Comparative Analysis of Policies to Reduce Anemia Among Women in the Community of Portuguese Speaking Countries (CPLP)

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The World Health Organization (WHO) estimates that nearly half of all pregnant women and children in the world are anemic (40 percent and 42 percent, respectively). This health issue also affects the well-being of nearly one-third of all non-pregnant women of reproductive age (32.4 percent) (WHO, 2016).

Anemia is an especially problematic health issue because it negatively impacts one's ability to live a healthy life and partake in income generation activities. Anemic pregnant women face more severe consequences such as miscarriage and maternal mortality. In fact, globally, 20 percent of maternal mortality is associated with anemia. Anemia is also a burden on governments due to an increase in public health spending with treatment and lower national productivity.

The prevalence of anemia has been increasing globally in the last decade. This trend is also observed in the Community of Portuguese Speaking Countries (CPLP), an intergovernmental organization formed by nine countries. In all CPLP members, anemia is considered a significant health issue. However, despite having a commission to end food and nutritional insecurity, CPLP does not address anemia directly at any of its shared plans. Thus, efforts to reduce the prevalence of anemia among women rely exclusively on national policies and actions.

Given the global relevance of this public health issue, WHO has a set of recommendations that should guide countries in the design of policies to combat anemia. Despite compliance with most of WHO recommendations, CPLP members continue to witness an increase in the prevalence

of anemia among women. Thus, national policies designed to address anemia should also include other strategies, such as monitoring and impact evaluations and gender-sensitive components.

Therefore, this study aims to analyze the compliance of CPLP members with the recommendations made by the World Health Organization (WHO) in order to identify opportunities for improvements in the prevention and treatment of anemia among women in the CPLP. This analysis can guide policymakers and development practitioners to develop comprehensive and gender-sensitive policies to address anemia. Untimely, it aims to produce evidence-based work that can motivate CPLP to explicitly address anemia in its agreements.

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List of Abbreviations

CONSEA	Conselho Nacional de Segurança Alimentar e Nutricional (National Council for Food and Nutritional Security)
CPLP	Comunidade de Países de Língua Portuguesa (Community of Portuguese Speaking Countries)
ESAN	Estrategia de Segurança Alimentar e Nutricional (Food and Nutritional Security Strategy)
FAPDA	Food and Agriculture Policy Decision Analysis Tool
FAO	Food and Agriculture Organization
GINA	Global Database on the Implementation of Nutrition
IDA	Iron-deficiency anemia
IFA	Iron and folic acid
ILO	International Labour Organization
ITN	Insecticide-treated net
IPC-IG	International Policy Center for Inclusive Growth
PAMRDC	Plano de Acção Multissectorial para a Redução da Desnutrição Crónica (Multisectoral Action Plan for the Reduction of Chronic Malnutrition)
PLANSAN	Plano Nacional de Segurança Alimentar e Nutricional (National Plan for Food and Nutritional Security)
PNSF	Programa Nacional de Suplementação de Ferro (National Iron Supplementation Program)
SDG	Sustainable Development Goal
SPRING	Strengthening Partnerships, Results, and Innovations in Nutrition Globally project

SUS	Sistema Único de Saúde (Unified Public Health System)
USAID	United States Agency for International Development
WHO	World Health Organization

Methodology

This study conducts a comparative policy analysis based on qualitative research. Policies and programs that are currently being implemented or that ended their implementation period in 2020 are included in the analysis. Section 1 and 2 are based on a literature review of global reports from intergovernmental organizations such as the Food and Agriculture Organization (FAO) and the World Health Organization, as well as regional reviews, based on impact evaluations, case studies, and public health study reviews. Section 3 analyzes documents from primary sources such as policy documents, Government Gazettes, and countries' legislations. These documents were collected from the Ministry of Health's online libraries of each country. Complementary policies were extracted from FAO's Food and Agriculture Policy Decision Analysis Tool (FAPDA) and WHO's Global database on the Implementation of Nutrition Action (GINA). Additional legislation pieces, such as decrees and resolutions, were extracted from the FAOLEX database.

Policies at the FAO's Food and Agriculture Policy Decision Analysis Tool (FAPDA) database are organized into two main categories: *Policy decision* and *Policy framework*. The category *Policy decisions* have two filters *food security dimensions* and *commodities.* All policies listed under *food security dimensions* were selected. Additionally, from the segment Policy framework, all policies under the following categories: National socio-economic development; Food security and nutrition; Social protection, and Gender were selected. The criteria to apply these filters in detriment to selecting the ones related to trade and commodities was to collect policies that were related to the public health aspect of food security.

The WHO's Global database on the Implementation of Nutrition Action (GINA) database provides a list of all policies in a country related to nutrition. No filters are required. From this database, were extracted policies from each of the CPLP members and then selected the ones that matched the period for this study. Finally, from the FAOLEX database were extracted all regulations related to food and nutrition in the CPLP countries.

Following, all the policies from FAPDA and GINA were classified into nine yes/no categories: Explicitly address anemia; Explicitly address anemia among women; Has goals that match with SDG 2.2.3; policy is monitored. Also, if they include the following strategies: Promote daily oral iron and folic acid supplementation as part of antenatal care; Iron supplementation for at least 3 months in the postpartum period; Fortification of wheat and maize flours and rice with iron, folic acid, and other micronutrients; For malaria-endemic areas - provision of iron and folic acid supplements should be made in conjunction with public health measures to prevent, diagnose and treat malaria; Exclusive breastfeeding that includes iron and folic acid supplementation to mothers. Additionally, a short description of each of them which included their goals, the gender-sensitive aspects, and the target population was added. This analysis guided Section 4 where a comparative analysis of the WHO recommendations among CPLP members is developed. Additionally, the gaps observed also guided the two last sections of this study: Opportunities for improvements and Recommendations.

1.0 Global overview of anemia

1.1 Causes of anemia

Anemia is a health condition that decreases the blood's capacity to carry oxygen to the body's tissues. As a result, anemic people face fatigue, weakness, dizziness, and shortness of breath. It can result from nutritional and non-nutritional causes, which in turn, are related to different socio-economic and biological conditions. Among the dietary reasons, iron deficiency is the most common and it happens when the intake of iron cannot meet the body's demands. Iron deficiency anemia (IDA) is generally connected to food and nutritional insecurity and high iron losses. In addition to iron, other micronutrient deficiencies also can result in anemia, such as vitamins A, B2, B6, B9, B12, C, D and E, zinc, and copper (WHO 2020b).

Among the non-nutritional causes, there are parasitic infestations or diseases such as malaria, HIV, and hookworm infestations that can cause anemia. Additionally, genetic conditions that interfere with the body's production of red blood cells can also result in anemia. Finally, some socio-economic conditions such as poverty, low educational levels, intra-household dynamics, and limited access to health care may be indirect causes of anemia. Such conditions cause negative impacts on people's livelihoods, especially women, and increase their vulnerability to developing anemia.

Consistent evidence has shown connections between anemia and food insecurity (FAO 2018). Food insecurity, defined by the Food and Agriculture Organization (FAO) (2007) as a "situation when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life," is the root cause of many health

issues, such as stunting and malnutrition. Anemia resulting from a diet deficient in micronutrients is directly related to food and nutritional insecurity. A study in Bangladesh, for example, finds that food insecure women were 1.6 times more likely to suffer from anemia compared to their secure food counterparts (Ghose et al., 2016).

