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Advances and Challenges in Maternal and Child Health (MCH) in the West Asia and North Africa (WANA) Region: A Path to Achieving the 2030 Sustainable Development Goals (SDGs)

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Abstract

Background: Maternal and child health (MCH) is a critical component of the sustainable development goals (SDGs), with the aim of reducing mortality rates by 2030.

Objectives: This study aims to evaluate the current status of MCH in the West Asia and North Africa (WANA) region and propose strategies to effectively achieve these goals.

Methods: This study analyzed MCH indicators in 23 countries within the WANA region using secondary data. Multiple international, regional, and national sources were consulted. The study examined 11 key indicators, including maternal mortality ratio (MMR) and child mortality rates. A total of 90 key experts provided insights into the challenges and gaps hindering the achievement of the SDGs.

Results: The indicators related to MCH in the region displayed significant disparities among the countries. For instance, the average MMR per 100,000 live births was found to be 94.1, which is considerably higher than the 2030 target of 70. Similarly, countries such as Afghanistan, Sudan, Mauritania, and Yemen are far from reaching the 2030 targets for neonatal deaths, as well as mortality rates for children under 1 year and under 5 years of age.

Conclusions: Countries in the WANA region face challenges in achieving MCH goals by 2030. To address these challenges, targeted interventions are needed. Policymakers must prioritize addressing disparities in healthcare access, gender inequality, health literacy, and economic stability. The findings of this study can guide efforts toward achieving the SDGs; however, further research is required to optimize interventions.

Keywords: Maternal and Child Health, Sustainable Development Goals, West Asia and North Africa, Secondary Analysis

1. Background

Maternal and child health (MCH) is a crucial component of the sustainable development goals (SDGs), aiming to reduce mortality rates by 2030. It is believed that the recognition and empowerment of mothers can have major positive effects on many of these SDGs (1). Maternal health plays an important role in ensuring women's well-being during pregnancy, childbirth, and the postpartum period. In 2020, approximately 287,000 women died due to pregnancy and childbirth complications (2). Despite significant progress in some regions, disparities remain stark, particularly in the West Asia and North Africa (WANA) region (3). These deaths, which could have been prevented with timely and appropriate care, underscore the importance of addressing disparities and inequalities in sexual and reproductive health, rights, and gender. Action in these critical areas is essential to ensure that all women receive respectful, high-quality maternity care, leading to improved maternal health outcomes and saving lives (4, 5).

During the first 28 days of life, 3 million babies die and 2.6 million are stillborn. There is hope, however, because available and effective maternal and infant health interventions can prevent many of these deaths. Extensive evidence shows that various interventions and behaviors have the potential to save the lives of mothers and babies. Prioritizing the implementation of these

interventions can significantly reduce mortality and improve overall health outcomes for women and their infants (6, 7).

In 2015, the United Nations (UN) committed to the SDGs as a means to promote peace, prosperity, health, and global cooperation for the sustainability of human civilization (8, 9). While developed countries are making progress toward the SDGs, low- and middle-income economies continue to face challenges in providing adequate services. One of the SDGs aims to reduce maternal mortality and prevent infant mortality by 2030 (4, 10). Approximately 85% of obstetric complications occur during pregnancy, labor, delivery, and the early postpartum period (11). Skilled birth attendance and emergency obstetric health care are key strategies to prevent avoidable childbirth deaths.

The WANA region, which includes the Middle East and North Africa, presents unique challenges and opportunities in MCH due to socioeconomic and cultural factors (11, 12). West Asia and North Africa includes 16 countries in the Middle East and 7 countries in North Africa. However, studies show a lack of access to basic health coverage for premature mothers. This highlights the need for a comprehensive assessment of MCH in the WANA region to develop effective strategies and interventions that can accelerate progress toward achieving the SDGs (13).

Given the diverse nature of the WANA region and the complex interactions of factors influencing MCH, conducting a systematic review provides a robust framework for synthesizing the available evidence and identifying priority areas for action (5). The results of this study will not only contribute to a better understanding of MCH at the regional level but will also have broader implications for global efforts to achieve the health-related SDGs by 2030 (14, 15).

2. Objectives

This review focuses on the assessment of MCH in the WANA region and its progress toward health-related SDGs. It identifies key indicators and disparities, examines factors affecting these outcomes, and examines aspects such as healthcare access, quality, social determinants, and policy frameworks.

3. Methods

This secondary analysis focuses on 11 key MCH indicators through a thorough analysis to identify disparities across 23 countries. Maternal and child health care includes health care services provided to women of reproductive age (15 to 49 years) and children, including those in school-age groups and adolescents. This methodological framework integrates quantitative and qualitative approaches.

