Maternal Mortality

West bank 2022 Report

من الشعب الياباني
From the People of Japan

UNFPA

وزارة الصحة الفلسطينية
Ministry of Health

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Foreword

ductive Health Strategy, on improving the quality of pregnancy, childbirth, and abortion healthcare services in Palestine.

Despite the occupation measures that hinder the development of the Palestinian health system, Palestine has achieved remarkable progress in maternal health compared to other countries. Yet maternal mortality reduction remains a priority. So, we must recognize where our health systems are failing. We must invest in fortifying our health workforce with the people, tools, and training they need to deliver the quality care that will make a difference. This is so that woman, regardless of income or education, can access safe, quality, and respectful childbearing services.

"Childbirth should be a time of life, not death. And yet, by the time you have finished reading this foreword, at least one woman will have died due to complications of pregnancy and childbirth. "Nearly every death is in low-and middle-income countries, and nearly every death is preventable", Tedros Ghebreyesus. From this point of view, the State of Palestine is keen to achieve the third sustainable development goal of "good health and well-being" and is also committed to implementing the Arab strategy for maternal health. To achieve the highest possible level of maternal health and reduce morbidity and mortality among women of childbearing age, the Palestinian Ministry of Health is working continuously, through the National Sexual and Repro-

Under the support of the United Nations Populations Fund, the West Bank Maternal Mortality Report 2022 has been developed by the Women's Health and Development Unit. Unfortunately, due to the circumstances of the war, our colleagues from the Gaza Strip were unable to participate in this report in the hope that the war would end, and peace would prevail. Therefore, we would like to thank all who participated and allowed the possibility to complete this work and bring it to light.

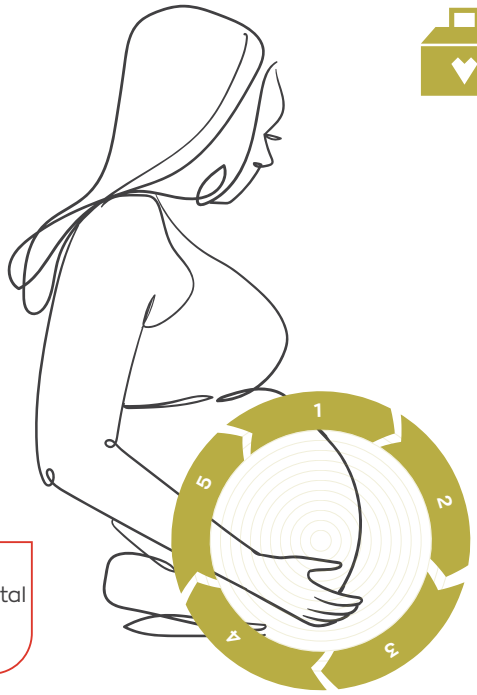
Dedication

For the souls of the Palestinian women who died during childbirth and for their families, for every woman who suffered and is suffering to access health service under the occupation which made the most basic human rights for freedom of movement an unattainable Palestinian dream For every woman who needed medical service but could not find it, for all our women who built dreams for themselves, for their children, for their families, and their homeland, so they raised, planted, made, and worked side by side with men, and because they deserve that and more.

Preventing Maternal Deaths
We are all part of the solution

Training
Train undergraduates.
Train postgraduates.
Avoid gaps in care or treatment.

Counsel Pre-Pregnancy
Work as a multidisciplinary team.
Propvide postnatal care.
Advice in contraception.



Causes of Womens Deaths
VTE contributing to %20.8 of all deaths.
Bleeding, preeclampsia, and sepsis are still the leading causes of direct maternal death.
Death due to cardiac Conditions of indirect maternal death were as common as sepsis and bleeding (%16.6).

Mental Health
Offer specialist mental and physcial health services.

Assess the risk
Women with risk factors for pre-eclampsia need Aspirin to be prescribed from 12 weeks of pregnancy.
Women with risk factors for VTE needs Anticoagulant.

