Ultrasound-derived fat fraction (UDFF)

Meta analysis

A meta-analysis, recently published in European Radiology[1], reviewed nine studies with a combined population of over 1,100 patients. The goal was to evaluate how well ultrasound-derived fat fraction (UDFF) performs in diagnosing hepatic steatosis, using magnetic resonance imaging proton density fat fraction (MRI-PDFF) as the reference standard.

MRI-PDFF is currently considered the noninvasive gold standard, but it's not always practical in routine clinical settings. So, the question was: can UDFF deliver similar diagnostic accuracy, at lower cost and greater accessibility?

1 Study overview

Study design
Systematic Review & Meta-Analysis

Published
European Radiology
2025 (Impact Factor 4.7)

Sample size
1,150 patients

Number of studies
9

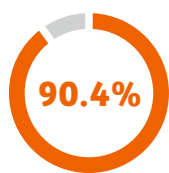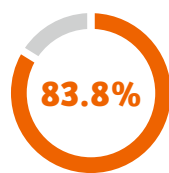**Number of countries**
5

Reference standard
MRI-PDFF

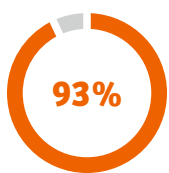Objective: Evaluate how UDFF compares with MRI-PDFF in detecting hepatic steatosis.

2 Study results

Sensitivity
90.4%

Specificity
83.8%

AUC*
93%
*Area Under the Curve

Heterogeneity
Low
Consistent results across studies

UDFF shows high diagnostic accuracy compared with MRI-PDFF supporting its use as a noninvasive tool (NIT) for screening hepatic steatosis.

3 UDFF benefits

Cost-effective and more accessible than MRI

Suitable for **population-level MASLD screening**

Enables **early detection** and routine monitoring

Enhances **clinical equity** across healthcare settings

UDFF is poised to become a key non-invasive tool (NIT) for steatotic liver disease care — broadly deployable and clinically reliable.

Key takeaways

UDFF offers **MRI-comparable accuracy** in detecting hepatic steatosis

Enables **early detection and routine monitoring** of MASLD

Cost-effective, noninvasive, and **clinically deployable** at scale

Supports **equity in liver care** by improving access to advanced imaging

UDFF delivers the diagnostic confidence of MRI, with broader reach and affordability, and is well-positioned to become a frontline non-invasive tool for liver assessment in both routine care and large-scale public health efforts.

[1] Verdan, S., Torri, G. B., Marcos, V. N., Moreira, M. H. S., Defante, M. L. R., Fagundes, M. da C., ... Altmayer, S. (2025). Ultrasound-derived fat fraction for diagnosing hepatic steatosis: a systematic review and meta-analysis. European Radiology. https://doi.org/10.1007/s00330-025-11652-8

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