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ORIGINAL ARTICLE

Evaluation of infant mortality before and during COVID-19 pandemic in a district of Istanbul

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Abstract

Objective: The aim of this study is to evaluate infant mortality in 2019 and 2020 years at the local level, considering the beginning of the pandemic period.

Methods: The population of this cross-sectional study are infants registered in a district of Istanbul in 2019 and 2020. Infant mortality rates before and during the COVID-19 pandemic were calculated. Antenatal healthcare and delivery practices in addition to the underlying risk factors for infant deaths were identified and compared by the year of mortality.

Results: Infant mortality rates were calculated as 4.8 and 5.1; neonatal mortality rates were 3.9 and 2.7; postneonatal mortality rates were 0.9 and 2.4 per thousand live births, respectively by the years. No statistically significant difference was found between maternal and infant characteristics of the two years. The number of pregnancy follow-up records was significantly higher for the infants that died in 2020 compared to 2019. Yet, there wasn't any difference in number of prenatal physician visits.

Conclusion: Increase in the infant mortality rate during the pandemic compared to the pre-pandemic period is due to postneonatal mortality. The increase in postneonatal mortality is related to deaths caused by infections. This should be investigated with the characteristics of infants and healthcare accessibility features. No disruption was identified in access to antenatal care in cases of infant mortality during the research period. This continuity in health services must be preserved. Our experience during the study revealed a room for improvement in data access on always-important public health indicators for evidence-based decision-making.

Keywords: Infant Mortality, COVID-19, Prenatal Care, Maternal-Child Health Services, Routinely Collected Health Data

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INTRODUCTION

Infant mortality rate is one of the most important health indicators used to evaluate population health status as well as providing information about maternal and infant health. The infant mortality rate is defined as the number of children deaths under one year of age for every 1,000 live births. The infant mortality rate has two components: the neonatal mortality rate, which refers to the number of infant deaths in the first four weeks of their life per 1000 live births, and the post-neonatal mortality rate, which includes the remaining deaths after the first four weeks.[1] High infant mortality rate is closely related to low birth weight and premature birth besides child healthcare services during infancy.[2] According to CDC (Centers for Disease Control and Prevention) the five leading causes of infant death in 2020 are birth defects, preterm birth and low birth weight, sudden infant death syndrome, injuries, and maternal pregnancy complications.[1] In 2019, WHO (World Health Organization) reported preterm birth, childbirth-related complications (birth asphyxia or lack of breathing at birth), infections, and birth defects caused most neonatal deaths.[2] Low birth weight can be caused by many factors, especially socioeconomic status, low education level, childbearing in the very early or late stages of the reproductive years, and malnutrition. Pregnancy follow-ups play an important role in providing the necessary care to pregnant women and reducing the risks, helping to prevent low birth weight and other undesirable consequences of pregnancy.[3]

Negative effects of new or re-emerging infections on pregnant women were observed during the H1N1 influenza epidemic in 2009 and the Zika virus outbreak in 2015.[4] During the COVID-19 pandemic, it is stated that pregnant women can have the disease severely, especially if they have underlying risk factors such as advanced age, overweight, hypertension, and diabetes, and the need for intensive care may develop more frequently than women who are not pregnant at reproductive age.[5] Maternal and child health might be neglected during the COVID-19 pandemic due to the allocation of limited resources primarily to those who have high risk of infection, mostly men or elders.[6]

Infant mortality rate had a declining trend in Istanbul, it fell from 11.4 in 2009 to 7.4 in 2019.[7] This was generally attributed to improvement in primary healthcare services. On 10 March 2020, the first confirmed COVID-19 case in Turkey was identified in Istanbul. As a pandemic control measure, the city faced two curfews each lasted approximately three months and had a serious impact on both admission and provision of primary healthcare services throughout 2020.[8]

The aim of this study is to examine infant deaths and the factors affecting these deaths in a district of Istanbul in 2019 and 2020, covering the onset of the COVID-19 pandemic. This study was conducted as the pilot of a national study.