1.2 Most affected population groups

This global health problem mainly affects young children and pregnant women. In the United States, for example, anemia is twice as prevalent in women as in men (Maakaron 2019). The World Health Organization (n.d.b) estimates that across the globe, 42 percent of children who are five years of age or younger are anemic, along with 40 percent of pregnant women. Even though anemia is associated with different forms of poverty, such as financial and nutritional, it affects women more both in developing and developed countries. In the American and European continents, the prevalence of anemia is the lowest in the world. Yet, it affects, on average, one-fifth of the women of reproductive age in these two regions (19 percent and 22 percent, respectively). On the other hand, anemia among women of reproductive age is more prevalent in Southeast Asia (45 percent), Eastern Mediterranean (39 percent), Africa (39 percent), and Western Pacific (25 percent) (ibid).

A higher incidence of anemia among women compared to other population groups is connected to different biological factors. First of all, women have fewer red blood cells than men. This natural condition places women at higher risk of anemia under any circumstances that could cause loss of healthy red blood cells. Because of menstruation, women are also more likely to have

iron losses. Pregnant women are particularly vulnerable to anemia because their iron and vitamin supply have to be enough for both them and the fetus's growth (WHO 2020a).

Social and intra-household dynamics can negatively impact women's ability to consume the nutrients that prevent anemia. In times of food shortage, women tend to deprive themselves of eating in order to feed their husbands and children (Nelson 2011). Women often shoulder the responsibility of childcare and domestic work solely; they work for income and subsistence and also assume voluntary community roles. Consequently, women have less time to prepare healthy meals and visit health centers to check their health. Additionally, in some places, women's autonomy to leave their homes and seek health care is limited (Sedlander et al. 2021). Finally, food taboo is also a barrier to a nutritional diet in some places. For instance, in specific locations of Ethiopia, pregnant, lactating women and children are restricted from consuming eggs and particular types of vegetables (FAO and AUC. 2020), limiting their access to the recommended amount of nutrients that could help prevent anemia.

Economic disparities also play a determinant factor in the higher risk of anemia among women. Even though anemia is present globally, a higher incidence is observed among the lower-income population. A study in Uganda illustrates that women of reproductive age in poorer households had a higher prevalence of anemia than those in wealthier households, as measured between 2006 and 2016 (Nankinga and Aguta 2019). Moreover, economic inequality among genders impacts women negatively. Globally, women earn on average 23 percent less than men (ILO 2016). This gap is as high as 35 percent and 31 percent in South Asia and sub-Saharan Africa on average, respectively (UN WOMEN 2015). In fact, 122 women between 25 and 34 years of age live in poor households for every 100 men of the same age group (Sánchez-Páramo and Munoz-

Boudet). Such economic conditions translate into lower financial power to consume nutritious foods.

1.3 Consequences of anemia

Women are at a higher risk to face health complications from anemia, which includes extreme weakness, heart problems, and death at the most severe stages (Mayo Clinic 2019). Globally, 20 percent of maternal mortality is associated with anemia (USAID 2014). In Kenya, for example, maternal death rates were 8 times higher among anemic pregnant women (Ronsmans, Collins, & Filippi 2008).

Ramifications of anemia among women have a significant impact on child development. Anemic pregnant women are likely to give birth to underweight children. In severe cases, anemia can increase the risk of infant mortality (Scott 2014). Without sufficient levels of iron and other vitamins in their organisms, anemic pregnant women provide less iron and vitamins to the fetus, which might induce children born with iron deficiencies. Complications of anemia then start to impact populations at intergenerational dimensions. According to the World Health Organization (2009), iron deficiency in early childhood has a negative impact on children's cognitive and psychological development.

1.4 Public health issue

The World Health Organization classifies the public health significance of anemia according to population prevalence, as seen in Figure 1. This classification guides policymakers and development practitioners to identify and design context-based interventions to address anemia. Globally, there is no country where anemia is not considered a public health problem. The countries with the lowest prevalence are Australia, Canada, and New Zealand (9 percent, 9.5 percent, and 11.5 percent, respectively). At the higher end are Gambia, Gabon, and Yemen (57.5 percent, 59 percent, and 69 percent) (WHO 2017). Anemia is considered mild public health in 19 percent of the countries, moderate in 61 percent, and severe in 20 percent of all countries where data is available[1].

Figure 1 Significance of ANEMIA in a population according to the population prevalence

Source: Created by the author based on WHO 2020b

[1] Total of 186 countries with available data

In the last decade, the prevalence of anemia among women increased from 29.9 to 32.8 globally (World Bank, n.d.). This is particularly worrisome because health issues caused by anemia decrease women's productivity and children's cognitive capabilities. Such consequences of anemia may trap women and children in a cycle of poverty. Weakness and extreme fatigue impact women's disposition to pursue daily activities, such as the ones that provide financial gains. A study done with nearly 20 thousand workers in Indonesia demonstrates that productivity among anemic employees was 20 percent lower than among non-anemic (Thomas 2004). In children, weakness and cognitive challenges can increase the likelihood of school dropouts. These children then become more vulnerable to poverty. In fact, it is estimated that every additional grade of schooling raises wages by 8 to 12 percent (Hoddinott 2013).

Governments also are confronted with the economic losses associated with anemia. Because of its symptoms, anemia reduces the potential economic contributions one can make to the country's economy. Moreover, anemia is also a financial burden to public health systems. Government expenses can be higher in countries where health care is universal, such as Brazil. Estimates based in 10 developing countries showed that deficiencies caused by anemia promoted government expenses equivalent to 4 percent of the GDP (Horton and Ross 2003). The prevalence of anemia prevents governments from promoting higher investments in human development. Instead, it pushes for expenses to treat a health issue that could have been prevented.

2.0 Community of Portuguese Speaking Countries (CPLP)

The Community of Portuguese Speaking Countries (CPLP) is an intergovernmental organization created in 1996. It is formed by nine members: Angola, Brazil, Cabo Verde, Equatorial Guinea, Guinea Bissau, Mozambique, Portugal, Sao Tome, and Principe, and Timor Leste. This organization started in 1996 intending to promote cooperation among its members in socio-economic and cultural areas. Ministers and ambassadors from CPLP members meet annually to debate and create strategies in areas such as health, education, and food security. These strategies are then incorporated into national plans that CPLP members have on each one of these areas. In order to promote the agreed goals, CPLP gathers funds from its own members' public and private sector along with non-governmental and intergovernmental organizations such as FAO and WHO.

Nearly one-quarter of the population within the CPLP are food insecure (FAO 2018). Given the diverse socio-economic contexts among countries from this community, the prevalence of food insecurity varies considerably, being as high as 40 percent in Mozambique and as low as 2.9 in Portugal (FAO 2020). However, in all countries, the population groups who are most vulnerable to food insecurity are women, children, and people from rural areas (Pinto 2011). Causes for food insecurity vary in each country from socio-economic to climatic factors. In most CPLP members, food insecurity results from extreme droughts, such as in Angola, Mozambique, and Guinea Bissau. These last two countries especially are challenged by a severe dry season and an intense rainy season (FAO 2018). These climatic conditions can cause disruptions in food production and harm soil quality.

