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Original Research

Maternal Deaths in Kayseri: Causes and Risk Factors

Mebrure Beyza Gökçek[1,*], Hümeyra Aslaner[2], Seçkin Özsaydı[3]

[1]Family Phsician Specialist, Health Directorate of Kayseri, 38120 Kayseri, Turkey
[2]Family Phsician Specialist, Kayseri City Hospital, 38020 Kayseri, Turkey
[3]Public Health Specialist, Health Directorate of Kayseri, 38010 Kayseri, Turkey
*Correspondence: beyzaozgun@gmail.com (Mebrure Beyza Gökçek)

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Abstract

Background: About a quarter of a million women die from pregnancy-related conditions every year. This study aimed to contribute to the literature by assessing causes and demographic data of maternal deaths in our region. **Methods**: Our study is retrospective and descriptive. The study sample comprised 36 mothers who died in Kayseri between 2015 and 2019. The assessment was performed on the Provincial Directorate of Health data-"Maternal Death Record Forms". Patients' demographic and clinical characteristics and the factors associated with mortality were analyzed. **Results**: A total of 33 maternal deaths that occurred between 2015 and 2019 were assessed in our study. The mean age of mothers included in the study was 33.3 $\pm$ 6.3. Median gestational week was 24.5 (min: 3–max: 39) weeks of pregnancy. The majority of preventable deaths were from indirect causes. Cesarean history was higher in previous pregnancies in preventable maternal deaths (p = 0.006). First-phase and third-phase delay models were higher in preventable maternal deaths (p = 0.008, p = 0.007). **Conclusions**: The rates of preventable maternal mortality are considerably high. The first-phase delay model has an important place in preventable maternal deaths.

Keywords: maternal death; maternal mortality; pregnancy; three delays model

1. Introduction

Maternal mortality is defined as maternal deaths caused by pregnancy or factors (direct) due to the pregnancy process or factors (indirect) aggravated by those during pregnancy, during delivery or within 42 days after delivery, regardless of the duration or place of pregnancy. Accidental factors are excluded from these causes [1].

About a quarter of a million women die from pregnancy-related conditions every year. Maternal deaths may have several causes. While the cause is mostly the difficulties in access to healthcare services in developing countries, maternal deaths are caused mainly by multiple risk factors (chronic disorder, obesity, smoking, etc.) in developed countries [2,3].

Maternal deaths are classified according to their causes and delay models. These models are described as three delays model by the World Health Organization (WHO). These models are, respectively, the delay developing due to the decision of receiving-seeking healthcare service, the delay developing due to access to a reasonable medical facility and the delay developing due to receiving sufficient medical care in a healthcare institution [4]. First phase delay generally occurs when the parents realize the condition late. Lack of medical knowledge is one of the most important causes of that. Second phase delay occurs due to poverty or living in a long distance from the healthcare institution. And third phase delay occurs generally due to misdiagnosis or insufficient treatment [5]. Many countries make an effort on different issues in order to decrease maternal deaths and most of these efforts have brought in succesful conclusions. While maternal deaths are still quite high in some countries they have decreased and re-increased in some others [6]. Maternal mortality is still a crucial global health problem to be solved [7]. This study aimed to contribute to the literature by assessing causes and demographic data of maternal deaths in our region.

2. Materials and Methods

2.1 Patient Population

Our study is retrospective and descriptive. Five-year maternal mortality data between 2015 and 2019 in Kayseri were assessed.

2.2 Objective of the Study

This study aimed to assess maternal deaths occurring in Kayseri between 2015 and 2019 and associated factors.

2.3 Setting and Sampling of the Study

The study sample comprised 36 mothers who died in Kayseri between 2015 and 2019. The assessment was performed on the data of the Provincial Directorate of Health-"Maternal Death Record Forms", and all samples were intended to be included in the study; therefore, no calculation was performed for sampling. Two of the maternal deaths were accidental; one was caused by a traffic accident, and the other was caused by murder, and one of them was young maternal death. After two accidental maternal deaths and one young maternal death were excluded from the study, 33 individuals were included.

2.4 Data Collection

Sociodemographic data of mothers who died and the data about date and gestation period of death, pregnancy outcome, place of birth, place of death, delivery method, classification of causes of death, preventability status, cause of death, cesarean history, number of primary, secondary and tertiary follow-ups, delay models, number of risk factors, edema, varicosis, blood pressure, pulse, and hemoglobin values, and presence of proteinuria were obtained from the file records that were regularly kept in Kayseri Department of Community Health Services. These file records are constituted based on the database of the national health system. The National Health System database is an online health record system comprising imaging methods, pathology data and blood tests performed in all healthcare institutions nationwide. Medications patients use, examination records and vaccination status can also be accessed on the system. Individuals authorized by the directorate can log in to this system.