METHOD

This cross-sectional study is conducted at June-July of 2021. The population of the study is all infants registered in a district of Istanbul in 2019 and 2020. Istanbul, the most populated and urbanized city in Türkiye, consists of 39 districts. The population of the district is over half a million. It is one of the developed districts of the province[9], where

many public and private health institutions are located both within and in the nearby districts, and family health centers are common as primary care. Data for the whole population were routinely collected in the district health directorate for infant mortality evaluation and the death registration. The total number of births in the district was retrieved from the national institution for statistics (TÜİK=TURKSTAT). Death records in Türkiye are collected in an electronic, real-time, and centralized information system called "Death Reporting System" (in Turkish, Ölüm Bildirim Sistemi). Infant deaths and stillbirths are reported to the public health departments of the provincial and district health directorates. Prenatal and postnatal health records are gathered from healthcare facilities and health information systems for evaluation. "Infant mortality commissions" evaluate each death and stillbirth in terms of prevention and the causes of deaths. They re-evaluate the diagnoses, revise and reorder the ICD codes if it's needed. The evaluation results of the commission at district level are checked at the provincial level and finally at the national level in the Ministry of Health (MoH). In this study, the data retrieved from both information systems and commission records.

The inclusion criteria are infants born alive, died in 2019 and 2020, who were residents of the district. The exclusion criteria are infants with foreign nationality (n=10), whose usual place of residence is outside the district (n=10), and stillbirths (n=49). The independent variable in the study is the year of infant death (2019 vs 2020) and the dependent variables are infant mortality rates along with the maternal and infant characteristics. Data regarding the maternal variables such as age, last menstrual period date, multiple pregnancy status, pregnancy follow-ups, hospital admissions/visits; and variables related to the infant such as sex, date of birth, place of birth, type of birth, week of birth, birth weight, presence of congenital anomaly, date of death, and diagnosis of death are obtained for these dependent variables.

Guidelines of WHO are used for definitions of live birth, stillbirth or fetal death, neonatal period (birth up to 28 complete days), postneonatal period, early neonatal deaths (first 7 days of life, 0-6 days), and late neonatal deaths (7-27 days).[10] Mortality rates are calculated for 1000 live births, and any live birth included in calculation regardless of gestational week. Births that happened at 37 weeks and later are considered as "term", otherwise grouped as "preterm" births. Pregnancies before the age of 18 years and after 35 years are defined as "risky pregnancies". There was no pregnancy before 18 years of age. Birth weights of the infants are classified as low birthweight (≤2500 grams) and normal weight (>2500 grams). Infant mortality causes are classified according to the major cause of death: "Congenital malformations", "Prematurity", "Infections", and "Other". Hospital visits at the day of birth are excluded while calculating the visit numbers during the pregnancy. The number of follow-up visits are obtained from the system where the records are labeled as "pregnancy follow-up" - these may or may not include the visits to a physician (family physician or OB/GYN). The "pregnancy follow-ups" are grouped as "real-time prenatal follow-up" and "statement-based follow-up". Real-time pregnancy follow-up means that the pregnant woman was in the health facility during this follow-up, so it was an in-person

follow-up. Statement-based pregnancy follow-up is the one based on a phone-call with pregnant women, or based on reviewing the health records of the pregnant woman who is seen by another physician, probably by an obstetrician/gynecologist (OB/GYN specialist). In the Health Statistics Yearbooks of the Ministry of Health, the infant mortality rates are calculated in two methods: 1- "deaths of live births (show any evidence of life) with minimum threshold of 28 weeks or 1.000 gr and more" 2- "deaths of live births (show any evidence of life) regardless of gestational age and birth weight (No Threshold)".[11] The rates which are calculated without a threshold are considered when comparing the results of our study with national and provincial rates, since there wasn't any threshold in our study.

The data is edited in Microsoft Excel and analyzed with the IBM SPSS Statistics version 28 (IBM Corp, Armonk, NY, USA.) Descriptive statistics are presented as number, percentage, median, interquartile range (IQR). Chi-square test and Mann-Whitney U test are used as significance tests. The statistically significant level is accepted as $p< 0.05$.