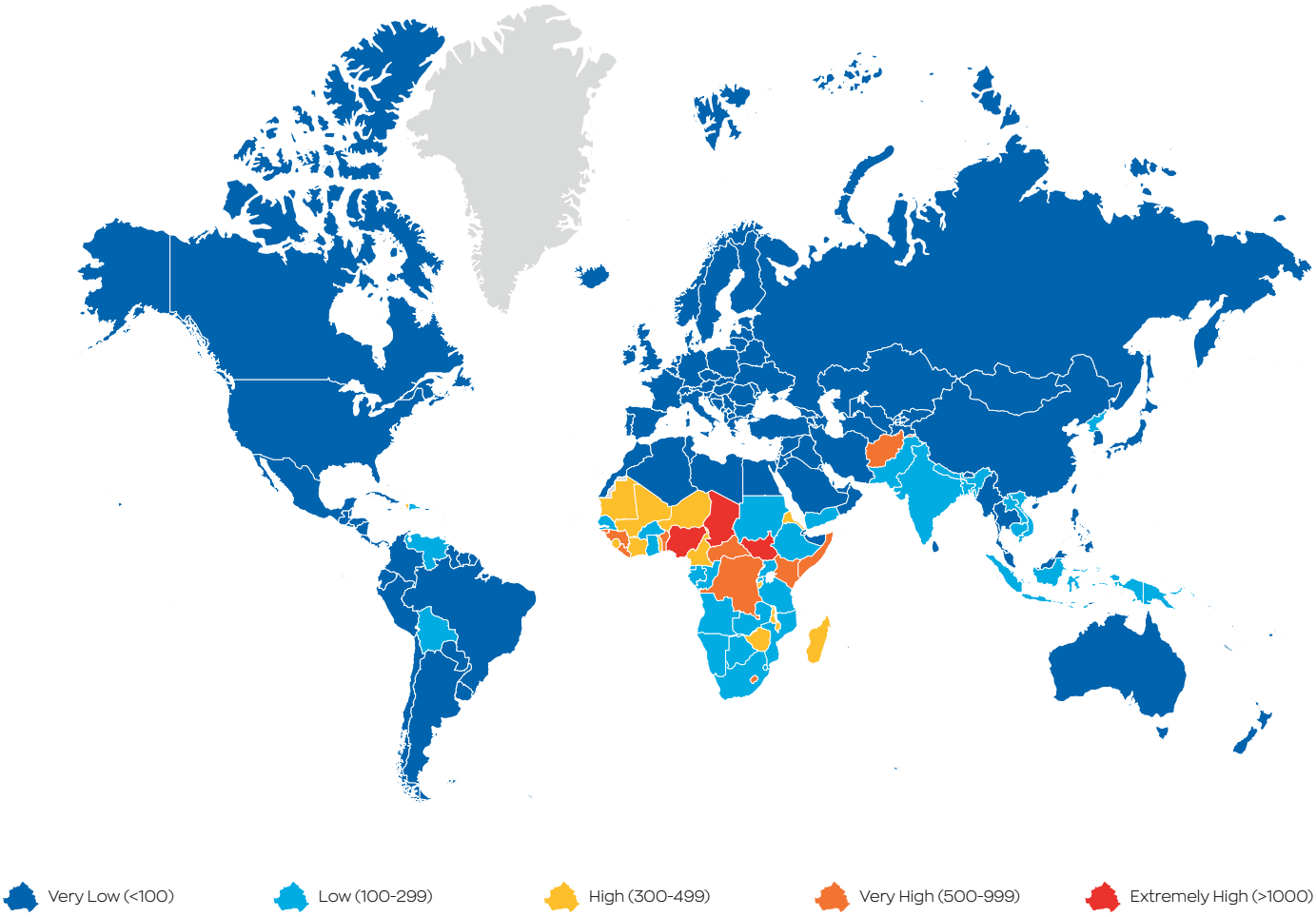
Introduction

Global trend

Maternal death is a primary global health concern. In the context of the Sustainable Development Goals (SDG), a recent target has been set "to accelerate the reduction of global maternal mortality by 2030 to 70 per 100,000 births, with no country having a maternal mortality rate of more than twice the global average" (1). From 2000 to 2020, the global maternal mortality ratio (MMR) declined by 34 percent – from 339 deaths to 223 deaths per 100,000 live births, according to UN inter-agency estimates. This translates into an average annual rate of reduction of 2.1 percent. While substantive, this is about one-third of the 6.4 percent yearly rate needed to achieve the Sustainable Development Goal (SDG) of 70 maternal deaths per 100,000 live births by 2030. (2)

Humanitarian, conflict, and post-conflict settings hinder progress in reducing the burden of maternal mortality. Significant inequalities in maternal survival exist between regions of the world and countries within those regions (figure 1). In 2020, sub-Saharan Africa had 545 maternal deaths per 100,000 live births, as compared to 4 in Australia and New Zealand. Sub-Saharan Africa alone accounted for 70% of global maternal deaths in 2020 (2).

Figure 1: Global ratios of maternal mortality



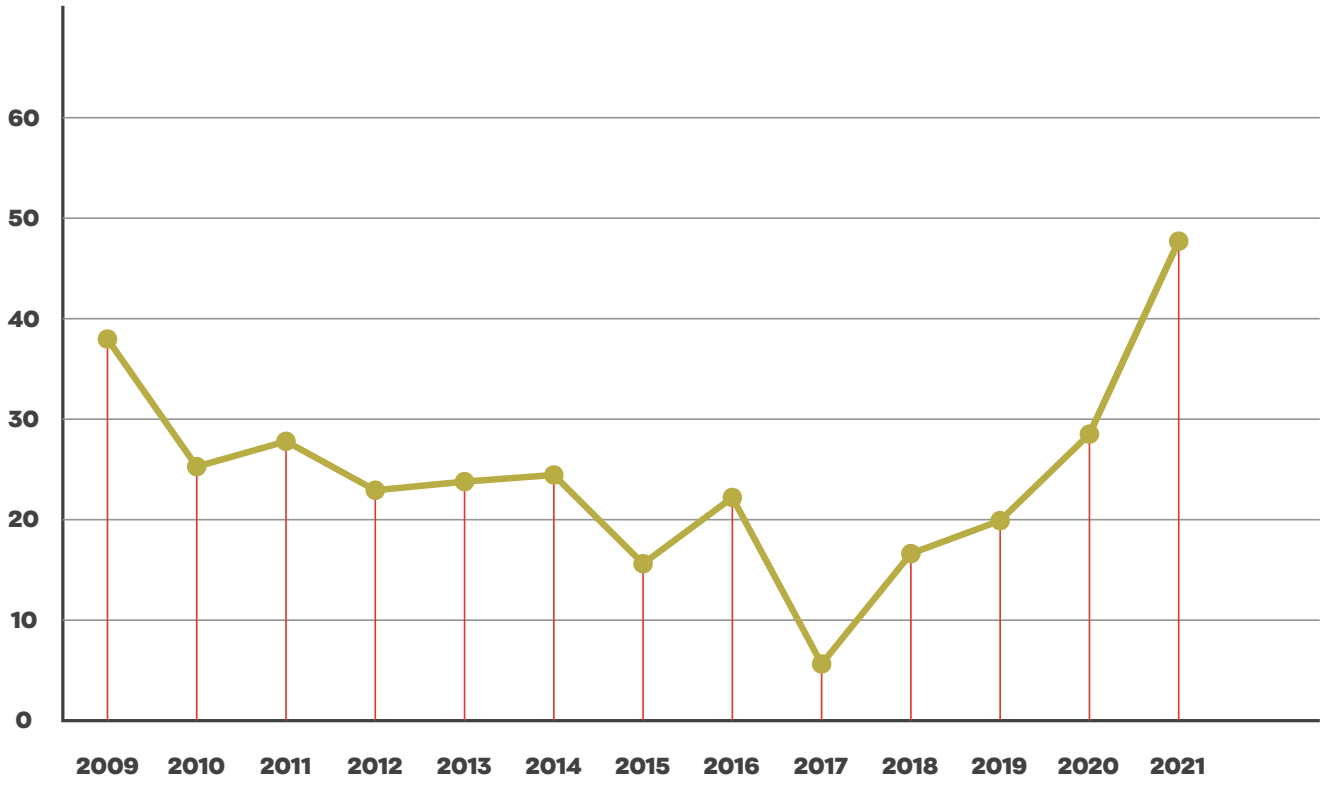
Source: World Health Organization, UNICEF, United Nations Population Fund and The World Bank, Trends in Maternal Mortality: 2000 to 2020 WHO, Geneva, 2023.

