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Content Analysis of the Science Textbooks of Iranian Junior High School Course in terms of the Components of Health Education

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Abstract

Background

Providing healthcare for students is one of the primary duties of the states. This study aimed to analyze the contents of the science textbooks of Junior High School course in terms of the components of health education in Iran.

Materials and Methods

This descriptive study was conducted through content analysis. To collect data, a researcher-made check list including: physical health, nutritional health, the environment, environmental health, family health, accidents and safety, mobility, physical education, mental health, prevention of risky behavior, control and prevention of diseases, disabilities, public health and school health, was used. The samples were the science textbooks of Junior High School course (7th, 8th and 9th grades). Analysis unit was all pages of the textbooks (texts, pictures and exercises). Descriptive method (frequency table, percentage, mean and standard deviation [SD]) was used to analyze the data and non-parametric Chi-square test was used to investigate the probable significant differences between the components.

Results

The results showed that the authors of sciences textbooks of Junior High School course have paid most attention to the component of control and prevention of diseases (21.10%) and have paid no attention to the component of "mental health". Also, there were significant differences among the components of physical health, family health, the environment and environmental health in terms of to be addressed in the science textbooks of Junior High School ($P<0.05$).

Conclusion

It can be generally concluded that the health education components are not equally covered in the sciences textbooks of Junior High School course and some of them either have not received any attention or just a little.

Key Words: Content analysis, Health education, Junior High School course, Textbook.

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1- INTRODUCTION

Health is considered as one of the basic and indiscriminate rights of every human being and in the views of all nations and schools the health has been considered as one of the most important and the most basic human rights and needs (1). One of the striking features of ancient Persian civilization is the importance of medical sciences. One testimony to this is the foundation of Gondishapur University 1745 years ago in the south-western Persia (Iran) (2). According to the Constitution of the World Health Organization (WHO): enjoyment of the highest attainable and logic standards of health regardless of race, religion, political beliefs and economic and social status, is the inalienable right of every human being. The method chosen by any person to deal with his/her health depends largely on the health literacy and increase in health literacy of different groups of people needs to develop scientific and rational health education in the country (2).

Health education includes any activity that is done to increase the health knowledge and aims to promote the health and prevent the disease through education and training, and on the other hand, health has been raised in the culture of Islam as a value with explanations such as: top blessings, valuable blessing, blessing of the world, a blessing without which it is not good in the world, a blessing that man is incapable to thank for it, hidden assets and tens of other descriptions and also, its importance has been noted and raised as an important question of the Lord in the form of various prayers and taught to those who believe in God (3). In order to increase the student's learning and health level, hygienic environmental factors (color, light, open space, noise, chairs, etc.) should be considered in order to the content of textbooks (4-10). Considering academic motivations and mental health of students is also of particular importance (11-12). At a time when the mechanical life surrounds the human, it is necessary that the humans are educated in the fields of behavior, health and safety to prevent the disease and health care that the schools and the courses are the best base of such educations in the various countries, especially in Iran. So, educational systems, especially primary education, will play an important role in the formation of health society with health individuals, for this reason, the schools must engage students in activities and contents which enhance their understanding of health and disease and related concepts, because many health-related problems that occur at older age, all originate in previous ages (13). National constitutions, including the constitution of the Islamic Republic of Iran and international laws and treaties emphasize on the development of health in the world (2). Given that the curriculum is centralized in Iran, textbook is a product of curriculum process, also, many researchers have considered the textbook as one of the most efficient and effective teaching media which can provide the context for learning and self-learning (14).

