

ABSTRAK

Latar Belakang: Anemia merupakan masalah kesehatan berkaitan dengan gizi yang terjadi di dunia, penduduk dunia paling banyak mengalami anemia adalah ibu hamil dan remaja. Anemia yang berkelanjutan pada remaja dapat berdampak pada menurunnya kemampuan belajar, pertumbuhan dan perkembangan. Remaja putri rentan mengalami anemia dikarenakan remaja putri mengalami siklus menstruasi setiap bulannya dan membatasi asupan makan. Kualitas dan kuantitas konsumsi makanan remaja putri dilihat dari keragaman konsumsi, proporsi konsumsi makanan dan kecukupan konsumsi makanan. Untuk dapat memenuhi kebutuhan gizi dalam upaya mencegah anemia, diperlukan pendekatan berbasis makanan yang didasarkan pada pangan lokal untuk memenuhi kecukupan nutrisi dengan biaya terjangkau. *Linear Programming* digunakan untuk merumuskan menu dengan biaya terjangkau dengan memastikan semua makronutrien dan mikronutrien telah terpenuhi sesuai dengan pedoman diet.

Tujuan: Memberikan rekomendasi makanan yang dapat memenuhi kebutuhan gizi remaja putri sesuai dengan sumber daya yang tersedia di pondok pesantren untuk mencegah anemia menggunakan *Linear Programming*.

Metode: Penelitian dilakukan pada remaja putri usia 16–18 tahun sebanyak 95 orang di Pondok Pesantren Al-Fattah dan Pondok Pesantren Al Hamdaniyah Kabupaten Sidoarjo dengan menggunakan desain penelitian *cross sectional*. Wawancara Food Recall 24h, SQ-FFQ, dan pengukuran antropometri dilakukan untuk mendapatkan data asupan makanan, pola makan dan status gizi. Selanjutnya data dianalisis menggunakan *linear programming* untuk menyusun rekomendasi makan optimal.

Hasil: Hasil penelitian menunjukkan rata-rata asupan harian energi, makronutrien dan mikronutrien (asam folat, vitamin C, vitamin B12, vitamin B6 dan zinc) masih dibawah rekomendasi AKG. Rata-rata asupan harian besi tergolong cukup. Asupan makan responden masih kurang beragam. Rekomendasi menu makan menggunakan *linear programming* telah dapat dioptimalkan dan sesuai dengan kecukupan makronutrien dan mikronutrien rekomendasi AKG serta berada di kisaran harga yang terjangkau. Pemenuhan gizi dalam menu optimal melebihi rata-rata asupan zat gizi harian responden dan harga menu berkisar rentang pengeluaran harian responden. Menu yang direkomendasikan selama 7 hari telah memenuhi syarat keragaman makan sesuai anjuran MDD-W.

Kesimpulan: Rekomendasi menu makanan untuk mencegah anemia pada remaja putri menggunakan LP telah optimal dan dapat memenuhi kebutuhan gizi harian dengan menu beragam sesuai anjuran MDD-W

Kata kunci: Anemia, remaja putri, pengoptimalan gizi, keragaman makan, *linear programming*.

ABSTRACT

Background: Anemia is a nutrition-related health problem that occurs in the world, the world's most anemic population is pregnant women and adolescents. Continuous anemia in adolescents can have an impact on decreased learning ability, growth and development. Adolescent girls are prone to anemia because they experience the menstrual cycle every month and limit their food intake. The quality and quantity of food consumption of adolescent girls are seen from the diversity of consumption, the proportion of food consumption and the adequacy of food consumption. To be able to meet nutritional needs in an effort to prevent anemia, a food-based approach based on local foods is needed to meet nutritional adequacy at an affordable cost. Linear Programming is used to formulate an affordable menu by ensuring all macronutrients and micronutrients are met according to dietary guidelines.

Objective: To provide food recommendations that can meet the nutritional needs of adolescent girls according to the resources available in Islamic boarding schools to prevent anemia using Linear Programming.

Methods: The study was conducted on adolescent girls aged 16-18 years as many as 95 people in Al-Fattah Islamic Boarding School and Hamdaniyah Islamic Boarding School, Sidoarjo Regency using a cross sectional research design. Food Recall 24h interview, SQ-FFQ, and anthropometric measurements were conducted to obtain data on food intake, dietary patterns and nutritional status. Furthermore, the data were analyzed using linear programming to develop optimal eating recommendations.

Results: The results showed that the average daily intake of energy, macronutrients and micronutrients (folic acid, vitamin C, vitamin B12, vitamin B6 and zinc) was still below the recommended RDA. The average daily intake of iron was moderate. Respondents' food intake is still less diverse. Meal recommendations using linear programming have been optimized and are in accordance with the adequacy of macronutrient and micronutrient RDA recommendations and are in the affordable price range. Nutritional fulfillment in the optimal menu exceeds the average daily nutrient intake of respondents and the menu price is within the range of respondents' daily expenditure. The recommended menu for 7 days has met the requirements for dietary diversity according to the MDD-W recommendations.

Conclusion: Food menu recommendations to prevent anemia in adolescent girls using LP are optimal and can meet daily nutritional needs with a diverse menu according to MDD-W recommendations.

Keywords: Anemia, adolescent girls, nutrition optimization, meal diversity, linear programming.