In response to increased concerns about food insecurity, the Community of Portuguese Speaking Countries jointly created a set of Strategies for Food and Nutritional Security[2] (ESAN). The strategy, finalized in 2012, aims to end hunger among the members of the community. ESAN is based on three main pillars: 1) Govern to create multisectoral responses to food security; 2) Cooperate to provide immediate assistance to women and children in emergency contexts, and 3) Increase food availability by supporting small food producers.

After the creation of ESAN, each CPLP member coordinated efforts to include each strategy into national programs and policies. Cabo Verde, for example, created the National Strategy for Food and Nutritional Security[3] in 2015, in which it is explicitly stated that this strategy was designed "in line with the guidelines issued by the Food and Nutrition Security Strategy of Communities in Portuguese Speaking Countries (CPLP)" (Cabo Verde n.d.). Timor Leste, for instance, implemented in 2014 the National Food and Nutrition Security Policy, which adopts a multi-stakeholder and multi-sector approach, as well as support to subsistent farmers.

Since the creation of ESAN, the prevalence of moderate and severe food insecurity has reduced in Portugal but increased in Brazil (FAO 2020). However, due to the lack of longitudinal data on food and nutritional security for the other CPLP members, it is not possible to identify the actual impacts of ESAN on each country.

Furthermore, ESAN failed to explicitly address the fight against anemia, even though this public health issue is prevalent among 41 percent of the CPLP female population (FAO 2020). Anemia affects more than half of the female population of reproductive age in Mozambique and nearly half in Angola and Sao Tome and Principe (51 percent, 47 percent, and 46 percent

[2] Estrategia de Segurança Alimentar e Nutricional

[3] Estrategia Nacional de Segurança Alimentar e Nutricional

respectively) (ibid). In fact, the prevalence of anemia among women of reproductive age has increased in nearly all CPLP members during the last decade, as shown in Figure 2. Except for Equatorial Guinea and Guinea Bissau, all CPLP countries are moving further away from achieving the SDG 2.2.3 (successfully reducing anemia rates among women).

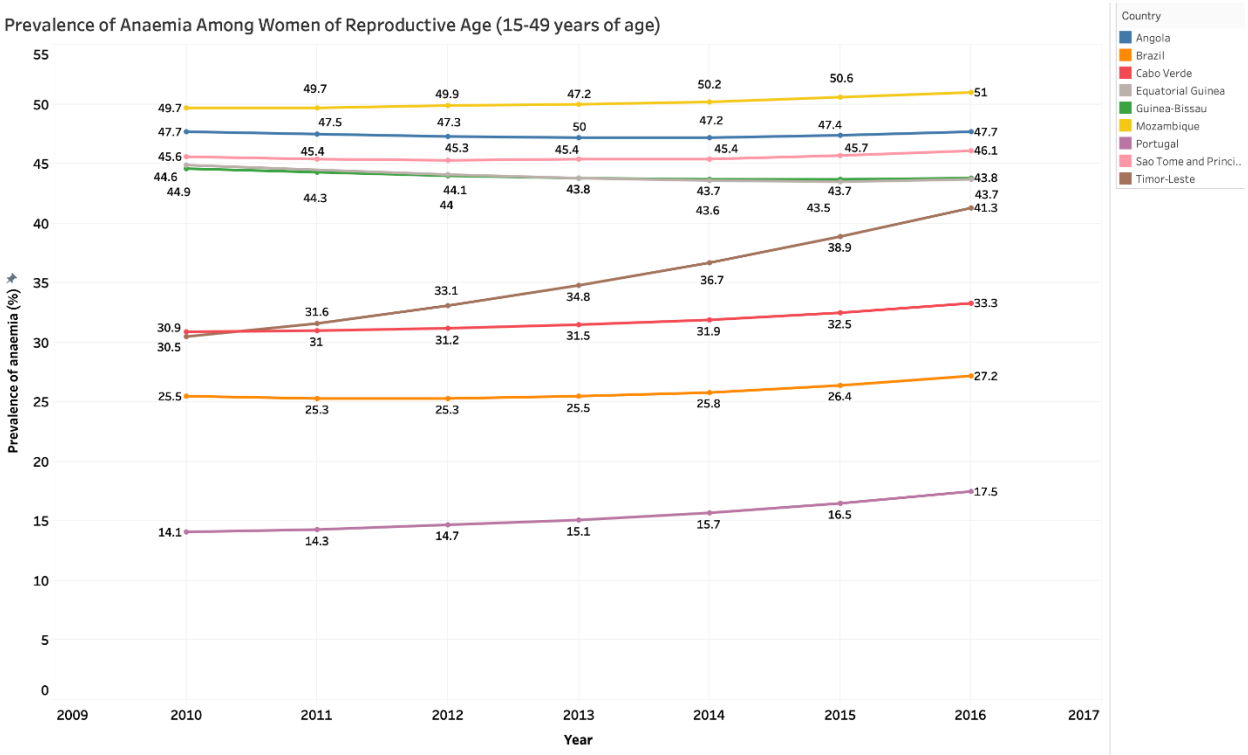

Figure 2 Prevalence of Anemia among women of Reproductive Age (15-49 years of age)

Source: Calculated by the author based on FAO (2020).

2.1 Main causes of anemia among CPLP members

The incidence of anemia among CPLP members is mainly associated with socio-economic factors, as well as the prevalence of other health conditions, such as HIV/AIDS and Malaria. In African CPLP members, anemia has been related to:

- HIV/AIDS: Medication taken by people living with HIV can decrease the production of red blood cells. In a study conducted in Mozambique, HIV-infected pregnant women were more likely to have anemia compared to their HIV-uninfected counterparts (71.5 percent versus 54.8 percent) (Gonzáles et al. 2017).
- Malaria: The parasite that causes malaria reduces the viability of healthy red blood cells. Malaria is a relevant factor in this regional context, given that it affects 15 percent of the CPLP African population. In Mozambique and Angola, malaria prevalence is as high as 30 percent and 23 percent, respectively (WHO 2019).
- Helminth, a parasite that can be accidentally ingested with unsanitary food, causes direct blood loss and steals nutrients from the person infected. As a result, Helminth victims are more likely to develop anemia (Fançony et al. 2020).

Relevant factors change across regions. In Portugal, for instance, anemia is commonly associated with restricted diets, such as vegetarianism and the ingestion of certain stomach and liver medications (Marques et al. 2016). Awareness of anemia is considered one of the significant challenges in this country. National measurements estimated that even though 20 percent of the population is anemic, only 10 percent are aware of their health condition. This gap is a result of a lack of awareness about anemia and its symptoms, which can be understood as just extreme fatigue. Therefore, people do not seek medical help and do not receive the appropriate treatment.

In Brazil, racial and income inequalities are key determinant factors for the prevalence of anemia. Brazil is the most income unequal country in Latin America and the second most income unequal in the world, only behind Sao Tome and Principe (World Bank 2018). Brazil is marked by racial, economic, and geographical divisions on access to essential services such as health and education. Anemia in Brazil tends to more prevalent among the Black and rural female population, who also face higher levels of food insecurity in the country. In a study in Pernambuco, one of the Brazilian states, anemia is found nearly twice as high among women in rural areas compared to urban areas (25 percent and 16 percent, respectively). Another study shows that 35 percent of Black women were anemic compared to only 15 percent of their White counterparts (Bezerra 2018). Finally, the prevalence of anemia among indigenous women is 38 percent, 11 percent greater than the national average. In fact, the prevalence of anemia was as high as 81 percent among pregnant women in Suruí, a Southern Amazonia indigenous community in the country (Borges et al. 2015).

