RECOMMENDATIONS TO IMPROVE THE IMPLEMENTATION OF ANEMIA PREVENTION AND CONTROL INTERVENTIONS
Acknowledgements

A team formed by members from Swiss Tropical and Public Health Institute and the An-Najah National University implemented an assessment of bottlenecks in anemia prevention and control in the Palestinian Territory.

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# ABBREVIATIONS

<table>
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<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>APC</td>
<td>Anemia prevention and control</td>
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<td>FFMC</td>
<td>Food Fortification Monitoring Committee</td>
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<td>GS</td>
<td>Gaza Strip</td>
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<td>IFA</td>
<td>Iron and folic acid</td>
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<td>MCNNP</td>
<td>Maternal and Child National Nutritional Protocol</td>
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<td>MoH</td>
<td>Ministry of Health</td>
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<td>MoH-CHD</td>
<td>Ministry of Health Community Health Department</td>
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<td>MoH-ND</td>
<td>Nutrition Department of the Ministry of Health</td>
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<td>MoNE</td>
<td>Ministry of National Economy</td>
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<td>SMS</td>
<td>Short Message Service</td>
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<td>UNRWA</td>
<td>United Nations Relief and Works Agency</td>
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<td>WB</td>
<td>West Bank</td>
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<td>WHO</td>
<td>World Health Organization</td>
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1. INTRODUCTION

1.1 Definition of anemia and its consequences and causes

Anemia is a condition in which the hemoglobin concentration in the blood is lower than normal. It is associated with poor cognitive and motor development outcomes in children. It causes fatigue and low productivity in all people affected. When anemia occurs during pregnancy, it is associated with poor birth outcomes (including low birth weight and prematurity) as well as maternal and perinatal mortality. Iron deficiency is the overall dominant cause of anemia. However, there is an interplay between biological and socio-economic factors, and not all anemia cases can be corrected by providing additional iron alone. Anemia is also caused by deficiencies in other nutrients (e.g., folate, vitamin A), increased physiologic requirements for iron during growth (young children, pregnancy), or blood loss (menstruation, helminth infections). The underlying causes of anemia include poverty, lack of access to services providing anemia prevention and control (APC) interventions, among others.

1.2 Anemia prevalence in the West Bank and Gaza Strip

The historical situation of instability in the West Bank (WB) and the Gaza Strip (GS) has multiple adverse impacts on the population. In this context, several assessments have documented a deterioration in the nutritional status of the population of the WB and GS including static or increasing prevalence of anemia, caused by iron deficiency, and other nutrition deficiencies (e.g., iodine and vitamin A).

According to the most recent information available, anemia is a public health problem among pregnant and postnatal women, children aged 6–59 months, and adolescents (Figure 1). In these four groups, the prevalence of anemia is higher in the GS compared to the WB. The fact that children aged 6–59 months are affected by anemia makes it probable that children aged 0–5 months are also affected. However, this may not be reflected in the data because this age group is not normally sampled.

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due to the procedure involving taking a blood sample from babies. Babies aged 0–5 months are particularly vulnerable if they are born with inadequate iron stores, e.g., if their mothers are anemic, babies are not exclusively breastfed or suffer from episodes of diarrhea.

In the GS, anemia is a severe public health problem, among pregnant women and children aged 6–23 months. In the remaining groups of both the WB and GS, anemia is a mild-moderate public health problem. Among children aged 6–23 months of the WB, anemia is virtually a severe problem.

Figure 1 Prevalence of anemia in high-risk groups of the West Bank (WB) and Gaza Strip (GS) according to the WHO’s classification of anemia as a public health problem.

1.3 Interventions to address anemia

The two main APC activities in the Palestinian Territory are the universal fortification of wheat flour with micronutrients and iron supplementation to pregnant and postnatal women, and children aged 6–23 months. Despite these efforts, the prevalence of anemia has remained static during the last decade (see Figure 2), indicating possible poor coverage and quality of these interventions considering this type of intervention has proven effective in other parts of the world.

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11 The WHO categories of anemia prevalence as public health problems are: Severe, for prevalences 40 percent or higher; Moderate, for prevalences 20–39.9 percent; and Mild, for prevalences 5–19.9 percent.
1.4 Assessment and its findings

An assessment was implemented to identify bottlenecks in the APC interventions in the WB and GS. The methodology of the assessment included reviewing all available data regarding the population’s anemia status; policy and technical documentation; interviewing key program implementers at central, regional, and local levels, with users of maternal and childcare services; and visiting warehouses of iron supplements and points of sale of fortified foods. The assessment identified demand-and-supply-side bottlenecks for the two major interventions: flour fortification and iron supplementation.

