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The Trend of Low Birth Weight and Its Correlation with Inflation Rate from 2016 to 2021 in Rafsanjan, Iran

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Abstract

Background: Iran has been affected by sanctions over the past few decades. The aim of the present study is to explore the effects of economic sanctions and inflation rates on the rate of low birth weight (LBW) in Rafsanjan, a city in southeastern Iran.

Materials and Method: In this descriptive study, we used data obtained from the Iranian maternal and neonatal online system (Iman System). The prevalence of LBW was evaluated in separate times including 2016-2021 on all live births registered in medical centers covered by Rafsanjan University of Medical Sciences.

Results: The rate of LBW decreased from 2016 to 2018 (from 90.4 per 1000 to 79.9 per 1000), but after the sanctions were aggravated in 2018, LBW clearly increased. The rate of LBW in 2018 was 79.9 per 1000 live births, and this rate reached 87.9 per 1000 live births in 2021.

Conclusions: The results of our study showed that the increased prevalence of LBW may be related to sanctions and an increased inflation rate. Policymakers should note that these of political and economic interventions first damage people's health including child and maternal health.

Keywords: Mandatory Programs, Sanctions, Low Birth Weight, Inflation, Economic, Iran.

Introduction

Many countries such as Iran, Syria, Iraq have been affected by inter-national sanctions over the past few decades [1]. Sanctions and embargos as political tools are generally designed to affect trade and economic activities of the target country; however, these actions can influence not only the political and economic aspects of a country, but also social aspects such as population's well-being, public health [2] and mortality of patients [1]. Previous studies have revealed that sanction was one of the most common risk factors associated with low birth weight (LBW) and mortality of infants and children [3-5]. In Iraq, the rate of LBW and infant mortality increased mainly due to maternal malnutrition during the sanctions [3]. All-cause mortality and severe malnutrition were higher during the period of the sanctions in Haiti [5].

Furthermore, the impact of economic embargo on lowering child height was shown in Burundi [6].

On April 2, 2015, the P5+1 group and Iran reached a temporary agreement to lift most of the sanctions. As a result, UN sanctions were lifted on January 16, 2016. But on May 8, 2018, US President Donald Trump announced that the US would withdraw from the Iran nuclear deal and sanctions were reinstated in November 2018 and are still in place [7]. Following the re-imposition of US sanctions against Iran in 2018, unprecedented inflation occurred in Iran's food market that undoubtedly affected the food security of the Iranian people [8]. Due to the limitations in international financial exchanges, a significant increase in the prices of all food groups occurred and the highest inflation rate was observed in vegetable, meat, and fruit groups [8]. It was reported that inaccessibility to high-quality health-care systems and more appropriate nutrition in pregnant women could increase the rate of LBW [9, 10].

About 15% to 20% of all births are LBW globally. In current literature, LBW is influenced by several factors, including genetic, maternal age and education, residency, income, pregnancy care, nutritional factors [11], mental diseases [10] and factors related to the environment such asstress [12]. LBW as a particularly important health outcome is of great importance for several well-established reasons. First, LBW is highly associated with higher prevalence of neonatal mortality, cognitive development, school difficulty, hyperactivity, respiratory distress and asthma. Also it has been shown that the adverse consequences of LBW continue to be influential in late adolescence and adulthood [13, 14].

Up to now, a very limited number of studies evaluated the association of economic sanctions on prevalence of LBW. Since sanctions and increasing inflation rate can immediately affect access to adequate nutrition and medical care and consequently increase the stress level of pregnant women, the aim of the present study was thus to explore the effects of economic sanctions on the rate of low birth weight in Rafsanjan, a city in the southeastern of Iran.

Materials and Methods

This descriptive study investigated the existing information of all live births registered in medical centers covered by Rafsanjan University of Medical Sciences, in the southeastern of Iran. Information was collected from the Iranian maternal and neonatal online system (Iman System), as one of the main sources of information for assessing the health status of Iranian mothers and neonates, designed by the Ministry of Health and Medical Education. The information has been recorded in Iman system since 2016. The Ministry of Health has limited access to personal and demographic information of mothers and children and it has only been allowed access to general statistics to health systems. The prevalence of LBW (weight ≤2500 g) was extracted from Iman System and reported in 1000 live birth.

