Arch Iran Med. November 2019;22(11):646-652

http www.aimjournal.ir

ARCHIVES OF IRANIAN MEDICINE

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Original Article

WHO Ending Childhood Obesity and Iran-Ending Childhood Obesity Programs Based on Urban Health Equity Indicators: A Qualitative Content Analysis

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Abstract

Background: The childhood obesity epidemic is one of the most serious global health challenges, and many relevant policies have been designed and implemented. Regarding health equity policy-making, it is important to adopt proper interventional strategies, including childhood obesity policies. The purpose of this study is to assess compliance with the WHO Ending Childhood Obesity (ECHO), and the Iran-Ending Childhood Obesity (IRAN-ECHO) program draft in terms of Urban Health Equity Indicators (UHEIs) in Iran.

Methods: This is a descriptive study, using a directed quantitative content analysis approach to analyze the ECHO report and IRAN-ECHO program draft, based on Iranian UHEI. The UHEI consist of 52 indicators in 5 domains. The frequency of each code in the ECHO report and IRAN-ECHO draft was calculated and analyzed.

Results: In total, 148 and 84 phrases or words in ECHO and IRAN-ECHO were encoded with UHEI concepts. The results showed that the physical activity indicator was the most frequent among indicators in both ECHO (n = 48, 32.43%) and IRAN-ECHO (n = 41, 48.80%). Indicators 28 (prevalence of underweight in children under 5, n = 14, 9.45%) and 19 (use of primary care services, n = 21, 25%) were the next most frequent in ECHO and IRAN-ECHO, respectively.

Conclusion: In this study, ECHO and IRAN-ECHO had high compliance with some UHEI, especially indicators placed in domain 3 (social and human development). It indicates that social and human development plays an important role in preventing and controlling childhood obesity.

Keywords: Content analysis, Health equity, Pediatric obesity

Cite this article as: Ezzeddin N, Eini-Zinab H, Ajami M, Kalantari N, Sheikhi M. WHO Ending Childhood Obesity and Iran-Ending Childhood Obesity Programs based on urban health equity indicators: a qualitative content analysis. Arch Iran Med. 2019;22(11):646–652.

Received: January 22, 2019, Accepted: June 30, 2019, ePublished: November 1, 2019

Introduction

The childhood obesity epidemic is one of the most serious global health challenges in the 21st century for both developed and developing countries.[1] Obesity rates among US children and adolescents aged 2 to 19 years have increased threefold over the past 3 decades.[2] Iran is also one of the countries with a growing childhood obesity trend.[3] Based on a nationwide study conducted in 2011-2012 among Iranian students aged 6-8 years, the prevalence rates of overweight, obese, and abdominally obese were 9.7%, 11.9%, and 19.1%, respectively.[4] The World Health Organization (WHO) considers childhood obesity to have reached an alarming status, one which can affect a child's immediate health, educational attainment and quality of life.[5] Childhood obesity is also associated with certain diseases including type 2 diabetes mellitus, hypertension, dyslipidemia, non-alcoholic fatty liver disease, and obstructive sleep apnea.[6]

Different strategies have been developed and implemented for preventing childhood obesity.[7] Prevention of childhood obesity should involve a cell-to-society, integrative approach that takes into account biology, early child development, home and childcare environments, and public policy.[8] In order to prevent and treat childhood obesity, the WHO established a commission on Ending Childhood Obesity in 2014 to review, build upon and address gaps in existing mandates and strategies. The commission has developed a set of recommendations to tackle childhood obesity in different contexts around the world, and published them in 2016. The WHO approach focuses on life courses for preventing childhood obesity.[5] In this regard, a program entitled the IRAN-Ending Childhood Obesity (IRAN-ECHO)[9] in the framework of the WHO Ending Childhood Obesity (ECHO) report,[5]

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was designed by considering life course dimensions, and was implemented in six provinces of Iran by Sayyari and colleagues. This program contains multicomponent interventions with a population approach (by considering different periods in life) and an individual approach (targeting overweight or obese children or adolescents), and is conducted through intersectoral collaboration among different organizations.[10]