Progress has stalled and has been uneven. Regions with the highest burden of maternal mortality will require additional attention and investment to accelerate the rate of reduction. In both access and quality, improvements in antenatal care, intrapartum care, and postpartum care will be needed. Partnerships between political and community leaders, the health system, and other stakeholders will be required to reach global goals and reduce these inequities.

National trend

The reported MMR figure in Palestine in 2019 was below the SDG target at 19.9 per 100,000 live births. The overall MMR in both the WB and Gaza has improved, decreasing by around 48% from 38 per 100,000 live births in 2009 to around 19.9 in 2019. But in 2020 and 2021 there was a noticeable increase in MMR to 28.5 and 47.7 per 100,000 live births, respectively. This reflects the negative impact of the corona pandemic on the number of maternal deaths (figure 2).

Figure 2



Purpose and Objectives

Maternal mortality reflects women's overall access to healthcare as well as the quality and responsiveness of the healthcare system to their needs.

Therefore, analysis of maternal mortality is not only crucial for identifying the factors contributing to maternal mortality, but also for evaluating the existing interventional programs.

The objectives of this report are:

1.1 Explore clinical characteristics of maternal deaths.

1.2 Explore the underlying causes of maternal deaths.

1.3 Explore the factors contributing to maternal death.

1.4 Form recommendations for corrective measures.

1.5 To explore whether MMR has recovered right after the corona pandemic.

Methods

Each maternal death case was reviewed utilizing medical files, death notification forms, and maternal mortality surveys. Descriptive and crosstab analyses were performed data presented for the West Bank only. Data from the Gaza Strip were not possible to be obtained due to the war of October 7.

Maternal condition upon arrival to the hospital was classified according to the American Hospital Association Guidelines (3):

Good condition; vital signs are within normal limits; the patient is conscious and comfortable.

Moderate: Patient vital signs are stable and within normal limits. The patient is aware but may be uncomfortable. Indicators are favorable or may have minor complications; Outlook/indicators are good.

Severe condition: Vital signs are unstable and not within normal limits. The patient is acutely ill. A chance for an improved outlook

Critical - Vital signs are dangerous and not within normal limits. The patient may be unconscious, has a multi-organ failure, and indicators are unfavorable (Death maybe imminent).

The severity classification of maternal clinical condition was determined based on the following:

1. Stability of vital signs
2. Level of consciousness
3. Normal or abnormal laboratory tests
4. Presence or absence of minor or major complications
5. Presence or absence of organ failure
6. Received critical intervention
7. For corona cases, we used the World Health Organization (WHO) COVID-19 severity criteria.

Gravidity: primigravida ladies who are pregnant for the first time, multigravida are women who have been pregnant 1-4 times before the current pregnancy and grand multigravida are women who were pregnant five times or more.

Parity: primiparous ladies having no previous births, multiparous women who have 1-4 births and grand multiparous women who have≥5 births.

Maternal death was defined based on the definition of the WHO as female deaths from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) that occur during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy.

Direct obstetric/maternal deaths are those resulting from obstetric complications of the pregnant state (pregnancy, labor, and puerperium), and from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above.

Indirect obstetric/maternal deaths are those maternal deaths “resulting from previous existing disease or disease that developed during pregnancy and not due to direct obstetric causes but were aggravated by the physiologic effects of pregnancy.

The WHO ICD-10 classification system was applied to classify causes of death (code O26. 8 for direct obstetric causes and code O99. 8 for indirect obstetric causes). For case assessment, the preventability of maternal death is defined as “any action or inaction on the part of the health care provider, system, patient, or a combination of these factors that may have caused progression to more severe morbidity” (3). Death preventability was assessed through expert revision of medical files and utilization of the three-delay model approach (4)

The maternal mortality ratio was computed by dividing recorded maternal deaths by total recorded live births in the same period and multiplying by 100,000.

Results

In 2022 there were 139,960 live births; 82.518 in the West Bank and 57.442 in Gaza. A total of 22 maternal deaths were reported in the West Bank and 10 in Gaza. Two deaths during pregnancy due to car accident in the West Bank were not included this report. Accordingly, the estimated maternal mortality ratio (MMR) is 21.9 per 100,000 live births in Palestine; 25.1 the West Bank and 17.4 in Gaza.