Izadi et al. (2010), in their study with the aim of analyzing the contents of the textbooks in primary schools based on the components of health education such as skin care, oral health, sports and physical activity, nutrition, paying attention to the diseases, AIDS and smoking and drugs, showed that the component of sports and physical activity was considered more than other components and the least attention was related to the component of paying attention to the diseases; moreover, the indices of above components have been not considered in a balanced way and the textbooks have not covered the components of health education equally (15). Hakimzadeh (2007) analyzed the contents of the social sciences, geography, sciences, literature and Islamic insight textbooks related to the 7^{th}, 8^{th} and 9^{th}

grades in terms of the concepts of the world affairs. In this study, he studied on health education in addition to other concepts (development education, environmental education, education for peace, equality and human rights, multicultural education, citizenship education, media and information technology education) and concluded that concept of environmental and multicultural education have been considered more than expected and teaching the components of peace, equality, health and human rights has been considered less than expected (16). Hosseini Yazdi et al. (2015) in their study entitled "component analysis of the science textbooks of elementary school in terms of addressing different kinds of equations" concluded that in the science textbook of first grade, the convergent and individual-oriented questions have the highest frequency and the result-oriented questions have the lowest frequency. In the science textbook of 2nd grade, the convergent and background questions have the highest frequency and the result-oriented questions have the lowest frequency. In the science textbook of 3rd and 4th grades, the convergent and scientific questions have the highest frequency and the result-oriented questions have the lowest frequency. In the science textbook of 5th grade, the convergent and topic-oriented questions have the highest frequency and the result-oriented and predictive questions have the lowest frequency. Also, the results of Chi-square test showed that there are significant differences between the observed and expected values of training question types in all science textbooks of elementary school (17).

Tu et al. (2002), in their study on the health and nutrition status of school-age children, concluded that there are slight differences between the age distribution of girls and boys, race, parents' education level and the participation rate (18). Ackermann, in his study entitled "health education in the schools of the capital of Australia", concluded that the health education in the West is concerned with the issue of life quality at both individual and social levels (19). Salehi Omran et al. (2011), in his study entitled "Analysis of Health Information Components in School Textbooks (7th, 8th and 9th grades) concluded that there is highest and lowest frequency and importance coefficient were related to sports and physical activity (14 cases) and smoking and drug abuse (no cases were found), respectively (20).

Amini et al. (2014), conducted a study on examining and evaluating the extent to which the issue of natural environment is paid attention to in the science and social education textbooks of the Junior High School course; they investigated the two parts of pictures and texts in the aforementioned textbooks and concluded that the indicators and components of natural environment are little taken into account therein. Thus, substantial modifications and changes are needed to be made in this regard since the textbooks play a great role and are of high importance in the State educational system (21). Investigating the contents of textbooks is necessary due to various reasons such as investigating their compliance with the goals of curriculum or identify the strengths and weaknesses of the textbooks and the changes in the textbooks (22). This investigation can be done in different ways that content analysis is one of the most common ways and also one of the most widely used research methods in social, behavioral and humanities studies. So, content analysis, provide the correct design method for managers, planners and authors of textbooks. This can help to clarify the issue and the potential strengths and weaknesses of the textbooks to be corrected and also propose the possible changes in the contents in accordance with

the determined objectives and scientific principles and also make it clear that to what extent that textbook is in the line with the objectives of national curriculum or at what level it is in terms of international standards. Given the importance mentioned, addressing the issues of health and the attention paid to it in the textbook is necessary; because it can be realized that how much the studied books are close to the standards of World Health Organization in terms of health education.

Also, familiarizing the children of different ages with hygiene and health through science textbooks is essential that they are able to survive in the current situation of the world are full of various diseases in addition to earning the ability for optimal implementation of health programs, so, given the changes in the science textbooks of junior high school and also, their new compilation in Iran, this research gap makes the necessity and importance of this research clear more than ever. In this regard, this study intends to analyze the content of science textbooks of the junior high school course based on the components of health education, including physical health, nutritional health, the environment, environmental health, family health, accidents and safety, mobility, physical education, mental health, prevention of risky behavior, control and prevention of diseases, disabilities, public health and school health and investigate the presence of each of these concepts in the science textbooks of junior high school course (7^{th}, 8^{th} and 9^{th} grades).

2- MATERIALS AND METHODS

This descriptive study was an applied research in terms of goal and it is a qualitative content analysis in terms of method. Analysis unit was all pages of the textbooks (texts, pictures and exercises), including 450 pages. In this study, 12 components of health education, including physical health, nutritional health, the environment, environmental health, family health, accidents and safety, mobility, physical education, mental health, prevention of risky behavior, control and prevention of diseases, disabilities, public health and school health were investigated. The data was collected by checklist (of health education components) including the components of physical health, nutritional health, the environment, environmental health, family health, accidents and safety, mobility, physical education, mental health, prevention of risky behavior, control and prevention of diseases, disabilities, public health and school health.