The IRAN-ECHO[9] program emphasizes policies which improve population health and health equity in childhood obesity prevention, as well as the WHO report.[5,10] "Health equity" or "equity in health" implies that ideally, everyone should have a fair opportunity to attain their full health potential and that no one should be disadvantaged from achieving this potential.[11] Social and economic determinants such as education, lifestyle and occupational status can affect the health of the population.[12] Therefore, it is important that the health sector targets social determinants of health (SDH), in addition to its traditional roles.[13] For this purpose, intersectoral action is needed.[14]

The indicators of health equity measure the outcome of the determinants of social health.[15] In recent years, many countries have been developing and providing tools for evaluating social determinants and health equity.[16,17] In Iran, the urban health equity indicators (UHEIs) were developed with the participation of a large group of healthcare experts, and by conducting multiple cross-sectoral meetings; it was approved by the Cabinet of Ministers on January 2, 2011. The UHEI consist of 52 indicators in 5 domains related to inequalities in health and SDH, namely physical and infrastructure, human and social development, economic development, governance, and health.[18]

Policy-makers will adopt proper interventions in society by considering the issue of health equity.[13] Considering health equity in childhood obesity policies is important, as well, because studies show that there are socio-economic, racial and ethnic disparities related to childhood obesity.[19,20] Policies which focus on health equity, therefore, are more successful in helping children.[21] Given the importance of considering the health equity in policies including childhood obesity prevention policies,[19,20] the purpose of the current study is to use UHEI, which are designed for assessing health equity in the Iranian context, in order to evaluate the health equity in the ECHO report[5] and IRAN-ECHO program draft.[9] In this regard, the following questions are posed:

Can policies to prevent and control childhood obesity (based on the WHO proposals[5]) be effective in improving UHEI[18] in the short- and long-term? Alternatively, can UHEI[18] policies be effective in preventing and controlling childhood obesity? When policy-makers deal with this health problem through a health equity framework, will the chances of minimizing inequalities in childhood obesity improve?[22]

Materials and Methods

When the WHO published the ECHO program, it invited governments from all over the world to adopt and implement the recommended policies.[5] IRAN-ECHO is the only national program which has been planned based on the ECHO program.[9] Given that, the IRAN-ECHO program is currently being implemented in the country in order to counter childhood obesity. This descriptive study was done, using a directed quantitative content analysis approach to analyze compliance with the content of the final report of the ECHO,[5] and the IRAN-ECHO program draft[9] with UHEI[18] in Iran. The UHEI[18] consist of 52 indicators in 5 domains, as mentioned in Table 1.[18] These findings can provide a comparison between these two programs for policy makers and planners. Therefore, the analyzed programs in the current study, were selected purposely.

The ECHO program was downloaded directly from the WHO website (http://www.who.int/end-childhood-obesity/en/), and the IRAN-ECHO program was taken directly from the Ministry of Health and Medical Education, Office of Community Nutrition. In this study, data were manually extracted. For this purpose, every word and/or phrase of ECHO[5] and IRAN-ECHO[9] directly referring to health equity indicators was assigned a score of 1 point, otherwise it was not scored. Indirect or overall references were counted and reported separately.

The frequency of every code in ECHO[5] and IRAN-ECHO[9] was calculated, and bar graphs were drawn using Excel 2013.

In total, there are 52 UHEI,[18] but some indicators were combined due to their closely linked concepts in the codes observed, including: a. Indicators 13 and 14 (codes such as: negative psychological effects, psychological health consequences, depression, mental health issues, etc.); b. Indicators 21 and 22, which indicate access to safe drinking water; and c. Indicators 42 and 43, which relate to smoking and drug abuse. It should be noted that indicator 29 was excluded, because the assessed programs were initially related to obesity, and it is expected that the prevalence of adult obesity will decrease through the program's prevention and control mechanisms.