Maternal Characteristics

Maternal age ranged from 19 to 41 years (median 28.5, mean 29.29, standarddeviation±3.92). Most (77.3%) women were multigravida where 13.6%grand multigravida, and 72.7% women were multiparous, where 9.1% were grand multiparous. About 13.6 %women had a history of at least one previous abortion.

Table 1: Maternal characteristics (N=22)

Characteristics	**West Bank**	
Age group (years)	**Number**	**%**
<20	1	4.5
(20-25)	3	13.6
(26-30)	10	45.5
(31-35)	7	31.8
>35	1	4.5
Education		
Primary School	1	4.5
Secondary school	11	50
Diploma/University	10	45.5
Gravidity		
Primigravida	5	22.7
Multigravida	14	63.6
Grand multigravida (≥5 pregnancies)	3	13.6
Parity		
Nulliparous	6	27.3
Multiparous	14	63.6
Grand multiparous (≥5 deliveries)	2	9.1
Previous abortions	3	13.6

Number and place of antenatal care

Except for one, all deceased women attended antenatal care (ANC)at least once during pregnancy. The most common places of receiving ANC were the private sector (68.2%), MOH (18.2%), and combined MOH + private (9.1%).

Twelve (54.5%) women had four or more ANC visits and four (18.2%) women had less than four visits. The number of ANC visits is unknown for6 (27.3%) women. Eight (66.7 %) of the twelve women who had more than four visits had received care in the private sector, 3 (25%) at the MOH center and 1 (8.3%) at MOH and private sector.

Of the four women who had less than four ANC, two (50%) attended the private sector, one (25%) at MOH, and one (25%) at MOH and private sector.

The six women who had an unknown number of ANC visits had received ANC in the private sector.

Table 2 Number of women according to place of ANC (N=22)

Centre of ANC*	West Bank	
	Number	%
Private	15	68.2
MOH**	4	18.2
MOH+ Private	2	9.1
Unknown	1	4.5

**ANC: antenatal care* ***MOH: Ministry of Health*

Residence

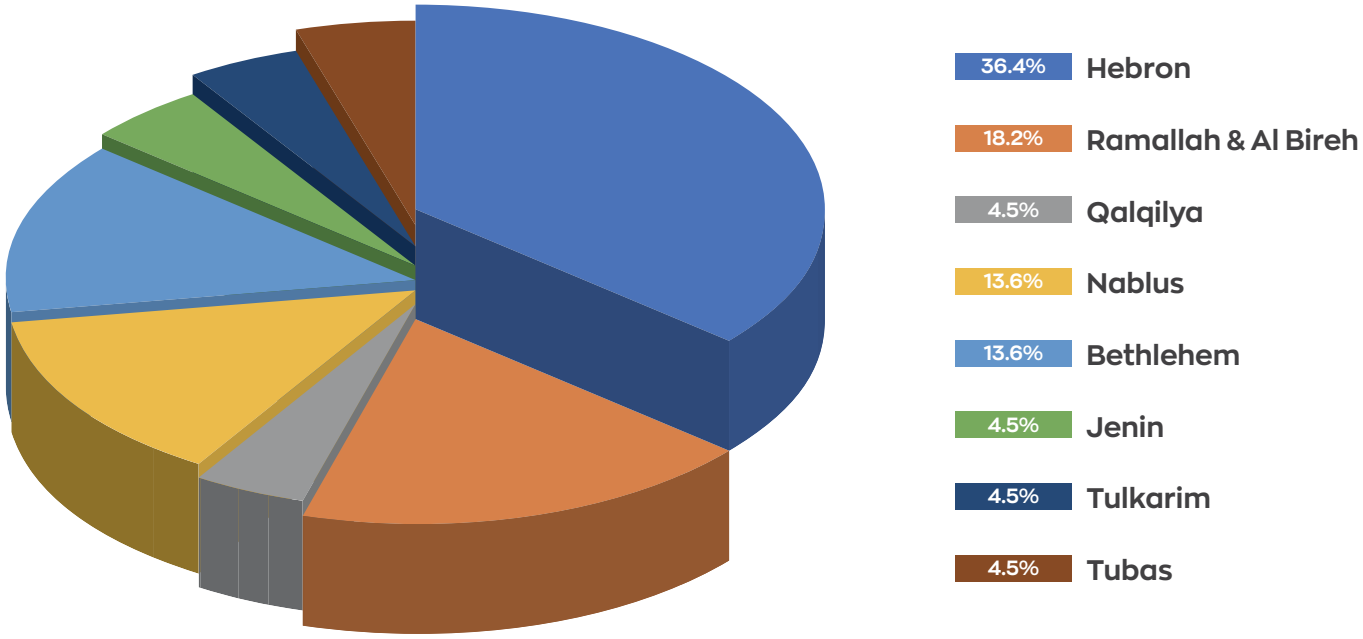
This section presents the governorate/city where the deceased came from, not the place/hospital where the death occurred.

Table 3 below shows MMR based on area of residence of the deceased.