Research permission is obtained from the Health Services General Directorate of the Ministry of Health (24/12/2020), and the ethical approval is obtained from Istanbul Medipol University Non-Invasive Clinical Studies Ethics Committee (21/01/2021, No: 65).

RESULTS

The number of total births was 5,396 in 2019 and 4,928 in 2020. Fifty-one infant deaths were observed, 26 (51.0%) in 2019 and 25 (49.0%) in 2020. Infant deaths and mortality rates by years in the district are summarized in Table 1. As it is seen from the Table infant mortality rates are calculated as 4.84‰ and 5.10‰ for 2019 and 2020 respectively. Infant, neonatal and postneonatal mortality rates of the study group in comparison with the national and provincial rates are presented in Figure 1.

Table 1. Infant mortality by years

	2019		2020	
Deaths	n	Mortality rate (‰)	n	Mortality rate (‰)
Infant deaths (0-365 days)	26	4.84	25	5.10
Neonatal deaths (0-27 days)	21	3.91	13	2.65
Early neonatal deaths (0-6 days)	15	2.79	11	2.25
Late neonatal deaths (7-27 days)	6	1.12	2	0.41
Postneonatal deaths (28-365 days)	5	0.93	12	2.45

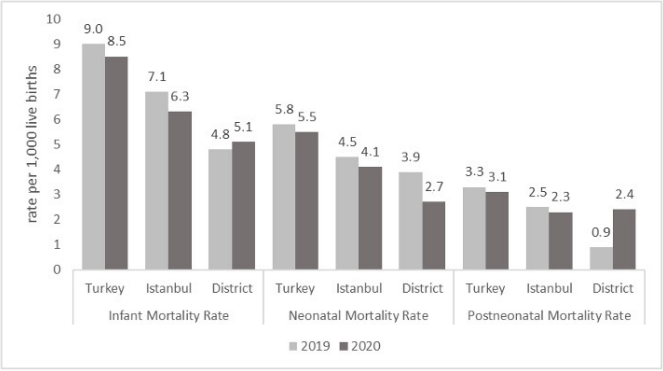

Figure 1. Infant mortality rates in comparison with national and provincial rates

(National and provincial data are from The Ministry of Health of Türkiye Health Statistics Yearbook 2020)[11]

All infants subject to infant death (n=51) were born in a hospital. There was no infant who registered in the district and died in another province. There wasn't any statistically significant difference between deaths in

two years by the maternal, birth and death characteristics of the infants, besides the time of death (Table 2). The proportion of postneonatal deaths were significantly higher in the year 2020 (48.0%) than the year 2019 (19.2%) (p=0.029).