Indicator 5 included codes such as heart disease, cardiovascular disease, gestational hypertension and other related codes. Although indicators such as 5, 7, 11, 12, 13 and 14 are non-communicable disease (NCDs), they were counted according to the exact name of the disease. The following sentences are provided as examples for encoding:

"Physical activity can reduce the risk of diabetes, cardiovascular disease and cancers, and improve children's ability to learn, their mental health and well-being" (ECHO report).[5]

The above sentence includes UHEI[18] codes 7, 5, 11, 13, 14, and 36, respectively.

"The health consequences of overweight and obesity in

Table 1. List of 52 Health Equity Indicators in Iran

Domain	*n*	Indicators
Health	1	Infant mortality rate
	2	Neonatal mortality rate
	3	Under 5 mortality rate
	4	Maternal mortality rate
	5	Mortality rate resulting from coronary disease
	6	Life expectancy at birth
	7	Diabetes incidence
	8	Tuberculosis
	9	Traffic injuries (inside and outside city)
	10	Non-traffic accidents
	11	Incidence of all kinds of cancers
	12	Osteoporosis incidence among women of 45-65 years old
	13	Mild mental disorders
	14	Severe mental disorders
	15	Committing suicide
	16	DMFT average in children of 12 years old
	17	Access to primary care services
	18	Access to secondary care services
	19	Use of primary care services
	20	Use of secondary care services
Physical environment and infrastructure	21	Public drinking water network
	22	Percentage of desirable cases of drinking water samples in terms of bacteriologic
	23	Percentage of families who have hygienic toilet in their homes according to definition
	24	The portion and percentage of families who have access to drainage systems in their homes
	25	Occupation injuries rate both killer and non-killer
	26	Per capita green space
	27	Number of days without air pollution in a year
Social and human development	28	Prevalence of underweight in under 5 children
	29	Prevalence of over-weight in 15-64 years old population
	30	Inclusive breast feeding for infant under 6 months
	31	Fertility rate under 18 years old and above 35 years old
	32	Prevalence of low birth weight
	33	Literacy rate in 15-49 years old group
	34	Registration rate of 6-year-old children in elementary school
	35	Registration rate of 5 years old children in pre-elementary school
	36	Persistency rate till the end of elementary school
Social and human development	37	Physical activity
	38	Sport facility and space per capita
	39	Incidence of disability both mild and sever cases
	40	Access of disabled people to rehabilitation services
	41	The percentage of women headed families who receive social support
	42	Prevalence of addiction among 13 years old population and older
	43	Incidence of drug abuse
	44	The number of mosques
Economic development	45	Absolute poverty line
	46	Extreme poverty line
	47	Percentage of unemployment
	48	Out of pocket health care payments
Governance	49	Basic insurance coverage
	50	Complementary insurance coverage
	51	Participation in parliament election
	52	Ratio of the number of health staff to population under coverage of urban medical care centers

DMFT: Decayed, Missing, Filled Teeth.

children and adolescents include increased risk of adult obesity, diabetes, cardiovascular disease and cancer in adulthood" (IRAN-ECHO draft).[9]

The above sentence includes UHEI[18] codes 7, 5, and 11, respectively.

Indicator 19 in the ECHO report[5] includes codes such as preventive health services, primary healthcare services, health services delivery and universal health coverage. In IRAN-ECHO,[9] every term or concept related to community health centers was counted. For example, the following sentence from the ECHO report[5] was regarded as a code for indicator 19 and a code for indicator 7, respectively:

"Primary health-care services are important for the early detection and management of obesity and its associated complications, such as diabetes" (ECHO report).[5]

The following sentence in the IRAN-ECHO draft[9] was regarded as a code for indicator 19.

"Screening and identification of children and adolescents with overweight and obesity in health houses/health centers, in the form of healthcare reform, in the field of health" (IRAN-ECHO draft).[9]

Indicators 21 and 22, which indicate access to safe drinking water, were found in the following sentence from the ECHO report:[5]

"Ensure access to potable water in schools and sports facilities" (ECHO report).[5]

The above sentence includes indicators 21/22 and 38, respectively.