This checklist was developed by the use of previous studies on the indices and components, the viewpoints of experts in health, teachers of science textbooks and the book "A comprehensive program of health education in schools from preschool course to the end of pre-university course" (1). Its validity was determined by experts in education. The reliability of the tools was calculated by William Scott formula and it was estimated equal to 85%. So, the components have the required validity and reliability. Population was the science textbooks of the junior high school course (7^{th}, 8^{th} and 9^{th} grades), including 45 chapters, in the academic year 2015. The science textbook of 7^{th} grade includes 149 pages, the science textbook of 8^{th} grade includes 144 paged and the one of 9^{th} grade includes 154 pages which are listed in **Table.1**.

The sample of this study includes the science textbooks of junior high school course in the academic year 2014 to 2015. Firstly, the measurement indices of health education components were identified; then the data was classified and analyzed by the use of descriptive statistics. Attention to each of the health education components and also the significant differences between the components in the science textbooks of junior high school

course were investigated. Descriptive method (frequency table, percentage, mean and standard deviation [SD]) and non-parametric Chi-square test (X^2) were used to analyze the data.

Table-1: Research population

Grade	Textbook/publication year	Number of courses	Number of numbered pages	Number of analyzed pages
7th	Science	15	152	152
8th	Science	15	144	144
9th	Science	15	154	154
Total		45	450	450

3- RESULTS

The results of the content analysis of all the pages of the science textbooks, including 45 chapters and 450 pages, showed that 218 cases on the contents of health education have been referred which were distributed in 12 general concepts [physical health (27 cases), nutritional health (38 cases), the environment (31 cases), environmental health (35 cases), family health (4 cases), events and safety (8 cases), mobility and physical education (10 cases), mental health (no cases), prevention of risky behavior (4 cases), control and prevention of diseases (46 case), disabilities (2 cases), public health and school health (4 cases).

Also, the results of the content analysis of all the pages of the science textbook (7^{th} grades), including 15 chapters and 152 pages showed that 73 cases on the contents of health education have been referred which were distributed in 12 general concepts (physical health (16.44%), nutritional health (23.29%), the environment (15.06%), environmental health (20.55%), family health (0), events and safety (6.85%), mobility and physical education (2.74%), mental health (0), prevention of risky behavior (0), control and prevention of diseases (13.70%), disabilities (0), public health and school health (1.37%). Also, the results of the content analysis of all the pages of the science textbook (8^{th} grades), including 15 chapters and 144 pages, showed that 70 cases on the contents of health education have been referred which were distributed in 12 general concepts (physical health (20%), nutritional health (22.86%), the environment (10%), environmental health (4.29%), family health (0), events and safety (1.43%), mobility and physical education (8.57%), mental health (0), prevention of risky behavior (4.28%), control and prevention of diseases (28.57%), disabilities (0), public health and school health (0).

Also, the results of the content analysis of all the pages of the science textbook (9^{th} grades), including 15 chapters and 154 pages, showed that 75 cases on the contents of health education have been referred which were distributed in 12 general concepts (physical health (1.33%), nutritional health (6.67%), the environment (29.33%), environmental health (22.67%), family health (5.33), events and safety (2.67%), mobility and physical education (2.67%), mental health (0), prevention of risky behavior (1.33%), control and prevention of diseases (21.33%), disabilities (2.67%), public health and school health (4%).

In total, the results showed that the components of health education have been paid attention at different levels; so that the most attention has been paid to the component of control and prevention of

diseases (21.10%) and the mental health component has not been paid any attention (**Tables 2-5**) and (**Figures 1-3)**. There were significant differences among the components of physical health, family health, the environment and environmental health in terms of to be addressed in the science textbooks of junior high school (P<0.05). Also, There is no significant differences among the components of nutritional health, accidents and safety, mobility and physical education, mental health, prevention of risky behavior, control and prevention of diseases, disabilities, public health and school health in terms of to be addressed in the science textbooks of junior high school. (P>0.05).

