

Program Studi Sarjana Keperawatan
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ABSTRAK

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Inovasi Pembuatan Tas Asi *Transportable* Dual Fungsi 'UMASI'(Hangat-Dingin) Bagian Fungsi Hangat

Air Susu Ibu (ASI) merupakan sumber nutrisi utama bayi yang tidak hanya kaya gizi, tetapi juga mengandung antibodi penting untuk mendukung tumbuh kembang. Namun, tantangan pemberian ASI eksklusif seringkali muncul akibat keterbatasan waktu, fasilitas, serta daya tahan ASI di suhu ruang. Untuk mengatasi kendala tersebut, dikembangkan inovasi tas ASI *transportable* dual fungsi “UMASI”, yang dilengkapi dengan fitur penghangat berbasis termoelektrik, sehingga memudahkan ibu menyusui menjaga kualitas ASI saat bepergian. Penelitian ini menggunakan pendekatan Research and Development (R&D) dengan tahapan: analisis kebutuhan, perancangan desain, pembuatan prototipe, uji coba, serta evaluasi. Sketsa awal dibuat untuk menentukan dimensi dan kompartemen. Komponen termoelektrik dipilih sebagai media penghangat dengan tegangan 5V-2A, dilengkapi thermometer digital untuk pemantauan suhu. Uji coba dilakukan menggunakan ASI beku dan dingin pada beberapa kondisi ruangan: tanpa AC/kipas, dengan kipas, dan dengan AC. Data suhu dicatat untuk menilai efektivitas penghangat dalam mencapai suhu ideal konsumsi bayi (36–37°C). Hasil dari penelitian produk berhasil menaikkan suhu ASI beku dari 11–12°C hingga 34–35°C dalam 49–50 menit pada ruangan tanpa AC, serta dari 16,7°C ke 34,3°C hanya dalam 15 menit pada ruangan ber-AC. Perbedaan suhu luar dan dalam botol ASI rata-rata 2,1°C. Hasil menunjukkan bahwa tas ASI *transportable* “UMASI” efektif menjaga suhu hangat sesuai kebutuhan bayi, aman digunakan, serta praktis untuk mobilitas ibu bekerja maupun bepergian. Tas ASI *transportable* “UMASI” efektif menghangatkan ASI dengan waktu optimal, mendukung pemberian ASI eksklusif secara praktis dan berkelanjutan.

Kata Kunci: ASI, Tas *Transportable*, Inovasi, Termoelektrik, Penghangat ASI

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ABSTRACT

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Innovation in Creating Dual-Function Transportable Breast Milk Bags: 'UMASI' (Warm-Cold) - Warm Function Section

Breast milk (ASI) is the primary source of nutrition for infants. It is not only rich in essential nutrients but also contains significant antibodies that support growth and development. However, many mothers face challenges with exclusive breastfeeding due to limited time, inadequate facilities, and the difficulty of keeping breast milk fresh at room temperature. To address these issues, an innovative dual-function transportable breast milk bag called "UMASI" has been developed. This bag includes a thermoelectric heating feature, making it easier for breastfeeding mothers to maintain the quality of their breast milk while on the go. This research employs a Research and Development (R&D) approach, which consists of several stages: needs analysis, design planning, prototyping, testing, and evaluation. Initial sketches were created to determine the bag's dimensions and compartments. Thermoelectric components were selected as the heating method, requiring a voltage of 5V-2A, and the bag is equipped with a digital thermometer for accurate temperature monitoring. Trials were conducted using frozen and cold breast milk in various conditions: without air conditioning (AC) or a fan, with a fan, and with AC.

Temperature data was collected to evaluate the effectiveness of the warmer in achieving the ideal temperature for infant milk consumption, which is between 36–37°C. The results of the research demonstrated that the product successfully raised the temperature of frozen breast milk from 11–12°C to 34–35°C within 49–50 minutes in a non-air-conditioned room. In contrast, in an air-conditioned room, the temperature increased from 16.7°C to 34.3°C in just 15 minutes. On average, there was a temperature difference of 2.1°C between the outside and inside of the breast milk bottle. These findings indicate that the "UMASI" transportable breast milk bag effectively maintains the warm temperature required for a baby's needs. It is safe to use and practical for the mobility of working and traveling mothers. The "UMASI" transportable breast milk bag not only warms breast milk within the optimal timeframe but also supports exclusive breastfeeding in a practical and sustainable manner.

Kata Kunci: *Breast Milk, Transportable bags, Innovation, Thermoelectric, Breast Milk Warmer*

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