These statistics highlight the strong relations between anemia and food insecurity. In Brazil, while women lead 41.8 percent of households in the country, 51.9 percent of households with severe food insecurity are headed by women. The same trend is observed with the Black and Brown populations, who lead 54.6 percent of households in the country, with 67.6 percent experiencing some degree of food insecurity. Finally, food insecurity in the country has been historically more prevalent in rural areas, with 46 percent of food-insecure households compared to 35 percent in urban settings (IBGE 2020). Women at a higher risk of being food insecure are less likely to have nutritious diets capable of preventing anemia.

3.0 WHO recommendations and best practices

The fight against anemia is an international effort included in the United Nations (UN) Sustainable Development Goals (SDGs). As the incidence of anemia continues to be prevalent among women, individuals and governments feel the negative impact of this public health issue. In order to address these adversities, the UN included in the SDGs Goal 2 (End Hunger) as indicator 2.2.3: Prevalence of ANEMIA in women aged 15 to 49 years, by pregnancy status (UN n.d.). Despite increasing international attention, the prevalence of anemia continues to rise in most regions of the world.

The World Health Organization (WHO) further proposes a set of prevention strategies to guide policymakers and development practitioners on the reduction of anemia. These suggestions are made based on evidence of their efficiency. However, WHO recognizes that each intervention needs to be adapted to the needs and characteristics of each country (WHO 2020b). These strategies come together in 4 main comprehensive approaches:

1. Food fortification:

   Fortification of wheat and maize flours and rice with iron, folic acid, and other micronutrients
2. Iron and Folic Acid (IFA) supplementation:

   Daily oral IFA supplementation as part of antenatal care.

   Iron supplementation for at least 3 months in the postpartum period.

   Iron supplementation for lactating mothers for at least 6 months after birth.
3. Integrated policies to address anemia and malaria:

Provision of IFA supplements should be made in conjunction with public health measures to prevent, diagnose and treat malaria.

3.1 Food fortification

Food vehicles for fortification need to be selected accordingly to context, and successful fortification requires multilateral efforts. Fortification should be done on the most popular foods consumed in each location. The World Health Organization recommends the addition of IFA into wheat, rice, and maize, as these are largely consumed foods across the globe. Additionally, such a strategy is better implemented if both public and private sectors are actively committed. In Brazil, for example, fortification of wheat and maize flours with IFA has been mandatory by law since 2002. This requires companies to change their production in order to comply with the national law.

Costa Rica, one of the pioneers in food fortification in Latin America, has successfully decreased the prevalence of anemia among women in the country - despite regional increases. Basic food staples such as wheat flour, salt, sugar, and maize have been fortified since the 1950s. The Costa Rican Ministry of Health hosts the National Micronutrient Commission[4], which gathers policymakers, academic experts, and representatives of the food industry to design policies to enhance micronutrient consumption. The importance of iron-fortified food consumption is highlighted by the press, which creates awareness of anemia and how to prevent it. As a result of combined efforts, the prevalence of anemia among women in the country has declined from 18.4 percent to 14.9 percent between 1998 and 2016 (Martorell et al. 2017; FAO 2020).

[4] Comisión Nacional de Micronutrientes

However, food fortification efficiency and efficacy are challenged by geographical and financial limitations. In areas where people's diets rely mainly on their community's crops, iron consumption increases cannot be reached by food fortification. Furthermore, the addition of iron and other micronutrients to food can increase their price, which makes them less accessible for the low-income population. For example, during an economic crisis, people tend to buy cheaper foods, even if they are of a lower nutritional value (Ramsay and Charles 2015). Finally, another issue is that levels of iron or iron compounds used are not efficient. A policy analysis of 78 countries' national programs evidenced that in only 9 countries, the compounds and amount of iron used were likely to promote a positive impact on iron coverage. Among the most common issues found were: "non-recommended, low-bioavailability, atomized, reduced or hydrogen-reduced iron powders" (Hurrel et al. 2010).

3.2 Iron and folic acid (IFA) supplementation

IFA supplements increase the number of red blood cells and reduce the risk of anemia. For this reason, IFA supplementation can support the maintenance of adequate iron levels. Provision of IFA supplements is a public health intervention recommended to all women of reproductive age where the prevalence of anemia is high (WHO 2017a). Supplementing diets with IFA can be especially beneficial to reach individuals who do not consume foods that have been fortified with these nutrients. The benefits of IFA supplementation include increased cognitive abilities and productivity performance. Additionally, this strategy also allows governments to specifically target women of reproductive age and children and ensure anemia prevention among vulnerable groups. A study conducted with more than 27 thousand women in 60 trials evidenced that iron

supplement consumption is likely to reduce maternal anemia up to 70 percent (Peña-Rosas et al. 2012).

Health institutions that provide IFA typically administrate IFA supplements to pregnant women both before and after birth. During antenatal care, daily oral IFA supplementation reduces the risk of preterm birth, therefore increases birth weight and child health. A study conducted in Nepal that maternal IFA supplementation reduced child mortality by 31 percent between birth time and age 7 (Christian 2009). After birth, women are vulnerable to intense blood losses, which translates into a higher need for nutrients to keep adequate amounts of red blood cells. Thus, WHO recommends that IFA is administered to women until three months after birth.

Furthermore, WHO recommends that at least 6 months of exclusive breastfeeding are accompanied by iron supplementation to mothers. Low consumption of IFA during pregnancy, along with possible blood losses over childbirth, places women at a higher risk to develop anemia. Evidence from different countries and regions shows high rates of anemia among lactating mothers, such as in Vietnam, India, and Kenya, with 66 percent, 63 percent, and 43 percent anemic, respectively (Liyew et al., 2020). Moreover, the same studies indicated that the incidence of anemia was 18 percent lower among women who had taken iron supplementation during pregnancy compared to their counterparts (ibid).

Despite its efficacy, IFA supplementation is a strategy challenged by low adherence, mainly due to side effects. The most common side effects of iron supplementation include nausea, constipation, dark stools, and metallic taste. A trial study conducted in Brazil to measure the adherence to IFA supplementation shows that 25 percent of women withdrew from the experiment due to the supplementation's side effects (Machado et al. 2011). In Ethiopia, a study conducted in Aykel town shows that the rate of adherence to IFA supplementation was 47 percent, but only 5

percent of pregnant women took Iron and Folic Acid tablets for 90 days or more. Similarly to the study in Brazil, women in Ethiopia reported having had adverse side effects in addition to the frustration about the frequency and number of pills that have to be taken (Assefa et al. 2019).

Moreover, IFA supplementation efficiency can be interconnected with awareness about their benefits. Consistent evidence showed that women are likely to be more likely to take IFA supplementation when such strategy is implemented along with educational campaigns about anemia and how to mitigate the IFA supplements' side effects. In Nigeria women who demonstrated awareness of iron supplementation as a strategy to prevent and treat anemia were 6,15 times more likely to comply with their treatment compared to their counterparts who did not have a clear understanding of this supplementation (Ugwu et al 2014).