Table-2: Frequency distribution of the health education components in the science textbooks of the 7th grade of the Junior High School course

Book Components	Texts	Pictures	Exercises	Number (Percentage)
Physical health	2	3	7	12(16.44)
Nutritional health	5	6	6	17(23.29)
The environment	3	5	3	11(15.06)
Environmental health	5	3	7	15(20.55)
Family health	0	0	0	0
Accidents and safety	3	1	1	5(6.85)
Mobility and physical education	0	0	2	2(2.74)
Mental health	0	0	0	0
Prevention of risky behaviors	0	0	0	0
Control and prevention of diseases	6	0	4	10(13.70)
Disabilities	0	0	0	0
Public and school health	0	0	0	1(1.37)
Total	24	18	30	73(100)

Table-3: Frequency distribution of the health education components in the science textbooks of the 8th grade of the Junior High School course

Book Components	Texts	Pictures	Exercises	Number (Percentage)
Physical health	6	2	6	14(20)
Nutritional health	10	2	4	16(22.86)
The environment	2	4	1	7(10)
Environmental health	3	0	0	3(4.29)
Family health	0	0		0
Accidents and safety	1	0	0	1(1.43)
Mobility and physical education	5	1	0	6(8.57)
Mental health	0	0	0	0
Prevention of risky behaviors	3	0	0	3(4.28)
Control and prevention of diseases	13	2	5	20(28.57)
Disabilities	0	0	0	0
Public and school health	0	0	0	0
Total	43	11	16	70(100)

Table-4: Frequency distribution of the health education components in the science textbooks of the 9th grade of the junior high school course

Book Components	Texts	Pictures	Exercises	Number (Percentage)
Physical health	1	0	0	1(1.33)
Nutritional health	5	0	1	5(6.67)
The environment	11	4	7	22(29.33)
Environmental health	14	1	2	17(22.67)
Family health	2	0	2	4(5.33)
Accidents and safety	2	0	0	2(2.67)
Mobility and physical education	1	1	0	2(2.67)
Mental health	0	0	0	0
Prevention of risky behaviors	1	0	0	1(1.33)
Control and prevention of diseases	14	1	1	16(21.33)
Disabilities	2	0	0	2(2.67)
Public and school health	2	0	1	3(4)
Total	55	7	14	75(100)

Table-5: Frequency distribution of the health education components in the science textbooks of junior high school course (7th, 8th and 9th grades)

Book Components	Texts	Pictures	Exercises	Number (Percentage)	P-value
Physical health	9	5	13	27(12.39)	0.004
Nutritional health	20	8	11	39(17.89)	0.300
The environment	16	13	11	40(18.35)	0.011
Environmental health	22	4	9	35(16.05)	0.007
Family health	2	0	2	4(1.83)	0.042
Accidents and safety	6	1	1	8(3.67)	0. 197
Mobility and physical education	6	2	2	10(4.59)	0.202
Mental health	0	0	0	0	
Prevention of risky behaviors	4	0	0	4(1.83)	0.317
Control and prevention of diseases	33	3	10	46(21.10)	0.192
Disabilities	2	0	0	2(0.92)	0.341
Public and school health	2	0	1	3(1.38)	0.317
Total	122	36	60	218(100%)	

