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Prevalence of Weight Condition among Females of Reproductive Age Visiting Gihundwe District Hospital Facilities/Rwanda

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ABSTRACT

Purpose: This study aimed to assess the prevalence of overweight and its associated factors, including dietary habits and genetic predisposition, among women of reproductive age attending Gihundwe District Hospital in Rwanda. The increasing rates of overweight and obesity among women globally and locally, and their implications for non-communicable diseases, motivated this research.

Methodology: A mixed-methods approach was employed, combining descriptive cross-sectional and triangulation designs. Using purposive, census, retrospective, and prospective sampling techniques, 198 participants were selected based on Fisher et al.'s (1998) formula. Data was collected through structured questionnaires, focus group discussions, and key informant interviews. Quantitative data were analyzed using SPSS version 30, while qualitative data underwent thematic analysis.

Findings: The results revealed that 51.5% (n=103) of the participants had a Body Mass Index (BMI) within the overweight range (25.0–29.9 kg/m²). Many respondents (75%; n=149) managed their weight through a balanced diet and regular physical activity. Key contributing factors to being overweight included unhealthy dietary habits, such as low intake of fruits and vegetables and frequent consumption of processed foods and sugary beverages, while genetic predisposition accounted for only 5% (n=15) of the cases. Overweight status was significantly associated with elevated blood pressure (p=0.023) and an increased risk of hypertension (Odds Ratio [OR]=1.1; p=0.035; 95% CI).

Unique Contribution to Theory, Policy, and Practice: This study contributes to the limited literature on overweight prevalence among Rwandan women of reproductive age and highlights the need for community-based interventions that focus on nutrition education and lifestyle modifications to mitigate overweight and its associated health risks.

Keywords: *BMI, Overweight, Dietary Habits, Genetic Predisposition, Reproductive-Aged Women, Rwanda*

1. Introduction

In the global context, being overweight leading to obesity is a serious global public health concern that has risen dramatically over the past 40 years and is considered an epidemic. Globally, 13% (650 million) of people aged 18 and over were obese, and 39% (1.9 billion) were overweight in 2016. Generally speaking, being obese or overweight increases the chance of developing several non-communicable diseases (NCDs), such as kidney and cardiovascular disease, type 2 diabetes, certain malignancies, musculoskeletal conditions, and other chronic illnesses (Um et al., 2023). The prevalence of overweight in women of reproductive age (15-49 years) is increasing globally due to a variety of factors, including lifestyle changes, poor dietary choices, and sedentary behavior (Popkin et al., 2020). This trend is concerning, as being overweight during this stage of life is associated with multiple health complications, including higher risks of cardiovascular diseases, type 2 diabetes, and pregnancy-related complications (Jensen et al., 2014). However, the study in the survey area remains undocumented. In Africa, the prevalence of obesity among women of reproductive age has been steadily rising due to rapid urbanization, changes in dietary patterns, and lifestyle transitions. While malnutrition and undernutrition remain prevalent issues, obesity rates are on the rise, leading to a double burden of malnutrition in many African countries (Seidu et al., 2021).

Dietary intake is a key factor influencing the overweight condition. Globally, high-calorie diets, poor macronutrient balance, large portion sizes, and irregular meal patterns are linked to weight gain, with an estimated 2.8 million deaths attributed to high body mass index (BMI) annually (WHO, 2021). In Africa, diets are increasingly shifting towards processed, high-calorie foods, with studies indicating that more than 30% of urban households in SSA consume processed foods regularly, often high in fats and sugars (FAO, 2022). However, the study in the survey area remains unclear

1.1. Prevalence of Overweight Condition among Women of Reproductive Age

The global prevalence of obesity among women of reproductive age has been increasing. A study by Ng et al. (2014) reported that the prevalence of obesity among women aged 18 and older increased from 6.4% in 1975 to 14.9% in 2014. In low- and middle-income countries (LMICs), the prevalence has risen rapidly due to urbanization and lifestyle changes (Popkin et al., 2012).