Table 2. Characteristics of the infant deaths and their mothers

	2019 (n=26)		2020 (n=25)		p*
Sex, *n (%)*					
Female	11	(42.3)	11	(44.0)	0.903
Male	15	(57.7)	14	(56.0)	
Multiple pregnancy, *n (%)*					
Yes	5	(19.2)	3	(12.0)	0.478
No	21	(80.8)	22	(88.0)	
Type of birth, *n (%)*					
Vaginal	5	(19.2)	5	(20.0)	0.945
Caesarean section	21	(80.8)	20	(80.0)	
Prematurity, *n (%)*					
Preterm (<37 weeks)	21	(80.8)	14	(56.0)	0.057
Term (≥37 weeks)	5	(19.2)	11	(44.0)	
Birth weight, *n (%)*					
<1500 gr	14	(53.8)	8	(32.0)	0.213
1500-2500 gr	6	(23.1)	6	(24.0)	
>2500 gr	6	(23.1)	11	(44.0)	
Congenital anomaly, *n (%)*					
No	19	(73.1)	16	(66.7)	0.621
Yes	7	(26.9)	8	(33.3)	
Maternal age, *n (%)*					
<35 years	13	(50.0)	19	(76.0)	0.055
≥35 years	13	(50.0)	6	(24.0)	
Hospital that reported death, *n (%)*					
Public Hospital	10	(38.5)	14	(56.0)	0.210
Private/Foundational Hospital	16	(61.5)	11	(44.0)	
Location of hospital, *n (%)*					
Same district	13	(50.0)	12	(48.0)	0.886
Another district	13	(50.0)	13	(52.0)	
Time of death, *n (%)*					
Neonatal period (0-27 days)	21	(80.8)	13	(52.0)	**0.02**9
Postneonatal period (28-365 days)	5	(19.2)	12	(48.0)	
Cause of the death, *n (%)*					
Congenital malformations	6	(23.1)	7	(28.0)	NA
Prematurity	15	(57.7)	9	(36.0)	
Infections	2	(7.7)	6	(24.0)	
Other specific reasons	3	(11.5)	3	(12.0)	
					p**
Maternal age (years), *Median (IQR)*	34.5	(26.8-39.0)	29	(26.5-34.5)	0.128
Gestational week at birth, *Median (IQR)*	30.5	(25.0-35.3)	34	(28.5-37.5)	0.096
Birth weight (grams), *Median (IQR)*	1440	(775-2542.5)	2250	(1075-2912.5)	0.129
Duration of life (days), *Median (IQR)*	4	(0.8-16.5)	27	(2-145)	0.075

*Chi-square test, **Mann-Whitney U test, IQR: Interquartile range

Antenatal care characteristics are summarized in Table 3. Only one mother whose baby died in 2019 had only 2 prenatal visits (both to OB/GYN specialists), and all others had at least 8 or more prenatal visits by a family physician or OB/GYN specialist.

(pneumonia+septicemia) in 2019. Among 6 postneonatal deaths due to infections in 2020, one was down syndrome with pneumonia + septicemia, one major congenital anomaly with septicemia, one asphyxic birth history with septicemia and no underlying cause could be identified for 3 deaths due to pneumonia.

Table 3. Antenatal care characteristics

	2019 (n=26)		2020 (n=24)*		p**
Prenatal records, *Median (IQR)*					
Visits to Family physician	7	(4-13)	7	(4.3-8)	0.266
Visits to OB/GYN specialist	10	(7.8-14.3)	10	(8-12.8)	0.869
Visits to ER	1	(0-5)	1	(0-4)	0.600
Percentage of OB/GYN visits to private hospitals	67.5	(17.8-100)	71.1	(21.3-83.3)	0.725
No. of pregnancy follow-up#	3.0	(2.0-3.3)	5.0	(4.0-7.8)	**<0.001**
No. of real-time pregnancy follow-up	2.0	(1.0-3.0)	3.0	(2.0-4.0)	**0.041**
No. of statement-based pregnancy follow-up	0	(0-1.3)	2.5	(0.3-4.0)	**0.004**
					p* **
Frequency of antenatal follow-ups, *n (%)*					
<4	20	(76.9)	4	(16.7)	**<0.001**
≥4	6	(23.1)	20	(83.3)	
Frequency of real-time follow-ups, *n (%)*					
<4	22	(84.6)	16	(66.7)	0.138
≥4	4	(33.3)	8	(24.0)	
Frequency of physician visits, *n (%)*					
<4	1	(3.8)	0	(0)	NA
≥4	25	(96.2)	24	(100)	

*No health data was available for one non-citizen mother. (Infant has citizenship due to father)
**Mann-Whitney U test, ***Chi-square test, IQR: Interquartile range, OB/GYN: Obstetrics and gynecology, ER: Emergency room

The most common causes of neonatal deaths are prematurity (66.7% in 2019 and 53.8% in 2020) and congenital malformations (23.8% in 2019 and 30.8% in 2020). Major causes of postneonatal deaths were infections (40.0% (n=2) in 2019 and 50.0% (n=6) in 2020, Figure 2) and so postneonatal mortalities due to infection were evaluated in detail. The underlying risk factors for 2 postneonatal deaths were asphyxic birth history (septicemia) and Down syndrome