Table 3: Maternal deaths number and MMR per governorate (N=22)

Governate	West Bank		
	Maternal deaths	Live births	MMR
Hebron	8	27490	29.1
Ramallah & Al Bireh	4	7990	50
Qalqilya	1	3664	27.3
Nablus	3	11081	27
Bethlehem	3	6896	43.5
Jenin	1	8967	11.2
Tulkarm	1	5136	19.5
Tubas	1	1725	57.9

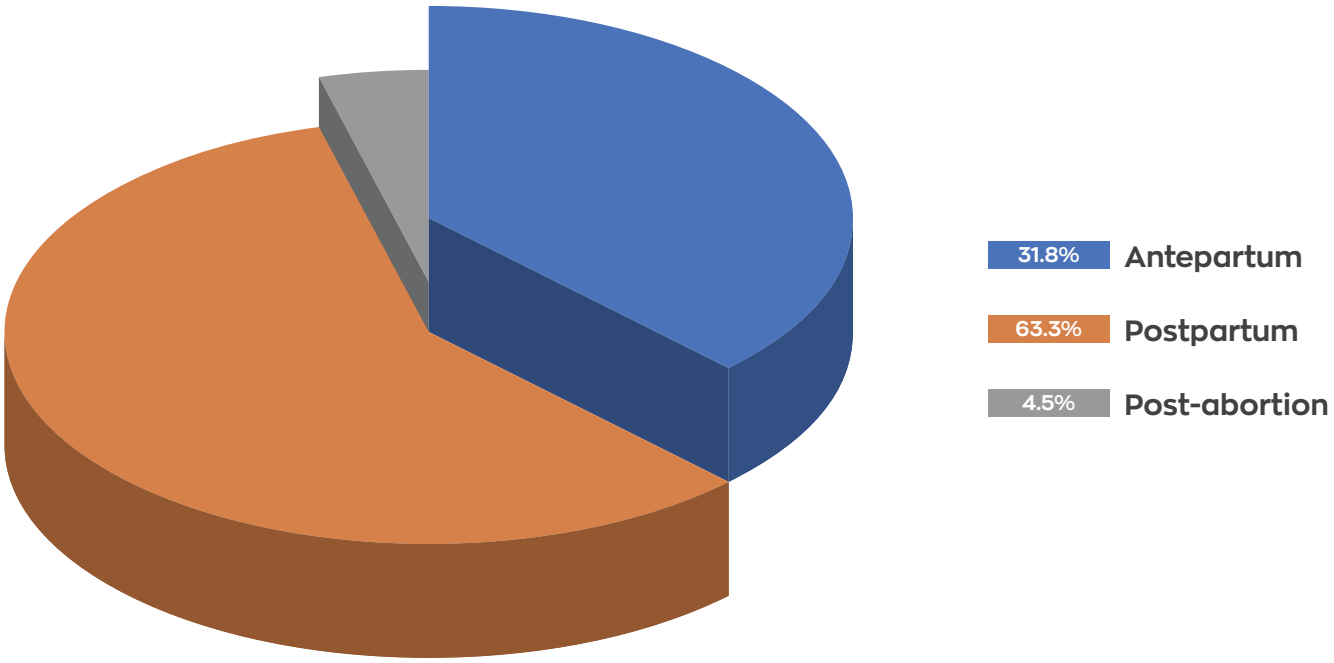
Figure 3: Distribution of maternal deaths by governorate, West Bank



Time of death

Fourteen (63.6%) women died during the postpartum period, seven (31.8%) during the antepartum period including a woman terminated by perimortem cesarean section, and another who died after abortion (figure 4).

Figure 4: Time of death



As shown in table 4, most of the antepartum deaths occurred in the second trimester (71.4%).

Table 4: Pregnancy trimester for antepartum deaths, West Bank (N=7)

Trimester	West Bank	
	Number	%
First trimester	1	14.3
Second trimester	5	71.4
Third Trimester	1	14.3

Time points of onset of complications/events that triggered the postpartum deaths are presented in Table 5.

Table 5: Onset of complications underlying postpartum deaths (N=14)

Trimester	West Bank	
	Number	%
Antepartum	6	42.9
Intrapartum	2	14.3
Postpartum	6	42.9

Mode of delivery

Six (27.3%) of the deceased women died while pregnant and without termination of pregnancy. In comparison, 9(56.3%) women were terminated by cesarean section, 6 (37.5%) by standard vaginal delivery and 1 (6.3%) post-abortion.

Six (66.7%) cesarean sections were performed due to obstetric indications, one (11.1%) perimortem cesarean section to facilitate CPR, and 2(22.2%) were completed to improve maternal respiratory condition.

Table 6 Mode of delivery in women who gave birth before death (N=15)

Mode of delivery	West Bank	
	Number	%
Vaginal delivery	6	40.0
Cesarean delivery	9	60.0
Emergency Cesarean	8	88.9
Perimortem Cesarean	1	11.1

Place of death

Five (22.7 %) women arrived dead at the hospital; 17 (77.3 %) deaths took place at the hospital (Table 7).

Table 7: Place of death (N=22)

Place of death	Number	%
At hospital	17	77.3
Outside the hospital	5	22.7

Place of pregnancy termination and place of death

Of the 16 of the deceased women who underwent termination of pregnancy (15 delivered and one abortion), six (37.5%) women underwent termination of pregnancy at private hospital but the death occurred at a governmental hospital. While five (31.3%) women underwent delivery/termination of pregnancy and died at a governmental hospital (Table 8).

Table 8: Place of pregnancy termination and place of death (N=16)

Place of termination and place of death	Number	%
T.O.P & death at governmental hospital	5	31.3
T.O.P & death at private hospital	2	12.5
T.O.P at governmental hosp. & death at private hospital	3	18.8
T.O.P at private hosp. & death at governmental hospital	6	37.5

T.O.P; termination of pregnancy

Clinical condition at the time of hospital admission

Six (35.3 %) of the 17 women who died inside a hospital were in general good condition at the time of admission, and 11 (64.7 %) were in severe to critical condition.