Overweight condition are significant global public health concerns that have escalated over the past few decades. According to the World Health Organization (WHO), in 2016, about 13% of the world's adult population was obese, and 39% were overweight. These conditions are linked to an increased risk of various non-communicable diseases (NCDs), including cardiovascular diseases, type 2 diabetes, musculoskeletal disorders, and certain cancers (Um et al., 2023). Predictions indicate that by 2030, the number of obese adults worldwide could reach 1.12 billion, with an additional 2.16 billion being overweight (Popkin et al., 2012). In Sub-Saharan Africa, the prevalence of obesity among women of reproductive age is rising. For instance, a study conducted

in Ghana found that the prevalence of overweight conditions among women aged 15-49 was 40.2% and 15.2%, respectively (Agyemang et al., 2016). This trend is driven by rapid urbanization, changing dietary patterns, and decreased physical activity (Seidu et al., 2021).

The prevalence of overweight conditions among women of reproductive age in Africa has been rising, particularly in urban areas. This trend is driven by rapid urbanization, dietary shifts towards high calorie processed foods, and increased sedentary lifestyles. This "nutrition transition" has led to a double burden of malnutrition, where nutrition conditions coexist within the same populations (Seidu et al., 2021). The World Bank projects a 64% increase in NCD-related mortality in Africa between 2008 and 2030, with the overweight condition being a significant contributing factor (Asosega et al., 2023**)** In Rwanda, the prevalence of overweight condition among women of reproductive age has increased significantly. In Rwanda, according to 2019–20 RDHS data for women between 15-49 years showed that, 26% of women are overweight or obese, while women's mean BMI is 23.3. During that time, the percentage of overweight or obese women has risen, rising from 12% in 2005 and 16% in 2010 to 21% in 2014–15 and 26% in 2019–20 (NSIR, 2021).

1.2. Dietary Intake and Genetic Factors

Dietary intake is a key factor influencing the overweight condition. Globally, high-calorie diets, poor macronutrient balance, large portion sizes, and irregular meal patterns are linked to weight gain, with an estimated 2.8 million deaths attributed to high body mass index (BMI) annually (WHO, 2021). In Africa, diets are increasingly shifting towards processed, high-calorie foods, with studies indicating that more than 30% of urban households in SSA consume processed foods regularly, often high in fats and sugars (FAO, 2022).

Dietary intake, including caloric consumption, macronutrient distribution, portion size, and meal frequency, is one of the most influential factors associated with overweight condition. High-calorie diets, combined with poor macronutrient balance, have been consistently linked to weight gain (CDC, 2022). For example, a study by Shimokawa et al. (2019) reported that Rwandan women of reproductive age frequently consume carbohydrate-rich and fat-heavy diets, which lack essential nutrients like vitamins and proteins, further increasing the risk of obesity. Genetic predisposition also plays a role in obesity risk. Women with a family history of obesity are more likely to develop the condition, especially if they adopt similar dietary and lifestyle patterns (WHO, 2021). Research shows that genetic factors can influence fat storage and appetite regulation, making it more challenging for some individuals to maintain a healthy weight (UNFPA, 2019). Zhang and Wang (2021) have identified specific genetic markers associated with obesity risk, underscoring the role of heredity in influencing susceptibility to obesity.

2.0 METHODS AND METHODOLOGY

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2.1 Methods

This study employed a mixed-methods research design including descriptive cross-sectional and triangulation designs. Qualitative methods such as interviews or focus groups were used to help in exploring individual perspectives, attitudes, Quantitative methods like surveys and retrospective chart reviews were used to provide numerical data on demographic characteristics, treatment adherence, healthcare access, and clinical outcomes, allowing for statistical analysis to identify correlations and patterns. This all-encompassing strategy would provide a complete understanding of the problem and direct the creation of focused actions to support this population's means of subsistence. Structured questionnaires, focus groups, and key informant interviews were used to gather information The sample size calculation using Fisher et al 1998 formula $n = (Z\alpha/2)^2 p (1-p) / d2$,

n = target population greater than 10,000

Z = Z-value (1.96 for 95% confidence level)

p = estimated prevalence (26% based on RDHS 2019-20)

d = margin of error (5%)

$$\frac{1.96^2 0.26(1-0.26)}{0.05} = 296$$

Adjustment of the sample size was done using the Finite population correction formula (Fisher's,1998) because the estimated sample size from the facilities is below 10,000 respondents.