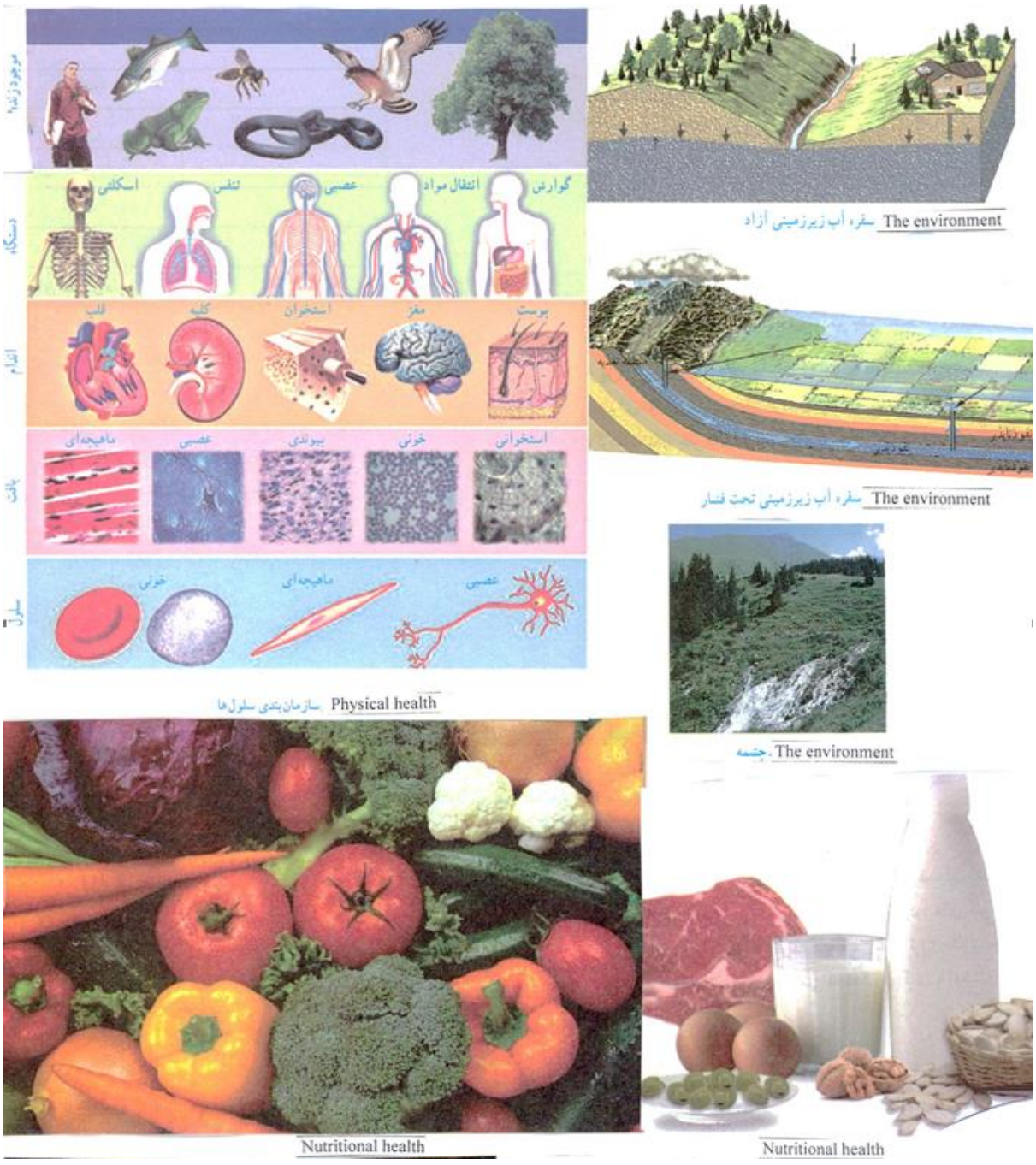

Fig.1: Pictures of the health education components in the science textbook of 7th grade of the Jounior High School course