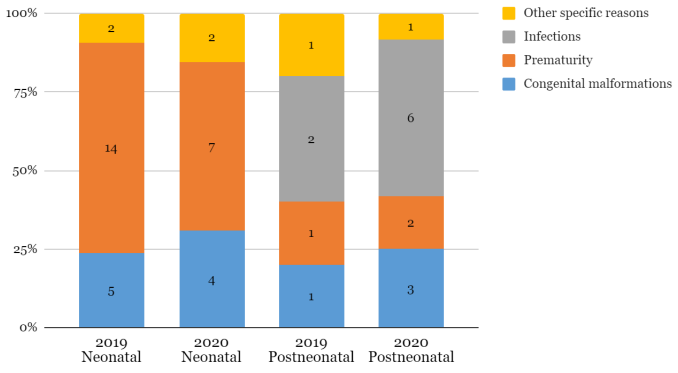

Figure 2. Neonatal and postneonatal mortality causes by years

DISCUSSION

This study analyzes the infant mortality for 2019 and 2020 in a district of Istanbul. This study analyzes infant mortality rates in a district of Istanbul for the years 2019 and 2020. Infant mortality rates were calculated as 4.8 and 5.1 per thousand live births; neonatal mortality rates were 3.9 and 2.7 per thousand live births; postneonatal mortality rates were 0.9 and 2.4 per thousand live births, respectively, for the years mentioned. No statistically significant difference was found between the maternal and infant characteristics of the two years. The number of pregnancy follow-up records was significantly higher for infants who died in 2020 compared to 2019. Yet, there was no difference in the number of prenatal physician visits.

Infant mortality rates have been reported by Turkish Statistical Institute (TURKSTAT) as 9.1 and 8.7 at national level, and 7.4 and 6.6 for Istanbul for the years 2019 and 2020 respectively.[12] Infant mortality rates in 2020 were lower than the previous year, both at national and provincial level (Figure 1). Also, infant mortality rates of the district were lower than national and provincial rates both years, this is expected since the district is a developed district of the country. On the other hand, in our study the infant mortality in the district, specifically postneonatal mortality rate was higher in 2020 than the previous year. Since there was a decrease in neonatal mortality in the district in 2020 compared to 2019, the increase in infant mortality rate was due to increased postneonatal mortality. Neonatal mortalities are related to maternal health, antenatal care, delivery complications and newborn care.[10] In our study, decrease in neonatal mortality in the district can be associated with the continuity of antenatal care and delivery care services during the study period (Table 3). This might be explained by the urgent and non-deferrable nature of birth, the absence of disruption in antenatal services during the study period may have decreased the neonatal death rate. Conversely, postneonatal mortality is considered related to infant's interaction with material and social environment, rather than birth outcomes.[13] A case-control study from Kars-Türkiye underlines the effects of social determinants of health on postneonatal deaths.[14] In a study conducted in Adiyaman province of Türkiye, the researchers investigated the infant mortality rates in 2020 and 2021, and they reported that 32% (33.9% for 2020 and 30.9% for 2021) of the infant mortalities were in postneonatal period. [15] In a study from Sivas province of Türkiye, postneonatal mortality rates were reported with a decrease as 2.37 and 1.84 (33.3% and 26% in all infant mortalities) for the years 2019 and 2020.[16] In our study, postneonatal mortality rates in the district were 0.9 and 2.4 (19.2% and 48.0% of the infant mortalities) for 2019 and 2020 respectively. According to the Health Statistics Yearbook of the Ministry of Health, there are differences in infant mortality rates by the region of the country.[11] These might explain the difference in the rates reported by these various studies from different regions. So, the increase in postneonatal mortality rate can be investigated considering social determinants of health.