In this study, we employed a multifaceted approach to gather and analyze data on MCH indicators in the WANA region. First, we conducted a comprehensive review of authoritative sources, including the 2016 Global Burden Study, the World Bank dataset, the International Labour Organization (ILO) (16), the World Health Organization (WHO), national surveys in the region, authoritative scientific publications, and the latest global sustainable development plan from 2023. These sources were chosen based on their established credibility and relevance to MCH. Indicators providing insights into various aspects of MCH outcomes included the maternal mortality ratio (MMR), the proportion of births attended by skilled health personnel, and the infant mortality rate, among others. Only sources that included these indicators were considered eligible. A detailed review and analysis were conducted on the collected data.

Using the analysis of available data from authoritative sources such as the WHO and the Ministry of Health of the countries, and comparing the data between different countries in the WANA region, we identified best practices and common challenges.

To gain deeper insights into the challenges and gaps in MCH, we engaged 90 key experts through structured questionnaires and in-depth interviews, employing a non-probability snowball sampling method that started with ten initial participants who helped identify additional experts. This included healthcare professionals, researchers, government representatives, and members of organizations focused on health policy and practice. We obtained informed consent from all participants to uphold ethical standards, ensuring confidentiality and privacy.

The emailed questionnaire consisted of ten questions that addressed various aspects of MCH in the WANA region. These questions explored challenges, enablers, barriers, interventions, and strategies to improve access to quality MCH services and achieve the SDGs. Key issues highlighted include challenges in ensuring access to quality MCH services, factors contributing to high MMRs in certain countries, barriers to receiving adequate health care during pregnancy and childbirth, improving health education and awareness campaigns, gaps in skilled care personnel for maternal health, deficiencies in comprehensive immunization programs for children, successful policies in reducing infant mortality rates, barriers to universal access to reproductive health services, the role of technology in

improving MCH delivery, and recommended actions or strategies to address challenges and accelerate SDG progress.

To ensure the reliability and validity of the findings, this study cross-referenced the SDG data with other official sources reporting the same indicators from different WANA countries. This process helped to verify and confirm the results obtained. In addition, evidence from the relevant literature, including randomized controlled trials and case-control studies, was reviewed and classified according to different levels of effectiveness.

For the economic classification of countries, this study adopted the World Bank classification. High-income countries were classified as Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, the United Arab Emirates, Israel, and Cyprus, while the rest were considered low- or middle-income countries.

To increase the methodological accuracy of the study, a meeting was held with technical experts to design a standard questionnaire and ensure consistency in the inclusion, classification, measurement, and interpretation of indicators. This collaborative effort led to a consensus on the most reliable use of data and methods employed throughout the study.

To enhance the validity and reliability of the questionnaire, we conducted an expert review and a pilot test with a small sample representative of the target population. We also provided clear instructions to participants to reduce ambiguity and ensure that they understood how to respond to the questions accurately. Data analysis was performed using SPSS version 21, utilizing descriptive statistics to summarize demographic indicators and MCH outcomes, with plans to provide more detailed information on the statistical methods used to enhance clarity and transparency in the manuscript.

4. Results

In general, more than 655 million people live in 23 countries in this region, which constitutes about 8.2% of the world's population. Of this population, 49% are females, and 25% are women aged 15 to 49. Table 1 provides more detailed data on the total population of these countries in the WANA region, with each row representing a specific country. The top three literacy rates for adult females are found in Cyprus, Jordan, and Qatar, each exceeding 97.5%. Conversely, countries such as Yemen, Afghanistan, Sudan, and Mauritania exhibit the poorest health-related indicators. High unemployment rates are observed in Libya (19.71%), Sudan (19.19%), and Yemen (18.65%).

Table 2 presents MCH-related indicators across the WANA region. For the total mortality rate (per 100,000 live births), Israel reports the lowest rate at 39.64, while Afghanistan exhibits the highest rate at 214.24. Furthermore, Israel demonstrates a lower number of maternal deaths per 100,000 live births (2.84) compared to Afghanistan (620.41), with the regional MMR reported at 94.13 per 100,000 live births. High-income countries in the region have the lowest neonatal mortality rates (ranging from 1.61 in Cyprus to 4.87 in Kuwait) compared to the low- and middle-income countries.

Table 3 shows indicators related to MCH services and some related health indicators in the WANA region. The rate of medical doctors per 10,000 population varies from 1.92 in Mauritania to 53.75 in Cyprus. The lowest and highest rates of nursing, midwifery, and other health workers also show significant variations between low- and high-income countries in the region. The antenatal care coverage rate in countries such as Yemen and Afghanistan is less than one-third. Births attended by skilled health personnel have a relatively good rate in the region (92.83%), with the lowest rates in Yemen (60.9%), Afghanistan (61.8%), and Sudan (78%). Universal health coverage (UHC) is also average in the region, at about 65% (ranging from 37% in Afghanistan to 84% in Israel). About one-third of women of reproductive age suffer from anemia (ranging from 12.90% in Israel to 61.6% in Yemen).

