Trends in Maternal Mortality: 1990 to 2010

WHO, UNICEF, UNFPA and The World Bank estimates



Trends in maternal mortality: 1990 to 2010

WHO, UNICEF, UNFPA and The World Bank estimates



WHO Library Cataloguing-in-Publication Data

Trends in maternal mortality: 1990 to 2010.

1.Maternal mortality - trends. 2.Maternal welfare. 3.Data collection - methods. 4.Models, Statistical. 5.Millennium Development Goals. I.World Health Organization. II.World Bank. III.UNICEF. IV.United Nations Population Fund.

ISBN 978 92 4 150363 1 (NLM classification: WQ 16)

© World Health Organization 2012

All rights reserved. Publications of the World Health Organization are available on the WHO web site (www.who.int) or can be purchased from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int).

Requests for permission to reproduce or translate WHO publications – whether for sale or for noncommercial distribution – should be addressed to WHO Press through the WHO web site (http://www.who.int/about/licensing/copyright_form/en/index.html).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

Contents

ACK	NOWLEDGEMENTS	V
ABB	REVIATIONS	vii
EXE	CUTIVE SUMMARY	1
1	INTRODUCTION	3
2	MEASURING MATERNAL MORTALITY	4
2.1	Concepts and definitions	
2.2	Coding of maternal deaths	
	Measures of maternal mortality	
2.3	Approaches for measuring maternal mortality	7
3	METHODOLOGY FOR THE 1990–2010 ESTIMATES OF MATERNAL MORTALITY	11
3.1	Sources of country data used for the 1990–2010 estimates	11
3.2	Methods used to estimate maternal mortality ratio in 1990–2010 according to data source	12
	Estimation of maternal mortality ratio from civil registration data (Group A)	
	Estimation of maternal mortality ratio using a statistical model (Groups B and C)	
	Multilevel regression model Uncertainty of estimates	
3.3	Computation of adult lifetime risk of maternal mortality	
3.4	Global and regional estimates	
3.5	Differences between the 2010 methodology and 2008	
3.6	Similarities and differences to other maternal mortality estimates	
4	ANALYSIS AND INTERPRETATION OF THE 2010 ESTIMATES	22
4.1	Maternal mortality estimates for 2010	22
4.2	Trends in MMR from 1990 to 2010	25
4.3	Issues to consider in using the 2010 maternal mortality estimates	26
5	IS THE FIFTH MILLENNIUM DEVELOPMENT GOAL ACHIEVABLE?	27
5.1	Potential reasons for declining maternal mortality	27
REF	ERENCES	30
TAB	I FS	
	le 1. Sources of maternal mortality data used in generating the 2010 maternal mortality ratio	
	mates	12
Tab	le 2. Estimates of maternal mortality ratio (MMR, maternal deaths per 100 000 live births), number	
of m	naternal deaths, and lifetime risk by United Nations Millennium Development Goal region, 2010	19
	le 3. Estimates of maternal mortality ratio (MMR, maternal deaths per 100 000 live births), number naternal deaths and maternal deaths attributed to HIV/AIDS, by United Nations Millennium	
	elopment Goal region, 2010elopment Goal region, 2010	24
	le 4. Comparison of 1990 and 2010 maternal mortality ratio (MMR, maternal deaths per	24
	000 live births) and number of maternal deaths, by United Nations Millennium Development	
	I region	26

ANNEXES AND APPENDICES

Annex 1. Estimates of maternal mortality ratio (MMR, maternal deaths per 100 000 live births),	
number of maternal deaths, lifetime risk and percentage of AIDS-related indirect maternal deaths, 2010	32
Annex 2. Trends in estimates of maternal mortality ratio (MMR, maternal deaths per 100 000	
live births) by 5-year intervals, 1990–2010, by country	37
Annex 3. Countries with 40% or more decrease in the maternal mortality ratio (maternal deaths per	
100 000 live births) from 1990 to 2010	46
Appendix 1. Adjustment factor to account for misclassification of maternal deaths in civil registration,	
literature review of reports and articles	47
Appendix 2. Sixty-five countries with civil registration data characterized as complete, with good	
attribution of cause of death	49
Appendix 3. Eighty-eight countries lacking good complete civil registration data but where other	
sources of national data are available	
Appendix 4. Twenty-seven countries with no national data on maternal mortality ^a	
Appendix 5. Estimation of maternal deaths due to HIV	51
Appendix 6. Trends in estimates of maternal mortality ratio (MMR, maternal deaths per 100 000 l	
ive births) by 5-year periods, 1990–2010, by United Nations Millennium Development Goal region	
(indicated in bold) and other grouping	53
Appendix 7. Estimates of maternal mortality ratio (MMR, maternal deaths per 100 000 live births),	
number of maternal deaths, and lifetime risk by WHO region, 2010	54
Appendix 8. Trends in estimates of maternal mortality ratio (MMR, maternal deaths per 100 000	
live births) by 5-year periods, 1990–2010, by WHO region	54
Appendix 9. Estimates of maternal mortality ratio (MMR, maternal deaths per 100 000 live births),	
number of maternal deaths, and lifetime risk by UNICEF region, 2010	55
Appendix 10. Trends in estimates of maternal mortality ratio (MMR, maternal deaths per 100 000	
live births) by 5-year periods, 1990–2010, by UNICEF region	55
Appendix 11. Estimates of maternal mortality ratio (MMR, maternal deaths per 100 000 live births),	
number of maternal deaths, and lifetime risk by UNFPA region, 2010	56
Appendix 12. Trends in estimates of maternal mortality ratio (MMR, maternal deaths per 100 000	
live births) by 5-year periods, 1990–2010, by UNFPA region	56
Appendix 13. Estimates of maternal mortality ratio (MMR, maternal deaths per 100 000 live births),	
number of maternal deaths, and lifetime risk by World Bank region and income group, 2010	57
Appendix 14. Trends in estimates of maternal mortality ratio (MMR, maternal deaths per 100 000	
live births) by 5-year periods, 1990–2010, by World Bank region and income group	57
Appendix 15. Estimates of maternal mortality ratio (MMR, maternal deaths per 100 000 live births),	
number of maternal deaths, and lifetime risk by UNPD region, 2010	58
Appendix 16. Trends in estimates of maternal mortality ratio (MMR, maternal deaths per 100 000	
live births) by 5-year periods, 1990–2010, by UNPD region	58
Appendix 17. Summary of country consultations	59

