ABSTRAK

Latar Belakang: Remaja perempuan merupakan populasi yang berisiko mengalami anemia. Faktor nutrisi seperti kalori, protein, zat besi, serat pangan, dan asam folat dapat menyebabkan penyakit ini. Selain itu, bau amis dan rasa mual merupakan dua faktor penyebab rendahnya konsumsi zat besi pada remaja putri. Formulasi permen jelly buah salak dan pisang dengan fortifikasi ferro fumarat menggunakan nanoteknologi sebagai alternatif konsumsi pangan. Karena bahan permen dari agar-agar yang mudah diperoleh dan sering dikonsumsi masyarakat. Remaja muda sebaiknya menyukai formulasi jeli ini, mengingat harganya yang wajar.

Tujuan: Mengetahui pengaruh fortifikasi agar-agar dan besi fumarat menggunakan nanoteknologi ditambah formulasi buah salak dan pisang dalam bentuk permen jelly terhadap peningkatan kadar hemoglobin.

Metode: Metode penelitian dengan menggunakan Mix Methode dengan rancangan sequential exploratory. Penelitian dilakukan 3 tahap: tahap 1 penelitian kualitatif; tahap 2 pengembangan produk permen jelly; tahap 3 penelitian kuantitatif dengan pendekatan quasi ekperimen dengan *Pretest-Posttest Control Group Design* dengan melibatkan 150 remaja putri yang berasal dari Kecamatan Tamansari, Kota Tasikmalaya, dengan rentang usia 12-18 tahun. Masing-masing kelompok berjumlah 50 orang. Proses pemilihan sampel menggunakan Teknik *purposive sampling*. Analisis data menggunakan metode Uji T dan Regresi Logistik Berganda.

Hasil: Penelitian tahap 1 menghasilkan 3 tema penelitian yang dijadikan dasar pengembangan produk permen jelly pada tahap 2. Pada penelitian tahap 3 didapatkan perbedaan yang signifikan pada kelompok perlakuan (Jepisa) dan kontrol 1 (JFumarat) (p=0,044) dengan *moderate size effect*(d=0,41). Sedangkan perbedaan yang signifikan didapatkan pada kelompok perlakuan (Jepisa) dan kontrol kontrol 2 (TTD) (p=0,033) dengan *moderate size effect*(d=0,36). Secara statistic terdapat hubungan antara pemberian Jepisa terhadap perubahan kadar hemoglobin. Berdasarkan analisis regresi logistik faktor risiko diperoleh status gizi dan lama menstruasi merupakan variabel perancu terhadap peningkatan kadar Hb dengan variabel utama yaitu kepatuhan (P-value=0,000; Exp (B)=17,769).

Kesimpulan: Permen jelly Jepisa efektif meningkatkan kadar hemoglobin pada remaja putri. Pada penelitian ini didapatkan remaja putri yang tidak patuh mempunyai peluang mengalami anemia 17,769 kali dibandingkan remaja yang patuh setelah dikontrol variabel status gizi dan lama menstruasi. Kenaikan kadar Hb lebih tinggi pada kelompok JFumarat, diperlukan investigasi lebih lanjut untuk meneliti tentang permen jelly dan ferro fumarat tanpa teknologi nano serta efektifitas dan efisiensi baik dari segi proses maupun biaya produksi.

Kata Kunci : Permen Jelly, Fortifikasi, Anemia, Hemoglobin, Remaja Putri

ABSTRACT

Background: Adolescent Female are a population at risk for anemia. Nutritional factors such as calories, protein, iron, dietary fiber, and folic acid induce this disease. Furthermore, fishy odor and nausea are two factors that contribute to adolescent females' lack of iron consumption. Jelly candy formulations of snake and banana fruit with ferrous fumarate fortification using nanotechnology also decrease these diseases as an alternative to food consumption. Because candy is made from gelatin, which is easy to get and is often consumed by the public. Young adolescents ought to embrace this jelly formulation, considering its reasonable pricing.

Objective: to determine the effect of jelly candy formulations of snake and banana fruit with ferrous fumarate fortification using nanotechnology on the increase in hemoglobin levels

Method: This study applied a mix methode with an sequential exploratory design. Overall, this study consisted of three stages; the first stage was a qualitatifve study exploring the experience; the second stage make a product JEPISA; and the third stage was intervention of JEPISA for adolescent girls. A quasi-experimental approach was adopted with a Pretest-Posttest Control Group design. The study included a cohort of 150 adolescent girls hailing from Tamansari District, Tasikmalaya City, within the age range of 12 to 18 years.

Results: The first study revealed 3 themes that were used the basic for developing JEPISA at second stage. In the third stage of the study, there was significant difference in hemoglobin level between the Jepisa and JFumarat (p=0.044) with a moderate effect size (d=0.41); between the Jepisa and TTD (p=0.033) with a moderate effect size (d=0.436). The multiple logistic regression analysis of nutritional status and menstrual duration were suspected as confounding variabels for the increase in Hb levels with the main variable being compliance (P-value=0,000; Exp (B)=17,769).

Conclusion: Jelly Candy (Jepisa) is effective in improving hemoglobin level in adolescent girls. In this study, there were differences in Hb levels before and after administering the treatment. The results of multivariate analysis with multiple logistic regression analysis, nutritional status, and length of menstruation were suspected as confounding variables for compliance with the incidence of anemia. Adolescent girls who are not compliant are 17,769 times more likely to be anemic than those who are compliant after being controlled for nutritional status variables and length of menstruation variable. Further investigation is needed for research on jelly candy and ferrous fumarate without nanotechnology and effectiveness and efficiency both in terms of process and production costs.

Keywords**:** Jelly Candy, Fortified, Anemia, Hemoglobin, Adolescent female.