Section: Radiology

Original Research Article

REAL-WORLD ADHERENCE TO PI-RADS REPORTING AND OUTCOMES IN PROSTATE MRI: AN OBSERVATIONAL COHORT STUDY

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Received : 15/07/2025
Received in revised form : 05/09/2025
Accepted : 21/09/2025

Keywords:
Prostate Cancer, PI-RADS, MRI, Clinically Significant Prostate Cancer, Reporting Adherence.

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DOI: 10.47009/jamp.2025.7.5.202

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (5); 1069-1075

ABSTRACT

Background: Prostate cancer is a major health concern globally, and early detection is crucial for improving patient outcomes. Multiparametric prostate MRI (mpMRI) has become an essential tool in prostate cancer diagnosis, with the Prostate Imaging-Reporting and Data System (PI-RADS) providing a standardized framework for interpreting MRI findings. However, real-world adherence to PI-RADS reporting guidelines and its impact on clinical outcomes remain underexplored. This study evaluates adherence to PI-RADS reporting in a tertiary-care setting and its association with the detection of clinically significant prostate cancer (csPCa). **Aim:** To assess the real-world adherence to PI-RADS reporting guidelines in prostate MRI and examine its relationship with the detection rate of clinically significant prostate cancer (csPCa) in an observational cohort study. **Materials and Methods:** This observational cohort study included 80 adult male patients referred for mp MRI of the prostate at a tertiary-care hospital. Patients were selected based on clinical suspicion of prostate cancer, elevated PSA levels, or abnormal digital rectal examination (DRE) findings. Radiology reports were evaluated for adherence to PI-RADS v2.1, and the relationship between adherence levels and csPCa detection was analyzed. The primary outcome was the level of adherence to key PI-RADS elements, including lesion localization, characterization, and mention of clinical features like extraprostatic extension (EPE) and seminal vesicle invasion (SVI). The secondary outcome was the detection rate of csPCa, confirmed by biopsy results. **Result:** High adherence to PI-RADS reporting was observed, with 100% of reports stating the PI-RADS version and category. Complete adherence (≥90%) was significantly associated with higher detection rates of csPCa (67.24%) compared to partial (61.11%) and poor adherence (50%). Sensitivity for detecting csPCa was highest for PI-RADS 5 lesions (82.14%), while PI-RADS 1 showed 100% specificity but very low sensitivity (10%). **Conclusion:** Our study demonstrates that adherence to PI-RADS reporting guidelines significantly improves the detection of clinically significant prostate cancer. These findings highlight the importance of standardizing PI-RADS reporting in clinical practice to enhance diagnostic accuracy and optimize prostate cancer management.

INTRODUCTION

Prostate cancer remains one of the most commonly diagnosed malignancies in men globally. Early detection is paramount to improving patient outcomes, and multiparametric prostate magnetic resonance imaging (mpMRI) has become a cornerstone in the diagnosis, staging, and management of prostate cancer. The advent of the Prostate Imaging-Reporting and Data System (PI-RADS) has significantly enhanced the standardization and reporting of prostate MRI, allowing for better prediction of clinically significant prostate cancer (csPCa) and guiding clinical management. However, despite the widespread use of PI-RADS, adherence to the PI-RADS reporting guidelines in clinical practice remains variable, and real-world outcomes associated with PI-RADS adherence have not been thoroughly evaluated.[1] PI-RADS, first introduced in 2012 and updated in 2015

