

## A Comparative Study of Health Services' Management of Adolescents and Youth in Selected Developed Countries and Iran: Developing a Model for Iran

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### Abstract

**Introduction:** Nowadays, adolescent and youth's health has become increasingly important. The world health organization (WHO) emphasizes the importance of evaluating the structure, process, and outcome of health services. This study was conducted to design a health services' management of adolescents and youth model for the Iranian population, to improve young people's health.

**Method:** This study is a comparative, quantitative-qualitative study. Countries were selected by comparing adolescent and youth health indicators based on population and availability of information. By studying the health services' management of adolescents and youth, essential variables and dimensions in the initial model were identified, and a preliminary questionnaire was developed and approved by experts. One hundred seventy-eight final questionnaires were completed by experts. Exploratory factor analysis was performed to determine the practical factors (SPSS 20), and the model's fit was examined by confirmatory factor analysis (Amos 24).

**Results:** A total of 6 factors were identified as effective in health services' management of adolescents and youth, including, health service package, human resources, financial resources, equipment and services' provision, data & statistics information resources, and health service delivery management of adolescents and youth. With a maximum 0.97 operating load had the highest and equipment and services' provision (0.53), had the least impact.

**Conclusion:** The proposed model has the most significant impact on the management of health services' management of adolescents and youth components.

**Key-words:** Comparative Study, Health Services' Management, Adolescents, and Youth.

## 1. Introduction

Health is one of the fundamental rights of every human being and the world health organization (WHO) defines it as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (1). Intending to create a healthy community, the health systems provide people-centered and integrated health services, which will ultimately improve health indicators for people, including adolescents and young adults (2-5). WHO defines 'adolescents' as individuals in the 10-19 years age group and 'Youth' as the 15-24 years age group (2). More than 1.1 billion people worldwide, or 1 in 5 of the world's population, are adolescents aged 10 – 19 years and around 1.5 billion of today's world population are young people between 10 and 24 years old; 85 percent of them live in developing countries (6). Nearly 30 percent of Iran's population are individuals aged between 10-24 years (7). Several studies on the health status of the Iranian youth and adolescents reported that this age group, making up a third of Iran's population, suffer from physical and mental disorders (8-9) that require more attention by the health policymakers (11,10). Despite the changes in global health policies, given that adolescent and youth health is one of the fundamental priorities of society and the third-millennium development goals (MDGs) (12), there are still many weaknesses in the health services' management of this vulnerable group, particularly in poor countries, compared to developed countries (13).

So far, several studies have been conducted to investigate the favorable conditions for providing adolescent and youth health services and the effects of different variables on the quality of health services have been examined and various conceptual models have been presented for the health services' management (14-17). Each country has chosen its health services management system based on the possibilities and utilization of a special conceptual model. Although all countries employ the same conceptual model, they have different ways of managing, providing, and distributing financial and human resources, planning for training of skilled manpower and adolescents and young people, and providing prevention, treatment, and care services (18-22). Thus, the use of these countries' positive experiences can be effective in managing and providing health services in Iran.

This study aimed to (i) compare the health services' management of adolescents and youth in selected developed countries and Iran, and (ii) to develop a model for Iran. In this study, a comparison of the health services' management was conducted between selected countries (the

United Kingdom, the United States, Australia, and Canada) and Iran, and a model was developed for Iran. Conducting this study can help improve the health indicators related to these services by identifying important variables involved in the success of developed countries in the field of adolescent and youth health status and their use in Iran's health services management system.

## 2. Methodology

This study was carried out practically, quantitatively, and qualitatively in seven steps:

1. At first, a situation analysis of health services' management of adolescents and youth in Iran and the world was carried out. The output of this phase was to identify the existing models and dimensions and compare the components of these models.
2. The second phase was selecting the countries for the comparative study.
3. A quantitative study for data collection.
4. A qualitative study for completion of quantitative data (awareness of the experts' and executive authorities' opinions about the extracted components in previous phases).
5. Summarizing the data obtained from previous phases and designing a primary model.
6. Exploratory factor analysis for model validation.
7. Confirmatory factor analysis to finalize the model.