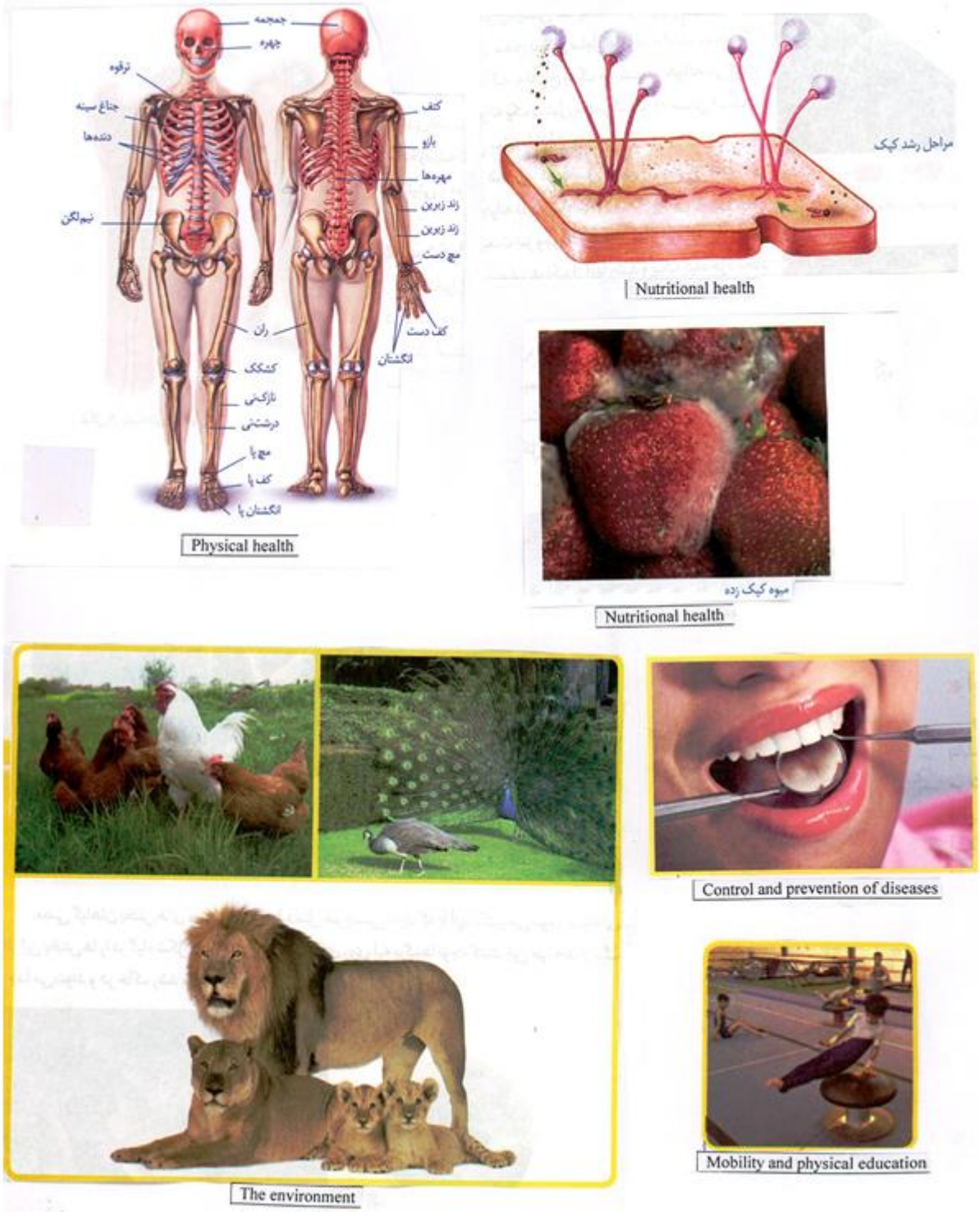

Fig.2: Pictures of the health education components in the science textbook of 8th grade of the Jounior High School course

Fig.3: Pictures of the health education components in the science textbook of 9th grade of the Jounior High School course

4- DISCUSSION

A general overview of the science textbooks of Iranian Junior High School course (7th, 8th ,and 9th grades) regarding the consideration of health education component reveals that the extent to which each of the health education components is taken into consideration differs across educational courses. It is such that, in the 7th grade, the most attention is paid to the components 'nutritional health', 'environmental health', and 'physical health', but not any to the family health, mental health and disabilities. The components mostly paid attention to in the 8th grade include control and prevention of diseases, nutritional health, and physical health whereas the family health, mental health and disabilities, public health, and

school health have not been included therein. Furthermore, with respect to the 9th grade, the environment, environmental health, and control and prevention of diseases have received the most attention while the mental health has not received any attention. It can be generally concluded that the health education components are not equally covered in the science textbooks of Junior High School course and some of them either have not received any attention or just a little. As such, the present study is consistent with the results of the studies conducted by Izadi et al. (15), Hakimzadeh et al. (16), Hosseini Yazdi et al. (17), Salehi Omran et al. (20), and Amini et al. (21).

