systems in Mashhad and Golestan Universities. To collect and retrieve related articles and research, the electronic search method was used in information banks, correspondence with authors and researchers, and a review of related scientific magazines and journals based on the research protocol. Thus, the keywords used for the search were EHR, PHC, minimum health data sets, outpatient care, health information technology, PHC, and Persian words, such as health information management, EHR, and minimum. The required data was examined in the EHR, and after removing overlaps manually, relevant information was extracted. Keywords were searched in reliable domestic electronic databases, including/Magiran/Irandoc/SID, and databases, including Scopus/PubMed/Google Scholar/ and World Health Organization (WHO) and NHS sites. Referring to the articles found from the electronic search and review of their sources, the authors searched other related articles.

Then, the required information was completed by searching the websites related to EHR and, if necessary, contacting experts in this field. The retrieved articles were evaluated based on the research protocol by examining the title and abstract of the articles, and the selected articles were identified.

Accordingly, based on the comparative matrix, the minimum data set's similarities and differences were recognized in the selected countries by which the interview guidance questions were set. To conduct the interview, the selection of experts was targeted and based on having at least five years of experience in the field of medical information systems at the national level. In addition, the experts should be oriented in the research related to

health technology or are members of at least two years in the headquarters or specialized units of health information technology and health deputy of the Ministry of Health and Medical Education or Medical universities. The snowball sampling method was also used.

To begin the interviews, first, the researchers telephoned the interviewee, and the text of the letter of introduction for the research title, the purpose, and the confidentiality of names were explained to the person. Twenty-four face-to-face interviews, twelve interviews via telephone, and six interviews via e-mail were conducted. All interviews were recorded and then implemented. The average time for each interview was between 30 and 60 minutes, and the researcher conducted all interviews personally.

The validity of the interview guide questions was confirmed using the opinions of experts in this field. During the interview, the researcher wrote a summary of the contents and ambiguous items. The notes were corrected or modified, especially the key points. Immediately after the interview, the material was typed. A five-step framework analysis method was applied to analyze data, including identifying a thematic framework, indexing, drawing tables, drawing maps, and interpreting [14]. Data analysis began from the first interview and was parallel to the interviews. The texts were read several times to gain a general understanding of the text, and then the text was read line by line to give an idea of the structure of the sentences. In the beginning, the first level was coded, which means that the analytical units, i.e. the sentences that answer the questions, were identified. Semantic units were extracted from the main concepts in the analysis units, and code was given to each semantic unit. A list of main and sub-codes was obtained by

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comparing the codes. In the second level of coding, the main and sub-codes were read, and then the main codes with the same meaning were classified and formed into classes.

To ensure the accuracy of the qualitative research results, four criteria (validity or acceptability, reliability or similarity, transferability, verification) proposed by GABA and Lincoln have been considered, and the researcher has tried to ensure that the results reflect the real experiences of participants [15].

In the third stage, the validity of the proposed minimum data set was performed using the Delphi technique with the opinion of 76 experts in this field with experience in the country. Experts in this stage are people with at least one year of work experience in the Ministry of Health and Medical Education, membership in the headquarters or specialized units of health information technology, and faculty members of the field of health information management in various universities of medical sciences. Finally, the form based on a Likert scale compiled on the results of the qualitative section in the previous stage was provided to the observers in person or by e-mail, in which the researcher and the goal were explained. They were asked to enter their comments in the questionnaire. In cases where people did not agree with one of the concepts or components, they submitted their comments as a corrective proposal. Finally, the researcher collected and analyzed questionnaires. For each data element, the value of zero to one hundred was considered according to the importance. After scoring the experts and after analyzing the data, options that scored less than 80% of the total (out of 159 suggested elements, 19 did not get the required points) were re-examined, corrective suggestions were considered, and then the newly developed questions were sent for re-examination. Ultimately, 145 data elements were approved by experts. The results of this step were analyzed by SPSS software, version 15.

Results

Based on the results of the comparative study, Table 1 presents the set of minimum health information data in seven countries, including the United States [15], Canada [16], the United Kingdom [17], Australia [18], Turkey [19], Malaysia [20], and Iran

Common items in the e-health file in the United States, Canada, the United Kingdom, Australia, Turkey, Malaysia, and Iran include immunization, mental health, the elderly, maternal and child care, and demographic information. These services are at the primary healthcare level and show the importance of these cases in promoting health. Meanwhile, the data on radiology, laboratory, pharmaceuticals, cancer, drugs and alcohol, disability services, allergies, infant nutrition, juvenile delinquency, disease prevalence, mortality data, social services, and organ transplants in EHRs has been used on a case-by-case basis, depending on the geographical, political and health conditions of the selected country.