This assessment identified that residing in the GS is associated with a higher prevalence of anemia across all the four groups of pregnant and lactating women, children aged 6–59 months and adolescents. Iron deficiency was also associated with anemia across all groups, whereas other factors associated were specific to certain population groups. The most relevant factors were vitamin A or folate deficiency, diarrhea, fever, not taking iron and folic acid (IFA) supplements at all during and after pregnancy, not taking IFA supplements regularly during and after pregnancy, infrequent consumption of iron-rich foods and socio-economic factors. Conditions related to an increased need for iron due to physiological state (2nd and 3rd trimester of pregnancy), age (children aged 6–11 months) and gender (females among adolescents) were also found to be associated with anemia.

The flour fortification program aims to increase the intake of iron and other micronutrients for the whole population, by adding 10 micronutrients to wheat flour, including iron, vitamin A, and folic acid. Currently, the Ministry of Health (MoH) and partners implement limited activities to promote the consumption of fortified flour. The monitoring of flour fortification indicated that only 3–5 percent of the wheat flour samples collected from 2016 to 2020 contained iron levels that complied with...
national standards. Due to the low iron fortification of wheat flour, this assessment concludes that the fortification program has a poor implementation, causing it to have a limited contribution to the general population’s iron intake.

This assessment verified the availability of wheat flour and wheat flour-based products in the WB and GS. However, these products are sold without any certification or reliable identification of their fortification status. Consequently, bakeries and consumers cannot make informed decisions regarding which products to buy because they cannot identify products that are adequately fortified.

The Maternal and Child National Nutritional Protocol (MCNNP) guides the iron supplementation program. The MCNNP includes pregnant and postnatal women, and children aged 6–23 months as the target populations of the supplementation program, which is appropriate and consistent with the recommendations of the World Health Organization (WHO). The monitoring of iron supplementation activities registers the volume of supplements dispensed but not the delivery of counselling or individual patients’ compliance with the supplementation schedule. Activities to promote iron supplementation have been limited and sporadic and do not follow an overall communication plan. The iron supplementation program partially provides for the target population’s requirements by distributing supplies based on previous consumption instead of on actual needs. The volume of IFA tablets distributed to pregnant and postnatal women who are registered as users of the MoH clinics was estimated to be equivalent to 61 percent of the amount necessary to comply with the supplementation schedule established in the MCNNP.

Iron supplementation supplies were found to be available in all the clinics and pharmacies visited, both in the WB and GS. However, users of antenatal care and childcare services perceive the educational information about iron supplementation—intended to aid in compliance—to be inadequate. Conversely, health care providers consider the compliance of patients to be satisfactory. The assessment concluded that the target population consumes substantially fewer iron supplements than indicated by the MCNNP.

This document provides recommendations to address demand-and-supply-side bottlenecks for wheat flour fortification and iron supplementation. The following recommendations can be taken independently to improve these two interventions.

2. RECOMMENDATIONS FOR THE WHEAT FLOUR FORTIFICATION PROGRAM

The wheat flour fortification and iron supplementation interventions have been a priority in the national strategic agenda for almost 20 years. In addition to the policies, strategies and regulations in place, the Nutrition Department of the Ministry of Health (MoH-ND) has been appointed as the national coordination office. The addition of micronutrients to all wheat flour, including iron, was made mandatory in 2006. However, the outcomes of this program and its impact have not been as effective as expected. The assessment hypothesizes that this is due to poor implementation. Some actions and policies could help enhance implementation to increase the effectiveness of the strategies and actions in place. A multi-sectoral partnership in fortification programs is known to be successful in diverse contexts and in the Eastern Mediterranean region. The multi-sectoral approach provides an opportunity to coordinate agendas and identify synergies among various stakeholders.

First identified problem
During the period 2016–2020, only 3–5 percent of wheat flour samples complied with national fortification standards, according to data collected by the flour fortification monitoring system. This suggests poor implementation and enforcement of the fortification program.

Recommendation
The MoH, in partnership with the Ministry of National Economy (MoNE), should commence a field investigation to identify the underlying reasons for non-compliance with the national fortification standards among flour producers and importers. The investigation should consult representatives of the private sector (including millers, pre-mix suppliers, importers, bakeries, and retail shops), government authorities responsible for food safety (MoH, Public Safety Committee) and those responsible for law enforcement (Ministry of Justice and Ministry of National Security). Inclusive stakeholder consultation will foster their support towards defined actions and their effective implementation.