To gather information, the Ministry of Health's website and each selected country's performance reports were used. In this study, variables of the health services' management of adolescents and youth, in the United States of America, Australia, Canada, England, and Iran were studied.

In the quantitative part of the study, the study's statistical population included all managers, experts in health services' management of adolescents and youth, involved in Iran. A sample of 270 experts composed of managers and experts from the Center for adolescent and youth health services was used. Selection criteria for experts included at least five years of management experience in the centers related to the health services' management of adolescents and youth, living in Iran, and having a willingness to cooperate.

The data collection tool in this research was a researcher-made questionnaire of 27 questions and interviews composed by reviewing the literature and documentation available at the health services' management of adolescents and youth.

In the present study, considering the use of the structural equation technique, the research variables were subdivided into questionnaires. At the time of the questionnaire preparation, the

number of samples was determined by the number of questions. In this study, 27 variables were identified. The initial default for each question was at least ten people, and about 270 samples were considered. Finally, 200 questionnaires remained for analysis. The present study's conceptual model is a combination of the models from the World Health Organization (14,15), the Australian Institute of Health and Welfare(16), the United Nations Population Fund(17), and UNICEF about the Health Services' Management of Adolescents and Youth(18-22).

The reliability of the tool was calculated by Cronbach's alpha, with a credit value of 0.857. The validity of the tool was calculated by factor analysis, which has a relatively high load factor. To ensure the reliability of the questionnaire, at the pretest stage, 20 questionnaires were distributed among the sample of the study with prior coordination with the managers of the organizations. A total of 18 questionnaires were compiled for the implementation of the pretest. Three methods, including face validity, content validity, and construct validity, were used for measuring validity. To determine face validity, two qualitative and quantitative methods were used. To determine content validity, two qualitative and quantitative methods were used. In the qualitative study, the researcher asked 15 specialists to check the quality of the questionnaire based on grammar observation criteria, proper words, necessity, importance, placing the phrases in their proper place, and appropriate scoring. To evaluate the content validity, content validity ratio, and content validity index were used quantitatively. To evaluate the construct validity, factor analysis was used.

Exploratory factor analysis was performed to identify the main factors for discovering and revealing specific features and relationships between them. To determine the variance of each index by analyzing the research subjects, commonalities were used. Initial subscriptions show all subscriptions before extraction, all of them equal to one. If the value of an item was less than 0.5, it was excluded from the analysis. To determine the amount of variance explained by the factors in the subjects, the total variance explained by factor analysis was used. Exploratory factor analysis was performed by the Kaiser–Meyer–Olkin sampling test (KMO) and Bartlett's test (BT), the main components' analysis, and the varimax rotated. The sampling adequacy index (KMO) for the variables and dimensions was  $>0.70$ . Furthermore, it was shown that correlations between the data were suitable for factor analysis.

To extract the factors in this research, the method of distribution of the main components, and the number of factors, the unique value method was used. To analyze the data, the "exploratory and confirmatory factor analysis" Amos 24 and SPSS 20 were used. In the field study, the collected data were transferred through a questionnaire to SPSS 20 and analyzed using exploratory factor analysis

of dimensions and components of the research pattern. Then, the components and dimensions were named.