The codes counted for indicator 28 were childhood undernutrition and malnutrition (including the notion of undernutrition). The following sentence in the ECHO report[5] was regarded as a related code:

"Attempts to deal with undernutrition and stunting during childhood may have led to the unintended consequences of obesity risks for these children" (ECHO report).[5] (This code was not observed in the IRAN-ECHO draft).[9]

Indicator 36 consisted of related phrases such as "educational attainment". For example: "Obesity can affect a child's immediate health, educational attainment and quality of life" (ECHO report).[5]

Phrases or words such as "physical activity", "sport", "exercise," etc. were considered as codes for indicator 37. For example: "Opportunities for physical activity, both in and out of school, have been reduced and more time is spent on screen based and sedentary leisure activities" (ECHO report).[5]

"Educational planning related to proper and balanced nutrition and physical activity in schools" (IRAN-ECHO draft).[9]

Indicator 38 includes the codes related to physical activity/sports facilities, such as the following sentences:

"Increasing the opportunities for safe, appropriate and gender-friendly structured and unstructured physical

activity, both in and out of school, including active transport (walking and cycling), will have positive health, behavioral and educational spill-over effects for all children and adolescents" (ECHO report).[5]

"Providing physical activity infrastructure for overweight and obese children and adolescents, in cooperation with the relevant organizations" (IRAN-ECHO draft).[9]

Indicator 44 is broadly related to civil society, so the code civil society was considered.

"Civil society can play a critical role in bringing social, moral and political pressure on governments to fulfil their commitments" (ECHO report).[5]

"Design and implementation of empowerment projects for local communities on healthy eating and lifestyle improvements and physical activity of children and adolescents" (IRAN-ECHO draft).[9]

The above sentence includes UHEI[18] codes 44 and 37, respectively.

As mentioned above, indicators 42 and 43 relate to smoking and drug abuse combined. The following sentence in the ECHO report[5] represents the related codes:

"Develop clear guidance and support for the promotion of good nutrition, healthy diets and physical activity, and for avoiding the use of and exposure to tobacco, alcohol, drugs and other toxins" (ECHO report).[5]

Healthcare expenditure and economic consequences on individuals were the codes for indicator 48. For example:

"Critically, childhood obesity is a strong predictor of adult obesity, which has well known health and economic consequences, both for individuals and society as a whole" (ECHO report).[5]

To increase the authenticity of the analysis, the entire texts were analyzed and encoded by another expert (a total of two experts). Then, the experts compared their extracted codes and made agreements regarding non-conforming codes. The initial coefficient of agreement between the two coders was 70.73% before discussion about non-conforming codes which increased to 96.69% after the discussion. The following formula[23] was used to calculate the coefficient of agreement before and after discussion (32 items were changed). All the presented findings in the article are provided after the discussion.

$$\frac{\text{No. of agreements} \times 100}{\text{No. of agreements} + \text{No. of disagreements}}$$

Results

Overall, 148 and 84 phrases or words which indicated UHEIs were encoded in ECHO [5] and IRAN-ECHO,[9] and their frequencies are provided in Figures 1 and 2, respectively. The frequency of the encoded domains is also provided in Table 2.

The frequency of NCDs (or chronic diseases) was counted separately, yielding 19 in ECHO[5] and 4 in IRAN-ECHO.[9]

In this study, indicator 37 (physical activity) had the highest frequency in both programs. Following that, indicator 28 (prevalence of underweight in children under 5) in ECHO[5] (n = 14), and indicator 19 (use of primary care services) (n = 21) in the IRAN-ECHO program[9] had the second-most frequencies. In total, Domain 3 (Social and Human Development) of UHEI[18] had an important place in both childhood obesity prevention programs.

With regard to indicator 30, there was emphasis on breastfeeding (not only exclusive breastfeeding) in both programs, although the codes were observed only twice in both the ECHO report[5] and the IRAN-ECHO program.[9] This led to it being repeated 12 and 4 times in ECHO[5] and IRAN-ECHO,[9] respectively. Educational attainment was the code for indicator 36, but there was an indirect code including learning ability (n = 2), which was not counted.