Table 2 presents the characteristics of the research community participating in the qualitative phase.

At this stage, 42 people were interviewed, including 25 men and 17 women, 14 health program managers, 12 experts from the health deputy of the Ministry of Health and Medical Education and 16 experts from medical universities. After implementing the data and analyzing them for spotting with one of the managers of the supplementary interview, at the end of the process, seven main concepts and 23 sub-concepts consisting of 159 information elements were obtained, the results of which are shown in Table 3.

Children's program

The minimum children's health data set includes demographic information, primary assessment, and health care. According to experts, "all information about children needs to be recorded from birth, such as height, weight and head circumference, pulse, parental name, all vital signs of the baby, blood type, skin color, and eye color, which are among the essential information in the case of e-health record. The type of delivery, the place of delivery, and the problems during childbirth should be recorded. The initial information should be recorded if there are any problems or diseases in the baby mother's name and surname. Maternal weight, maternal morbidity, and type of delivery should also be recorded.

Mothers' program

Dispersion of recorded information, exposure to large amounts of data, lack of timely access to essential information for health care providers, poor documentation of information, and duplicate information are among the problems of information systems in the mothers' program [21].

"Currently, standard mobility data specification (MDS) and valuable data elements related to the prenatal period for information exchange and comparison do not exist in Iran. For the pregnant mother, it is better to record all the mother's details in the electronic file, such as name and

Table 1. The minimum set of electronic health records information data in the countries under study

	USA	England	Canada	Australia	Turkey	Malesia	Iran Sib	Iran Sina	Iran Nab
Immunity	P	√	√	√	√	√	√	P	P
Mental health	P	√	√	√	P	P	P	P	P
Alderly care	√	√	P	√	—	P	√	P	P
Mother and child information	√	√	√	√	P	P	P	√	√
Radiological information	√	√	P	√	√	—	P	√	P
Radiological information	√	√	P	P	—	P	—	—	—
Pharmaceutical information	√	—	√	√	—	P	P	√	P
Drug and alcohol information	P	—	—	√	√	—	P	P	√
Cancer information	—	√	—	√	P	—	√		
Demographic information	P	√	√	√	√	P	√	P	P
Personal identification and special care for Infants	—	√	—	—	—	—	—	—	—
Allergy	√	—				P		—	—
Nutrition of infants	—	—	—	√	P	—	√	P	P
Housing	—	—	—	√	—	—	—	—	—
Housing household information	—	—	—	√	—	—	—	—	—
Adoption information	—	—	—	√	—	—	—	—	—
Juvenile delinquency information	P	—	—	√	—	—	√	√	P
Disease prevalence and disease burden child care	—	—	—	√	P	P	P	√	P
Homelessness child care protection information	—	—	—	√	—	—	—		
Disability services data	P	—	—	√	—	P	P	√	√
Mortality data	—	—	—	—	√	P	P	√	√
Buy home	—	—	—	P	—	—	—	—	—
Spinal cord injury	—	—	—	√	—	—	—	—	—
Administrative and billing data	√	—	—	√	—	—	—	—	—
Critical insurance information	—	√	—	—	—	—	—	—	—
Women genital problems data	—	√	—	—	—	—	—	—	—
Social services	—	√	—	P	—	—	—	—	—
Emergency data	—	P	—	—	—	—	—	—	—
Infectious diseases data	—	—	—	—	√	—	—	—	—
Sexual identity data	—	—	—	√	√	—	—	—	—
Gender and sexual orientation	√	-	-	-	—			—	—
Environmental care data	—	—	—	P	—	—	—	—	—

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Table 2. Profile of the participants in the interview section

Demographic Characteristics		%
Sex	Man	59.52
	Female	40.47
Degree	Bachelor	50
	MA	8
	PhD and above	42
Work experience (y)	5-0	34
	6-10	16
	<10	50

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surname, age, and the person's health history. The history, including height, weight, blood pressure, and body mass, should be carefully calculated and determined at the first visit. Record the presence of any diseases or other problems. In the case of drug use, ask the mother and determine the type of drug and the dosage of use. All maternal referrals and health care should be recorded and followed up with the care date (P 3).

Elderly program

It seems necessary to develop a comprehensive system of special services for the elderly population in Iran. Preventive and therapeutic policies should be directed toward maintaining and improving the health of the elderly population and identifying the factors threatening and protecting health in their lives [22].