Hence, corrected sample size:

$$nf = \frac{296}{1+\left(\frac{296}{600}\right)} = 198$$

Were

Nf = desired sample size of respondents was less than 10,000.

n= desired sample size of respondents was more than 10,000

N = total estimated study/target population size (600)

The desired sample size of respondents was 298 women of reproductive age with overweight or obesity visiting the Gihundwe district hospital.

3. Results and Findings

3.0 Demographic Profile

The study found that overweight was majority 50% (89)among married women, and commonly also to employed female who are also on family planning method with respondents rate of 24%

(48), which was significant with P value of 0.031 and 95% %/, CI, as demonstrated in the table and figure below respectively.

Table 1. Distribution of overweight and occupation of the female respondents in the study area

Occupation	No	%
Unemployed	37	18.7
Self-employed	42	21.2
Employed	48	24.2
Student	39	19.7
Other	32	16.2
Total	198	100.0

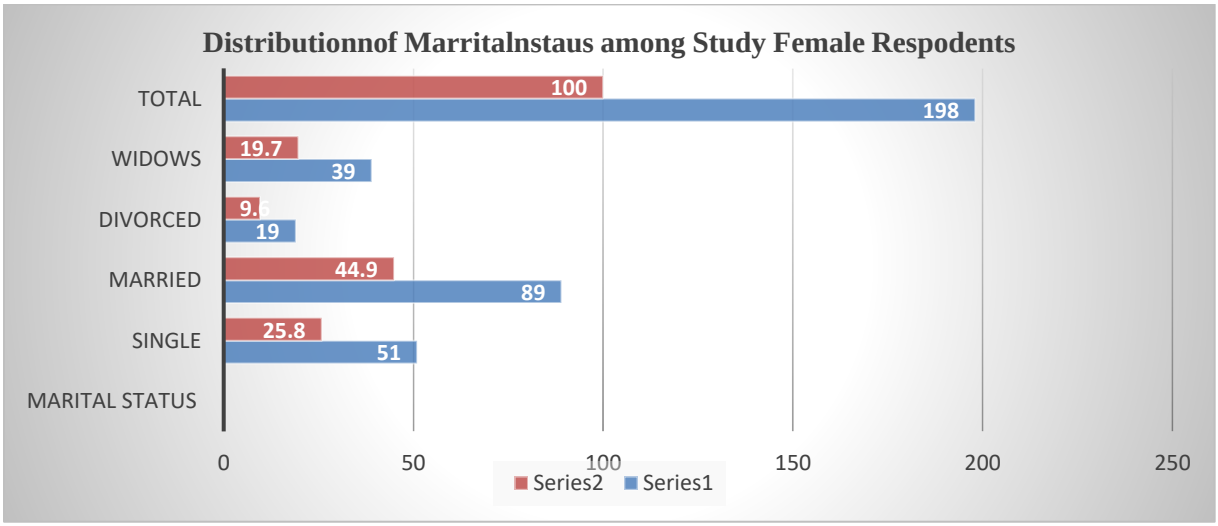

Figure 1: Distribution of Marital Status among Study Female Respondents

3.1 Prevalence and control measures of overweight among females of the Reproductive Age in Gihundwe District Facilities.

The Results opined that the overweight prevalence in the study region was 51.5% (103) Of female of reproductive age visiting the study facility were overweight, with BMI index over 25.0 - 29.9 kg/m2 Many respondents reported using 75% (149) respondents, used a balanced Dietary intake change and regular physical fitness

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3.2 Prevalence of Overweight among Females of Reproductive Age in Gihundwe District Facilities

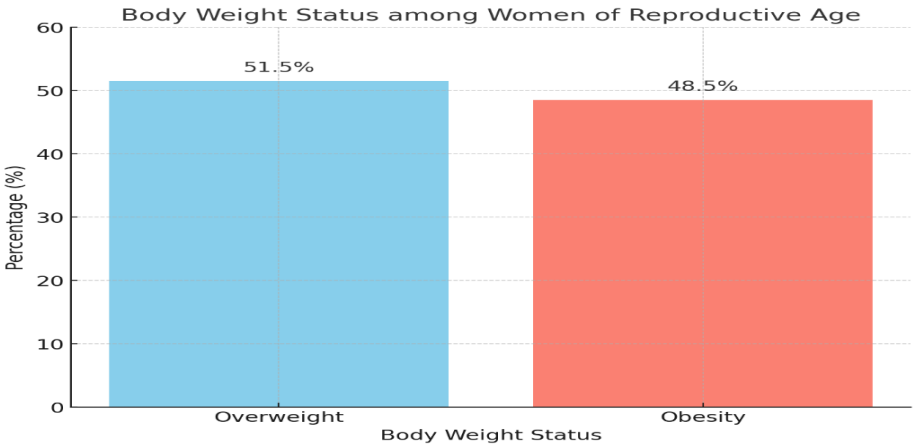

Figure 2: demonstrates the Prevalence of Body Weight among females of Reproductive Age as a Key Contributing Factor to Obesity in the Study District