Discussion

In this study, we assessed the compliance of the final report of ECHO,[5] and the IRAN-ECHO program draft[9] with Iranian UHEI[18]. The results of the study show that the physical activity indicator was the most frequent among indicators in both ECHO[5] and IRAN-ECHO.[9] Following

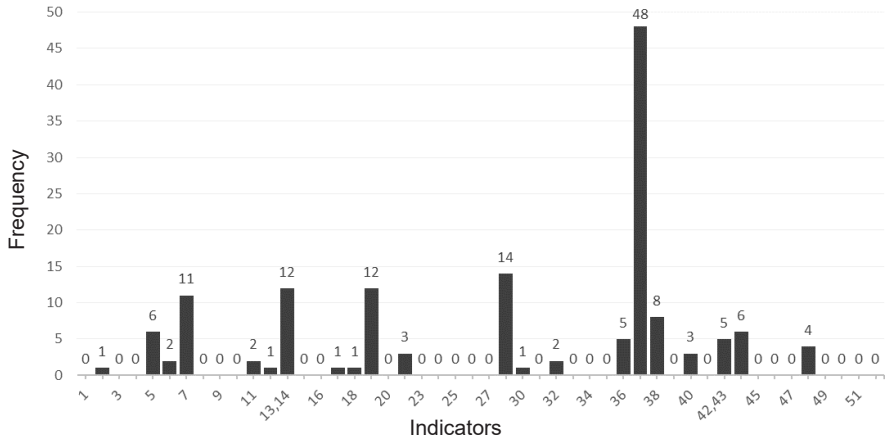

Figure 1. Frequency of UHEI in the ECHO report. UHEI, The Urban Health Equity Indicators; ECHO, Ending Childhood Obesity.

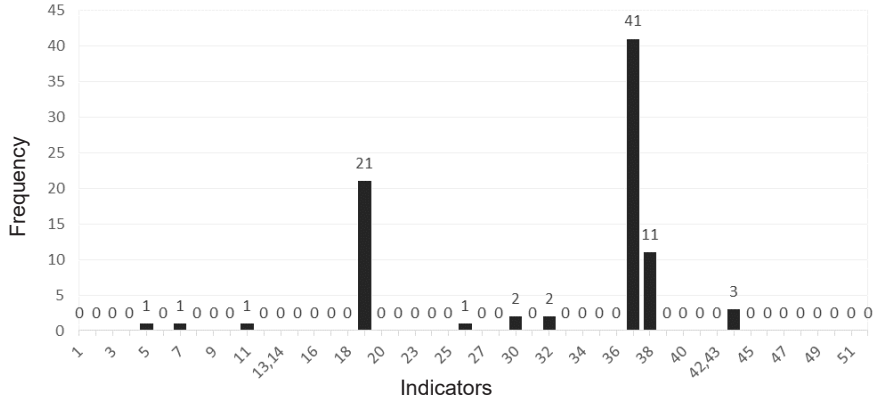

Figure 2. Frequency of UHEI in the IRAN-ECHO Program. UHEI, The Urban Health Equity Indicators; IRAN-ECHO, The Iran-Ending Childhood Obesity.

that, indicators 28 (prevalence of underweight in under 5 children) and 19 (use of primary care services) were the next-most frequent in ECHO[5] and IRAN-ECHO,[9] respectively.

There is no doubt about the health benefits of physical activity.[24] Physical inactivity has many negative health effects for people around the world. Studies have shown that elimination of physical inactivity would remove between 6% and 10% of major NCDs, such as chronic heart disease, type 2 diabetes, and breast and colon cancers, and would also improve life expectancy[25]. Physical activity also has positive benefits for mental health, especially in young people,[26] and can increase academic performance in children.[27] The WHO has reported that 81% of adolescents are insufficiently physically active; therefore, it emphasizes the promotion of physical activity in both the school environment and in society. One suggestion is to create physical activity facilities for all people, including the disabled.[5] Increasing access to green space is associated with increased levels of walking, while lack of access to green space decreases its level. In a study conducted by Pearson et al., the likelihood of overweight or obesity was raised with increasing deprivation of the neighborhood, and reduced access to green space.[28] In another study in France, it was observed that living in neighborhoods with lower socio-economic status (LSES) was associated with higher body mass index (BMI) and waist circumference.[29] In Iran, physical activity, sport facilities, space per capita, and per capita green space are health equity indicators[30]; therefore, policies (like ECHO)[5] that support and promote physical activity and its facilities can lead to strengthening health equity, and ultimately, health among different socio-economic groups.