Table 9: Hospital arrival condition and cause of admission, WB (N=17)

Condition at hospital arrival	Cause	Number
Good n= 6 (35.3%)	Labor pain	4
	Upper respiratory infection (Suspected COVID-19)	2
Severe n=5 (29.4%)	Lower respiratory tract infection	2
	Pulmonary hemorrhage	1
	Bleeding	2
Critical n=6 (35.3%)	Maternal collapse	3
	Puerperal sepsis	1
	Pulmonary embolism	1
	Intracranial hemorrhage	1

Medical problems

Eleven women (50 %) had a free past medical history and uncomplicated pregnancy. Seven (31.8 %) had a chronic medical condition only without obstetric complications, and four (18.2 %) women had an obstetric complication during the current pregnancy.

Table 10: Pre-gestational medical condition, WB (N=7)

Medical condition	Number
Hypothyroidism	1
Cardiac disease	2
Morbid obesity and psychiatric illness	1
Epilepsy	1
Psychiatric illness	1
Hypertension, interstitial lung disease with morbid obesity	1

PREGNANCY COMPLICATION

Table 11 Obstetric complication, WB (N=4)

Obstetric complication	Number
PET, HELLP	2
Gestational hypertension	1
Bilateral hydronephrosis	1

Cause of Death

The cause of maternal death was identified based on verbal autopsy.

There were 12 direct maternal deaths (54.5%) and 10 indirect maternal deaths (45.5%).

Figure 5: Indirect cause, 10 maternal deaths

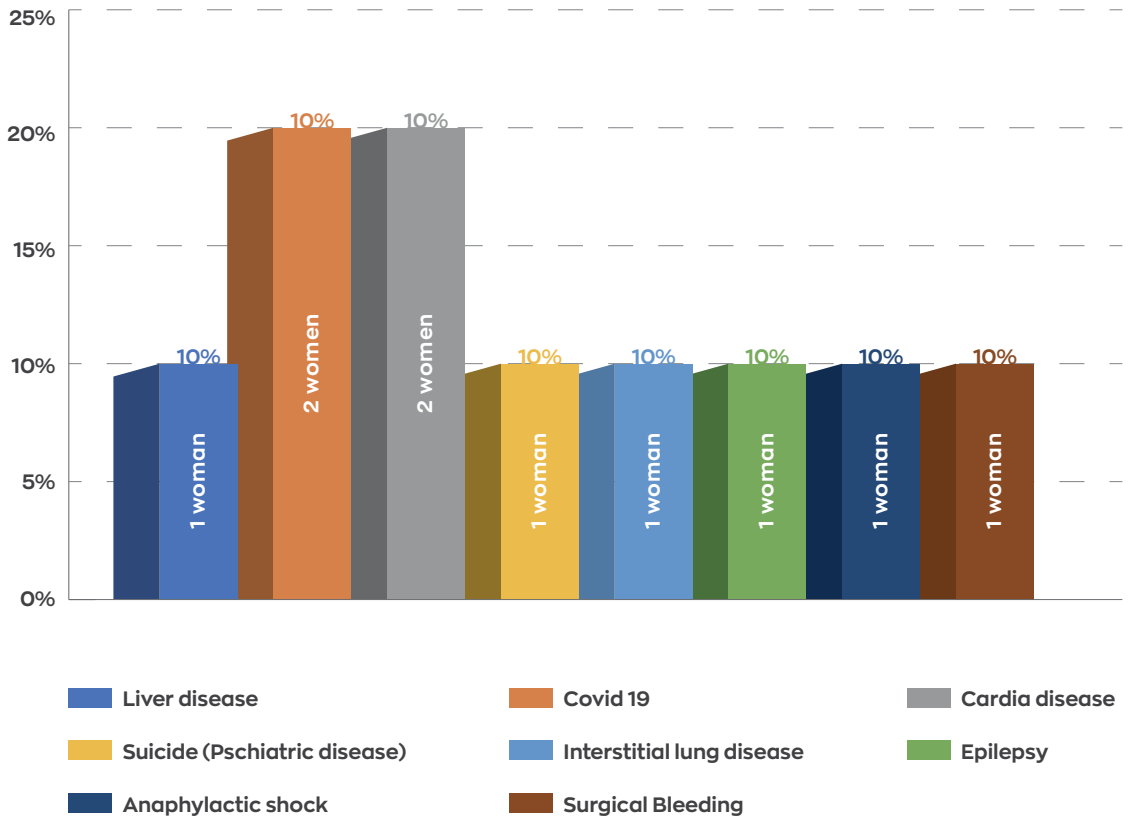
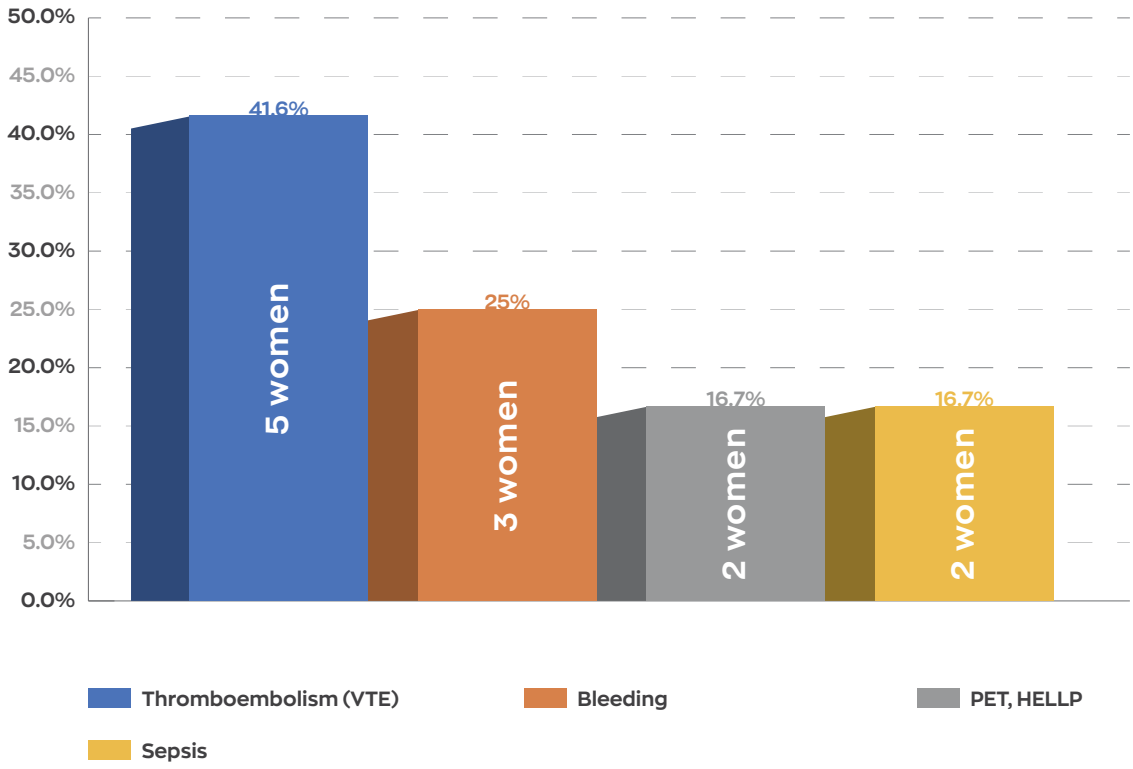