### 3. Results

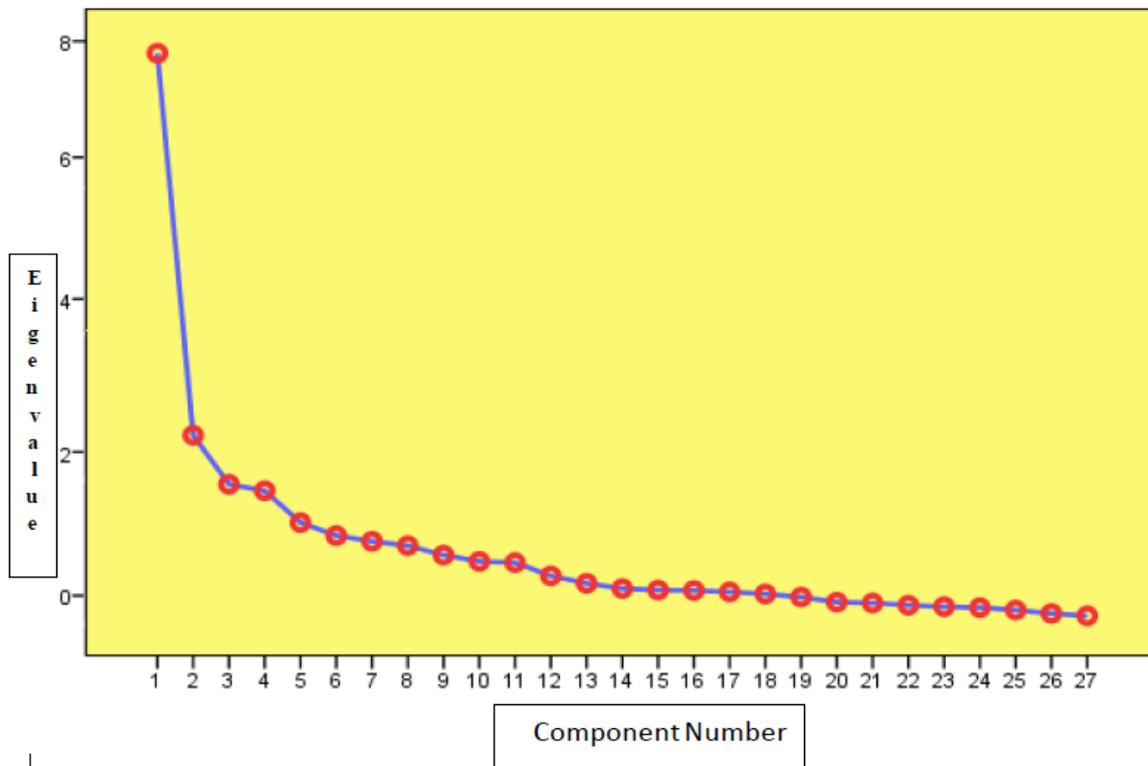
Twenty-seven types of Health Services' Management of Adolescents and Youth variables were identified from the studied countries (Table-1). The exploratory factor analysis was performed using the principal components method on 27 phrases. The results showed that the value of KMO was 0.79. Furthermore, the BT with a mean of 12.275 at the level of 0.10 was significant, which justified factor analysis based on the correlation matrix in the sample.

Table 1 - Comparison of variables affecting the Health Services' Management of Adolescents and Youth in the Selected Developed Countries and Iran

Country Variable	Iran	Australia	The United Kingdom	The United States	Canada
1.A home visit		*	*	*	*
2.Free training programs	*	*	*	*	*
3. Free-of-charge administration of supplementation	*	*	*	*	*
4. Free-of-charge screening and diagnostic tests	*	*	*	*	*
5. A health guidance booklet for family	*	*	*	*	*
6. Wide access to adolescent and youth Emergency Centers	Had no access	*	*	Restricted access	*
7. Providing mental health services to support adolescents and young adults		*	*		
8. Providing centralized management across adolescent and youth health services	*				
9. Developing a referral system for adolescent and youth health services		*			*
10. A wide variety of centers providing adolescent and youth health services		*	*	*	*
11. The right to choose freely centers providing adolescent and youth health services with easy access to them		*	*	*	*
12. Government policies in support of providing adolescent and youth health services	*	*	*	*	*
13. the planning and provision of local health services based on regional needs		*	*	*	*
14. Retraining programs for health service staff		*	*	*	*
15. Retraining programs for specialists		*	*	*	
16. Programs providing the distribution of health service staff allowing public access		*	*	*	*
17. Increasing the range of health care providers		*	*		*
18. Appropriate and up-to-date equipment under government supervision	*	*	*	*	*
19. Government funding for the purchase of medicine and medical equipment	Somewhat	*	*	*	*
20. Government supervision of medical equipment	*	*	*	*	*
21. An electronic health record (EHR)		*	*	*	*
22. Integrated data collection system	*	*	*	*	*
23. System monitoring the data collection	*	*	*	*	*
24. The basic insurance coverage		*	*	*	*
25. Government involvement in providing funding		*	*		*
26. Public sector involvement in providing funding		*	*	*	*
27. Involvement of non-governmental organizations or NGOs in providing funding		*	*	*	*