A comparison of some important indicators related to MCH in this region to the worst and best rates in the world (Table 4) shows a significant gap between the best rates and those in WANA countries. This gap is more pronounced for the MMR, under-1 and under-5 mortality rates, and medical doctors per 10,000 population.

In Table 5, the responses of experts regarding major challenges and gaps in achieving the SDGs related to MCH in WANA are presented. The key experts were 66% female, with a mean age of 33.3 years (SD = 11.0), and job experience in MCH of 8.0 years (SD = 10.1). Their educational levels were BSc (24.0%), MSc (14.0%), PhD (38.0%), and general practitioners (24.0%).

According to their responses, addressing challenges such as limited infrastructure, cultural barriers, and a shortage of trained professionals is crucial. Financial limitations, distance from healthcare facilities, and a lack of awareness about pregnancy complications are obstacles. Effective strategies involve social media, workshops, and cultural sensitivity. Collaboration with local leaders, incentivizing healthcare professionals, and ensuring equal healthcare distribution are crucial.

Table 1. Women's Population and Some General Health-Related Indicators in West Asia and North Africa Region

Countries	Population Total (Thousands)	Population Female	Population, Female (% of Total Population)	Women of Reproductive Age (15 - 49 Years) Population (Thousands)	Literacy Rate, Adult Total (% of People Ages 15 and Above	Literacy Rate, Adult Female (% of Females Ages 15 and Above	Life Expectancy at Birth	Unemployment Rate (%)
Afghanistan	40,099,462	19,844,584	49.5	9542.91	37.27	22.60	63.21	12.07
Algeria	44,177,969	21,680,725	49.1	10918.50	81.4	75.32	77.13	13.73
Bahrain	1,463,265	554,616	37.9	314.13	92.3	90.70	75.81	1.55
Cyprus	1,244,188	621,034	49.9	311.42	99.36	99.15	83.14	7.51
Egypt	109,262,178	54,001,891	49.4	27388.83	74.5	68.95	71.82	7.44
Iran	87,923,432	43,496,643	49.5	23760.45	88.74	84.87	77.35	9.28
Iraq	43,533,592	21,736,184	49.9	10902.33	85.6	79.90	72.42	16.17
Israel	9,371,400	4,699,259	50.1	2057.17	91.75	88.67	82.62	4.81
Jordan	11,148,278	5,368,123	48.2	2828.10	98.42	98.12	77.87	19.84
Kuwait	4,250,114	1,659,419	39.0	917.34	96.46	95.35	80.97	2.94
Lebanon	5,592,631	2,879,140	51.5	1368.17	95.3	93.60	76.44	12.77
Libya	6,735,277	3,325,769	49.4	1784.23	76.5	63.70	75.78	19.71
Mauritania	4,614,974	2,354,385	51.0	1140.18	66.7	62.16	68.38	11.33
Morocco	37,076,584	18,410,922	49.7	9471.18	77.35	69.08	72.99	11.22
Oman	4,520,471	1,758,703	38.9	972.17	97.34	94.85	73.90	1.9
Qatar	2,688,235	734,561	27.3	451.95	97.75	97.55	77.17	0.14
Saudi Arabia	35,950,396	15,184,150	42.2	8770.15	97.6	96.05	74.31	6.62
Sudan	45,657,202	22,842,482	50.0	10956.27	60.7	56.06	69.15	19.19
Syrian Arab Republic	21,324,367	10,643,230	49.9	5509.91	86.3	80.90	72.67	15.08
Turkey	84,147,320	41,972,288	49.9	22059.52	96.74	94.42	78.62	11.98
Tunisia	12,262,946	6,205,901	50.6	3133.29	83.55	77.88	77.04	18.52
United Arab Emirates	9,365,145	2,853,108	30.5	1860.47	98.12	97.58	76.08	3.11
Yemen	32,981,641	16,313,210	49.5	8374.11	54.1	35.00	66.63	18.65
Total	655,391,067	319,140,377	48.7	164,792.8	84.08	79.24	74.85	10.68

Access to vaccines and promoting immunization awareness are important. Strengthening primary healthcare, neonatal care, and comprehensive sex education are necessary.

5. Discussion

This study emphasizes the significance of examining population characteristics and economic factors to comprehend the state of MCH in the WANA region. Analyzing these key indicators provides policymakers, healthcare practitioners, and researchers with a comprehensive understanding of the current MCH status in the WANA region, facilitating evidence-based strategies to address existing challenges and enhance health outcomes (17). The relatively large gap between the indicators of MCH in this region and the best corresponding indicators in the world, as well as reaching the goals of sustainable development by 2030, highlights the need for redoubled efforts in many developing countries, especially low-income countries.

