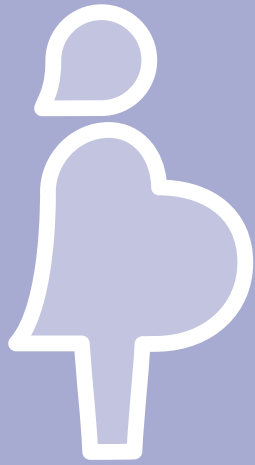


WHO recommendation

**Calcium supplementation
during pregnancy for the
prevention of pre-eclampsia
and its complications**



World Health
Organization

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prevention of pre-eclampsia
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Acronyms and abbreviations

| | |
|-------|--|
| ANC | Antenatal care |
| BMGF | Bill & Melinda Gates Foundation |
| CI | Confidence interval |
| DOI | Declaration of Interest |
| FIGO | International Federation of Gynaecology and Obstetrics |
| FWC | Family, Women’s and Children’s Health (a WHO cluster) |
| GDG | Guideline Development Group |
| GRC | Guideline Review Committee |
| GRADE | Grading of Recommendations, Assessment, Development, and Evaluation |
| GREAT | Guideline development, Research priorities, Evidence synthesis, Applicability of evidence, Transfer of knowledge (a WHO project) |
| GSG | Executive Guideline Steering Group |
| HELLP | Haemolysis, elevated liver enzymes, low platelets |
| ICM | International Confederation of Midwives |
| ICU | Intensive Care Unit |
| LMIC | Low and middle-income country |
| MAP | Mean Arterial Pressure |
| MCA | [WHO Department of] Maternal, Newborn, Child and Adolescent Health |
| MCSP | Maternal and Child Survival Programme |
| MPA | Maternal and Perinatal Health and Preventing Unsafe Abortion (a team in WHO’s Department of Reproductive Health and Research) |
| MPH | Maternal and perinatal health |
| NHD | [WHO Department of] Nutrition for Health and Development |
| NICU | Neonatal Intensive Care Unit |
| NNT | Number needed to treat |
| PICO | Population (P), intervention (I), comparison (C), outcome (O) |
| RCT | Randomized Controlled Trial |
| RHR | [WHO Department of] Reproductive Health and Research |
| RR | Relative risk |
| SDG | Sustainable Development Goals |
| UN | United Nations |
| UNFPA | United Nations Population Fund |
| USAID | United States Agency for International Development |
| WHO | World Health Organization |



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Executive Summary

Introduction

Hypertensive disorders of pregnancy are a significant cause of severe morbidity, long-term disability and death among both mothers and their babies. Worldwide, they account for approximately 14% of all maternal deaths (1). Among the hypertensive disorders that complicate pregnancy, pre-eclampsia and eclampsia stand out as major causes of maternal and perinatal mortality and morbidity. The majority of deaths due to pre-eclampsia and eclampsia are avoidable through the provision of timely and effective care to the women presenting with these complications.

Improving care for women during pregnancy and around the time of childbirth to prevent and treat pre-eclampsia and eclampsia is a necessary step towards the achievement of the health targets of the Sustainable Development Goals (SDGs). Efforts to prevent and reduce morbidity and mortality due to these conditions can help address the profound inequities in maternal and perinatal health globally. To achieve this, healthcare providers, health managers, policy-makers and other stakeholders need up-to-date and evidence-informed recommendations to guide clinical policies and practices.

In 2017, the Executive Guideline Steering Group (GSG) on WHO maternal and perinatal health recommendations prioritized the updating of the existing *WHO recommendation on calcium supplementation during pregnancy* in response to new evidence available on the effects of this intervention. This recommendation is a revalidation of the previous recommendation on calcium supplementation issued in 2016 in the *WHO recommendations on antenatal care for a positive pregnancy experience* (2).

Target audience

The primary audience of this recommendation includes healthcare professionals who are responsible for developing national and local healthcare protocols (particularly those related to

pre-eclampsia and eclampsia) and those directly providing care to pregnant women and their newborns, including midwives, nurses, general medical practitioners, obstetricians, managers of maternal and child health programmes, and relevant staff in ministries of health, in all settings.

Guideline development methods

The update of this recommendation was guided by standardized operating procedures in accordance with the process described in the *WHO handbook for guideline development*. The recommendation was initially developed using this process, namely:

- (i) identification of the priority question and critical outcomes;
- (ii) retrieval of evidence;
- (iii) assessment and synthesis of evidence;
- (iv) formulation of the recommendation; and
- (v) planning for the dissemination, implementation, impact evaluation and updating of the recommendations.

The scientific evidence supporting the recommendation was synthesized using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) approach. An updated systematic review was used to prepare evidence profiles for the prioritized question. WHO convened an online meeting on 2 May 2018 where the Guideline Development Group (GDG) members reviewed, deliberated and achieved consensus on the strength and direction of the recommendation presented herein. Through a structured process, the GDG reviewed the balance between the desirable and undesirable effects and the overall certainty of supporting evidence, values and preferences of stakeholders, resource requirements and cost-effectiveness, acceptability, feasibility and equity. The GDG revalidated the WHO recommendation on calcium supplementation during pregnancy published in 2016 with minor revisions to the remarks and implementation considerations.

The recommendation

To ensure that the recommendation is correctly understood and applied in practice, guideline users may want to refer to the remarks, as well as to the evidence summary, including the considerations on implementation.

Table 1: WHO recommendation on calcium supplementation during pregnancy for the prevention of pre-eclampsia and its complications

| |
|---|
| <p>In populations with low dietary calcium intake, daily calcium supplementation (1.5–2.0g oral elemental calcium) is recommended for pregnant women to reduce the risk of pre-eclampsia.</p> <p><i>(Context-specific recommendation, moderate-certainty evidence)</i></p> |
| <p>Remarks</p> <ul style="list-style-type: none">• This recommendation is consistent with the 2016 <i>WHO recommendations on antenatal care for a positive pregnancy experience</i> (2).• Dietary counselling of pregnant women should promote adequate calcium intake through locally available, calcium-rich foods.• Dividing the dose of calcium may improve acceptability. The suggested scheme for calcium supplementation is 1.5-2.0g daily, with the total dose divided into three doses, preferably taken at mealtimes.• Negative interactions between iron and calcium supplements may occur. Therefore, the two micronutrients should preferably be administered several hours apart rather than concomitantly (3).• As there is no clear evidence on the timing of initiation of calcium supplementation, stakeholders may wish to commence supplementation at the first antenatal care contact, in order to improve compliance to the regimen. |

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