Among the countries that have successfully implemented IFA supplementation, Nicaragua includes IFA supplements as essential medications and provides them universally. In the 1990s, one-third of all women in Nicaragua from 15 to 45 years of age were anemic. In response to this issue, the Ministry of Health created the Integrated Anemia Control Strategy (IACS), which was exclusively dedicated to developing policies to fight anemia. They guaranteed constant supply and distribution of IFA to all women and worked together with operational researchers to address possible implementation constraints. Additionally, community leaders delivered supplements and assisted beneficiaries with counseling. After one year of this policy implementation, women reported being more aware of anemia and how to prevent it. In fact, 96 percent of women reported having received clear instructions on how to take IFA tablets, and 77 percent reported having been taught by healthcare workers about the importance of iron during pregnancy and childhood (Sanghvi 2010). As a result of joint efforts from governments and civil society, the prevalence of

anemia among non-pregnant women reduced by 10 percent in ten years, from 33.6 percent in 1990 to 23.7 percent in 2000 (ibid).

3.3 Integrated policies to address anemia and malaria

In malaria-endemic areas, women are at a higher risk of developing anemia. Just in Sub-Saharan Africa, 24,7 percent of anemia cases are attributed to malaria (Kassebaum et al., 2014). The World Health Organization (2020a) estimates that 11 million pregnant women in Africa were infected with malaria in 2018. A high incidence of malaria among pregnant women translates into an increased risk of anemia, premature delivery, and child mortality. The strong linkages between both health conditions indicate that initiatives to end malaria should concomitantly address anemia.

Such antimalarial treatment has led to a reduction in anemia cases among women. Intermittent preventative treatment (IPT) is a control strategy administered to prevent and treat malaria cases, especially among pregnant women and children, as they tend to be more vulnerable to developing malaria. A study that conducted 17 trials with women from 8 different sub-Saharan Africa countries shows that antimalarial drugs reduced the risk of moderate to severe anemia by around 40 percent (Radeva-Petrova 2014, Azunie 2017). Screening ceilings, an alternative to block contact with the mosquito that transmits malaria, have also shown efficiency in reducing anemia's prevalence. In Gambia, a study with 500 households showed that anemia prevalence was 19 percent higher in houses without any type of screening (Tizifa 2018).

Uganda's integrated approach to address anemia and malaria has reduced the prevalence of anemia among women by 11 percent in less than two decades – from 39 percent in 2000 to 28 percent in 2016 (WH0 2017b; FA0 2020). Because anemia in pregnancy has also been a relevant

health problem in Uganda, the government has developed a set of supplements and medications to be administrated to pregnant women. Ugandan Antenatal Care comprises supplementation with iron and vitamin A, deworming, preventive treatment of malaria in pregnancy, and distribution of insecticide-treated nets. Additionally, since 2011 medium- and large-scale wheat and maize flour producers must fortify wheat and maize flour with folic acid, B12, and six other micronutrients as part of governmental order. As a result, coverage of women who received IPT and Iron increased from 2 percent to 50 percent and 51 percent to 77 percent, respectively, from 2001 to 2011. Increased coverage helped to reduce the prevalence of anemia in the country (SPRING 2015).

4.0 Policy analysis on CPLP members

This section presents an analysis of the current public policies to reduce anemia rates in the eight CPLP member states, according to the strategies proposed by the World Health Organization identified in Section 2.

4.1 Food fortification

Food fortification is the most common initiative among CPLP members. In fact, the only countries that do not implement this strategy are Equatorial Guinea and Portugal. In all countries where food fortification is implemented, wheat and maize flour are the main food vehicles. Despite its popularity, only in Brazil and Mozambique fortification of wheat and maize flour with iron and folic acid is mandatory by law.

Most CPLP members' initiatives to provide fortified food, however, do not specifically facilitate access to these foods by women. Government initiatives to guarantee food fortification by law are an essential step to leverage IFA consumption. However, fortified flours result from industrial processes and may not reach all women due to financial or geographical constraints. Only Brazil and Angola facilitate the special provision of fortified food to vulnerable populations, such as children and women. The Brazilian National plan for food and nutritional security, along with the National Program for Food Iron Supplementation, prescribes universal distribution of iron supplementation to all women until three months after birth or abortion. In Angola, pregnant women also receive IFA free of costs as part of their Micronutrient Supplementation Program.

In Cabo Verde, the National Strategy for Food and Nutritional Security[5] (ENSAN) encompasses as one of its actions to "Improve financial access to food for the most vulnerable (the elderly, people with special needs, poor families, especially those headed by women)" (Cabo Verde 2015). Government interventions include supporting economic sectors where women who live under the poverty line are most active, as a way to increase their income. However, this National Strategy does not state specific provisions to prevent nor treat anemia among women of reproductive age.

Brazil and Mozambique are the only CPLP members with a policy exclusively focused on food fortification. Mozambique stands out with a National Food Fortification Strategy, in place since 2016, that has high coverage levels of 94 percent and 81 percent in urban and rural areas, respectively (IPC-IG 2019). In Brazil, different associations in the food industry, intergovernmental organizations, such as UNICEF and FAO, and the Ministry of Health co-signed the Brazilian Social Commitment to Reduce Iron-deficiency Anemia. Through this commitment, the signatories articulate the provision of iron-fortified foods through the Brazilian Universal Health System[6] (SUS) (Government of Brazil 1999). Additionally, this agreement includes the food industries' commitment to promote and conduct research on iron food fortification.

4.2 IFA supplements

In the four countries with IFA supplementation programs: Angola, Brazil, Cabo Verde, Guinea Bissau, Mozambique, and Timor Leste micronutrients are offered universally to pregnant

[5] Estrategia Nacional de Segurança Alimentar e Nutricional

[6] it is not stated which groups are included

and lactating women. Initiatives in these countries comply with the World Health Organization's recommendation to assist women during and after pregnancy. In Angola, IFA supplementation is part of the National Strategy to Food Security, embedded in a national resolution. In Mozambique, such a strategy is listed as part of a multisectoral plan, which engages the participation of the civil society network (CSN) and the National Institute of Health's National Evaluation Platform (NEP).

Brazil stands out as the only country in the CPLP with a national program specifically on iron supplementation. The National Iron Supplementation Program[7] (PNSF) targets pregnant women during and after pregnancy, as well as children from 6 to 24 months. The program has specific recommendations for women on dosage and duration of supplementation. It also proposes different recommendations in the case of anemic mothers and how to mitigate side effects for women.

Nearly all CPLP members promote IFA supplementation to lactating mothers. Brazil and Timor Leste have included exclusive breastfeeding in national policies since 1999 and 2014, respectively. These policies are based on WHO recommendations and guide health practitioners nationwide to support and ensure that breastfeeding practices also benefit mothers with free supplementation supply.

Given the higher risk of anemia among lactating mothers, many governments also support this group with free iron supplementation access. In Angola, Brazil, Cabo Verde, and Mozambique, exclusive breastfeeding policies and programs also recommend IFA supplementation to mothers.