Six factors were found to explain the variances. The first factor accounted for 16.154%, the second factor 13.961%, the third factor 9.249%, the fourth factor 8.102% the fifth factor 7.802% the sixth factor 6.729%, and 61.997% of the total variance, respectively. The number of particular values is also given in the scree plot (Figure-1).

Figure 1 - Scree Plot to Determine the Number of Factors



The minimum factor load accepted in this study was 0.527 based on the analysis, the six factors are named as follows: (1) Health service package for adolescents and youth consisting of 7 indicators; (2) Health service delivery management consisting of six indicators; (3) Human Resources; (4) Providing equipment and services consisting of 5 indicators; (5) Data & statistics information resources consisting of 3 indicators (6) Financial resources for the health services' management of adolescents and youth consisting of 4 indicators.

Confirmatory factor analysis of Health Services' Management of Adolescents and Youth dimensions, six main factors (hidden variables), and 27 questions (visible variables) were used. An index represents each of these variables up to the figure. The results of the factor analysis Health Services' Management of Adolescents and Youth are presented in table-2.

Table 2 - Factor Loadings of the Items and Factors

Factors	Items	variables	Factor loadings
Health service package for adolescents and youth 0.895	1	A home visit	0.524
	2	Free training programs	0.643
	3.	Free-of-charge administration of supplementation	0.705
	4	Free-of-charge screening and diagnostic tests	0.555
	5	A health guidance booklet for family	0.709
	6	Wide access to adolescent and youth Emergency Centers	0.723
	7	Providing mental health services to support adolescents and young adults	0.593
Health service delivery management of adolescents and youth 0.970	1	Providing centralized management across adolescent and youth health services	0.708
	2	Developing a referral system for adolescent and youth health services	0.548
	3	A wide variety of centers providing adolescent and youth health services	0.715
	4	The right to choose freely centers providing adolescent and youth health services with easy access to them	0.619
	5	Government policies in support of providing adolescent and youth health services	0.648
	6	The planning and provision of local health services based on regional needs	0.615
Human Resources Management of Adolescent and Youth Health Services 0.821	1	Retraining programs for health service staff	0.717
	2	Retraining programs for specialists	0.585
	3	Programs providing the distribution of health service staff allowing public access	0.788
	4	Increasing the range of health care providers	0.542
Providing equipment and services for the health services' management of adolescents and youth 0.527	1	Appropriate and up-to-date equipment under government supervision	0.546
	2	Government funding for the purchase of medicine and medical equipment	0.670
	3	Government supervision of medical equipment	0.508
Data & statistics information resources on the health services' management of adolescents and youth 0.590	1	An electronic health record (EHR)	0.841
	2	Integrated data collection system	0.786
	3	System monitoring the data collection	0.819
Financial resources for the health services' management of adolescents and youth 0.675	1	The basic insurance coverage	0.561
	2	Government involvement in providing funding	0.699
	3	Public sector involvement in providing funding	0.775
	4	Involvement of non-governmental organizations or NGOs in providing funding	0.577

The observational factor load in all cases was more significant than 0.5. Also, the t-value statistic is higher than 1.96, indicating that the observed correlations are significant. Model Fit Indexes are presented in Table-3, which indicates a great fit. The results of factor loads and t values of some of the indicators are presented in Table-4. Finally, the factors of the final model in standard estimation are shown in Figure-2.