The COVID-19 pandemic carries the risk of potential disruptions in maternal and child health services due to the overload in health systems. However, in the neonatal mortality estimates for 2030 in the GBD study, similar estimates were obtained with the reference

scenario in the absence of a COVID-19 pandemic.[17] In a meta-analysis investigating the effect of the pandemic period on maternal and child health although an increase in infant mortality was detected in one study it was reported that no significant change could be detected when all studies were evaluated together (pooled OR: 1.01 (0.38–2.67)). Yet, an increase in maternal mortality and stillbirths in middle-income and low-income countries, and a decrease in preterm birth in high income countries, which is one of the important causes of neonatal death, were reported at this meta-analysis research.[18] In the meta-analysis study by Yang et al., there was a decrease in preterm births according to the pooled results of single center studies, but no significant difference was found other than that.[19]

Causes of Infant Death

According to the American Mortality Statistics, the most common causes of neonatal death are disorders due to gestational age and low birth weight, and congenital malformations. The most common causes of postneonatal deaths have been reported as congenital malformations, accidents and sudden infant death syndrome.[20] At a global perspective, pneumonia, diarrhea, birth defects, malaria, and acquired immunodeficiency syndrome (AIDS) are known as the reasons for postneonatal mortality.[13] In the infant mortality research conducted in Sivas in Türkiye, in the last year of the study period (2020), an increase in early (54.0%) neonatal deaths and a decrease in late (20.0%) and post (26.0%) neonatal deaths were observed compared to the previous year. The most common causes of death were found to be congenital anomalies and lung failure. It has been determined that neonatal deaths are more frequent as the gestational week and birth weight decrease.[16] In our study, there was no neonatal deaths due to infection and there was a decrease in the rate of prematurity related neonatal deaths in 2020. On the other hand, infections have the leading role among the postneonatal mortality causes. While there were underlying reasons in 2 postneonatal deaths due to infection in 2019, there were underlying risk factors in 3 of 6 postneonatal deaths due to infection in 2020. Any cause other than infection was not recorded as an additional diagnosis in 3 of them. Hypothetically, if these 3 cases of pneumonia were prevented, all mortality rates would be lower than the previous year in the district.

Access To Healthcare

We have also evaluated the mothers' access to health services during their pregnancy and at the delivery. The results of the analysis of the prenatal visits and pregnancy follow-ups of the mothers in the study group suggested that there wasn't any barrier to the healthcare services and median number of the visits to an OB/GYN specialist was 10 for each year. Only one infant's mother whose baby died only in 2019 had less than 4 visits, which is under the recommended pregnancy follow-up/visit number in the guidelines of WHO.[3] In a study conducted in Trabzon in Türkiye, the mortality and morbidity data of the infants who were treated at neonatal intensive care units at the early period of the pandemic were compared to the previous year (2019) and no difference on the mortality was reported while there was a decrease on the pregnancy follow-ups in 2020.[21] In our study, 4 or more pregnancy follow-ups were significantly higher in 2020

than in 2019. Pregnancy follow-ups are the specific records -usually entered by family health centers- that are required by the MoH's standards. Because of that, sometimes the health professionals at the family health centers conduct these follow-ups via phone-calls with the pregnant woman or according to their hospital visit records in the system, and those follow-ups are labeled as "statement-based". Even though there was an ongoing pandemic in 2020, the follow-ups (both real-time and statement-based) seem to be higher compared to the previous year. This might be a real increase or just because of the change in recording habits of the healthcare providers. This study cannot explain the reasons for this increase in the follow-ups.

Literature reviews examining the restructuring of maternal services during the pandemic indicate that the number of face-to-face antenatal care visits has been decreased by 38.6% in general, and services were continued by using technological applications such as telecare/telehealth.[22, 23] The decrease in the number and duration of face-to-face visits is more common worldwide, as a consequence of the transfer of staff working in antenatal care services to other COVID-19 services. Additionally, differences are observed worldwide in terms of access and quality of telecare applications and in some regions, this access was reported to be more limited.[24, 25] During the COVID-19 pandemic period, general curfews, travel restrictions and possible inadequate service reception, and thus the fear of admission to health facilities, are thought to have an indirect effect on the health of pregnant women and infants. During the general curfew in Nepal, births in the hospital decreased by half compared to before the restrictions.[26] A study conducted in Israel observed that the number of stillbirths increased and there was a decrease in admissions to emergency maternity services during the first peak of the COVID-19 pandemic.[26] Both studies concluded that the probable cause was the women's avoidance of admission to the health facility for fear of being infected.[26, 27] In order to reduce mobility and contact during the COVID-19 pandemic, routine pregnant and child follow-ups, as well as the follow-up of infected patients, are carried out remotely in Türkiye.[28]

