

Guideline:

USE OF MULTIPLE MICRONUTRIENT POWDERS

FOR POINT-OF-USE FORTIFICATION OF FOODS CONSUMED BY **PREGNANT WOMEN**



World Health
Organization

GUIDELINE:

**USE OF MULTIPLE MICRONUTRIENT POWDERS
FOR POINT-OF-USE FORTIFICATION OF FOODS
CONSUMED BY PREGNANT WOMEN**

WHO Library Cataloguing-in-Publication Data

Guideline: use of multiple micronutrient powders for point-of-use fortification of foods consumed by pregnant women.

1.Micronutrients - administration and dosage. 2.Anaemia, Iron-Deficiency - prevention and control. 3.Pregnancy. 4.Food, Fortified. 5.Dietary Supplements. 6.Guideline. I.World Health Organization.

ISBN 978 92 4 154951 6

(NLM classification: WH 160)

© World Health Organization 2016

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 non-commercial distribution– should be addressed to WHO Press through the WHO website (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.

Design and layout: Elysium sàrl

Cover photo by Gerardo Zamora and Mikel Otxotorena

Printed by the WHO Document Production Services, Geneva, Switzerland

SUGGESTED CITATION

WHO. Guideline: *Use of multiple micronutrient powders for point-of-use fortification of foods consumed by pregnant women*. Geneva: World Health Organization; 2016.

CONTENTS

| | |
|---|----|
| PUBLICATION HISTORY | IV |
| ACKNOWLEDGEMENTS | IV |
| Financial support | IV |
| EXECUTIVE SUMMARY | 1 |
| Background | 1 |
| Purpose of the guideline | 1 |
| Guideline development methodology | 1 |
| Available evidence | 2 |
| Recommendation | 2 |
| Remarks | 2 |
| WHO GUIDELINE: | |
| Use of multiple micronutrient powders for point-of-use fortification of foods consumed by pregnant women | 3 |
| 1. Scope and purpose | 3 |
| 2. Background | 3 |
| 3. Summary of evidence | 4 |
| 4. Recommendation | 5 |
| 5. Remarks | 6 |
| 6. Implications for future research | 6 |
| 7. Dissemination and programme implications | 6 |
| 8. Guideline development process | 7 |
| Advisory groups | 7 |
| Scope of the guideline | 8 |
| Evidence appraisal and decision-making | 8 |
| 9. Management of conflicts of interests | 9 |
| 10. Plans for updating the guideline | 11 |
| REFERENCES | 12 |
| ANNEX 1. | |
| GRADE summary of findings tables | 15 |
| a. Micronutrient powders for point-of-use fortification of foods versus iron and folic acid supplements | 15 |
| b. Micronutrient powders for point-of-use fortification of foods versus the same multiple micronutrients in supplements | 16 |
| ANNEX 2. | |
| Summary of the considerations of the members of the guideline development group for determining the strength of the recommendation for use of multiple micronutrient powders for point-of-use fortification of foods consumed by pregnant women | 17 |
| ANNEX 3. | |
| WHO Steering Committee for Nutrition Guidelines Development | 18 |
| ANNEX 4. | |
| WHO guideline development group – nutrition actions 2013–2014 | 20 |
| ANNEX 5. | |
| WHO Secretariat | 22 |
| ANNEX 6. | |
| External resource experts | 23 |
| ANNEX 7. | |
| Peer-reviewers | 24 |
| ANNEX 8. | |
| Questions in population, intervention, control, outcomes (PICO) format | 25 |

PUBLICATION HISTORY

This guideline, *Use of multiple micronutrient powders for point-of-use fortification of foods consumed by pregnant women* is an update of the 2011 WHO guideline, *Use of multiple micronutrient powders for home fortification of foods consumed by pregnant women*. The word “home” has been substituted by “point-of-use”, to reflect the variety of settings where this intervention may take place. In order to produce this current guideline, the standard guideline development process was followed, according to the *WHO handbook for guideline development*. The current guideline updates the evidence on the use of multiple micronutrient powders by pregnant women and the overall evidence supports the continuance of the 2011 recommendation. This document expands the sections on dissemination and updates the summary of evidence used for this guideline, based on the most recent systematic review on the topic.