[7] Programa Nacional de Suplementação de Ferro

The analysis of the Mozambican Multisectoral Action Plan for the Reduction of Chronic Malnutrition[8] (PAMRDC) highlights that successful implementation of government initiatives is often challenged by a lack of information for individuals and communities on how to benefit from such services. Such concern has been addressed by other CPLP members such as Brazil and Cabo Verde. Brazil has formulated the Brazilian Strategy for Food and Breastfeeding[9], which qualifies primary care professionals to encourage breastfeeding and guide women on how to access the IFA supplementation provided by the Unified Health System. In Cabo Verde, the federal and local public administrators conduct awareness campaigns on exclusive breastfeeding and guide pregnant and lactating women on how to access public services that provide IFA supplements.

4.3 Malaria

Some CPLP countries have among the highest incidences of malaria globally, such as Mozambique and Angola. However, only Mozambique and Timor Leste integrate malaria responses with policies to reduce the incidence of anemia. In Mozambique, the national plan to end malnutrition consists of the administration of IPT to pregnant women along with IFA supplementation and free distribution of insecticide-treated mosquito nets. Moreover, in Timor Leste, addressing malaria among women was cited as one of the strategic priorities in the Nutrition Strategy Plan in place from 2014 to 2019. In this country, nutrition-sensitive interventions are implemented along with the national malaria control strategy and plan. Finally, pregnant women

[8] Plano de Acção Multissectorial para a Redução da Desnutrição Crónica

[9] Estratégia Amamenta e Alimenta Brasil

in Angola and Sao Tome and Principe receive free insecticide-treated mosquito nets from the government (Eijk et al. 2011). However, malaria-prevention initiatives in these countries are not specifically integrated with strategies to prevent anemia.

Overall, most CPLP members are following the international guidelines made by the World Health Organization. Except for Portugal and Sao Tome and Principe, all countries are currently implementing at least one of the proposed strategies[10]. The most common policies are food fortification and IFA supplementation to lactating mothers, implemented by all CPLP members except for Portugal and Sao Tome and Principe. IFA supplementation during antenatal and postnatal care is the second most common strategies, implemented by Angola, Brazil, Guinea Bissau, and Mozambique. Anemia and malaria integrated policies are the least common, only implemented by Guinea Bissau, Mozambique, and Timor Leste. Table 1 summarizes the World Health Organization recommendations adopted by CPLP members.

[10] Equatorial Guinea does not have policies directly related to anemia or food and nutritional security publicly available. Therefore, it is not possible to identify the strategies that have been taken in this country.

Table 1 Summary of interventions recommended by the World Health Organization adopted by each CPLP member

Country	Food Fortification	IFA Supplementation			Anemia and malaria integrated policies
		Antenatal care	Postpartum care	Lactating Mothers	
Angola	*	*	*	*	-
Brazil	*	*	*	*	-
Cabo Verde	*	-	-	*	-
Equatorial Guinea	/	/	/	/	/
Guinea-Bissau	*	*	*	*	*
Mozambique	*	*	*	*	*
Portugal	-	-	-	-	-
Sao Tome and Príncipe	-	-	-	-	-
Timor Leste	*	-	-	*	*

Source: Created by the author based on mapped policies.

Green stars indicate strategies that were adopted
Red dash indicates strategies that were not adopted.
Yellow dashes indicate countries that do not have policy documentation regarding anemia/food and nutritional security publicly available.

Despite compliance with most WHO recommendations, the prevalence of anemia among nearly all CPLP members has been increasing. In fact, an interesting phenomenon is observed; The two countries that fully comply with all WHO recommendations: Guinea Bissau and Mozambique, have had opposite results regarding the prevalence of anemia. While Guinea Bissau

has had a slight decline in the prevalence of this health issue from 44.9 percent to 43.6 percent from 2010 to 2016, Mozambique witnessed an increase from 49.7 percent to 51 percent, as shown in figure 2 in section 2.

One possible conclusion from this scenario is that there might be other strategies that countries are not implementing, but that can be more efficient to address anemia, such as conducting monitoring and impact evaluations of current interventions, design gender-sensitive policies, increase awareness about this health issue and promote multisectoral approaches to anemia. The National Nutritional Policy from Guinea-Bissau, for instance, establishes a food and nutritional security monitoring system and a monitoring and evaluation mechanism for all strategies included in the policy. Additionally, it engages different stakeholders at the central, regional, and community administrative levels.

5.0 Opportunities for improvements

Most CPLP members follow the strategies suggested by the World Health Organization to prevent and treat anemia among women. Nevertheless, only in Guinea Bissau and Mozambique all WHO's recommendations are followed. Among the main identified gaps are the following:

5.1 Absence of policies to reduce anemia

Most CPLP members have National Policies, Strategies, and programs to end food and nutritional security. However, out of the 26 mapped policies, only 14 address anemia. Portugal and Sao Tome and Principe have the largest gaps and do not include anemia in any of its food security plans. On the other hand, only in Cabo Verde anemia is considered across all national food and nutritional security plans. In Portugal, there are currently two national initiatives to increase food and nutritional security, but none of them addresses anemia. Without specific policies, circumstances that lead to anemia, such as women's biological and socio-economic conditions, are less likely to be directly addressed. As a consequence, the female population can be more exposed to develop this health condition. In fact, such an increase is already a reality in the country. Even though Portugal has the lowest prevalence of anemia among women of reproductive age in the CPLP group, this rate increased from 14 percent in 2000 to 17.5 percent in 2016.

5.2 Lack of specific strategies to address anemia

Policy plans in Sao Tome and Principe acknowledges anemia as a public health issue but do not define any specific strategies on how anemia will be addressed. Lack of particular action plans is a problem because it can lead to uncoordinated actions to end anemia. Sao Tome and Principe has two national policies[11] that state the goal to reduce the prevalence of anemia among all women from 15-49 years of age. One of the plans includes an indicator to reduce such prevalence from 46 percent in 2016 to less than 10 percent by 2021. However, it is not indicated what interventions are going to be implemented to achieve the desired rate. Without national guidelines, interventions to address anemia are less likely to be efficient because they require coordinated actions from different sectors, such as health and public administration.

5.3 Policies are not gender-sensitive

Not one of the CPLP members mainstream gender in all policies and programs. Out of the 14 mapped policies and government programs that address anemia, only 9 had strategies or goals specific to women. This is particularly worrisome because even though anemia affects all population groups, prevalence among women is considerably higher across the globe. Additionally, women and men have different biological and socio-economic conditions, which usually translates into lower access to healthy diets and women's health care. Policies and programs that do not specifically address anemia among women are at risk of dismissing the specific

[11] The National Program for Food and Nutritional Security (PNSAN) and the National Plan for Health Development 2017-2021.

challenges that put women at a higher vulnerability to anemia. It is worth mentioning that in the countries where anemia is included as a public health issue, such as Brazil, Angola, and Mozambique, strategies to reduce the prevalence of anemia among women are considered in a larger share of the national policies. However, the lack of gender components in all national policies might create gaps in their implementation that neglect women's specific needs.