"Because the elderly program is new and has just been integrated into care programs, the information needed is the person's illness and history of the elderly's illness. The elderly live alone, and the source of their income should be known. Information, such as first and last name, and residence should also be asked. Elderly nutrition is crucial. The national code and contact number should be recorded if available. Identifying the older adult's national code, literacy, and education should be recorded because the older adult's literacy rate affects how the person is cared for [P 7].

Mental health program

The mental health program is still new since it has just entered the health care system of individuals in Iran, and implementing this program has many problems.

"Mental health problems and questions should be consistent with that society's culture. Because asking certain questions is like a taboo in society that needs to be considered in designing these questions; for example, "I think in our society asking sexual problems is not possible. Even the training provided should be specialized" (P 11).

Drug program

Today, one of the basic concepts in the health care system is patient safety, therefore identifying influential factors, such as illegibility of prescriptions, errors in prescribing medication, and how to use the drug may lead to severe complications that drive to death, disability, or prolonged hospital stay [23].

"I am not at all satisfied with the drug registration in the existing system. The standard code and sub-branches of the drug do not report well. In the drug section, the type of drug and how to use it should be known. Furthermore, the person's blood pressure should be recorded. Sensitivity to the drug should be asked. The type of individual insurance should be recorded. The critical thing is to take care of the person and what problems he has had so far in taking the drug, whether he has a reaction or sensitivity to the drug (P 12).

Para clinic program

Because laboratory reports in the e-health file system play an essential role in diagnosing and managing the patient's clinical problems, providing a conceptual model of the laboratory reporting system for systematic design can be difficult to exchange information between this reporting system and the EHR system [24].

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"This part has not been loaded in the Sib system yet. It means that it can be recorded only in the type of tests in a small way, but in any case, it is crucial in the EHR of this part. The types of body examinations should be uploaded so that the attending physician can access them. Primary information, such as a person's details, national code, and medical history is also crucial (P 12)".

"Vaccination program"

Vaccination is one of the most effective medical interventions for the public's health, especially for children. The goal of the health care system in ensuring the reduction of unwanted side effects is to look for different vaccines and identify these side effects to prevent them, which requires the availability of the required information [25].

Table 3. Basic and sub-concepts of at least HER data set based on expert opinion in qualitative phase

Information Elements	Sub-themes	Themes
Body temperature		
Pulse		
Level of consciousness	Vital signs	
Number of breaths		
Name and surname of the child		
Parents' 1st and last names		
National code		
Place of birth	Individual profile	
Address		
Phone number		
Mother's age		
Type of nutrition		Children's program
Nutritional supplement type	Nutrition	
Type of delivery		
Place of birth		
Childbirth rank		
Investigating dental problems in children		
Disease background		
Vaccine history	Biography (client information)	
Care date		
Child height		
Baby weight		
Around the baby's head		
History of drug use		

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Information Elements	Sub-themes	Themes
Information elements		
To cry		
Type of feeding	Individual profile	
Eye movements		
Body movements		
Baby hearing		
Baby talk		
Mother's name and surname		
National code		
Date of birth		
Address		
Type of insurance		
Mother's job		
Wife's job		
Number of children		
Weight	Biography (client information)	
Height		Mothers' program
BMI		
EDC		
LMP		
Disease background		
History of illness in spouse or children		
Surgical history		
History of abortion		
Twin history		
Pharmaceutical history		
Hospital history		
History of previous deliveries		
Care date		
Pulse	Oral health Mental health	
Blood pressure		
Information elements		
Body temperature		

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Information Elements	Sub-themes	Themes
Pulse		
Level of consciousness		
Number of breaths	Nutrition Education Individual profile	
Name and surname of the child		
Parents' 1st and last names		Mental health
National code		
Place of birth		
Address	Biography (client information)	
Phone number		
Mother's age		Themes
Type of nutrition		
Nutritional supplement type	Under the concept (Sub-themes)	
Type of delivery		Mental health
Place of birth		
Childbirth rank	Biography	
Investigating dental problems in children		
Disease background		
Vaccine history		
Care date		
Child height	Education Individual profile	
Baby weight		Elderly
Around the baby's head		
History of drug use		
Information elements		
To cry	Nutrition	

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Information Elements	Sub-themes	Themes
Type of feeding		
Eye movements	Mental health Education	
Body movements		
Baby hearing		
Baby talk		
Mother's name and surname	Individual profile	
National code		
Date of birth		Para clinic
Address		
Type of insurance		
Mother's job	Under the concept (Sub-themes) Individual profile Biography (client information)	
Wife's job		
Number of children		
Weight		
Height		
BMI		
EDC		
LMP		
Disease background		
History of illness in spouse or children		
Surgical history		
History of abortion		
Twin history	Individual profile Biography	Drug program
Pharmaceutical history		
Hospital history		
History of previous deliveries		
Care date		
Pulse		
Blood pressure		
Information elements		
Body temperature		Vaccination
Pulse		

Abbreviations: BMI: Body mass index; EDC: Estimated date of confinement; LMP: Last menstrual period.