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16 24–47 percent were assessed as negative by the qualitative test and 51–74 percent were assessed as low (< 25 mg/kg) by the MoH lab test. Source: Dataset of the MoH-Food Fortification Monitoring System 2016–2020.
With the results from this assessment, the MoH and the MoNE should determine and agree on short- and medium-term actions towards improving the compliance and enforcement of flour fortification. The participation of MoNE in this investigation is relevant due to its regulatory role in food production and importation. The MoH should continue leading its efforts on quality control of the flour fortification program, namely sample collection and assessment.

Second identified problem
There are very limited efforts to promote fortified flour consumption. The MoH considers that promotion is unnecessary given that fortification is mandatory, but also due the not sufficient presence of fortified flour.

Recommendation
The MoH should establish a communication campaign to raise awareness regarding the importance of reducing the prevalence of anemia and highlighting the consequences for improved health and productivity. In addition, the communication campaign should include information regarding prevention and available resources in place. Though the campaign should target the general population, it should include tailored and extensive efforts to target at-risk sub-groups with the highest prevalence. These groups include pregnant and postnatal women, adolescents, and children aged 6–59 months and their caregivers. Bakeries, as a place frequently visited by consumers, should be targeted to disseminate information regarding wheat flour fortification and iron supplementation, as well as clinics, homes, supermarkets, traditional markets, and other relevant places. The communication campaign should also consider the use of digital channels (e.g., via social media) if this is relevant to the targeted populations.

The communication campaign should be accompanied by nutrition education and behavior change actions at health facilities, for example, promoting the consumption of foods containing iron and the avoidance of tobacco consumption in addition to iron supplementation. The contents of nutrition education and behavior change actions should be tailored to the specific needs of patients attending health facility services. Increasing awareness will increase the demand for fortified wheat and APC services, which will ultimately have a positive result in the effectiveness of APC services.

Third identified problem
The following weaknesses were identified in the food fortification monitoring system operating in the WB:

- The sampling of monitored actions is not systematic (each team decides independently what sources are included and why).
- There is no tracking of previous non-compliers (no unique identification).
- There is no categorization of sources (e.g., mills, importers, bakeries).

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19 The assessment could not evaluate details in the GS.
Recommendation
The Food Fortification Monitoring Committee (FFMC) should update its guidelines by including a random-based procedure for sample collections to ensure representativeness and transparency. The revised FFMC guidelines should include criteria to define the minimum number of samples by source (producers, importers, bakeries) in each governorate. Clear classification and coding of each source should be included in the system to allow for the tracking of each collected sample with additional information, such as stages of testing, results, and actions taken according to a test result.
3. RECOMMENDATIONS FOR THE IRON SUPPLEMENTATION PROGRAM

The MoH and the United Nations Relief and Works Agency (UNRWA) distribute iron supplements to pregnant and postnatal women, and children aged 6–23 months in the WB and GS\textsuperscript{20}. The table below summarizes the schedules of supplementation recommended by WHO and compares them to the schedules of the MCNNP for each population group.

<table>
<thead>
<tr>
<th>Population</th>
<th>WHO’s recommendations</th>
<th>National Nutrition Protocol</th>
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<tbody>
<tr>
<td>Pregnant women</td>
<td>30–60 mg of elemental iron plus 400 μg (0.4 mg) of folic acid daily throughout pregnancy\textsuperscript{21}.</td>
<td>60 mg of elemental iron plus 400 μg of folic acid daily for at least six months of pregnancy, plus continuing to three months postpartum (or a total duration of nine months)\textsuperscript{22, 23}.</td>
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<tr>
<td>Postnatal women</td>
<td>In settings where gestational anemia is ≥20 percent\textsuperscript{24} oral iron alone or with folic acid, may be provided to postpartum women for 6–12 weeks following delivery. Scheme used during pregnancy (daily or weekly).</td>
<td></td>
</tr>
<tr>
<td>Children aged 6–23 months</td>
<td>In populations where the prevalence of anemia is ≥40 percent\textsuperscript{25}. 10–12.5 mg elemental iron, drops or syrup daily, one supplement per day, three consecutive months per year.</td>
<td>12.5 mg elemental iron, drops or syrup daily, one supplement per day.</td>
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First identified problem

There is a gap between the required quantity of supplements to cover the normative needs of the registered pregnant women and how much is actually distributed. This indicates that the target population is consuming fewer iron supplements than recommended by the MCNNP. The gap comes from the calculation of supplements quantity; it is based on past consumption and not on the actual needs of the population receiving maternal childcare from MoH clinics, including pregnant and postnatal women, and children aged 6–23 months.