The region faces challenges like high illiteracy rates, unemployment, early pregnancies, anemia in women, and a shortage of health workers. Improvement in these infrastructure indicators by 2030 may be limited, but they should not be ignored. Focus on feasible interventions is crucial to address these issues effectively. High unemployment rates create significant barriers to healthcare access and socioeconomic well-being. Unemployment rates, which reflect economic stability and social determinants of health, reveal the complex interplay between economic factors and MCH outcomes (5). Gender dynamics play a significant role in shaping MCH outcomes, highlighting the importance of adopting gender-sensitive approaches to healthcare delivery and policymaking (4).

Life expectancy at birth, an essential measure of population health and healthcare system effectiveness, varies across WANA countries. Disparities in life expectancy, ranging from 62 years in Afghanistan to 83 years in Israel, highlight the need for comprehensive

Table 2. Maternal and Child Health-Related Indicators in the West Asia and North Africa Region

Countries	Total Mortality Rate (100000 Live Birth)	Surviving Infants Who Received 2 WHO-Recommended Vaccines	MMR (Modeled Estimate, Per 100,000 Live Births)	Neonatal Mortality Rate (Deaths Per 1,000 Live Births)	Mortality Rate, Infant (Per 1,000 Live Births)	Mortality Rate for Children Under 5 Years of Age Per 1,000 Live Births	Fertility Rate by Country	Birth Rate by Country
Afghanistan	214.24	63.00	620.41	34.09	43.40	55.60	4.64	35.84
Algeria	63.98	80.00	77.69	15.65	19.20	22.34	2.89	21.52
Bahrain	52.55	98.00	15.90	2.97	5.90	6.92	1.81	11.93
Cyprus	41.55	86.00	68.41	1.61	2.30	2.79	1.32	10.31
Egypt	114.16	96.00	16.82	10.02	16.20	18.96	2.92	22.56
Iran	78.88	98.00	22.02	8.07	10.90	12.63	1.69	13.70
Iraq	126.43	75.00	76.11	14.07	20.70	24.52	3.50	27.37
Israel	39.64	98.00	2.84	1.73	2.70	3.36	3.00	19.70
Jordan	79.13	76.00	41.31	8.54	12.60	14.60	2.83	21.95
Kuwait	34.62	94.00	7.17	4.87	7.50	8.73	2.11	10.41
Lebanon	82.51	67.00	20.62	4.78	7.10	8.24	2.09	14.95
Libya	128.35	73.00	72.13	5.76	9.20	10.77	2.46	17.83
Mauritania	186.32	63.00	463.83	22.61	32.20	40.50	4.40	33.19
Morocco	84.00	99.00	71.85	11.12	15.40	18.00	2.33	17.55
Oman	92.93	99.00	17.01	4.55	8.70	10.14	2.62	18.42
Qatar	45.87	98.00	7.61	3.31	4.50	5.31	1.80	9.82
Saudi Arabia	80.85	97.00	16.20	3.27	5.70	6.72	2.43	17.47
Sudan	174.37	81.00	270.40	26.66	38.90	54.90	4.46	33.60
Syria	94.95	48.00	29.92	10.84	18.40	22.27	2.75	20.11
Turkey	58.04	95.00	17.33	4.72	7.70	8.98	1.89	14.68
Tunisia	76.65	95.00	36.63	11.54	14.00	16.32	2.09	16.09
United Arab Emirates	48.28	96.00	9.34	3.49	5.40	6.37	1.46	10.31
Yemen	171.92	71.00	183.40	28.31	46.70	61.91	3.80	30.54
Total	94.36	84.61	94.13	10.55	15.45	19.17	54.63	18.00

Abbreviations: MMR, maternal mortality ratio; WHO, World Health Organization.

MCH interventions tailored to address the specific health challenges present in each country (8).

The variations in population sizes, ranging from 1.2 million in Cyprus to 109.3 million in Egypt, underscore the heterogeneous healthcare needs and challenges faced by MCH experts and stakeholders across the region.

According to goal 3.1 of sustainable development, by 2030, the maternal mortality rate should reach 70 per 100,000 live births (8). The average of this amount in the region is still much higher, and seven countries, including Afghanistan, Mauritania, Yemen, Sudan, Libya, Iraq, and Egypt, have a long way to go to reach this goal.

Target 3.2 assigned the end of preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-five mortality to at least as low as 25 per 1,000 live births (8). Regarding the rate of neonatal deaths, this goal has been achieved in high-income countries (18), however, countries such as Afghanistan, Yemen, Mauritania, and Sudan are relatively far from achieving this goal. This is also true regarding the death rates of children under one year and under 5 years. Achieving universal health coverage, including financial risk protection, access to quality essential health care services, and access to essential, effective, quality, and affordable medicines and vaccines for all, are among the other SDGs by 2030. Regarding these indicators, however, there is a big difference between low-income and high-income countries in the region.