ACKNOWLEDGEMENTS

This updated guideline was coordinated by Mr Gerardo Zamora and Dr Lisa Rogers, under the supervision of Dr Juan Pablo Peña-Rosas. Thanks are due to Dr Susan Norris and staff from the World Health Organization (WHO) Guidelines Review Committee Secretariat for their support throughout the process and to Ms Alma Alic from the Office of Compliance and Risk Management and Ethics for her support in the management of conflicts of interest procedures. Thanks are also due to the office of the Deputy Minister for the Prevention and Promotion of Health, Ministry of Health, Mexico, for their support in the preparation of one of the consultative meetings where this guideline was discussed. WHO acknowledges the technical contribution from the following individuals (in alphabetical order): Ms Mónica Flores-Urrutia, Dr Jonathan Siekmann and Dr Pattanee Winichagoon. Ms Jennifer Volonnino from the Evidence and Programme Guidance Unit, Department of Nutrition for Health and Development, provided logistic support.

WHO gratefully acknowledges the technical input of the members of the Nutrition Steering Committee and the WHO guidelines development group – nutrition actions 2013–2014, especially the chairs of the meetings, Dr Rebecca Stoltzfus and Ms Rusidah Selamat. WHO is also grateful to the staff of the Cochrane Pregnancy and Childbirth Group, for their support during the development of the systematic review used to inform this updated guideline.

Financial support

WHO thanks the Bill & Melinda Gates Foundation for providing financial support for this work. Micronutrient Initiative provides financial support to the Evidence and Programme Guidance Unit for the commissioning of systematic reviews of nutrition interventions. Donors do not fund specific guidelines and do not participate in any decision related to the guideline development process, including the composition of research questions, membership of the guideline groups, conduct and interpretation of systematic reviews, or formulation of recommendations.

WHO GUIDELINE¹: USE OF MULTIPLE MICRONUTRIENT POWDERS FOR POINT-OF-USE FORTIFICATION OF FOODS CONSUMED BY PREGNANT WOMEN

EXECUTIVE SUMMARY

Background

Pregnant women are particularly vulnerable to vitamin and mineral deficiencies because of the increase in metabolic demands to meet fetal requirements for growth and development. It is estimated that 38.2% of pregnant women (aged 15–49 years) worldwide are anaemic and that iron deficiency anaemia represents approximately 60% of these cases in non-malarious areas and 50% in malaria-endemic settings. Vitamin and mineral deficiencies in pregnancy are associated with adverse health outcomes in both the mother and her neonate.

Purpose of the guideline

Member States have requested guidance from the World Health Organization (WHO) on the effects and safety of the use of multiple micronutrient powders for point-of-use² fortification of foods consumed by pregnant women. This guideline is intended to help Member States in their efforts to make evidence-informed decisions on the appropriate nutrition actions to improve the nutritional status of pregnant women. It will also support their efforts to achieve the [Sustainable Development Goals](#) (2), the global targets set by the [Comprehensive implementation plan on maternal, infant and young child nutrition](#) (3) and the [Global strategy for women's, children's, and adolescents' health 2016–2030](#) (4).

The guideline is intended for a wide audience, including governments, nongovernmental organizations, health-care workers, scientists and donors involved in the design and implementation of micronutrient programmes and antenatal care services and their integration into national and subnational public health strategies and programmes.