Future studies should investigate infants' access to healthcare services since the increase in the postneonatal mortality rate may be related with access problems during the pandemic.

A Takeaway for Data Readiness on Essential Public Health Indicators

Even though most of the infant mortality records are electronic, real-time, and paperless, the evaluation process can take time since it requires additional information from the hospitals, primary care centers, etc.; and the evaluation is made by the commission members who discuss the cases at in person meetings. Also, in cases of forensic investigation, the timeline is expected to be longer than the others. Eventually, these processes take time and health directorates (district/provincial) may wait for months to see the consensus on the preventability of the deaths or the description of the final causes of the death. Beside these, the infant mortality commissions' studies are managed with non-integrated processes.

Although health records are mostly digitized in Türkiye, in our study we saw that it was very time consuming to correlate data

held in different information systems (and sometimes paper) to calculate a key public health indicator such as infant mortality rate. This study revealed the need for the integration of the information systems and the epidemiological data to be more accessible to the public health practitioners and decision makers at local level, specifically for the essential public health indicators such as infant mortality rates. Health directorates should be able to monitor and evaluate the level of these indicators in a timely manner and, without additional effort. By doing so, directorates can be able to plan and implement preventive interventions as soon as possible.

In a recent scoping review, it's stated that the usage of routine health information system data on maternal and neonatal health is helpful to analyze the effects of public health emergencies and monitoring disruptions on health services.[29] The health informatics infrastructure of the Ministry of Health has demonstrated its ability to automatically integrate data from many different sources in the detection of COVID-19 cases. Such solutions need to be established for key public health indicators as well, and for them in the first place. We advocate that public health indicators should be made near real-time and automatically available to local health administrators and public health professionals to strengthen community health services and make them resilient to public health emergencies such as the COVID-19 pandemic. In this way, they can make evidence-based decisions and develop timely interventions.

Limitations

There are some limitations of this study. Firstly, the data includes the limitations of the information systems, such as data entry errors, underreporting, misclassification of the causes, inconsistent definitions, limited demographic insights. In addition, prenatal follow-up/visit numbers are expected to be lower for babies born at early gestational weeks and the fact that no correction was made according to the gestational week while evaluating prenatal follow-up and visits in our study is another limitation of the study. Some of the infants who died in 2020 were born and died before the pandemic started in the country. For this reason, when comparing the data of infants who died in 2019 and infants who died in 2020, it should be kept in mind that the grouping is made according to the date of death, not as 'born-died before the pandemic' or 'born-died after the pandemic'. Therefore, in this study, it is not possible to make causal inference about the effect of the pandemic.

CONCLUSION

Despite the decrease in the neonatal death rate which may indicate an improvement in antenatal healthcare services, there was an increase in the postneonatal death rate in the study region during the pandemic. No disruption was identified in access to antenatal care in infant mortality cases during the research period. But infants' access to health care should be investigated in future studies. Our experience in this study underscored the necessity of facilitating access to the data on essential public health indicators and ability to use that in evidence-based decision making.

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Conflict of Interest: The authors declare no

conflicts of interest.

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Authorship Contributions: Concept: ÖA, HK, AZTF, ASP, SÇ, Design: ÖA, HK, AZTF, ASP, SÇ, Supervising: ÖA, HK, OH, Data collection and entry: SÇ, AZTF, Analysis and interpretation: SÇ, AZTF, Literature search: ASP, AZTF, SÇ, Writing: SÇ, AZTF, ASP, HK, Critical review: ÖA, OH.

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