Some of the babies were delivered as dead. Fetuses that had been accepted as dead with fetal ultrasonography in utero and had not been delivered at all were accepted as intrauterine death of the fetus.

Preventable maternal deaths are determined by the Maternal Mortality Review Committee of the Provincial Directorate of Health. The provincial health director, two specialists from anesthesiology and reanimation, two gynecologists, two pediatricians and two internal medicine specialists are in the commission. Physicians from other departments are included when needed. Two public health specialists and a family physician are generally included. Deaths have been classified by this commission as the first, second and third delay according to the Three Delays Model defined by the WHO. There is no second delay model in our study.

Kayseri is a medium-sized city with a population of 1,441,523 (Turkish population is 85,279,553) and ranking 17 in terms of socioeconomic development among 81 cities in Turkey. It takes place among secondary cities with a socioeconomic development index of 0.560. It is located in the Middle Anatolian region and neighbors several less-developed cities.

2.5 Statistical Analysis

SPSS version 22.0 (IBM Corp., Armonk, NY, USA) was used for analyses. Descriptive statistics were given as mean, standard deviation, median, minimum, and maximum values. Numbers and percentages were used for categorical data. Kolmogorov-Smirnov test was used to determine whether numerical data belonging to the variables were compatible with the normal distribution. Pearson's and Fisher's Chi-Square tests were used to compare categorical data. The two-sample Student *T*-test was used in normally distributed numerical data, and the Mann-Whitney U test was used to assess non-normally distributed two samples. The statistical significance level was accepted as 5% in the calculations, and a *p*-value equal to or lower than this value revealed that the relationship between the parameters was statistically significant.

3. Results

The number of live births in Kayseri was 23,065 in 2015, 22,496 in 2016, 21,500 in 2017, 20,737 in 2018, and 19,477 in 2019 [8]. Maternal mortality rates (MMR) in Kayseri by years were 33.3/100,000 in 2015, 19.4 in 2016, 19.4 in 2017, 5.6 in 2018, and 22.2 in 2019 (refugees are not included in these data). A total of 33 maternal deaths that occurred between 2015 and 2019 were assessed in our study. The mean age of mothers included in the study was 33.3 $\pm$ 6.3. Of the mothers who died, 87.9% were Turkish citizens, 81.8% lived in Kayseri, and 69.7% lived in the city center. While 30.3% of mothers were having their first pregnancy. The median duration from previous pregnancy was 4 (min: 1–max: 19) years. The median gestational week of mothers who died during pregnancy was 24.5 (min: 3–max: 39) weeks, and median number of postpartum alive days of mothers who died during their postpartum period was 8 (min: 1–max: 42) days. The median gestational week of preventable maternal deaths was 27 (9–39). Of the mothers, 69.7% had been followed up in a primary healthcare institution before delivery, and 93.9% had been followed up in any healthcare institution. Median number of follow-ups was 3 (min: 0–max: 7) in primary care, 3 (min: 0–max: 11) in secondary care and 3 (min: 0–max: 11) in tertiary care. In our study, there was at least one delay model in 53.1% of mothers who died. Details on the other data are presented in Table 1.

The mean Body Mass Index (BMI) of all mothers was 26.6 $\pm$ 4.5. Mean BMI of preventable maternal deaths was 27.0 $\pm$ 5.7. Mean BMI of non-preventable maternal deaths was 26.0 $\pm$ 3.0. There was no significant difference between the two values ($p = 0.513$). Raw data of allcases are presented in Table 2.

The preventable maternal mortality rate was higher in winter ($p = 0.004$). When maternal deaths are assessed according to preventability, no significant difference was found in nationality, city, district, status of follow-up in primary care, educational status, place of death, type of delivery, gestational period of death, pregnancy outcome, edema, varicosis, and proteinuria (Table 3).

Cesarean history was higher in previous pregnancies in preventable maternal deaths ($p = 0.006$). First-phase and third-phase delay models were higher in preventable maternal deaths ($p = 0.008$, $p = 0.007$). For preventability, there was no difference in disease detected during pregnancy, number of risk factors, classification of causes of death, and causes of death (Table 4).