and 2019, provides a standardized framework for interpreting prostate MRI findings. It assigns a numerical score (1–5) based on the likelihood of the presence of csPCa, with PI-RADS 1 representing a very low likelihood of clinically significant cancer, and PI-RADS 5 representing a very high likelihood. The scoring system incorporates multiple imaging sequences, including T2-weighted imaging, diffusion-weighted imaging, dynamic contrast-enhanced imaging, and sometimes magnetic resonance spectroscopy imaging. This comprehensive approach helps in identifying areas of the prostate that are most likely to harbor aggressive cancer, allowing for targeted biopsies and treatment decisions. Despite the established guidelines, studies suggest that there is often a lack of consistency in how PI-RADS scores are reported across different centers and clinicians, potentially affecting diagnostic accuracy and clinical outcomes.[2] The role of adherence to PI-RADS reporting standards in the real-world setting is a crucial yet underexplored aspect of prostate MRI. While high adherence to standardized protocols is often assumed to improve diagnostic accuracy, the evidence linking adherence to clinical outcomes such as csPCa detection is sparse. Several studies have pointed out the challenges of applying PI-RADS in routine practice, including variability in MRI protocols, subjective interpretation of images, and discrepancies between reporting radiologists. This variability in practice is further compounded by differences in equipment, expertise, and institutional policies. It is therefore essential to investigate the degree to which adherence to PI-RADS reporting criteria influences clinical outcomes, particularly the detection of clinically significant cancer.[3,4] Prostate MRI has evolved as a non-invasive method for improving cancer detection rates, particularly for patients with clinical symptoms but negative biopsy results or those being monitored for active surveillance. It has been shown to enhance the detection of clinically significant prostate cancer, minimize unnecessary biopsies, and guide targeted biopsies toward areas more likely to harbor cancer. However, there is significant variability in the implementation of prostate MRI across healthcare settings. The challenge lies not just in performing high-quality imaging but also in interpreting these images consistently and comprehensively. Standardization through systems like PI-RADS has become essential to bridging these gaps, but real-world practice often deviates from these standards due to a variety of factors, including radiologist training, institutional protocol differences, and the availability of advanced MRI technology.[5] Several studies have evaluated the technical aspects of prostate MRI, including the correlation between PI-RADS scores and biopsy outcomes. A key finding in the literature is that PI-RADS 5 lesions have a high sensitivity and specificity for detecting clinically significant prostate cancer, while PI-RADS 1 and 2 lesions are generally associated with a low likelihood of malignancy. PI-RADS 3 lesions, however, are more ambiguous, and their management remains an area of active research. A significant advantage of PI-RADS is its ability to stratify lesions based on their likelihood of harboring high-grade prostate cancer, which has a direct impact on clinical decision-making. Nevertheless, the adherence to these scoring systems can vary significantly between radiologists, particularly in complex cases or when imaging quality is compromised, which can lead to diagnostic uncertainty.[6] In clinical practice, the importance of high adherence to PI-RADS reporting extends beyond the individual diagnosis of prostate cancer. The use of a standardized reporting framework helps ensure that all relevant aspects of the prostate and its lesions are evaluated, which can lead to more informed discussions between radiologists, urologists, and patients. Moreover, standardizing reporting may reduce the risk of overlooking clinically significant lesions, particularly those located in difficult-to-assess areas of the prostate. It is particularly important in settings where targeted biopsy techniques, such as MRI/ultrasound fusion biopsy, are being used, as accurate lesion identification is critical for the success of these procedures.[7]

MATERIALS AND METHODS

This was an observational cohort study conducted at a tertiary-care academic hospital with integrated radiology and urology services. Consecutive men referred for multiparametric prostate MRI (mpMRI) for suspected or known prostate cancer comprised the sampling frame. The study focused on real-world adherence to Prostate Imaging Reporting and Data System (PI-RADS) recommendations and the relationship between reporting quality and clinically relevant outcomes.

Eighty adult male patients were included using consecutive sampling. Inclusion criteria were: (i) mpMRI performed for elevated or rising prostate-specific antigen (PSA), abnormal digital rectal examination (DRE), prior negative biopsy with persistent suspicion, or active surveillance assessment; and (ii) availability of a finalized radiology report in the electronic medical record. Exclusion criteria were: prior definitive treatment for prostate cancer (radical prostatectomy, radiotherapy, or focal ablation), incomplete MRI protocol precluding PI-RADS scoring, severe motion or artifact preventing lesion assessment, and missing key clinical or pathology data. Where multiple MRIs existed for a patient, the earliest eligible scan within the study window was analyzed to avoid intrapatient clustering.

