Analisis Kesepakatan Pengukuran Disc Height Index Antara Modalitas Radiografi Lumbal dan MRI Lumbal
pada Pasien Low Back Pain
Rezki amelia Susanti, Dr. dr. Bambang Supriyadi, Sp.Rad., Subsp. MSK(K), MM.; dr. Evi Artsini, Sp.Rad.,Subsp. TR
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

ANALISIS KESEPAKATAN PENGUKURAN *DISC HEIGHT INDEX* ANTARA MODALITAS RADIOGRAFI LUMBAL DAN MRI LUMBAL PADA PASIEN *LOW BACK PAIN*

Rezki Amelia Susanti[1], Bambang Supriyadi[2], Evi Artsini[2], Lina Choridah[2], Bambang Purwanto Utomo[2]

[1]Residen dan [2]Staf Departemen Radiologi, Fakultas Kedokteran, Kesehatan Masyarakat dan Keperawatan, Universitas Gadjah Mada, Daerah Istimewa Yogyakarta-Indonesia

INTISARI

Latar Belakang: *Low back pain* merupakan penyebab utama disabilitas yang sering berkaitan dengan degenerasi diskus intervertebralis dan herniasi nukleus pulposus (HNP). *Disc height index* (DHI) merupakan parameter kuantitatif untuk menilai perubahan tinggi diskus, tetapi kesepakatan pengukurannya antara radiografi dan MRI serta hubungannya dengan HNP masih belum jelas. Tujuan penelitian ini adalah mengetahui kesepakatan pengukuran *disc height index* antara modalitas radiografi lumbal dan MRI lumbal pada pasien *low back pain*, serta korelasinya dengan herniasi nukleus pulposus.

Metode: Penelitian *cross sectional* menggunakan data sekunder pasien *low back pain* usia 40-70 tahun yang menjalani radiografi dan MRI lumbal di RSUP Dr. Sardjito Yogyakarta pada Januari-Desember 2024. Sebanyak 58 subjek dipilih secara *consecutive sampling*. DHI diukur pada lima segmen lumbal menggunakan radiografi lateral dan MRI sagital T2-*weighted*. Kesepakatan antarmodalitas dianalisis menggunakan *intraclass correlation coefficient* (ICC) dan plot Bland-Altman, sedangkan korelasi DHI berdasarkan MRI dengan derajat HNP dianalisis menggunakan korelasi Spearman.

Hasil: Rerata usia subjek adalah 52,7 ± 13,9 tahun; 28 subjek (48,3%) laki-laki dan 30 (51,7%) perempuan, dengan IMT 24,8 ± 3,5 kg/m². Nilai ICC berturut-turut pada L1-L5 adalah 0,945; 0,086; 0,184; 0,403; dan 0,791, yang menunjukkan kesepakatan sangat baik pada L1, baik pada L5, serta buruk pada L2-L4. Plot Bland-Altman menunjukkan sebagian besar selisih pengukuran berpusat di sekitar nol, tetapi terdapat beberapa pencilan dan variasi kesepakatan antarsegmen. Tidak terdapat korelasi signifikan antara DHI MRI dan HNP pada seluruh segmen, dengan *r* berturut-turut 0,042; -0,154; 0,021; -0,093; dan -0,161 serta seluruh $p>0,05$.

Kesimpulan: Tidak terdapat korelasi signifikan antara DHI berdasarkan MRI dan HNP pada seluruh segmen lumbal. Kesepakatan pengukuran DHI antara radiografi dan MRI bersifat spesifik menurut segmen.

Kata kunci: *Low Back Pain*; *Intervertebral Disc Degeneration*; *Intervertebral Disc Displacement*; *Magnetic Resonance Imaging*; *Radiography*.

UNIVERSITAS GADJAH MADA
Analisis Kesepakatan Pengukuran Disc Height Index Antara Modalitas Radiografi Lumbal dan MRI Lumbal pada Pasien Low Back Pain
Rezki amelia Susanti, Dr. dr. Bambang Supriyadi, Sp.Rad., Subsp. MSK(K), MM.; dr. Evi Artsini, Sp.Rad.,Subsp. TR
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

ANALYSIS OF MEASUREMENT AGREEMENT OF THE *DISC HEIGHT INDEX* BETWEEN LUMBAR RADIOGRAPHY AND LUMBAR MRI IN PATIENTS WITH *LOW BACK PAIN*

Rezki Amelia Susanti[1], Bambang Supriyadi[2], Evi Artsini[2], Lina Choridah[2], Bambang Purwanto Utomo[2]

[1]Resident and [2]Staff of Radiology Department, Faculty of Medicine, Public Health, and Nursing, Gadjah Mada University, Special Region of Yogyakarta, Indonesia

ABSTRACT

Background: Low back pain is a leading cause of disability, frequently associated with intervertebral disc degeneration and herniation of the nucleus pulposus (HNP). The disc height index (DHI) is a quantitative parameter for assessing changes in disc height; however, the agreement of measurements between radiography and MRI, as well as its relationship with HNP, remains unclear. This study aimed to determine the agreement of DHI measurements between lumbar radiography and lumbar MRI modalities in patients with low back pain, and to assess the correlation with HNP.

Methods: This cross-sectional study utilized secondary data from patients aged 40-70 years with low back pain who underwent lumbar radiography and MRI at Dr. Sardjito General Hospital, Yogyakarta, between January and December 2024. Fifty-eight subjects were selected via consecutive sampling. DHI was measured across five lumbar segments using lateral radiographs and sagittal T2-weighted MRI images. Inter-modality agreement was analyzed using the intraclass correlation coefficient (ICC) and Bland-Altman plots, while the correlation between MRI-based DHI and HNP severity was analyzed using Spearman's correlation.

Results: The mean age of the subjects was 52.7 ± 13.9 years; 28 subjects (48.3%) were male and 30 (51.7%) were female, with a mean BMI of 24.8 ± 3.5 kg/m². ICC values for segments L1 through L5 were 0.945, 0.086, 0.184, 0.403, and 0.791, respectively, indicating excellent agreement at L1, good agreement at L5, and poor agreement at L2-L4. Bland-Altman plots showed that most measurement differences clustered around zero, though there were some outliers and variations in agreement across segments. No significant correlation was found between MRI-based DHI and HNP across any of the segments, with r-values of 0.042, .-0.154; 0.021; -0.093; and -0.161, with all p-values >0.05.

Conclusion: There is no significant correlation between MRI-based DHI and HNP across any of the lumbar segments. Agreement on DHI measurements between radiography and MRI varies by segment.

Keywords: Low Back Pain; Intervertebral Disc Degeneration; Intervertebral Disc Displacement; Magnetic Resonance Imaging; Radiography.