5.4 Strategies are not embedded in legislation

Not all CPLP Policies and government initiatives that address anemia are embedded in national laws, decrees, or resolutions. Policies and programs that are not ruled by legislation are at a higher risk of not being implemented in the long term. In Brazil, for example, the National Plan for Food and Nutritional Security (PLANSAN) was a national plan for food security that included strategies recommended by the WHO, such as food fortification. The Food and Nutritional Security Commission CONSEA is formed by civil society representatives such as non-profit organizations, research institutes, and community-led organizations to assist policymakers in designing public policies to address food and nutritional insecurity. CONSEA is responsible for developing the PLANSAN. However, CONSEA was eliminated by Brazilian President Jair Bolsonaro on his first day of presidency in 2019 for political-partisan reasons. Along with CONSEA, PLANSAN ended, and it was not renewed since then. Therefore, without legislative support, the implementation of initiates to address anemia are more conditional to political dynamics.

Despite the end of PLANSAN, Brazil still has some strategies to fight anemia embedded in National resolutions, as do Angola, Cabo Verde, and Mozambique. However, this is not the case

for Sao Tome and Principe, Guinea-Bissau, and Timor Leste. These latter two countries, for example, have a comprehensive plan to reduce the prevalence of anemia among women that includes all strategies suggested by WHO (or nearly all in the case of Timor Leste). However, the Guinean National Nutrition Policy[12] and the National Action Plan for a Hunger and Malnutrition Free Timor-Leste will both come to an end in 2025. While Guinea Bissau has a National Plan for Food and Nutritional Security[13] established in 1995 that does not have an end date, Timor Leste does not have a history of food and nutritional plans that can lead to the conclusion that the current plan will be renewed. Therefore, when countries do not have projects to end anemia included at any decree, law, or resolution, long-term governmental approaches to this issue are uncertain.

5.5 Lack of government enforcement on food fortification

Even though food fortification is a strategy for almost all CPLP members, this initiative is considered mandatory only in Brazil and Mozambique. Food fortification in Brazil is monitored by an inter-institutional commission formed by health ministry workers and intergovernmental organizations such as the WHO. In Mozambique, food fortification has been mandatory since 2016, and it reaches 80 percent of the population. Without governmental enforcement, however, the food industry's compliance with such recommendations can be uncertain.

[12] Politique Nationale de Nutrition

[13] Plano Nacional De Alimentacao E Nutricao (PNAN)

5.6 Data on programs' coverage is not publicly available

No CPLP members have publicly available data on the coverage of anemia prevention activities. In fact, except for the food fortification program in Mozambique, it is not even possible to identify the population share covered by each intervention among any of the CPLP members. This lack of data on program coverage increases the challenges of thoroughly evaluating each intervention's efficacy. The need to access each intervention's coverage is especially important for CPLP members, where the prevalence of anemia has been increasing despite the implementation of WHO recommendations. Coverage might be high, but perhaps goals are not achieved for other reasons, such as the need for more context-based approaches. On the other hand, coverage of ongoing interventions might be low, which would explain why the prevalence of anemia is still high among CPLP members. Without publicly available data, it is difficult to identify the exact interventions' gaps.

5.7 Low adherence to integrated strategies to combat malaria

In Angola, the incidence of malaria is the second highest among CPLP members, only behind Mozambique[14]. However, policies that address anemia do not consider any integrated interventions to combat malaria. Lack of coordinated responses to these public health issues is specifically worrisome given the interconnections of both health conditions. Thus, the lack of initiatives to control and prevent malaria incidence creates gaps in response to anemia.

[14] 124 per 1,000 population at risk and 297 cases in a year per 1,000 population at risk in Angola and Mozambique, respectively (Max Roser and Hannah Ritchie 2013)

Additionally, a lack of integrated responses is also found in Cabo Verde and Sao Tome and Principe. However, in these last two countries, malaria incidence is nearly 100 percent lower than in Angola[15].

[15] 0.2 cases per 1,000 population at risk and 17.8 per 1,000 population at risk in Cabo Verde and Sao Tome and Principe, respectively. (Ibid)

6.0 Recommendations

The comparative policy analysis conducted evidenced that most CPLP members comply with the WHO's recommendations. However, the continued increase in the prevalence of anemia among women of reproductive age indicates that other strategies must be implemented in other to enhance the implementation of WHO's recommendations. Therefore, policymakers and development practitioners should design comprehensive policies that includes the following:

6.1 Gender-sensitive policies

The disproportionate impact of anemia on women requires government responses that specifically address this population group's needs. Interventions to prevent and treat anemia need to be gender-sensitive. This means that women's needs and particular challenges, such as biological and socio-economic conditions, need to be considered in all policy stages, such as design, implementation, and evaluation. Such an approach is necessary to efficiently identify and specifically address the ways in which women are at a higher risk to develop anemia than men in each location.

First of all, policies and projects must engage men and women in discussions and activities regarding gender equality. These activities should aim to put in perspective contextual dynamics that have a negative impact on women's lives. Moreover, they can be part of a change in social constructions, such as food taboos gender roles that directly or indirectly increases the vulnerability of women to anemia.

Furthermore, governmental and intergovernmental responses to anemia should target all women of reproductive age, regardless of their pregnancy status. A global policy review conducted by the World Health Organization (2016) evidence that in most countries IFA supplementation does not reach women until they become pregnant. More comprehensive coverage is necessary, given the fact that anemia affects nearly one-third of all non-pregnant women worldwide.

Gender-sensitive policies should also ensure that the implemented interventions such as food fortification and IFA supplementation are geographically and financially accessible to women. In some locations, women are not allowed to leave their houses alone. It is also possible that they lack transportation options to reach health institutions. Women might also lack financial means to acquire IFA supplementation, fortified food, and other instruments to prevent and treat anemia. Such limitations should be taken into considerations when designing responses to this public health issue.

Finally, it is particularly important that governments invest in the capacity building of policymakers to ensure that the professionals designing responses to anemia are aware of gender issues.

6.2 Policies implemented along with health education

Prevention and treatment of anemia are intrinsically connected to health education and communication strategies. As presented in Section 2, a considerable constraint on treating anemia in Portugal is because anemic women were not aware they had developed this health condition. Additionally, educational aspects can increase adherence to the WHO's recommendations, such as IFA supplementation. Symptoms of anemia, along with its details about prevention and treatment

options should be part of national campaigns. These campaigns can be promoted by the use of different media, such as radio, tv, the internet, and illustrated materials, in addition to community meetings.

National and local governments should engage community health workers and community leaders on awareness campaigns regarding anemia. Local health professionals and leaders have played a key role in the prevention and treatment of anemia through awareness campaigns. Their participation is particularly important once they have direct contact with the women in the community and are most likely to establish a trust relationship with them. Local health workers and leaders can serve as focal points for women to consult with questions and concerns. These professionals can provide educated guidance to women on anemia prevention and treatment that are respectful of cultural and contextual particularities.

All health professionals must have communication skills to adequately promote guidance to their communities. In Indonesia, 98 percent of women who had received counseling from health professionals trained in communications skills said they would follow the advice offered in comparison to 32 percent of women who were counseled by untrained professionals (Griffiths 2002). Therefore, educational aspects should target and benefit vulnerable populations to anemia, as well and health workers and community leaders, for them to provide more efficient guidance.

6.3 Monitoring and Impact Evaluation

Strategies to address anemia, such as the ones recommended by WHO need to be implemented along with monitoring and impact evaluations. Systematic monitoring allows governments to identify and analyze the strengths and possible gaps of their interventions while

they are being implemented. This is particularly important once it helps policymakers and development practitioners to make the necessary changes to implement more efficient approaches.