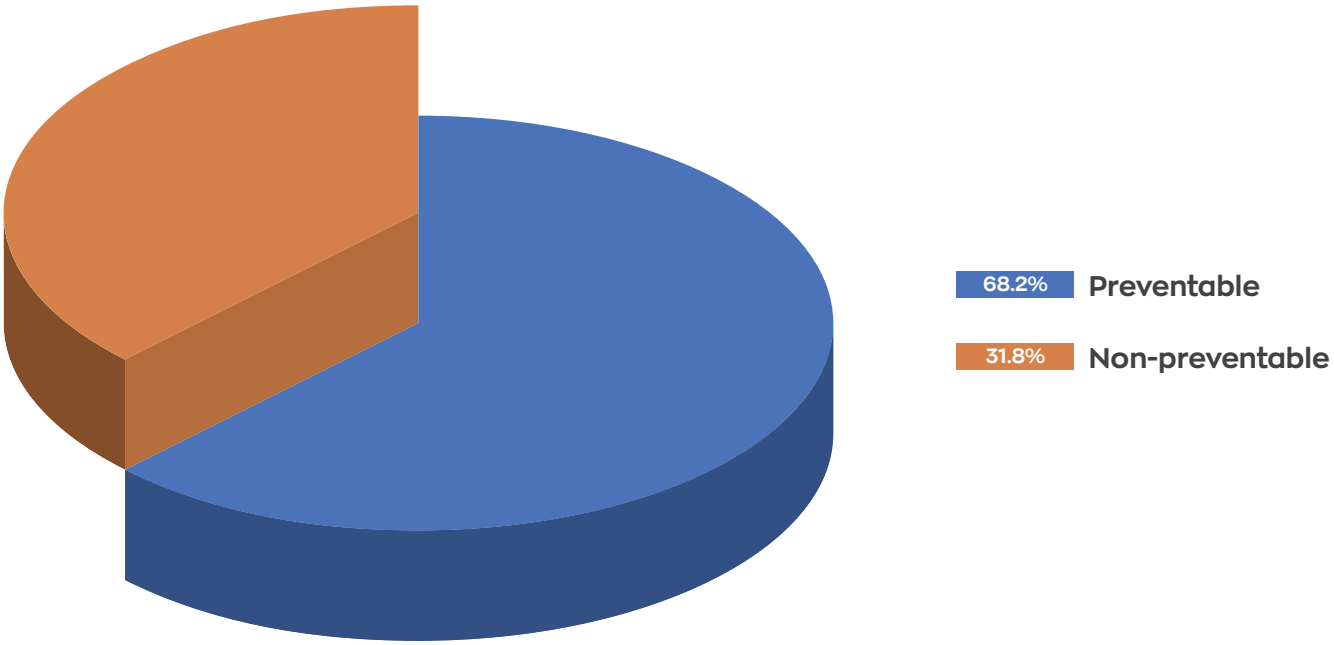
Figure 6: Direct cause , 12 maternal death



Death preventability

A total of 15 (68.2%) maternal deaths were deemed preventable.

Figure 7: Death preventability



Discussion

In Palestine, there was a noticeable increase in the MMR during the corona pandemic; 28.5 and 47.7 per 100,000 live births in the years 2020 and 2021, respectively. However, the MMR has decreased by approximately 52% in 2022 (22.9 per 100,000 livebirth) compared to the previous year. Although this reduction is somehow significant, it is still higher than the estimated MMR just before the corona pandemics, something that reflects the longstanding impact of the pandemic on maternal health and services.