While the mean age of preventable deaths was 33.1 $\pm$ 6.27 years, the mean age of unpreventable deaths was 33.9 $\pm$ 6.51 years, and there was no significant difference between the two values ($p = 0.721$). There was a significant difference in pulse rate and hemoglobin values (Table 5).

Table 1. General Distribution Characteristics of Data.

Characteristics	Variables	n (%)
Year	2015	11 (33.3)
	2016	7 (21.2)
	2017	5 (15.2)
	2018	2 (6.1)
	2019	8 (24.2)
Season	Spring	10 (30.3)
	Summer	7 (21.2)
	Autumn	6 (18.2)
	Winter	10 (30.3)
Educational Status	Illiterate	1 (3.0)
	Primary School	11 (33.4)
	Secondary School	4 (12.1)
	High School	8 (24.2)
	University	5 (15.2)
	Unknown	4 (12.1)
Period of Death	Prenatal	8 (24.2)
	Post-partum	25 (75.8)
Pregnancy Outcome	Live	24 (72.7)
	Dead	9 (27.3)
Place of Birth	Tertiary Care	16 (48.5)
	Secondary Care	16 (48.5)
	Out of Healthcare Institution	1 (3.0)
Place of Death	Tertiary Care	21 (63.6)
	Secondary Care	9 (27.3)
	Out of Healthcare Institution	3 (9.1)
Type of Delivery	Cesarean	26 (78.8)
	Vaginal	3 (9.1)
	Intrauterine Death of Fetus	4 (12.1)
Classification of Causes of Death	Direct	8 (24.2)
	Indirect	24 (72.8)
	Undefined	1 (3.0)
Preventability Status	Preventable	17 (51.5)
	Non-preventable	15 (45.5)
	Undefined	1 (3.0)
Cause of Death	Acute Pancreatitis	2 (6.1)
	Pulmonary Emboli	7 (21.2)
	CVD	9 (27.3)
	Intracranial Hemorrhage	2 (6.1)
	Pneumonia	1 (3)
	Uterine Atony/Hemorrhage	2 (6.1)
	Preeclampsia/Eclampsia	3 (9.1)
	Amniotic Fluid Embolism	2 (6.1)
	Septicemia	4 (12.1)
	Undefined	1 (3.0)

CVD, Cardiovascular Disorder.

4. Discussion

Maternal mortality is an important marker of a country's level of development [9]. Despite several improvement efforts worldwide, declines in maternal mortality rates are unfortunately below par. In national data of Kayseri (refugee and foreign national mothers were not included in these data), maternal mortality rates by years were 33.3/100,000 in 2015, 19.4 in 2016, 19.4 in 2017, 5.6 in 2018, and 22.2 in 2019. While the maternal mortality rate in Turkey was reported as 14.6/100,000 in 2015, it was 14.7% in 2016, 14.5% in 2017, 13.6% in 2018, and 13.1% in 2019 [10]. Kayseri is located in the Middle Anatolian region

Table 2. Descriptive Data of All Cases.

Patients	Age	P/NP	Cause of death	GW	Period of death	Type of delivery	Pregnancy outcome	Race	G	P	Previous c/s	BMI
P1	22	NP	AFE	34	Pre	C	L	T	2	2	N	23.87
P2	40	NP	CVD	3	Pre	IDF	D	T	3	1	N	26.84
P3	25	NP	CVD	12	Pre	IDF	D	F	2	0	Y	26.90
P4	25	NP	AP	28	Post	C	L	T	1	1	N	27.06
P5	41	NP	IH	32	Post	V	L	T	5	5	N	33.31
P6	31	NP	CVD	33	Post	C	L	T	3	3	Y	22.21
P7	39	NP	UAH	33	Post	C	L	F	4	4	N	28.58
P8	33	NP	CVD	30	Post	C	L	T	3	3	Y	27.10
P9	37	NP	UAH	38	Post	C	L	T	1	1	N	23.11
P10	37	NP	PE	32	Post	C	L	T	1	1	N	25.81
P11	40	NP	IH	30	Post	C	L	T	2	0	N	24.34
P12	39	NP	S	32	Post	C	L	T	2	1	N	22.89
P13	41	NP	PREEC/EC	37	Post	C	L	T	4	4	Y	24.52
P14	29	NP	CVD	35	Post	C	L	T	3	2	Y	30.86
P15	30	NP	S	32	Post	C	L	T	3	3	Y	25.71
P16	32	P	PE	32	Pre	C	D	T	3	2	N	23.24
P17	40	P	PE	17	Pre	IDF	D	T	10	1	N	30.82
P18	21	P	S	27	Post	C	L	T	1	1	N	39.09
P19	37	P	S	26	Post	C	L	T	3	3	N	39.33
P20	27	P	PE	27	Post	C	L	T	1	1	N	26.78
P21	39	P	PE	29	Post	C	L	T	5	4	N	21.08
P22	44	P	CVD	28	Post	C	L	T	3	3	N	26.50
P23	34	P	CVD	9	Pre	IDF	D	T	1	0	N	23.31
P24	31	P	AFE	39	Pre	C	D	T	1	0	N	24.46
P25	22	P	AP	27	Post	C	L	T	1	1	N	26.08
P26	32	P	PE	26	Post	V	L	T	2	1	N	20.61
P27	30	P	PE	27	Post	C	L	T	5	5	N	23.11
P28	37	P	CVD	24	Post	C	L	T	2	1	N	22.83
P29	32	NP	PREEC/EC	39	Post	C	L	F	3	3	N	23.15
P30	41	P	PREEC/EC	30	Post	C	L	T	8	6	N	26.95
P31	34	P	CVD	28	Post	V	D	T	1	0	N	25.96
P32	30	P	P	24	Post	C	D	F	4	3	N	33.30
P33	27	U	U	35	Pre	C	D	T	1	0	N	30.86