Use of primary care services is one of the UHEIs in Iran.[30] After content analysis of the IRAN-ECHO[9] program draft, an emphasis on primary health care centers was seen at the individual level in terms of preventing and controlling childhood obesity (n = 21). Presence of a nutritionist at public health centers can be useful and effective in preventing and controlling NCDs by preventing and controlling obesity (especially childhood obesity) through individual and population-based training, and counseling through the life-cycle approach.[10] Therefore, a good distribution of primary care services will contribute to health equity by increasing people's access to health facilities in various aspects, including obesity prevention and control.

In 2015, NCDs were identified by the United Nations as core priorities in the Sustainable Development Goals.[31] Childhood obesity undermines the physical, social and psychological well-being of children, and is considered as an important risk factor for adult obesity and NCDs. Thus, in ECHO[5] and IRAN-ECHO,[9] a major purpose for ending childhood obesity is prevention of NCDs.[5] Based on a WHO report, NCDs are estimated to account for 76% of total deaths in Iran.[32] There is evidence that NCDs are associated with socio-economic disparities.[33] LSES is associated with health inequalities in terms of access to care, increased incident risk of NCDs, and early death.[34] In Iran, NCDs are mentioned in UHEI[18] under numbers 5, 7, 11, 12, 13 and 14.[30] By controlling and decreasing childhood obesity and overweight, through implementing

Table 2. Frequency and Percentage of Urban Health Equity Domains in the ECHO Report and IRAN-ECHO Program Draft

Programs	Domains					Total
	Health	Physical Environment and Infrastructure	Social And Human Development	Economic Development	Governance	
ECHO report	49 (33.1%)	3 (2.02%)	92 (62.16%)	4 (2.70%)	0 (0%)	148(100%)
IRAN-ECHO	24 (28.57%)	1 (2.08%)	59 (70.23%)	0 (0%)	0 (0%)	84(100%)

IRAN-ECHO, the Iran-Ending Childhood Obesity; ECHO, Ending Childhood Obesity.

the IRAN-ECHO program,[9] it is expected that these indicators will improve and health equity will rise.

In this study, some UHEIs[18] had high compliance with the ECHO[5] and IRAN-ECHO,[9] especially indicators placed in domain 3 (Social and human development). This indicates that social and human development plays an important role in preventing and controlling childhood obesity. Regarding domain 1 (Health), although some indicators initially do not seem to have close association with childhood obesity (such as indicators 8, 9, 20, etc.), some of them are associated with childhood obesity despite not being mentioned in the program, such as indicators 16 (DMFT average in children of 12 years old).[35] In both childhood obesity prevention programs, little attention is given to domain 4 (Economic development). There is strong evidence that there is an association between LSES and childhood obesity.[36] Improvements in LSES, therefore, can assist in the success of such childhood prevention programs. Domain 5 may also have an impact on childhood obesity in a similar way. Increased levels of insurance are always associated with economic development, and enhance the standard of living and the livelihood of individuals by improving the economic status of the country.[37]

As shown in Figures 1 and 2, there are more types of Iranian UHEIs in the ECHO report[5] than in the IRAN-ECHO program draft[9] It is therefore suggested that policy-makers consider health equity issues in their country, even beyond the proposed programs, when implementing international programs.

Authors' Contribution

NE participated in the study design, analysis and preparing the manuscript. HE and NK, participated in the study design, and critically reviewing the manuscript. MA participated in the study design and preparing the manuscript, and MSh; in the study analysis. All authors have read and approved the content of the manuscript.

Conflict of Interest Disclosures

The authors declare that there is no conflict of interest.

Ethical Statement

This research does not involve the human subjects.

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