War and regional insecurity destroy and make the infrastructure of many countries ineffective. This is especially important in places where security, humanitarian, and economic crises overlap, threatening the country's institutions that are in danger of government collapse. The international community should support countries under pressure, even in the most difficult situations (19). Some of these countries are involved in wars and regional crises, the solution of

Table 3. Indicators Related to Maternal and Child Health Services and Some Health Indicators with Them in the West Asia and North Africa Region

Countries	Medical Doctors (Per 10, 000 Population)	Nursing and Midwifery Personnel (Per 10, 000 Population)	Other Health Workers (Per 10, 000 Population)	Antenatal Care Coverage- At Least Four Visits (%)	Births Attended by Skilled Health Personnel (%)	UHC Index of Service Coverage	Prevalence of Anemia Among Women of Reproductive Age (%)
Afghanistan	2.54	4.52	4.80	33.40	61.8	37.00	42.60
Algeria	17.32	15.59	21.60	69.80	98.8	75.00	33.30
Bahrain	8.42	23.46	114.70	100.00	99.6	71.00	35.40
Cyprus	53.75	46.28	107.60	-	99.9	79.00	13.60
Egypt	7.09	18.27	25.40	82.80	97.1	70.00	28.30
Iran	15.14	19.84	29.70	94.30	99	77.00	24.10
Iraq	9.13	22.56	23.50	67.90	95.6	55.00	28.60
Israel	36.54	56.32	245.40	-	99	84.00	12.90
Jordan	25.13	31.60	34.80	91.60	99.7	60.00	37.70
Kuwait	22.93	45.87	110.30	88.50	100	70.00	23.70
Lebanon	26.17	19.29	50.70	84.00	98.2	72.00	28.30
Libya	21.57	67.38	26.90	-	100	60.00	29.90
Mauritania	1.92	9.54	6.90	38.50	70.4	40.00	43.30
Morocco	7.32	13.91	10.00	60.90	86.6	73.00	29.90
Oman	19.94	44.26	54.40	73.90	99.9	69.00	29.10
Qatar	24.99	72.36	144.40	84.50	100	74.00	28.10
Saudi Arabia	27.89	56.05	77.40	79.90	99	74.00	27.50
Sudan	2.63	11.40	9.10	51.20	78	44.00	36.50
Syria	11.86	14.19	12.70	63.70	96	56.00	32.80
Turkey	20.36	34.03	41.50	89.70	97	79.00	29.80
Tunisia	12.61	24.33	15.80	84.10	99.5	70.00	32.10
United Arab Emirates	28.79	63.57	203.70	98.60	99.2	78.00	24.30
Yemen	2.94	7.27	5.00	25.10	60.9	44.00	61.50
Total	17.69	31.39	59.84	63.58	92.83	65.70	31.01

Abbreviation: UHC, universal health coverage.

Table 4. Some of Important Indicators Related to Maternal and Child Health in West Asia and North Africa in Comparison with the Best and Worst Ones (with Examples) in the Worlds in 2021

Indicators	WANA (Average)	Best in WANA	Worst in the World	Best in the World
MMR/100000 live births	94.1	1.61 (Cyprus)	1150 (South Sudan)	3 (Finland)
Neonatal mortality rate/1000 live births	10.55	2.84 (Israel)	42.7 (Pakistan)	1.7 (Iceland)
Infant mortality rate/1000 live births	15.45	2.30 (Cyprus)	68.2 (Central African Republic)	1.9 (Japan)
Under 5 y mortality rate/1000 live births	19.17	2.79 (Cyprus)	91.1 (Central African Republic)	2.8 (Japan)
Proportion of births attended by skilled personnel	92.83	100 (Qatar)	14 (South Sudan) [a]	100 (Sweden) [a]
Medical doctors/10000 population	17.69	53.75 (Cyprus)	82.8 (Sierra Leon)	82.8 (Cuba)
Nursing and midwifery personnel/10000 population	31.39	72.36 (Qatar)	2.002 (Chad)	223.2 (Finland)

Abbreviation: MMR, maternal mortality ratio; WANA, West Asia and North Africa.

[a] Values are expressed as (%).

which requires the will and efforts of the international community to pay more attention and investment in the health of mothers and children in the shadow of peace, because they are the main victims of these disasters.

The health of the people of any country and region is positively and negatively affected by the health status of other communities, especially their neighbors (20, 21). High-income countries in the region can alleviate MCH problems in neighboring WANA with economic,

Table 5. Experts' Responses About Major Challenges and Gaps on Achieving the Sustainable Development Goals Related to Maternal and Child Health in West Asia and North Africa (n = 90) [a]