On January 16, 2016, UN sanctions against Iran were lifted, but were reinstated in November 2018 and are still in place [7]. In present study, the prevalence of LBW was evaluated during 2016-2021 in separate times. This study was approved by the Ethics Committee of Rafsanjan University of Medical Sciences (Ethical codes: ID: IR.RUMS.REC.1398.153).

Results

The inflation rate in Iran from 2013-2021 is shown in fig. 1. Inflation rate was about 11.3% in 2015 which decreased until 2017 (9.64%), but with the re-imposition of US sanctions from 2018, it has been increasing until now, so that the inflation rate was about 30.22% in 2018 which reached about 40.13% in 2021 (Fig. 1).

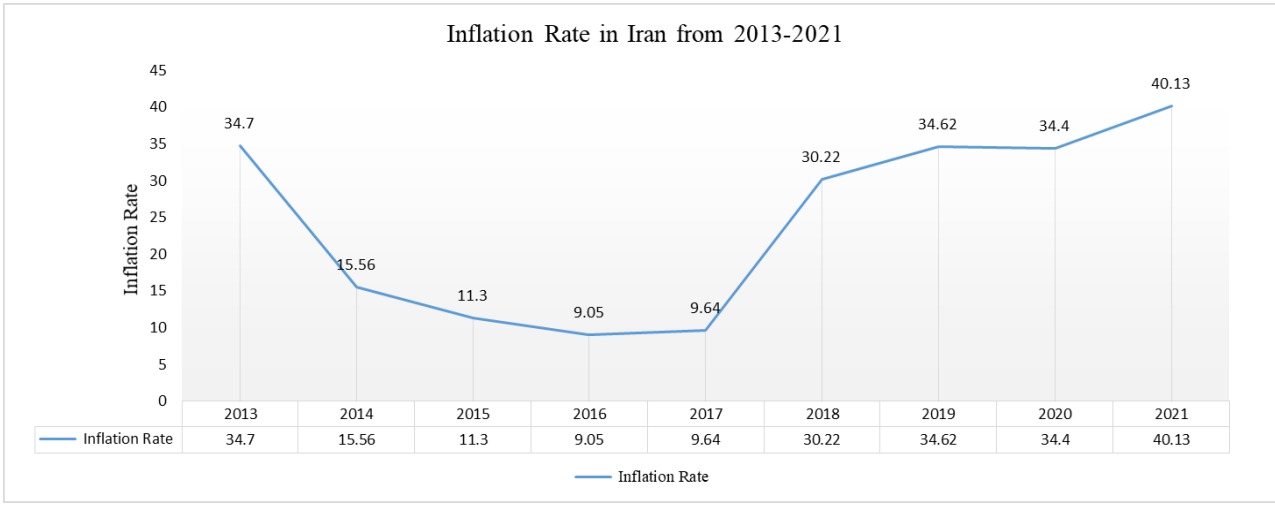

Fig. 1. The inflation rate in Iran from 2013 to 2021.

Fig. 2. presents the rate of LBW from 2016 to 2021. As seen in figure 2, the rate of LBW was decreasing during 2016 to 2018 (from 90.4 per 1000 to 79.9 per 1000), but after the sanctions being aggravated from 2018, LBW clearly increased. The rate of LBW in 2018 was 79.9 per 1000 live births, and this rate reached 87.9 per 1000 live births in 2021.