Based on the present scientific research and documents, the ultimate goal of the health education components is to educate and develop students as well as make them committed and responsible citizens and adults regarding the health education components. As such, the major emphasis and orientation of the health education components are to make fundamental changes in the three fields, knowledge, insight, and skill, as the main constructive aspects of students' learning. As a matter of fact, changing the three mentioned fields is the central idea of the health education components and the relevant curriculum. Textbooks are practically used as the most essential instrument and medium of instruction to convey concepts, meanings, and values to students in all educational systems, specifically in centralized educational structures. In fact, the content of textbooks is regarded as an important curriculum element and a means of meeting its goals. Moreover, in most educational institutes and particularly in the Elementary school and Junior high school, the materials and subjects included in the textbooks are central to formal teaching and learning. Regarding the rapid technological development and advancements as well as their challenges and harmful consequences on citizens' health in the recent years, the health education components are taken into consideration as an educational realm needing to be more extensively included in the textbooks. The emphasis on the inclusion of the health education components into the textbook format is especially because of the important role these books play as the basic references for teaching in the State educational system. This does not obviously mean to overlook the role and effectiveness of the other educational curricula including learning activities, equipment and facilities, educational environment, teachers' teaching methodologies, etc. on the health education.

4-1. Suggestions

The results show that some components of health education have been paid attention less or have been paid no attention, so, it is recommended to consider these neglected components and to include them in the textbooks to help to foster the healthy people. It is recommended to researchers who are interested in the field of health education, to address the components of health education separately due to the vastness of the subject.

It is recommended to develop and compile non-academic and supplementary (teaching aid) books on the health education and its components. It is recommended to develop and plan the extracurricular activities based on the components of health education. Since teachers and other education professionals are the main factors affecting the educational process, it is suggested to do other research on the importance of familiarizing them with the methods and basis of health education. It is recommended to consider a special place for health education in formal and informal programs of the schools. It is necessary to compile and write the content of the science textbooks in a way the students

can question, investigate, and analyze their individual and group health problems; hence, they will be able to achieve a comprehensive understanding of the issues and problems related to health. A part of the educational system functioning, with respect to the health education components, deals with developing students' individual and group sense of responsibility regarding their own physical and mental health. Therefore, it is recommended that the content of the textbooks should pay special attention to the students' citizenship development and advancements, particularly their personal and social responsibilities with regard to the health education components.

Regarding the rapid technological development and advancements as well as their challenges and harmful consequences on citizens' health, it is recommended to provide other educational resources for the students in addition to writing and compiling textbooks specific to the health education components; these educational resource may include pamphlets, booklets, and educational software enhancing the textbook content and reflecting the emerging problems. It is recommended to make substantial changes in the teaching-learning methods in line with compiling and writing textbooks related to the health education components. It demands a substantial change in the teacher training methods and the in-service training courses for teachers. It is recommended to organize the content of the books such that the learners be able to apply what they have learned to the real life and solve their health problems.

4-2. Limitations of the study

There is no standard and appropriate checklist for content analysis of textbooks. There is no similar background and research done in the past.

5- CONCLUSION

Books are one the main tools of learning in educational setting. Nowadays with the expansion of technology, new high quality images are widespread in the textbooks. In every educational setting at times new books appeared. It can be generally concluded that the health education components are not equally covered in the science textbooks of Junior High School course. Meanwhile, it is worth noting that the present approach to the Iranian educational system mostly presents a score-oriented and cognitive-based education, the successfulness criterion for which is passing the university entrance exam and entering university. Therefore, it does not basically provide opportunities for paying attention to the health facts and for effectively enabling learners to confront the emerging health problems and challenges. As such, being in line with their own traditional functions, the schools and textbooks are still seeking to convey a set of specific abstract scientific concepts to students; they are not naturally so flexible to be consistent with the changes and development of the day as well as the new educational functions.

6- CONFLICT OF INTEREST

The authors had not any financial or personal relationships with other people or organizations during the study. So there was no conflict of interests in this article.

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