Guideline development methodology

WHO developed the present evidence-informed recommendation using the procedures outlined in the [WHO handbook for guideline development](#) (5). The steps in this process included: (i) identification of priority questions and outcomes; (ii) retrieval of the evidence; (iii) assessment and synthesis of the evidence; (iv) formulation of recommendations, including research priorities; and (v) planning for dissemination implementation, impact evaluation and updating of the guideline. The Grading of Recommendations Assessment, Development and Evaluation ([GRADE](#)) methodology was followed (6), to prepare evidence profiles related to prioritized questions, based on up-to-date systematic reviews.

The guideline development group – nutrition actions 2013–2014 consisted of content experts, methodologists, and representatives of potential stakeholders and beneficiaries. The first meeting to scope the guideline was held on 18–21 February 2013, Geneva, Switzerland. The second meeting on 23–26 June 2014, Geneva, Switzerland, aimed to examine the evidence and assess the results of the systematic review. The third and final meeting on 3–6 November 2014, Cancun, Mexico, was held to finalize the formulation of the recommendation and the research priorities. External experts, as resource persons, assisted the guideline development group during the guideline development process, in presenting the evidence and contributing to the identification

¹ This publication is a WHO guideline. A WHO guideline is any document, whatever its title, containing WHO recommendations about health interventions, whether they be clinical, public health or policy interventions. A recommendation provides information about what policy-makers, health-care providers or patients should do. It implies a choice between different interventions that have an impact on health and that have ramifications for the use of resources. All publications containing WHO recommendations are approved by the WHO Guidelines Review Committee.

² Point-of-use fortification with multiple micronutrient powders refers to the addition of powders containing vitamins and minerals to energy-containing foods at home or in any other place where meals are to be consumed, such as schools, nurseries and refugee camps (1).

of research priorities. All meeting participants completed a declaration of interests form before each meeting. The final guideline document was peer-reviewed by two experts.

Available evidence

The systematic review included two trials. One trial, involving 478 pregnant women, assessed micronutrient powders for point-of-use fortification of foods versus iron and folic acid supplements. The other trial, involving 470 pregnant women, assessed micronutrient powders for point-of-use fortification of foods versus the same multiple micronutrients in supplements. No trials that assessed the other comparisons were found. Both trials took place in rural settings, one in Bangladesh and the other in Mexico. Neither of the included trial settings was endemic for malaria. The overall quality of evidence was very low and there was no evidence available for the majority of critical and important outcomes. Maternal adherence to micronutrient powders was reported to be lower than adherence to iron and folic acid supplementation (risk ratio [RR]: 0.76; 95% confidence interval [CI]: 0.66 to 0.87; $n = 405$). There were no significant differences in the prevalence of maternal anaemia at term or near term between multiple micronutrient supplements and multiple micronutrient powders containing the same micronutrient (RR: 0.92; 95% CI: 0.53 to 1.59; $n = 470$, very low quality evidence).

Recommendation

- Routine use of multiple micronutrient powders during pregnancy is *not* recommended as an alternative to standard iron and folic supplementation during pregnancy for improving maternal and infant health outcomes (*strong recommendation, very low quality of evidence*).

This recommendation is based on the very limited evidence to directly assess the potential benefits or harms of the use of point-of-use fortification with multiple micronutrient powders in pregnant women for improving maternal and infant health outcomes.

Remarks

- Evidence to date shows no added value of multiple micronutrient powders over iron and folic acid supplementation in pregnant women.
- An efficient system for the routine collection of relevant data, including therapeutic adherence and measures of programme performance, is critical to ensure supplementation programmes are effective and sustained, especially for iron and folic acid supplementation (7, 8).
- Monitoring is key to identifying barriers that might be sustaining unequal access to antenatal care, including iron and folic supplementation. Sustained implementation and scale-up largely benefit from appropriate monitoring mechanisms.

The WHO Secretariat will continue to follow the research development in the area of micronutrient supplementation for pregnant women. If the guideline merits an update, or if there are concerns about the validity of the guideline, the Department of Nutrition for Health and Development will coordinate the guideline update, following the formal procedures of the [WHO handbook for guideline development](#) (5).

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_27080