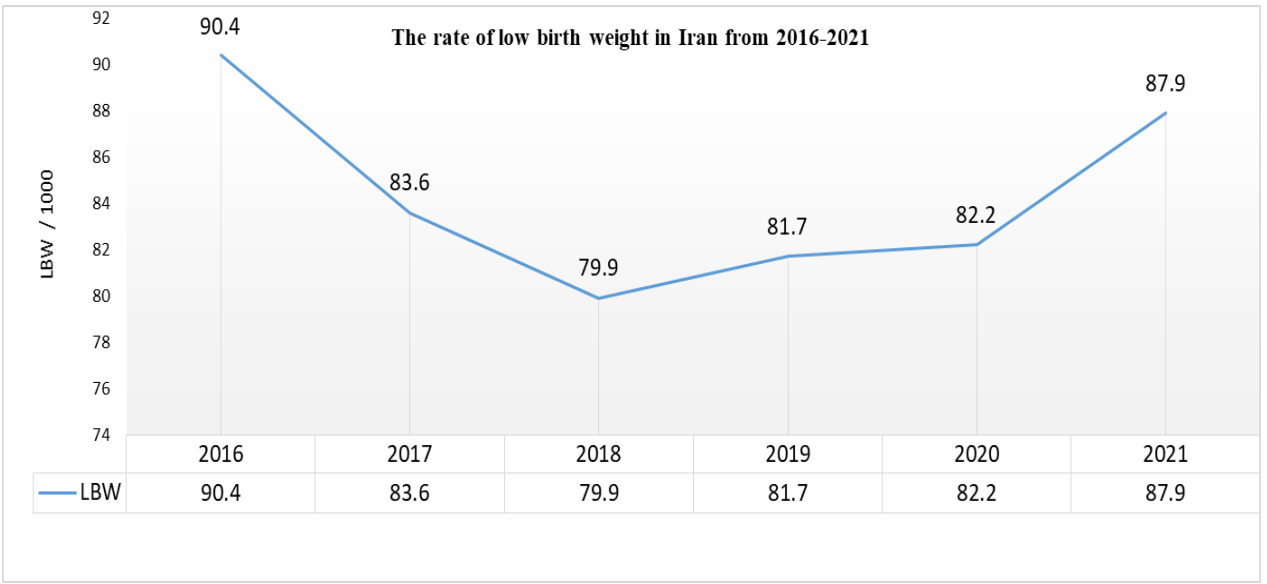

Fig.2. The rate of LBW during 2016 to 2021

Discussion

To the best of our knowledge, this study is the first descriptive study to investigate the impact of economic sanctions on prevalence of LBW among Iranian pregnant mothers. Our study revealed a clear increase in rate of LBW during 2018-2021 compared with 2016-2018. This could be due to poor nutrition, insufficient prenatal care and increased living costs which is probably the result of the negative effects of economic sanctions and increased inflation rate [1]. There are reliable evidences that indicate the adverse effects of sanctions on human rights and various aspects of health, such as impaired access to medicines or medical care for ordinary people particularly vulnerable groups such as women, children, the elderly, the poor and persons with disabilities [15, 16]. The results of the literature review in Iran indicated that humanitarian exemptions did not protect Iranians from the negative effects of sanctions and the sanctions adversely affected accessibility and quality of health services and medicine and decreased the living standards of Iranians [17].

Conflicts and economic shocks have been highlighted as one of the main drivers of food insecurity and malnutrition in the 2022 edition of the State of Food Security and Nutrition in the World (SOFI) [18]. Sanctions were found to be one of the most common risk factors associated with mortality and LBW in Iraq and Haiti [3-5]. Infant mortality in Iraq clearly increased from 47 per 1000 live births during 1984-1989 to 108 per 1000 in 1994-1999, and mortality of children under 5 years increased from 56 to 131 per 1000 live births. The rate of LBW increased from 4% in 1994 to about 25% in 1997, mainly due to maternal malnutrition which was estimated to be up to 70% in 1997 [3]. Using a large child level data set from 69 countries in study of Petrescu et al, the effects of economic sanctions on child health and mortality of children under three years old were accessed. It was shown that being exposed to sanctions resulted in lower infant weight and higher probability of death [4].

Study of Reid et al, on the effects of sanctions on malnutrition and mortality of 1,593 children under 24 months old living in Haiti from 1989 to 1996 showed that despite the continuous availability of preventive services (1989–1996), all-cause mortality and severe malnutrition was higher during the period of the embargo than in the periods before and after the embargo [5]. Furthermore, the impact of civil war and the subsequent economic embargo on lowering child height of children in Burundi was showed in Bundervoet study [6].

Our results have important policy implications. In addition to the many negative effects on government policies, sanctions have a direct and indirect negative impact on Iranian people and their right to health, which is contrary to the universal principles and values of human rights. International diplomacy must urgently consider

Iranians' right to its citizens' health specially the pregnant women and children.

Conclusion

The results of our study showed that increased prevalence of LBW may be related to sanctions and increased inflation rate. Policy makers should note that these types of political and economic interventions first damage people's health including child and maternal health.

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Conflict of interest: None declared.

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