

ABSTRAK

RANCANGAN PROTOTIPE APLIKASI RR.D UNTUK SKRINING FAKTOR KEKURANGAN VITAMIN D PADA REMAJA AKHIR DI IKES PAYUNG NEGERI PEKANBARU

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Kekurangan vitamin D pada remaja akhir berisiko menimbulkan gangguan pertumbuhan tulang, penurunan daya tahan tubuh, serta keluhan kelelahan dan nyeri otot, namun deteksi bakunya melalui pemeriksaan serum 25-*hydroxy* vitamin D bersifat invasif dan mahal sehingga kurang sesuai untuk skrining massal pada populasi mahasiswa. Penelitian pengembangan ini bertujuan merancang, menguji validitas, dan menilai kemudahan penggunaan (*usability*) prototipe aplikasi Rr.D sebagai instrumen skrining non-invasif faktor risiko kekurangan vitamin D pada remaja akhir di Institut Kesehatan Payung Negeri Pekanbaru. Penelitian menggunakan pendekatan *Research and Development* (R&D) dengan model ADDIE, meliputi tahap analisis, perancangan, pengembangan, implementasi, dan evaluasi. Algoritma skrining aplikasi mengadaptasi instrumen EVIDENCE-Q Pediatri yang telah tervalidasi secara psikometrik (AUC 0,7066; sensitivitas 100% pada ambang skor ≥ 20), dikombinasikan dengan Kuesioner *Sun Exposure & Diet* dan *Semi Quantitative Food Frequency Questionnaire* (SQ-FFQ). Penelitian ini menyimpulkan bahwa aplikasi Rr.D valid dan mudah digunakan sebagai instrumen skrining mandiri risiko kekurangan vitamin D bagi remaja akhir, serta merekomendasikan validasi klinis lebih lanjut melalui pemeriksaan laboratorium sebelum aplikasi didiseminasikan secara lebih luas.

Kata Kunci: Aplikasi Skrining, Kekurangan Vitamin D, Remaja Akhir, *Research and Development*.

ABSTRACT

DESIGN OF THE RR.D APPLICATION PROTOTYPE FOR SCREENING VITAMIN D DEFICIENCY RISK FACTORS AMONG LATE ADOLESCENTS AT IKES PAYUNG NEGERI PEKANBARU

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Vitamin D deficiency among late adolescents may lead to impaired bone growth, reduced immunity, and complaints of fatigue and muscle pain, yet the gold-standard diagnostic method through serum 25-hydroxy vitamin D testing is invasive and costly, making it impractical for mass screening among the student population. This development research aimed to design, test the validity, and assess the usability of the Rr.D application prototype as a non-invasive screening instrument for vitamin D deficiency risk factors among late adolescents at Institut Kesehatan Payung Negeri Pekanbaru. The study employed a Research and Development (R&D) approach using the ADDIE model, comprising the analysis, design, development, implementation, and evaluation stages. The application's screening algorithm adapted the psychometrically validated EVIDENCE-Q Pediatric instrument (AUC 0.7066; 100% sensitivity at a cut-off score of ≥ 20), combined with the Sun Exposure & Diet Questionnaire and the Semi Quantitative Food Frequency Questionnaire (SQ-FFQ). This study concludes that the Rr.D application is valid and easy to use as a self-administered screening tool for vitamin D deficiency risk among late adolescents, and recommends further clinical validation through laboratory testing prior to wider dissemination of the application.

Keywords: Screening Application, Vitamin D Deficiency, Late Adolescents, Research and Development.