P/NP, Preventable/Non-preventable; GW, Gestational week; G, Gravida; P, Parity; BMI, Body mass index; U, Undefined; AFE, Amniotic Fluid Embolism; CVD, Cardiovascular Disorder; AP, Acute pancreatitis; IH, Intracranial Hemorrhage; UAH, Uterine Atony/Hemorrhage; PE, Pulmonary Emboli; S, Septicemia; PREEC/EC, Preeclampsia/Eclampsia; PN, Pneumonia; Pre, Prenatal; Post, Post-natal; C, Cesarean; V, Vaginal; IDF, Intrauterine death of fetus; L, Live; D, Dead; T, Turkish; F, Foreign; Y, Yes; N, No.

and neighbors several less-developed cities. Therefore, the number of transfers to the hospitals in Kayseri is relatively high. Kayseri is in an important location regarding this, and the maternal mortality rate has been higher in our city for these reasons. Turkish data on maternal deaths does not include refugee or foreign national patients. We preferred including foreign national mothers in this study so that we could observe the data regarding the reasons.

The maternal mortality rate was 313/100,000 in a study performed in Pakistan and 84/100,000 in Egypt [11, 12]. In a study performed in the United States of America, the rate increased by three times from 1990 (8/100,000) to 2019 (20.1/100,000) [13]. As seen, maternal mortality rates in undeveloped countries are high and have not declined to the desired rates in several developed countries. Although the rates, according to our city's data, are much better than undeveloped countries, they are still not low enough. Health directors must do their part to increase access to healthcare services and their quality.

The mean age of mothers who died in our study was 33.3. While the mean age among maternal deaths was 28.6 years in a study in Mexico[14], 75% were between the ages of 21 and 30 in a study in India [15]. The median age was 29 in the study by Clark *et al*. [16].

Maternal deaths are classified according to their causes and delay models identified by the WHO. There was a delay in 53.1% of maternal deaths occurring in our city. No Delay Model 2 was observed in our region. While

Table 3. Assessment by Preventability.