The cause of death was identified based on the ICD-10 system, yet this relied almost entirely on verbal autopsy. Venous thromboembolism was the most common cause of death in the West Bank, contributing to 22.7 % of all maternal deaths and 41.6 % of direct maternal deaths. Preeclampsia, bleeding and sepsis are still in the top five leading causes of direct maternal death, with 25%, 16.7%, and 16.7%, respectively. Death due to cardiac conditions and covid-19 were the most common causes of indirect maternal death (20%) for each. Death due to mental illness has also become an alarming concern. One of the indirect maternal deaths was due to suicide and two (9.1%) of the deceased women had a psychiatric disorder. Reviewing the files of the dead mothers showed that there were 18.2% women who seemed to hide their chronic illnesses from their husbands, in addition to being discharged from the hospital against medical advice at the husband's responsibility. Cultural perspectives and stigmatization are believed to be significant barriers to quality healthcare. Public education, raising awareness, and promotion of health are cornerstones in the prevention of maternal death.

The most common site where the deceased women received ANC was in the private sector (68.2 %). Despite the assumption that women might receive more attention at private practice, these figures highlight the importance of assessing the effectiveness and quality of care at all sites and emphasizes the need to unify and adhere to the clinical guidelines and protocols at the national level. Moreover, 37.5 % who underwent termination or delivered at a private hospital, sought or were referred for management of severe and critical postpartum complications at a governmental hospital where death occurred. The main reason for this was the financial constraints of those women, as several private health insurance companies cover only uncomplicated childbirth at private hospitals. Therefore, most postpartum complications are managed at governmental hospitals. Another plausible explanation of why women with complications are often referred to the governmental hospitals is the lack of preparedness and incapability of some of the private hospitals to receive and manage critical cases.

Most deaths (63.6 %) occurred in the postpartum period, yet approximately 43% women had the onset of death trigger during the antepartum period. This raises the question of whether the ANC was adequate and of good quality but also emphasizes the importance of integration of preconception care services at a national scale to optimize maternal health conditions before pregnancy.

The "Three Delays" model proposes that pregnancy-related mortality is due to delays in (1) deciding to seek appropriate medical help, (2) reaching an appropriate health facility and (3) receiving adequate care when a facility is reached (4). The cases of the five women who died before arriving the hospital might reflect delays 1 and 2, i.e. difficulty

of seeking and reaching the health facility at a timely manner. An example of the third delay is the seven women who arrived at a hospital, primarily a government hospital and were then transferred to another hospital due to the lack of places and necessary medical equipment. Despite the great efforts to address such challenges, they persist as major gaps in the Palestinian health system over the years. Significant changes in the approach to policies, coordination and public awareness are needed to mitigate these problems.

Of all maternal deaths, more than 68% were recognized as preventable, according to the definition of preventability of maternal death: "any action or inaction on the part of the health care provider, system, patient, or a combination of these factors that may have caused progression to more severe morbidity."

Maternal condition at the time of hospital admission can be used to indicate medical care status within the health facility. Out of 17 women admitted to the hospital, 35% were in a general good condition. Based on the international criteria, the indicators in this group of women are supposed to be favorable.

However, their condition has deteriorated inside the health facility, which reveals a delayed and suboptimal intra-hospital medical management (i.e. the third delay). Such delay was associated with several factors, including underestimation of the condition's severity, insufficient knowledge or training in patient critical care, lack of specialized care, delayed referral due to limited options, and lack of coordination and communication between health care providers.

Logistic challenges

Obtaining detailed data from medical files on the health information system (HIS), is a time- and effort-consuming process.

Poor data of many pregnant women who were followed up and or delivered at the private sector which is not connected to the governmental health information system.

Poor documentation of the cause of death, and sometimes there was more than one reason, or the reason was not mentioned.

Recommendations

For policymakers, service planners, and service managers:

1. Improve the gaps in the hospital health information system.
2. Closely monitor ANC provided at private sectors by the MOH and implement actions regarding including licensing these clinics if not abiding to unified protocols and standards.
3. Ensure that women's electronic records can be easily accessed and shared when they receive care in different settings regardless of the place of antenatal care. This requires that governmental and private antenatal care clinics be part of the electronic system.
4. Improve communication between governmental and private sector.
5. Propose recommendation and implementation by government towards private health insurance i.e. coverage of high-risk maternal condition should be imposed and requested as part of any private insurance.
6. Improve screening and management of high-risk pregnancies and ensure that they are transferred at a timely manner to be followed up in the hospital where childbirth is expected to allow adequate preparation and planning for birth.
7. Speed up the maternal death notification process, where the file is followed up in less than a week of death and participation of all the medical team involved in the care of the deceased woman in each city.
8. Implementing maternal clinical audit in each maternity ward that should include all physicians (consultants, seniors, juniors, medical students) and midwives (maternal mortality review committee), to stand on the causes that led to death in addition to considering the circumstances of death and if there is any failure to learn the lesson and correct the mistake in the future.
9. Consider skills and drills training on the risk assessment and management of pre-eclampsia, PPH, sepsis, and venous thromboembolism as per national guidelines.
10. Improve coverage and quality of postnatal care.
11. Form supervising committees to monitor the residency program in the specialty of obstetrics and gynecology.

For health professionals and those designing professional education programs:

1. All health professionals should manage pregnant women with chronic diseases in a multidisciplinary manner.
2. Proper patient counseling and education on signs and symptoms necessitating seeking medical care.
3. All women should undergo a regular ongoing documented assessment of risk factors for high-risk conditions such as venous thromboembolism, in the antepartum, intrapartum and postpartum periods.
4. All health professionals should remember that perimortem cesarean section is a resuscitative procedure to be performed primarily in the interests of maternal, not fetal, survival.
5. Improving the care of women with mental health problems so healthcare professionals need to be alert that any new expressions or acts of violent self-harm or new persistent expressions of incompetency as a mother are red flag symptoms and should always be regarded seriously.

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