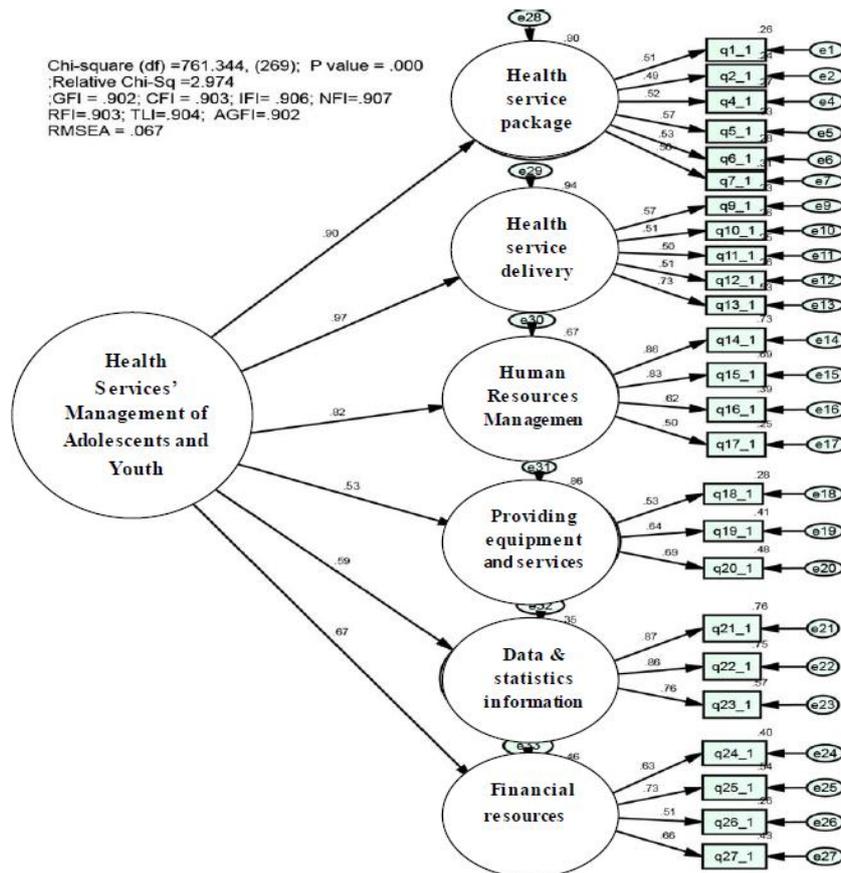
Table 3 - Model Fit Indices

Fit index	Acceptable range	Result
/df $\chi^2$	<3/00	2/947
GFI(goodness of fit index)	>0/90	0/902
RMSE(Root Mean Squared error)	<0 /08	0/067
IFI(Incremental Fit Index)	> 0/90	0/906
NFI(Normed Fit Index)	> 0/90	0/907
RFI(Relative Fit Index)	> 0/ 90	0/903
AGFI( Adjusted Goodness of Fit Index)	>0/90	0/902
TLI(Tucker-Lewis Index)	>0/90	0/904
CFI(Comparative Fit Index)	>0/90	0/902

Table 4 - Factor Loads and t values of some of the main Model Parameters

Agents	Estimate	T-test	Status
Health service package for adolescents and youth	0.895	4.213	Confirmed
Health service delivery management of adolescents and youth	0.97	5.058	Confirmed
Human Resources Management of Adolescent and Youth Health Services	0.821	5.718	Confirmed
Providing equipment and services for the health services' management of adolescents and youth	0.527	4.747	Confirmed
Data & statistics information resources on the health services' management of adolescents and youth	0.59	4.956	Confirmed
Financial resources for the health services' management of adolescents and youth	0.675	4.878	Confirmed