Characteristics	Variables	Preventable Maternal Mortality (%)	Non-preventable Maternal Mortality (%)	*p*-value
Year	2015	2 (11.8)	9 (60.0)	0.042
	2016	4 (23.5)	3 (20.0)	
	2017	4 (23.5)	1 (6.7)	
	2018	1 (5.9)	1 (6.7)	
	2019	6 (35.3)	1 (6.7)	
Season	Spring	3 (17.6)	7 (46.7)	0.004
	Summer	1 (5.9)	6 (40.0)	
	Autumn	5 (29.4)	1 (6.7)	
	Winter	8 (47.1)	1 (6.7)	
Nationality	Turkish	15 (88.2)	13 (86.7)	0.650
	Foreign	2 (11.8)	2 (13.3)	
City	Kayseri	13 (81.3)	13 (83.3)	0.392
	Out-of-Town	4 (18.8)	2 (16.7)	
District	Central	10 (76.5)	12 (86.7)	0.297
	Peripheral	3 (23.5)	1 (13.3)	
Follow-up in Primary Care	Yes	11 (64.7)	11 (73.3)	0.445
	No	6 (35.3)	4 (26.7)	
Educational Status	Primary School	6 (35.3)	5 (33.3)	0.804
	Secondary School	1 (5.9)	3 (20.0)	
	High School	4 (23.5)	3 (20.0)	
	University	3 (17.6)	2 (13.3)	
	Unknown	2 (12.5)	2 (11.1)	
	Illiterate	1 (5.9)	0 (0)	
Place of Death	Tertiary Care	13 (76.5)	7 (46.7)	0.221
	Secondary Care	3 (17.6)	6 (40.0)	
	Out of Healthcare Institution	1 (5.9)	2 (13.3)	
Type of Delivery	Cesarean	13 (76.5)	12 (80.0)	0.883
	Vaginal	2 (11.8)	1 (6.7)	
	Intrauterine Death of Fetus	2 (11.8)	2 (13.3)	
Period of Death	Prenatal	4 (23.5)	3 (20.0)	0.576
	Postpartum	13 (76.5)	12 (80.0)	
Pregnancy Outcome	Live	11 (64.7)	13 (86.7)	0.154
	Dead	6 (35.3)	2 (13.3)	
Edema	No	14 (82.4)	11 (73.3)	0.424
	Unknown	3 (17.6)	4 (26.7)	
Varicosis	No	14 (82.4)	11 (73.3)	0.424
	Unknown	3 (17.6)	4 (26.7)	
Proteinuria	Unknown	5 (29.4)	4 (26.7)	0.589
	Negative	12 (70.6)	11 (73.3)	

The chi-square test and Fisher's exact test were used.

the first phase delay model was high in preventable maternal deaths, the third phase delay model was higher in non-preventable maternal deaths. Factors such as the presence of refugees in our country and communication problems they experience [17] may have caused delays in healthcare services and, thereby, such a rate in the first phase delay model.

In our study, mostly indirect causes resulted in maternal death. It was reported in a comprehensive study, including the years from 2003 to 2009, that about three-fourths of maternal deaths worldwide were caused by direct factors, and one-fourth were caused by indirect factors [14,18]. The most common direct causes of maternal mortality were preeclampsia, thromboembolism, sudden death

Table 4. Assessment by Preventability -2.

Characteristics	Variables	Preventable Maternal Mortality (%)	Non-preventable Maternal Mortality (%)	*p*-value
Previous C/S	Yes	0 (0)	6 (40.0)	0.006
	No	17 (100)	9 (60.0)	
First Phase Delay	Yes	10 (58.8)	1 (6.7)	0.002
	No	7 (41.2)	14 (93.3)	
Third Phase Delay	Yes	7 (41.2)	0 (0)	0.006
	No	10 (58.8)	15 (100.0)	
Delay Model (total)	Yes	16 (94.1)	1 (6.7)	<0.001
	No	1 (5.9)	14 (93.3)	
Disease Detected during Pregnancy	Yes	9 (52.9)	7 (46.7)	0.939
	No	7 (41.2)	7 (46.7)	
	Unknown	1 (5.9)	1 (6.7)	
Number of Risk Factors	0	5 (29.4)	6 (40.0)	0.414
	1	7 (41.2)	4 (26.7)	
	2	4 (23.5)	3 (20.0)	
	3 and more	1 (5.9)	2 (13.3)	
Classification of Causes of Death	Direct	5 (29.4)	3 (20.0)	0.421
	Indirect	12 (70.6)	12 (80.0)	
Cause of Death	Acute Pancreatitis	1 (6.3)	1 (6.3)	0.341
	Pulmonary Emboli	6 (37.5)	1 (6.3)	
	CVD	4 (25.0)	5 (31.3)	
	Intracranial Hemorrhage	0 (0)	2 (12.5)	
	Pneumonia	1 (6.3)	0 (0)	
	Uterine Atony/Hemorrhage	0 (0)	2 (12.5)	
	Preeclampsia/Eclampsia	1 (6.3)	2 (12.5)	
	Amniotic Fluid Embolism	1 (6.3)	1 (6.3)	
	Septicemia	2 (12.5)	2 (12.5)	

The chi-square test and Fisher's exact test were used. Previous C/S, Previous Cesarean; CVD, Cardiovascular Disorder.

Table 5. Assessment of vital signs and Hb values by preventability.