"Vaccination status of children is one of the vital information elements in a person's health record. Vaccination should be recorded first. Vaccine type, vaccination date, and specifications of the person's vaccine are crucial to register. Preliminary evaluation should be conducted in children, for example, a child's temperature and type of disease. If there is, it must be recorded. The person's medical history must be asked. If necessary, all information about the vaccine should be recorded in terms of the expiration date and serial number" (P11).

In the Delphi stage, 76 people participated, including 28 women and 48 men, of whom 25 people with experience in the Ministry of Health and Medical Education, 30 members of technical units of health information technology, and 21 members of the faculty of health information management at various universities of medical sciences.

During the first round, 19 components did not receive the required points, which were surveyed with the advice and discretion of the research team by modifying the titلصes. Seventeen elements of income source-income and support programs and educational backgrounds in the central subgroup of the elderly-skin color and eye color in terms of problems or illness and yellow history of the central subgroup of children-the existence of mother support programs and history of alcohol consumption and the educational background of the central subgroup of mothers-the position of the prescribing person from the central subclinical subgroup and the destination pharmacy in electronic referral and the position of the prescribing person in the central subgroup of medicine and source of income-income- educational background were removed from the mental health subgroup. Three elements of disease history in the spouse or children under the leading group of mothers and history of smoking under the main group of mental health and the serial number of the vaccine under the leading group of vaccination were added with the participation of participants in the list. Finally, 145 data elements in the second round of Delphi were approved.

Discussion:

This study was conducted to determine the minimum required data in the EHR in the health system of Iran. Data sets record the most relevant and up-to-date facts about a patient's health information. Therefore, the data provide useful information for policymakers, healthcare professionals, and stakeholders and should be readily available to care providers [26]. A review of the minimum data set used in the seven countries surveyed found

that the information in the e-health file is used on a case-by-case basis, depending on the country's geopolitical and health conditions.

Australia's information system had the most connection with health and social welfare indicators, indicating the importance of this section.

The information systems and e-health records of the seven countries surveyed showed that the highest emphasis was on data at three levels of prevention. Among the countries surveyed, only the United States collected information on sexual orientation and the needs of bisexuals and homosexuals that measured sexual orientation.

In the United Kingdom, out of 13 data, four items, including neonatal intensive care-critical care and women's genital problems and emergency care, are specific to the country's e-health file due to the increased demand for service quality, the added value of emergency care, and to deploy effective and efficient resources. In Turkey, data related to infectious diseases are specific to this country, which can be related to the cultural and tourist conditions [19].

The minimum data set used in these seven countries showed the most significant emphasis on PHC, highlighting the high potential of this level of care to promote health, cost-effectiveness, and ensure its effectiveness [27].

In developed countries (USA-Canada-UK-Australia), PHC is related to second and third health care, effectively designing a set of minimum data required for EHRs [28]. In developing countries (Turkey-Malaysia-Iran), e-health records operate in PHC and are yet to be associated with specialized levels [29]. In developed countries, the recipient has access to his/her electronic file and participates in managing his/her health file while observing this. The design of Sib, Sina, and Nab systems in Iran was based PHC service package provided by the Ministry of Health and Medical Education in 1995, which uses the minimum standards in the content structure. A big difference is observed in the information contained in these systems (standardized text, such as text fields and how to interact with it is software [3].

According to the research results, the minimum data set in different registration systems has different categories. Information elements in the EHR, such as medical records, are considered as nature and existence, and each entity has its subsets. It is expected that due to the evolution and dynamism of medical science, information

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items in EHRs will not be an exception to this rule. Demographic information is emphasized in all information systems under study, which indicates the importance of the items mentioned in the e-health record. Cases, such as ethnicity, race, and language can be identified in countries, such as the United States, Canada, and Australia. The demographic and immigration conditions of these countries are relative to the rest [30].

The sources of income and income in all three groups of mothers, the elderly, and mental health were not confirmed, which can be due to cultural sensitivities about the amount of income in our country.