Given that excess body weight is the main contributing factor increased risk of non-communicable diseases such as hypertension, diabetes, and cardiovascular conditions, as well as complications during pregnancy, these findings suggest an urgent need for targeted health interventions.

Preventive strategies such as nutritional counseling, regular physical activity programs, and awareness campaigns should be prioritized to address this rising burden among women of reproductive age in the Gihundwe catchment area

3.4 Control Measures Used to Control Overweight among Females of Reproductive Age in Gihundwe District Facilities

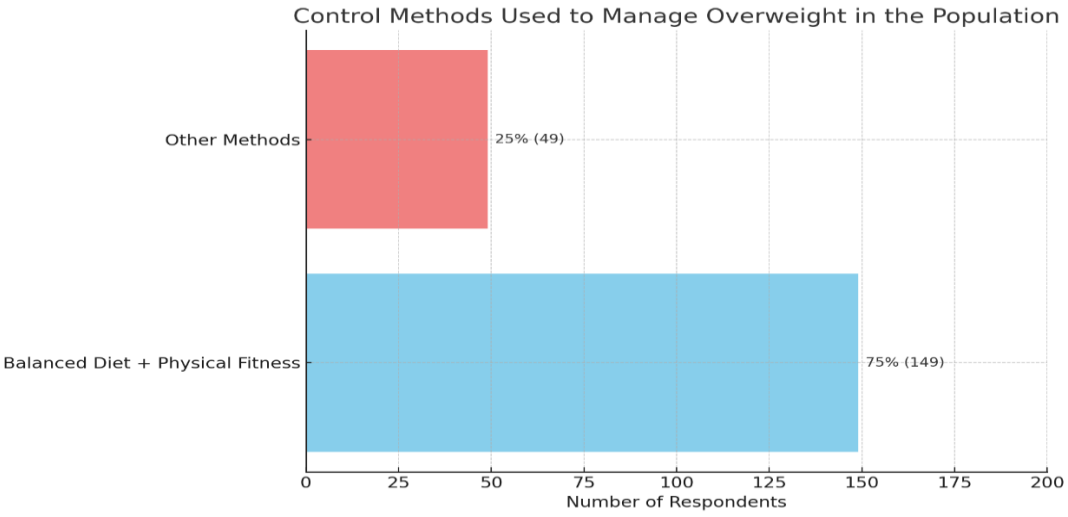

Figure 3: Demonstrates Methods Used to Control Body Weight among Women of Reproductive Age as a Key-Contributing Factor to Obesity in the Study District

Here is the bar chart showing the control methods used to manage overweight among the population. It highlights that 75% (149 respondents) used a combination of a balanced diet and regular physical fitness, while 25% (49 respondents) relied on other methods.