Major Challenges and Gaps	Responses	%
Key challenges in ensuring access to quality MCH care services	Limited healthcare infrastructure; cultural and social barriers; lack of trained healthcare professionals; insufficient healthcare funding; other	42.9, 23.8, 14.3, 4.8, 14.2
Main contributing factors to the persistently high MMR	Lack of transportation options; cultural beliefs and practices; financial constraints and affordability of services; geographical distance from healthcare facilities; other	47.6, 23.8, 14.3, 4.8, 9.5
Barriers preventing women and children from receiving adequate healthcare during pregnancy, childbirth, and the postnatal period.	Inadequate emergency obstetric services; high rates of early marriages and teenage pregnancies; limited awareness about pregnancy complications; other	52.4, 19.1, 19.0, 9.5
Suggestion for health education and awareness campaigns that effectively target cultural and social elements impacting MCH practices.	Utilizing social media and technology for dissemination; conducting community-based workshops and training sessions; developing culturally sensitive educational materials; collaborating with local community leaders and influencers; other	52.4, 23.8, 19.1, 14.3, 4.8
Major gaps in skilled healthcare personnel attending births in the WANA region and propose effective strategies to address them.	Insufficient incentives for healthcare professionals to work in rural areas; limited access to quality training programs; inadequate distribution of healthcare professionals; other	47.6, 32.9, 14.3, 5.2
Key challenges encountered in implementing comprehensive immunization programs for children based on your experience.	Limited accessibility to remote areas; vaccine hesitancy and misinformation; inadequate cold chain infrastructure for vaccine storage; lack of awareness about the importance of immunization; other	47.6, 19.0, 14.3, 9.5, 9.5
Successful policies and interventions that have reduced infant mortality rates in specific countries within the region.	Enhancing MCH surveillance systems; implementing immunization campaigns; strengthening primary healthcare services; improving access to NICUs; Other	47.7, 23.8, 19.1, 19.1, 4.8
Major barriers to universal access to sexual and reproductive health services for women and adolescents in the WANA region and propose solutions to overcome them.	Limited availability of contraceptive methods; lack of comprehensive sex education; inadequate knowledge about available services; stigma and cultural taboos surrounding reproductive health	47.7, 38.2, 23.8, 4.8
Role of technology and telemedicine in enhancing MCH care delivery, especially in remote or underserved areas	Supporting training and professional development of healthcare providers; enabling remote monitoring of pregnancies and postnatal care; enhancing access to medical information and resources; facilitating remote consultations and telehealth services	42.9, 38.2, 23.8, 9.6
Challenges and accelerating progress towards MCH-related SDGs	Addressing social determinants of health; increasing investment in MCH programs and services; strengthening healthcare infrastructure and workforce; promoting community engagement and participation	42.9, 38.4, 23.8, 14.2

Abbreviations: MCH, maternal and child health; MMR, maternal mortality ratio; NICUs, neonatal intensive care unit.

[a] The sum of more than 100% is related to the cases that were answered to more than one question.

political, and humanitarian support. This benefits both countries' populations and advances sustainable development in the region.

Variations in fertility rates stem from disparities in access to family planning and cultural norms. Addressing these gaps necessitates culturally-sensitive interventions. Tailored efforts informed by these disparities are crucial for advancing the health-related SDGs. Family planning service utilization is pivotal for MCH. Variation in usage may be due to obstacles like cultural beliefs, limited education, and inadequate healthcare. Yemen has higher modern family planning method adoption than Cyprus. Furthermore, the prevalence of anemia among women of reproductive age is another significant determinant of MCH in the WANA region. Anemia during pregnancy increases the risk of maternal mortality, preterm birth, and low birth weight infants (22). As shown in Table 3, Israel reports a prevalence of 12.90% among women aged 15-49 years, while Yemen exhibits a higher prevalence of 61.50%.

This study highlights complexities in healthcare and policymaking in WANA, emphasizing addressing gender disparities, economic factors, and country-specific challenges to improve MCH. Data and expert insights can inform targeted interventions for better MCH outcomes.

Antenatal care coverage is crucial for monitoring maternal health and detecting potential complications during pregnancy. Adequate antenatal care enables healthcare providers to identify and manage maternal health conditions, reducing the risk of adverse pregnancy outcomes (23). Disparities in antenatal care coverage may result from barriers like financial constraints, geographic remoteness, and cultural beliefs. Afghanistan has higher coverage (4.64%) compared to Cyprus (1.32%). Addressing factors influencing MCH in the WANA region is crucial for effective interventions. This analysis of population characteristics and socioeconomic indicators reveals the varying MCH outcomes. Different death, fertility, and birth rates highlight discrepancies in access to healthcare, service quality, and socioeconomic conditions. Using these indicators, policymakers, healthcare practitioners, and researchers can target interventions to overcome challenges and enhance health outcomes (24). Understanding and analyzing

these key indicators are important steps to achieving equitable MCH outcomes in the WANA region that ultimately contribute to the advancement of public health and well-being.