For instance, Kuwait's Ministry of Health has implemented a nutrition surveillance system in 1995 to measure health and nutrition-related trends. The system that started by measuring the height and weight of preschool children incorporated all age groups in 2001. Annual blood samples were taken for measuring hemoglobin levels, which helped to identify population groups that would be more vulnerable to anemia. The data collected from this monitoring system led the Ministry of Health to adopt food fortification as a strategy to reduce the prevalence of anemia in the country. However, the monitoring results from 4 years after the implementation of food fortification showed that this strategy was not successful to reduce anemia incidence. The government then promoted iron supplementation which has led to slight drops in the prevalence of anemia (WHO 2013).

Another crucial initiative to ensure efficient policies to reduce and treat anemia is the conduction of impact evaluations. Such evaluations allow governments to understand the effects of each strategy on women from different locations and socio-economic conditions. Additionally, impact evaluations will assist governments to understand to what extent the outcomes were met, as well as the project's cost-effectiveness, and identify the strengths and weaknesses of each strategy.

Among the countries that had successfully implemented an impact evaluation in Vietnam. A survey conducted in one of the country's provinces showed that 37.5 percent of non-pregnant women were anemic in 2005. In order to address this public health issue, the government distributed weekly supplementation of iron and folic acid to women of reproductive age (16–45 years), intending to cover 50,000 women. Impact evaluations conducted after one year of

intervention evidenced that prevalence of anemia among women reduced by 48 percent. The positive results from this impact evaluation motivated the Prime Minister of Vietnam to include this strategy into the National Nutrition Strategy 2011–2020 (WHO 2013).

These examples illustrate the importance of monitoring impact evaluation practices. CPLP members should adopt monitoring and evaluation activities in order to measure the impact of the WHO recommendations they have been implementing. Without such actions, it becomes difficult to understand if the implemented interventions are in fact promoting a reduction in the prevalence of anemia.

6.4 Multisectoral approach

Incidence of anemia is a consequence of an issue that encompasses different aspects, such as economic, social, and cultural. For this reason, efforts to address this public health problem need to involve different sectors and professionals, such as public and private institutions, community members, health workers, and research specialists. Additionally, policy design and implementation should involve inter-ministerial cooperation and engagement of local governments.

Jordan is one of the countries that stand out for reducing the prevalence of anemia through the implementation of multisectoral interventions. In 2002, Jordan launched a wheat flour fortification program that aimed to reduce the prevalence of anemia in the country, which affected nearly one-third of all women of reproductive age in the country (32.3 percent) by the same year. The country created a national fortification alliance and flour fortification steering committee, with the participation of the food industry, policymakers, community leaders, and non-governmental

organizations. A survey conducted in the country in 2010 showed that this intervention reduced the prevalence of anemia among women of reproductive age (WHO 2016).

Governments and intergovernmental organizations, such as WHO and FAO should design interventions that engage different stakeholders as a way to implement more efficient ways to address anemia among women of reproductive age.

7.0 Conclusion

Nearly one-third of all women of reproductive age in the world is considered anemic. The high incidence of anemia is particularly worrisome given the negative impacts this health condition has on one's livelihood and ability to partake in income-generating activities.

The intergovernmental organization CPLP states food and nutritional security as one of its primary goals. In 2012 CPLP launched a common strategy to increase food and nutritional security among its members, ESAN. This strategy shaped national policies among CPLP members with the support of private and intergovernmental organizations, such as FAO and WHO. However, despite the increasing incidence of anemia among CPLP members, ESAN fails to address this public health issue.

Given the relevance and increasing anemia rates globally, the World Health Organization makes three main recommendations to address anemia. The policy analysis conducted in this study evidenced that, except for Portugal and Sao Tome and Principe, most countries have implemented at least one of the guidelines proposed by the World Health Organization. There are only two CPLP members that follow all recommendations: Guinea Bissau and Mozambique. While in Guinea Bissau prevalence of anemia among women of reproductive age has decreased by 1.3 percent, in Mozambique there was an increase of 1.3 percent.

Local and regional case studies evidenced that successful interventions to address anemia were not limited to the adoption of WHO's strategies. Efficient governmental efforts were gender-sensitive, meaning that issues that particularly affect women were considered in all policy stages. Additionally, educational campaigns on anemia have had a direct impact on the adherence to anemia prevention and treatment strategies, such as iron supplementation. It is also crucial that

policies engage multiple stakeholders, such as the private sector and community leaders that can facilitate the implementation of governmental interventions and WHO's recommendations. Finally, monitoring and evaluation plans are essential to identify interventions' strengths and address possible gaps.

Compliance with WHO guidelines is essential, but it does not guarantee a successful outcome by itself. For this reason, policymakers should consider the different strategies abovementioned when designing policies to address anemia. Successfully policies also state clear goals and strategies to reduce anemia. Without clear and coordinated efforts, interventions to address this public health issue, it is unlikely that the prevalence of anemia will naturally decline. For this reason, CPLP must establish agreements of cooperation, political and economic support to directly reduce anemia among women of reproductive age.

Appendix A Mapped Policies and Governmental Programs to Increase Food and Nutritional Security and Reduce Anemia

Country	Policy/ Program
Angola	Estratégia Nacional de Segurança Alimentar e Nutricional (ESAN)
	Plano de Acção de Segurança Alimentar e Nutricional (PASAN)
	Programa Estratégico de Desenvolvimento de Longo Prazo (PEDLP-2025)
	Plano de Desenvolvimento Nacional 2018-2022
Brazil	Compromisso Social para a Redução de Anemia por Carência de Ferro no Brasil
	Política Nacional de Alimentação e Nutrição (PNAN)
	Vigilância Alimentar e Nutricional (VAN)
	Promoção da Saúde e da Alimentação Adequada e Saudável
	Prevenção e Controle de Agravos Nutricionais
	Estratégia Amamenta e Alimenta Brasil
	Programa Nacional de Suplementação de Ferro - PNSF

	Ações de Fortificação de Farinhas de Trigo, de Milho e de seus Subprodutos
Cabo Verde	Estratégia Nacional de Segurança Alimentar e Nutricional (ENSAN 2020)
	Plano Nacional de Ação de Alimentação e Nutrição
	Direito Humano Alimentação Adequada (DHAA)
	Estratégia de Fortificação Domiciliar para a Redução da Anemia em Crianças Menores de 5 Anos - VITAFERRO
Guinea-Bissau	Politique Nationale de Nutrition
Mozambique	Programa Quinquenal do Governo 2020 – 2024
	Plano de Acção Multisesctorial para a Redução de Desnutrição Cronica (PAMRDC)
	The National Food Fortification Strategy (2016-2021)
Portugal	Programa Nacional para a Promoção da Alimentação Saudável (PNPAS)
	Estratégia Integrada para a Promoção da Alimentação Saudável (EIPAS)
Sao Tome and Principe	Plano Nacional de Desenvolvimento da Saúde 2017-2021

	Programme National de Sécurité Alimentaire et Nutritionnelle (P.N.S.A.N)
Timor Leste	National Food and Nutrition Security Policy National Action Plan for a Hunger and Malnutrition Free Timor-Leste

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