3.5 Prevalence of Physical Activities Used to Control Overweight in Population Health

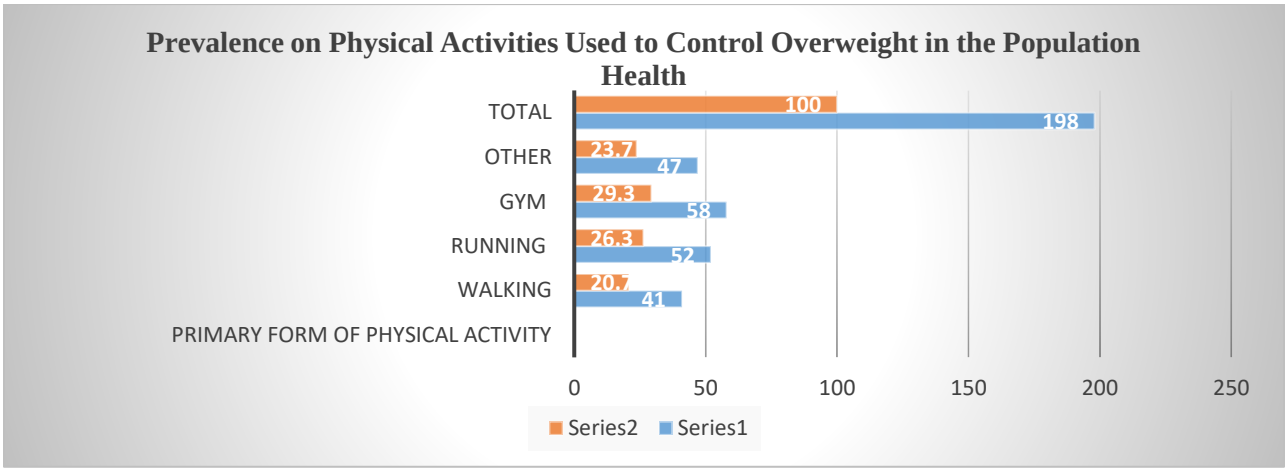

Figure 4. Demonstrates various Protective and Promotive Activities Used to intervene in the Overweight Condition in the Study Area

Figure 4.5 illustrates the prevalence of various physical activities employed to manage overweight conditions within the population. The graph compares five primary forms of physical activity: walking, running, gym workouts, other activities, and the overall total. Among the individual activities, gym workouts (29.3%) and running (26.3%) are the most used, followed by other physical activities (23.7%) and walking (20.7%). In terms of total participation, walking and running were practiced by 41 and 52 individuals, respectively, while gym workouts and other activities involved 58 and 47 individuals, respectively. The overall total indicates that 198 individuals engaged in physical activities to control overweight, with 100 representing the percentage prevalence, highlighting the significant role of protective and promotive activities in improving population health

3.6. Healthy Dietary Lifestyles and Genetic Factors

The results revealed that Fruit and vegetable consumption as Dietary habits and genetic predisposition are critical contributors to the increasing rates of overweight, among women of reproductive age and remain limited with only a rate of 32% (63) in uptake, while 24% rarely uptake fruits and vegetable as dietary control of overweight in their diet among the study respondents. The study opined that only 5% of overweight re contributed by family genetic makeup in the study region.

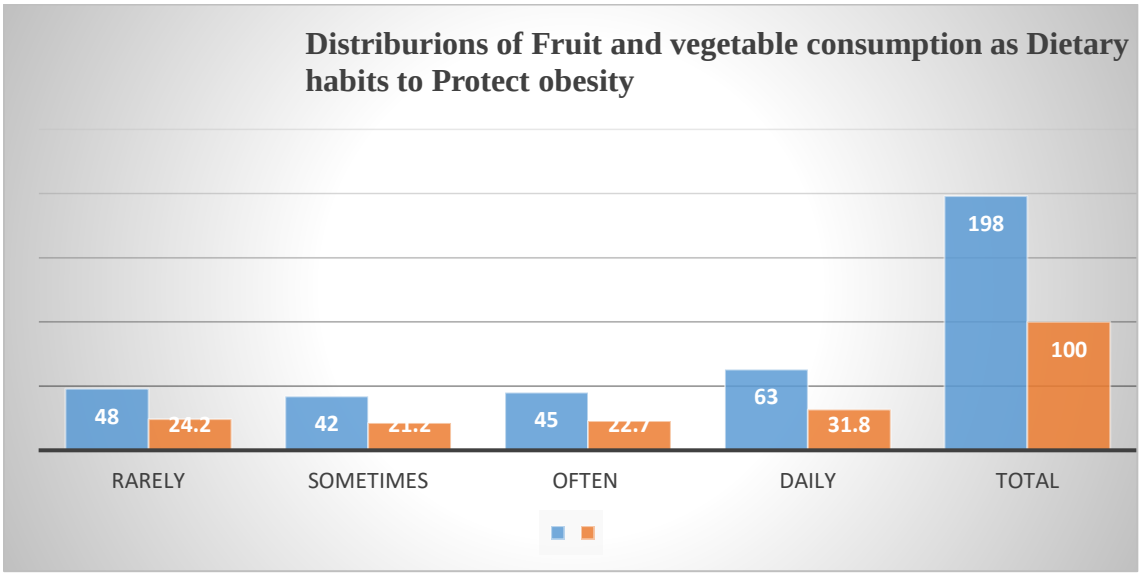

Figure 5: Distributions of Fruit and vegetable consumption as Dietary habits to protect against obesity

The low uptake of Fruit and vegetable consumption as Dietary habits to protect against obesity was also heard during the focused group discussion:

"We are not cows or goats to eat vegetables daily and we have to punish our men to buy us meat daily, if not lunch, supper, I must eat in my house." FGD held on 16 March 2025.