Challenges in achieving SDGs for MCH in the WANA region include limited infrastructure, cultural barriers, lack of professionals, financial constraints, distance from healthcare, and knowledge gaps on pregnancy complications. Strategies to overcome these challenges involve social media, workshops, culturally sensitive materials, collaboration with local leaders, encouraging professionals in underserved areas, ensuring resource distribution, promoting vaccines, improving primary healthcare, newborn care, and sexuality education. Health program investment, infrastructure, and community involvement are vital, with access, service quality, and socioeconomic factors affecting MCH outcomes. Addressing workforce shortages and enhancing healthcare infrastructure are crucial for MCH improvements.

This study is strong and reliable for several reasons. In the first step, it examined a wide range of MCH indicators. The study used multiple authoritative data sources, which lends credibility to the findings. The opinions of key stakeholders, such as government representatives and experts, have led to a richer study and broader insights into MCH improvement. This diversity ensured a comprehensive understanding of the challenges and solutions in MCH.

The use of secondary data from multiple sources increases the robustness of the analysis and provides an overview of MCH indicators across the WANA region. However, it is important to acknowledge the limitations associated with secondary data, including potential biases and inconsistencies. Data quality and accuracy may vary across countries, and potential inconsistencies or biases in data sources can affect the reliability of findings. The reliance on specific secondary data sources, such as WHO reports, World Bank datasets, and national surveys, may introduce selection bias. Furthermore, different countries may have unique contextual factors and healthcare systems that can influence MCH outcomes. The choice of statistical methods and the handling of missing data can introduce bias. Finally, while this study involved the participation of 90 key experts, their selection and voluntary responses may have caused bias.

In conclusion, countries in the WANA region face challenges in achieving their 2030 goals. Targeted interventions for MCH are crucial. Policymakers should prioritize addressing healthcare access disparities, promoting gender equality, improving health literacy, and fostering economic stability to reach this objective effectively. Stakeholders can reduce maternal and child mortality rates and improve healthcare access by addressing disparities, promoting gender equity, enhancing health literacy, and fostering economic stability. Investment in health programs, infrastructure, and community involvement are essential for progress. The study's findings can guide evidence-based strategies for MCH outcomes and health-related SDGs in the region, with consideration of study limitations and country-specific contexts.

To achieve the SDGs for MCH in WANA, further investigation is needed into geographic disparities, financial barriers, healthcare quality, cultural beliefs, gender inequalities, health education programs, integrated care models, technology use, existing policies, and external factors like conflict, displacement, and climate change. This will help develop targeted strategies to improve health outcomes in the region.

Footnotes

Authors' Contribution: H. S.: Study design and analysis, information gathering and writing the manuscript; T. M. O.: Information gathering and contribution to writing the manuscript; Z. H.: Information gathering and contribution to manuscript review.

Conflict of Interests Statement: The authors declared no conflict of interest.

Data Availability: To conduct this study, various data sources were used, including the 2016 Global Burden Study, the World Bank dataset, the international Labour Organization (ILO), the World Health Organization (WHO), national surveys in the region, authoritative scientific publications, and the latest Global Sustainable Development Plan from 2023. Other information from qualitative study is available.

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References

1. Nepal A, Dangol SK, van der Kwaak A. Improving maternal health services through social accountability interventions in Nepal: an analytical review of existing literature. *Public Health Rev*. 2020;**41**(1):31. [PubMed ID: 33349273]. [PubMed Central ID: PMC7751117]. https://doi.org/10.1186/s40985-020-00147-0.