	Preventable Maternal Mortality	Non-Preventable Maternal Mortality	*p*-value
	median (min–max)/mean + SD	median (min–max)/mean + SD	
Weight*	68.5 ± 20.9	66.3 ± 12.2	0.993
SBP	110 (90–130)	100 (90–130)	0.373
DBP	70 (50–80)	65 (40–80)	0.829
Pulse	78 (72–86)	87 (76–105)	0.009
Hb	12.8 (9.9–15.7)	12 (10.9–14.2)	0.033

Mann-Whitney U and Independent Student *T*-tests* were used. SBP, Systolic Blood Pressure; DBP, Diastolic Blood Pressure; Hb, Hemoglobin; SD, Standard Deviation.

during pregnancy, sepsis, obstetric hemorrhage, and amniotic fluid embolism. Cardiovascular disorders were the most common indirect cause of death [14,16,19,20]. In our study, while cardiovascular disorders were the most common indirect causes, pulmonary thromboembolism was the most common direct cause. Direct and indirect causes of maternal mortality were similar to findings in the literature. As the experience and knowledge of healthcare personnel increase, direct maternal deaths can be reduced. Most indirect causes are generally the most common health problems worldwide. Cardiovascular disorders (CVD) may cause delays in diagnosis as normal pregnancy symptoms correspond to the symptoms of CVD and thereby cause maternal mortality [21].

Our study group had a high cesarean rate (66.7%). Studies revealed that cesarean birth increased the risk of maternal mortality [22]. It was observed that the increasing risk was mostly caused by infection, thromboembolism

and anesthesia complications. It can be concluded that cesarean increases the risk of maternal mortality even if the causes are indirect [23].

In our study, 75.8% of deaths occurred during the postpartum period. In a study performed in Syria, 54% of deaths occurred during labor or delivery, and 32% occurred during postpartum [24]. In a study in Mexico, 65.5% of mothers died after delivery [14]. The high mortality rate during pregnancy in Syria may be because abortion is banned there and individuals use illegal means.

Our study's mean gestational week of mothers who died during pregnancy was 24.5. It was 34.2 in a study in our country [25]. In our study, mothers died in earlier gestational weeks.

The rate of mothers with no primary care follow-up before delivery was 25.4%, and the mean number of visits was 2.8. The rate of mothers who had never been followed up was 6.1%. The rate of prenatal visits in developing countries may differ from 12% to 39% [26,27]. It is pleasing that the rate of pregnant women without follow-up was low in our study.

In our study, there was a delay model in 53.1% of maternal deaths, which were first-phase and third-phase delay models. None of the local or foreign women had a second-phase delay model. In a study performed in Egypt, the third-phase delay was observed in 88.9% of the cases, second-phase delay in 50% and first-phase delay only in 6.3% [28]. In a study in Sweden, the third-phase delay model was the most common cause of maternal mortality [17]. There was first-phase delay in Sweden-born deaths, while the second-phase delay model was detected only in foreign groups [17]. It is observed that the prevalence of first and second-phase delay models decreases as the level of socioeconomic development of countries and individuals increases.

Our study has discussed maternal deaths, which are an important health problem. However, it has some limitations. Pregnant women's detailed records on delivery and operation and data on whether vaginal delivery of the pregnant women was performed with induction could not be obtained.

5. Conclusions

As seen in our study, the rates of preventable maternal mortality are considerably high. The first-phase delay model has an important place in preventable maternal deaths. Individuals must have knowledge and awareness of risks and protection during pregnancy, starting from consultancy services before pregnancy and adapt to their routine follow-ups in healthcare institutions and directions of healthcare personnel throughout the process.

Awareness of pregnant women on frequent maternal deaths in our region can be raised by training provided in pregnancy schools, etc. Family physicians can be encouraged to more closely follow up pre-pregnancy, prenatal and postpartum processes of individuals in the reproductive age group, considering their health conditions, and more actively play a consulting and directive role. Studies on the causes of maternal deaths and associated factors will contribute to the planning of future healthcare services.

Availability of Data and Materials

Datasets are available from the corresponding author upon reasonable request after permission from the local authorities.

Author Contributions

HA, MBG, and SO conceived the manuscript, oversaw the data collection, and conducted the analyses. MBG and SO wrote the manuscript. MBG participated in the study design, data analyses and interpretations, critically revised the manuscript. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Institutional consent for the study was obtained from the Kayseri Provincial Health Directorate, and ethical approval was obtained from the Ethics Committee of Kayseri City Training and Research Hospital (Decision Number: 243, Date: 24.10.2020). Our study is retrospective and no voluntary consent form was obtained.

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Conflict of Interest

The authors declare no conflict of interest.

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