All recommendations made in the vaccination section have been finalized, indicating complete familiarity with the program and its long history in the health system. Given that vaccination of children is one of the vital measures the WHO takes to eliminate pediatric diseases and public health, it is also strongly emphasized in the Iranian health system [31]. In each age group, one of the most critical elements in the history of vaccination is that the interviewees have emphasized in the interviews conducted that currently, the Sib system, which is implemented nationally, does not have the necessary capability to record the information required by the vaccination program. In a study conducted by Saberi et al. on designing a set of minimum data required in children, the data on vaccination data in the e-health records of the United States, Australia, Canada, and Iran are consistent with the data finalized in this study [32].

Thirty-three items in the central concept of children will be asked, and 91% of them agreed. Children's health program is one of the main components of the EHR in all countries studied. From the point of view of the interviewees, it is necessary to record all the information about the children from birth. Childcare is one of the most critical aspects of health care and has all the characteristics of priority selection in executive programs. Quantitative indicators of child mortality under one year, mortality under five years, and vaccination of children are the essential indicators of sustainable development of a society that requires attention to health-based services and strengthening primary care prevention [33]. Saberi et al., in collecting the minimum data of the case for children's appetite under the data set, provided 146 data elements for children, and all the data elements approved in this study were consistent with the data of this study and were confirmed [32].

Maternal health programs are also a significant part of the study program in seven countries. Given that mother

and baby are considered a vulnerable group in society, maintaining and improving their health is considered an essential element of health care in any country and is one of the critical indicators of health in the sustainable development of the maternal mortality index. Therefore, the improvement in the effectiveness, efficiency, and quality of health services related to Pregnancy, childbirth, and postpartum are primarily affected by accurate and quality health information [33]. From their point of view, mental health is one of the most critical issues in the mothers' program. It is essential to be clear about issues, such as spousal abuse and parental support programs supported by whom and which organization. Cultural issues strongly influence the removal of items, such as income and type of maternal support in this section [34].

A total of 18% of items were removed in the original sense of mental health. According to the WHO, in 1990, five of the ten diseases that caused the most disability in the world were related to mental illness. Due to the misguided view and not-so-logical attitude of people, experts, and political and health policymakers in the field of mental health, inappropriate structure and lack of financial credit in the Ministry of Health and Medical Education, worn-out PHC network, lack of specialized health care and treatment in mental health. Since the integration of mental health program care in the network system, especially EHRs, a lack of complete familiarity with mental health issues is one of the factors that can cause a series of information data to be disapproved in this section.

On the one hand, with the growth of the elderly population and the change in the epidemiological pattern of diseases in middle age and old age to chronic diseases, attention should be paid to preventive and therapeutic policies to maintain and improve the health of the elderly population [22]. In the United States, the United Kingdom, Canada, and Australia, in addition to health data, data from other health-related organizations are used to complete electronic health data. In Iran, this extra-sectorial relationship in electronic health data has not yet been completed, and most of the data is based on the individual's statements. According to interviewees, information, such as insurance type, source and amount of income, and type of support programs for the elderly is required in the elderly health record.

A total of 93% of the items related to the para-clinic section were approved by the participants, considering that the family physician program and referral system have been implemented in the rural areas of the coun-

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try so far, and an interaction still is found between level one and level two and three electronic services. Failure to fully familiarize the target group with these items may not be effective in deleting para-clinical information [1].

Conclusion

- To standardize the structure and content and follow the standards of data exchange in the electronic health file of the country, it is necessary to create a database and a glossary of national health information that determines the professional terms of health and treatment.

- The vital role of users and their information needs in designing an EHR system should be considered.

- In other countries, some elements of essential data in the minimum data set of EHRs are required by organizations or health care providers in the country, but are not currently collected, such as data related to (disabled, adoption), orphaned children, housing, juvenile delinquency, therefore, a complete list of the minimum set of standard data elements need to be created.

- Creating a large amount of information data with a big gap between understanding and interpreting it will be confusing, therefore, having a minimum set of standard data can lead to accurate and unambiguous access to the service recipient.

- It is necessary to pay more attention to mental health programs and the use of the latest information in the design of the minimum data required in the EHR in this regard.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethical Committee of Mashhad University of Medical Sciences (Code: IR.MUMS.REC.1396.77).

Authors' contributions

Conceptualisation and study design: Elaheh Hooshmand; Data analysis and data interpretation: Elaheh Hooshmand and Roghaye Estaji; Interviews analysis: Elaheh Hooshmand, Marzie Zarqi; Drafting of the manuscript: Marziye Mera; Critical revision of the manuscript for important intellectual content: Marzie Zarqi.

Conflict of interest

The authors declared no conflict of interest.

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