Moreover, the large proportion of respondents with a family history of being overweight suggests an interplay between genetic factors and lifestyle behaviors**.** Genetic predisposition was limited to only 5% of the 10 respondents.

4. Discussion

The present study revealed a high prevalence of overweight (51.5%) among women of reproductive age attending Gihundwe District Hospital. This prevalence exceeds the national average of 26% reported in the Rwanda Demographic and Health Survey (RDHS) 2019-2020 (NISR, 2020), indicating a potential local clustering of risk factors or demographic influences within the district. This pattern is consistent with findings from urban Ghana, where Agyemang et al. (2016) reported overweight prevalence of 40.2% among women aged 15–49 years, highlighting the growing burden of overweight in sub-Saharan African urban and peri-urban populations.

Overweight in this study was most common among married women (50%) and employed females (24%). These findings align with those from Tanzania, where Mosha et al. (2021) found that marital status and employment were positively associated with overweight and obesity among women, likely due to lifestyle changes such as reduced physical activity and increased access to

energy-dense foods among these groups. The association of overweight with family planning use among 24% of respondents could be partially attributed to hormonal changes or reduced physical activity post-childbearing, as suggested by studies in low- and middle-income countries (Jones-Smith et al., 2012).

Dietary practices emerged as a critical determinant of overweight. Although 75% of respondents reported using diet modification and physical activity to control weight, the intake of fruits and vegetables remained low, with only 32% consuming adequate amounts. Similarly, the Cambodian study by Um et al. (2023) noted that despite awareness of healthy dietary practices, adherence remained low, contributing to a 36% prevalence of overweight among reproductive-age women.

Physical activity patterns in the study area showed that gym workouts (29.3%) and running (26.3%) were more commonly practiced than walking (20.7%). This preference differs slightly from findings in South Africa, where aerobic household and outdoor activities such as walking dominated physical activity patterns among women (Owen et al., 2018). The promotion of culturally appropriate, accessible physical activity options such as walking could thus enhance participation and weight control efforts in this population.

While genetic predisposition was acknowledged by only 5% of respondents, its contribution cannot be overlooked. Studies suggest that while genetics influences obesity susceptibility, environmental factors such as diet and activity patterns play a more substantial role (Friedman, 2019). This emphasizes the importance of focusing on modifiable behaviours through community-based interventions.

Overall, the study underscores an urgent need for integrated health promotion strategies targeting diet quality improvement, increased physical activity, and behavioural change communication in women of reproductive age. These findings should guide policymakers in designing targeted interventions to curb the rising overweight burden and associated non-communicable disease risks in rural Rwandan settings.

5. Conclusion

This study found a high prevalence of overweight (51.5%) among women of reproductive age at Gihundwe District Hospital. Key factors included marital status, employment, poor diet, low fruit and vegetable intake, and sedentary lifestyles. Although many practiced dietary changes and physical activity, these were insufficient to prevent overweight. Genetic factors contributed minimally (5%). Overweight was significantly linked to high blood pressure, increasing the risk of hypertension. The results emphasize the need for community-based interventions promoting healthy eating, physical activity, and integrating nutrition education into reproductive health services to reduce overweight and related health issues in Rwandan women.

6. Recommendations

To address the high prevalence of overweight among women of reproductive age, it is recommended to focus on three key areas: first, enhance community education and awareness campaigns that promote healthy eating habits and the importance of regular physical activity; second, integrate comprehensive nutrition and fitness counseling into reproductive health services at local health facilities to provide ongoing support and monitoring; and third, improve access to affordable, nutritious foods such as fruits and vegetables while creating opportunities for women to engage in consistent physical exercise, thereby tackling both dietary and lifestyle factors contributing to overweight.

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