Figure 2 - Components of Final Model



#### **4. Discussion**

For all the studied countries of this study, the health services' management focuses on the Ministry of Health of that country, and the government supervises the health care process and policy development, and it is classified into public and private sectors at lower levels. Budget and financial resources are provided by the government, with the involvement of local organizations and non-governmental organizations (NGOs). Comprehensive national health insurance is provided to all citizens. The health services' package provided to adolescents and youth in all countries included free training programs, the 24-hour-a-day online emergency services for adolescents in all regions, free psychological support, a home visit, free-of-charge screening test, a health guidance booklet for family, and the registration of all the uniformed services. The human resources for adolescent and youth health services in the selected developed countries included family physicians, nurses, school nurses, midwives, gynecologists and psychiatrists, dental hygienists, dentists, nutritionists, psychologists. All of the studied countries participate in both training and retraining programs offering adolescent and youth health services. The financial resources were provided by the government, local and regional organizations, insurance organizations, and NGOs. All countries use the electronic health record (EHR) systems for all patients or clients, the principle of confidentiality is observed, especially for adolescents and youth, and all information collected from low to high levels have feedback systems and the government is responsible for collecting, monitoring, and using information. The government and the private sector purchase and distribute the medical equipment, but the government is responsible for its surveillance.

In Iran, the Ministry of Health and Medical Education (MOHME) has the responsibility for the health services' management of adolescents and youth, and the public and private sectors are responsible for providing the health services. Most health services are provided by health centers and schools. The health services' packages are not complete and basic insurance coverage is not enough, and the electronic registration system and the HER systems are not yet in widespread use in healthcare, and there is a dearth of healthcare providers for adolescents and youth, and deprived areas and villages have no access to adolescent and youth health care providers.

The results of the present study showed that six factors affecting the health services' management of adolescents and youth in selected developed countries include the health services management, the health services' package, and purchase of medical equipment and provision of health services, financial resources, data & statistics information resources, and human resources. Each of these factors is divided into other variables that are prominent in selected developed countries

and it seems to be useful in Iran according to a survey of relevant experts. In the present study, the health services' management of adolescents and youth, service health package, and human resources are considered as the most important factors affecting the health services' management of adolescent and youth, which is consistent with the results of the study of Ramezanzadeh et al (23)., suggesting that lack of access to the health services' centers for adolescents and youth, a shortage of skilled healthcare staff, and lack of counseling services are among the most important problems facing the health services' management of adolescent and youth. Our study is consistent with previous studies (24,25), showing that it is essential to provide health services packages containing a health guidance booklet for family, free-of-charge screening tests, free-of-charge administration of supplementation, and the training of skilled manpower. Our results are consistent with the study of Motlagh et al., (26) regarding Health needs assessment based on local and regional priorities in providing health services decentralized management in the field of youth health services, which may be due to the growing importance of adolescent and youth health problems and the challenges of health policymakers for improving adolescent and youth health indicators that can be optimized by health service packages, human resources and the health services' management of adolescents and youth. Shariati (27) conducted a study titled "Interpretation of the Characteristics of Adolescent Friendly Reproductive Health Services in Iran" and the results showed that personnel factors, management factors, rapid access to centers offering the health services and referral system were identified as the most important factors affecting adolescent health services, which was consistent with our study, centers providing adolescent and youth health services are not institutionalized in Iran and health service packages are provided to a limited extent for health centers, but there is no possibility of fast and round-the-clock access, which is the reason for the consistency of this study. Mazur Amanda et al. (28) assessed the centers providing the health services for adolescents and youth aged 10 - 29 years in twenty countries (including 14 low-and middle-income countries and six high-income countries) in 2015 and management factors, support, decentralized management, referral system, and health service packages were identified as the most important factors affecting the centers providing the health services for adolescents and youth. Also, Parkas (29) also identified the skills and training of skilled manpower in counseling and health service packages as the most important factor affecting the improvement of health services' management of adolescents. Saratov et al. (30) also identified the provision of health service packages containing counseling and screening tests, and Claire et al. (31) mentioned the institutionalization of decentralized and state policies in health services' management of adolescent health, which are consistent with our study. The reason for the consistency in these studies conducted in Asian and African countries and our study is the lack of decentralized

management in the field of adolescent and youth health services in Iran, which shows the importance of this issue.