Acknowledgements

The Maternal Mortality Estimation Inter-Agency Group (MMEIG), together with Professor John Wilmoth and Alison Gemmill, of the University of California at Berkeley, United States of America (USA), collaborated in developing these maternal mortality estimates.

The MMEIG consists of the following individuals, listed in alphabetical order: Mohamed Ali of the World Health Organization (WHO); Ties Boerma of WHO; Doris Chou of WHO; Sara Hertog of the United Nations Population Division (UNPD); Edilberto Loaiza of the United Nations Population Fund (UNFPA); Mie Inoue of WHO; Colin Mathers of WHO; Michael Mbizvo of WHO; Samuel Mills of The World Bank, Washington, DC, USA; Holly Newby of the United Nations Children's Fund (UNICEF); Mikkel Oestergaard of WHO; Dag Roll-Hansen of Statistics Norway; Lale Say of WHO; Armando Seuc of WHO; and Emi Suzuki of The World Bank. Professor John Wilmoth is the lead adviser to the MMEIG.

An external technical advisory group (TAG) provided independent technical advice. The members of the TAG are: Saifuddin Ahmed of Johns Hopkins University, Baltimore, MD, USA; David Braunholz of Aberdeen University, Scotland; Peter Byass of Umeå University, Sweden; Wendy Graham of Aberdeen University, Scotland; Kenneth Hill of Harvard University, Cambridge, Massachusetts, MA, USA; Thomas Pullum of University of Texas at Austin, USA; and Neff Walker of Johns Hopkins University, Baltimore, MD, USA.

The Department of Governing Bodies and External Relations of WHO, WHO country offices, UNFPA country offices, and UNICEF country offices, are gratefully acknowledged for facilitating the country consultations. Thanks to the WHO regional office staff:

Regional Office for Africa

Derege Kebede Triphonie Nkurunziza Edoh William Soumbey-Alley

Regional Office for the Americas

Bremen De Mucio Ricardo Fescina Fatima Marinho De Souza

Regional Office for South East Asia

Narimah Awin Jyotsna Chikersal Gunasena Sunil Senanayake

Regional Office for Europe

Enrique Gerardo Loyola Elizondo Gunta Lazdane Lucianne Licari Claudia Elisabeth Stein

Regional Office for the Eastern Mediterranean

Ramez Khairi Mahaini Mohamed Mahmoud Ali

Regional Office for the Western Pacific

Jun Gao Ardi Kaptiningsih

Mie Inoue, Alexandre Peregoudov, and Armando Seuc of WHO provided translation during country consultations. Thanks to all focal points of governments who reviewed the preliminary estimates of maternal mortality ratios and provided valuable feedback.

WHO, The World Bank Netherlands Partnership Program (BNPP), UNICEF and the United States Agency for International Development (USAID) provided financial support.

This report was prepared by Doris Chou, Mie Inoue, Colin Mathers, Ann-Beth Moller, Mikkel Oestergaard, and Lale Say of WHO; Samuel Mills and Emi Suzuki of The World Bank; and John Wilmoth of the University of California at Berkeley, USA. Fern Greenwell assisted with the country consultation and writing of the report. Grateful thanks are extended to Peter Byass, Liliana Carvajal, Vibeke Nielsen, Mary Mahy and Sara Hertog, who reviewed the drafts of this report and provided valuable advice.

Contact person: Doris Chou, Department of Reproductive Health and Research, WHO; e-mail: choud@who.int

预览已结束,完整报告链接和二维码如下:

https://www.yunbaogao.cn/report/index/report?reportId=5 20348