\textsuperscript{20} UNRWA also distributes iron supplements to children 24–59 months.
\textsuperscript{21} World Health Organization, \textit{WHO recommendations on antenatal care for a positive pregnancy experience} (Geneva, 2016).
\textsuperscript{24} World Health Organization, \textit{Guideline Iron Supplementation in postpartum women} (Geneva, 2016).
Recommendation
To ensure the adequate availability of iron supplements in clinics to supply the normative needs of the target population, iron supplement needs should be calculated for each specific target group by using the number of registered users and the schedule established in the MCNNP.

Based on the results of an estimation of needs guided by the MCNNP, the MoH budget for essential medicines should include sufficient financial resources to cover the target populations’ needs for IFA and iron supplements. The MoH Central Warehouse Department should be ready to order additional amounts of iron supplements in between annual orders in preparation for an eventual increase in demand.

In order to increase the service delivery of iron supplementation and contact with the target population, MoH clinics can expand current experiences that use a "child's unified file" system (where children receive multiple preventive health services during the same visit to clinics) or deliver iron supplements during home visits. Additionally, the MoH should consider providing non-financial incentives for collecting the supplements, e.g., foods or plates26 to women.

The MoH and organizations providing healthcare services should track attendance as a standard procedure for monitoring the delivery of antenatal, postnatal and childcare services. With adequate data on the beneficiaries, varied communication and community engagement (e.g., SMS reminders, phone calls, community-based networks) should be sought to encourage compliance with the supplementation schedule.

The MoH Community Health Department (MoH-CHD) should include an indicator to monitor the amount of iron supplements distributed to each registered user, as a proxy of compliance with the iron supplementation protocol. This indicator will provide the percentage of users who received the amount established in the protocol.

Second identified problem
Iron supplement delivery for children aged 6–23 months is linked to the immunization schedule. However, the last immunization dose is scheduled at 18 months; hence, children aged 19–23 months could miss an opportunity to receive the supplements.

Recommendation
The MoH-ND, jointly with the MoH-CHD, should establish a standard calendar of contacts for iron supplement delivery to children aged 6–23 months. These could be

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linked with the six visits for growth monitoring as per the MOH guidelines for child health services.

**Third identified problem**
Most of the providers interviewed do not consider their protocols comprehensive for APC. In addition, patients consider nutrition counseling to be inadequate; they receive insufficient information regarding the potential undesired side effects of iron supplementation and how to manage them.

**Recommendation**
The MoH should strengthen health staff capacity to provide APC services through pre-service and in-service training and supportive supervision. The training should include how to provide counseling regarding iron supplementation (antenatal, postnatal, and childcare). The supportive supervision should include monitoring compliance with iron supplementation per individual and the associated quality of services (counseling).

A campaign to educate women and mothers on the importance of iron supplementation should take place in the health services, especially at the pharmacies where patients collect their supplements. For example, pamphlets on the importance of taking IFA supplements daily, early on and throughout pregnancy, could be distributed. In addition, pamphlets should include information on possible side effects and how to manage them, and a supplementation schedule. This campaign is not, however, a replacement for one-on-one counseling by doctors, nurses, and relevant health staff, and it would benefit from reminder systems already in place (e.g., SMS) that prompt women to attend the clinic and take their supplements.

Moreover, a communication campaign through schools and/or mass media (including digital channels and social media) could target female adolescents to provide information regarding anemia and its consequences, effective preventive interventions available, and promote pre-conception care.

**Fourth identified problem**
The following weaknesses were identified in the supplementation monitoring system:

- MoH clinics do not report stocks.
- Monitoring does not collect data about counseling or follow up on compliance.
- Monitoring does not report the percentage of individuals who have received the amount established in the MCNNP.

**Recommendation**
MoH clinics should submit monthly reports on the available stocks of iron supplements to the MoH Central Warehouse Department. The dataset should be
available to MoH-ND, MoH-CHD and MoH staff at the governorate level for them to identify risks of stockouts and act accordingly.

In addition, the PHC clinics should collect and include the following indicators related to the iron supplementation program in their routine monthly report: the numbers of the individuals who received iron supplementation counseling and those who received the recommended number of IFA supplement tablets or iron droplet bottles. The MoH-CHD should summarize and share these indicators with the MoH-Health Information Center for its dissemination (e.g., in the section -maternal and child health- of the Health Annual Report). The MoH staff at the governorate level, to compile and analyze the information available each quarter. The analysis should include information from the supportive supervision, the clinics' monthly reports, and the logistic information system. This analysis should guide further efforts of training and supervision.
Bibliography