In this study, wide access to adolescent and youth emergency centers, 24 hours a day is considered as an important factor in the health services' management of adolescents and youth and it is necessary to train the staff which is well performed in all countries (32,33). According to a survey of experts, the centralized management of adolescents and youth health services is known to be effective in Iran, but planning needs to be flexible and tailored to local needs (34). This is highly considered in the studied countries and even training programs are determined based on the conditions of each region, but they are almost the same across Iran. Referral system and grading system are also known to be effective in the health services' management of adolescents and youth, and the grading system is highly considered in Australia, the United Kingdom, and Canada and there is a triple grading system in Iran, but high-level service health centers are not evenly distributed across Iran. In this study, a wide variety of centers providing adolescent and youth health services is observed in all countries. Home Visits, hospitals, and clinics for adolescents and youth make it possible for them to choose the service center the way they want, and feel pleased and satisfied, and have better access to health services. In Iran, only health service centers usually provide such services. Thus, a wide variety of centers providing adolescent and youth health services and access to them can have an impact on the optimal management of these services, which is consistent with the results of Claire et al, (31), indicating the importance of the issue. The supportive government policies are known to be very effective in developing and implementing the laws related to the health services' management of adolescents and youth. It is also essential to perform retraining programs for health service staff and specialists which can lead to updating information and knowledge and improve the quality of care. This issue has received more attention in selected developed countries than Iran. Distribution of health service staff is one of the factors affecting everyone's access to adolescent and youth health services. Facilities should be considered to encourage specialists and health service staff to provide health services in remote and marginal areas, and an assessment of selected developed countries showed that this is consistent with the results of Parkas's study (29). The results of the present study demonstrated that integrated information and electronic patient record (EPR) systems supervised by the government can improve the quality of adolescent and youth health services, which is consistent with the findings of Saratov (30). An electronic health record (EHR) and the management of information received from the centers providing the health services can lead to the improvement of planning in a country's macro policy, which is of great importance and justifies the consistency of this study with Saratov's study. In the present study, for all countries, the financial

resources for the health services' management of adolescents and youth are provided by basic and supplementary insurance, the private sector, the NGOs, charitable organizations and the local organizations, including municipalities and the churches, which is consistent with the results of previous studies (29, 31, 35). Financial resources can play a key role in all models developed for the health services' management of adolescents and youth. From the perspective of experts, purchase of the equipment is the last factor affecting the health services' management of services of adolescents and youth, which is consistent with the results of previous studies (27 - 29). The need for the provision of equipment for the health services' management of adolescents and youth in Iran and the above-mentioned studies may be due to lack of financial resources in the last factor affecting the health services' management of adolescents and youth.

## **5. Conclusion**

The results of the present study demonstrated that health service delivery management, health service packages, human and financial resources, data & statistics information resources, the purchase and distribution of equipment are the factors affecting the health services' management of adolescents and youth. Considering the appropriate fit of the fit indicators for the developed model, and the adolescent and youth health status in Iran, it is necessary to pay special attention to factors affecting the health services' management of adolescents and youth. The results of the present study can improve the quality of the health services' management of adolescents and youth. It seems that with macro planning at the level of the Ministry of Health and Medical Education, The Ministry of Youth Affairs and Sports and Ministry of Education by considering the dimensions of the model developed for the health services' management of adolescent and youth in the health service center improvement can be made in the quality of the health services' management of adolescent and youth in Iran.

## **Limitations**

The limitation of this study was the lack of access to the full text of some articles and some of the information banks.

## **Executive Recommendations**

According to the results of this study and the presented model, the researcher believes that there are factors that can be effective in implementing this model and achieving its goals. It is hoped

that these suggestions will help the executive officials of the country's health sector in the correct implementation of the current model and ultimately improve the quality of adolescent and youth health services.

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