2. World Health Organization. *Maternal mortality. Key facts*. 2024. Available from: https://www.who.int/news-room/fact-sheets/detail/maternal-mortality.
3. Unite Nations Women; Regional Factsheet. *Northern Africa and Western Asia. Progress of the World's Women, Families in a Challenging World*. 2020. Available from: https://www.unwomen.org/sites/default/files/Headquarters/Attachments/Sections/Library/Publications/2019/POWW-2019-Fact-sheet-Northern-Africa-and-Western-Asia-en.pdf.
4. World Health Organization. *Maternal Health*. 2024. Available from: https://www.who.int/health-topics/maternal-health.
5. Souza JP, Day LT, Rezende-Gomes AC, Zhang J, Mori R, Baguiya A, et al. A global analysis of the determinants of maternal health and transitions in maternal mortality. *Lancet Glob Health*. 2024;**12**(2):e306-16. [PubMed ID: 38070536]. https://doi.org/10.1016/S2214-109X(23)00468-0.
6. World Health Organization. *Maternal, newborn, child, and adolescent health*. 2018. Available from: https://www.who.int/teams/maternal-newborn-child-adolescent-health-and-ageing/covid-19.
7. BMC Proceeding. Proceedings of the 2023 International Maternal Newborn Health Conference. *BMC Proc*. 2024. https://doi.org/10.1186/s12919-024-00289-y.
8. UN General Assembly. *Transforming our world: the 2030 Agenda for Sustainable Development*. 2024. Available from: https://www.refworld.org/legal/resolution/unga/2015/en/111816.
9. Coburn C, Restivo M, Shandra JM. The African Development Bank and women's health: a cross-national analysis of structural adjustment and maternal mortality. *Soc Sci Res*. 2015;**51**:307-21. [PubMed ID: 25769869]. https://doi.org/10.1016/j.ssresearch.2014.09.007.
10. Sumankuuro J, Crockett J, Wang S. Maternal health care initiatives: Causes of morbidities and mortalities in two rural districts of Upper West Region, Ghana. *PLoS One*. 2017;**12**(8). e0183644. [PubMed ID: 28854248]. [PubMed Central ID: PMC5576685]. https://doi.org/10.1371/journal.pone.0183644.
11. United Nations. *Transforming our world: The 2030 Agenda for Sustainable Development*. 2015. Available from: https://sdgs.un.org/2030agenda.
12. Katoue MG, Cerda AA, Garcia LY, Jakovljevic M. Healthcare system development in the Middle East and North Africa region: Challenges, endeavors and prospective opportunities. *Front Public Health*. 2022;**10**:1045739. [PubMed ID: 36620278]. [PubMed Central ID: PMC9815436]. https://doi.org/10.3389/fpubh.2022.1045739.
13. Mate K, Bryan C, Deen N, McCall J. Review of Health Systems of the Middle East and North Africa Region. In: Quah SR, editor. *International Encyclopedia of Public Health (Second Edition)*. Oxford: Academic Press; 2017. p. 347-56. https://doi.org/10.1016/B978-0-12-803678-5.00303-9.
14. Hamza A, Hassen S. A systematic review and meta-analysis of the prevalence of neonatal jaundice in the Arab world. *BMC Pediatrics*. 2018;**18**(1):195.
15. World Bank Data Blog. *New World Bank country classifications by income level: 2022-2023*. 2022. Available from: https://blogs.worldbank.org/en/opendata/new-world-bank-country-classifications-income-level-2022-2023.
16. International Labour Organization. *Data and statistics*. 2024. Available from: https://www.ilo.org/data-and-statistics.
17. Jennings MC, Pradhan S, Schleiff M, Sacks E, Freeman PA, Gupta S, et al. Comprehensive review of the evidence regarding the effectiveness of community-based primary health care in improving maternal, neonatal and child health: 2. maternal health findings. *J Glob Health*. 2017;**7**(1):10902. [PubMed ID: 28685040]. [PubMed Central ID: PMC5491947]. https://doi.org/10.7189/jogh.07.010902.
18. Hug L, Alexander M, You D, Alkema L, U. N. Inter-agency Group for Child Mortality Estimation. National, regional, and global levels and trends in neonatal mortality between 1990 and 2017, with scenario-based projections to 2030: a systematic analysis. *Lancet Glob Health*. 2019;**7**(6):e710-20. [PubMed ID: 31097275]. [PubMed Central ID: PMC6527519]. https://doi.org/10.1016/S2214-109X(19)30163-9.
19. Azour J, Bousquet F, Selassie AA. *Countries Hurt by War and Fragility Need Strong Global Partnerships, Resources. international Monetary Fund-Blog*. 2024. Available from: https://www.imf.org/en/Blogs/Articles/2022/12/21/countries-hurt-by-war-and-fragility-need-strong-global-partnerships-resources.
20. Conde P, Gutierrez M, Sandin M, Diez J, Borrell LN, Rivera-Navarro J, et al. Changing Neighborhoods and Residents' Health Perceptions: The Heart Healthy Hoods Qualitative Study. *Int J Environ Res Public Health*. 2018;**15**(8). [PubMed ID: 30065187]. [PubMed Central ID: PMC6121635]. https://doi.org/10.3390/ijerph15081617.
21. Arcaya MC, Arcaya AL, Subramanian SV. Inequalities in health: definitions, concepts, and theories. *Glob Health Action*. 2015;**8**:27106. [PubMed ID: 26112142]. [PubMed Central ID: PMC4481045]. https://doi.org/10.3402/gha.v8.27106.
22. Rahmati S, Delpishe A, Azami M, Hafezi Ahmadi MR, Sayehmiri K. Maternal Anemia during pregnancy and infant low birth weight: A systematic review and Meta-analysis. *Int J Reprod Biomed*. 2017;**15**(3):125-34. [PubMed ID: 28580444]. [PubMed Central ID: PMC5447828].
23. Vollset SE, Goren E, Yuan CW, Cao J, Smith AE, Hsiao T, et al. Fertility, mortality, migration, and population scenarios for 195 countries and territories from 2017 to 2100: a forecasting analysis for the Global Burden of Disease Study. *Lancet*. 2020;**396**(10258):1285-306. [PubMed ID: 32679112]. [PubMed Central ID: PMC7561721]. https://doi.org/10.1016/S0140-6736(20)30677-2.
24. United Nations Development Programme. *People's climate vote*. UNDP and University of Oxford; 2024. Available from: https://www.undp.org/publications/peoples-climate-vote-2024.