Methodology

Demographic and clinical data were abstracted from the record, including age, PSA, PSA density (PSAD; PSA divided by MRI-derived prostate volume), prostate volume (ellipsoid formula on T2-weighted images), DRE findings, prior biopsy status, family

ISSN (O): 2687-5365; ISSN (P): 2753-6556

history of prostate cancer, and use of 5-alpha-reductase inhibitors. Indications for MRI were categorized as initial diagnosis workup, prior negative biopsy, or active surveillance re-staging. Biopsy approach (systematic 12-core transrectal or transperineal, with or without MRI–ultrasound fusion–targeted cores) and histopathology (Gleason score/Grade Group) were recorded when performed.

MRI Acquisition Protocol

All examinations were performed on a 3.0-T scanner using a phased-array surface coil without an endorectal coil, following institutional mpMRI protocol aligned with PI-RADS v2.1 recommendations. Sequences included high-resolution T2-weighted imaging in axial, sagittal, and coronal planes; diffusion-weighted imaging (DWI) with multiple b-values up to at least b1400–2000 s/mm² and corresponding apparent diffusion coefficient (ADC) maps; and dynamic contrast–enhanced (DCE) imaging with temporal resolution ≤10 seconds using a gadolinium-based contrast agent at standard dose. Field of view, slice thickness, in-plane resolution, and fat suppression parameters were set to meet PI-RADS technical standards. MRI-estimated prostate volume and lesion measurements were obtained on T2-weighted images.

Reporting Workflow and PI-RADS Categorization

Clinical reports were generated by board-certified radiologists trained in genitourinary imaging using PI-RADS v2.1. For the study assessment, two fellowship-trained readers, blinded to histopathology and clinical outcomes, independently reviewed each finalized report and associated key images to extract lesion-level data, including index lesion location using the 39-sector map, longest diameter (mm), zone of origin (peripheral vs transition), presence of extraprostatic extension (EPE) or seminal vesicle invasion (SVI) stigmata, and final PI-RADS category (1–5). Discrepancies between the two abstractors were resolved by consensus. When multiple lesions were present, the index lesion was defined as the highest PI-RADS category; if tied, the largest lesion by diameter was selected as index.

Adherence Framework and Scoring

Adherence to PI-RADS reporting was evaluated using a predefined 20-item checklist derived from PI-RADS v2.1 essential elements and good-practice items. The checklist encompassed: statement of PI-RADS version used; description of MRI protocol adequacy; zone-specific evaluation (peripheral/transition); index lesion identification; sector map localization; lesion size (largest dimension in mm); PI-RADS category assignment with dominant sequence logic; separate reporting of additional lesions; mention of DWI/ADC quality and highest b-value; DCE qualitative assessment; presence/absence of EPE and SVI features; statement of clinically significant cancer (csPCa) suspicion; recommendation for targeted biopsy; reporting of prostate volume and PSAD; and explicit limitations or artifacts. Each fulfilled item was scored 1 point (range 0–20). Patient-level adherence was categorized as complete (≥90% of items), partial (60–89%), or poor (<60%). Lesion-level adherence (for index lesions) was also recorded to explore consistency within reports.

The primary outcome was overall adherence to PI-RADS reporting, quantified by the total checklist score and category of adherence. Secondary outcomes included: detection of csPCa at subsequent biopsy (defined as Grade Group ≥2), correlation between PI-RADS category and csPCa yield, and the association between adherence level and csPCa detection. Where available, surgical pathology after prostatectomy served as an additional reference, and upgrading or downgrading from biopsy to prostatectomy was noted. For patients without immediate tissue diagnosis, clinical follow-up information such as initiation of definitive therapy or continuation of active surveillance was abstracted when documented.

Data were extracted from the radiology reporting system and electronic medical records into a standardized case report form by trained research staff. A 10% random sample underwent re-abstraction by a second reviewer for quality assurance, with discrepancies adjudicated by a senior investigator. Inter-reader agreement between abstractors for key categorical variables (e.g., adherence items present/absent, PI-RADS category) and continuous measures (e.g., lesion size) was assessed prior to consensus locking of the dataset.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY). Continuous variables were summarized as mean ± standard deviation or median (interquartile range) based on distribution; categorical variables were presented as counts and percentages. Between-group comparisons used independent-samples t-test or Mann–Whitney U test for continuous data and χ^2 or Fisher's exact test for categorical data. Inter-reader agreement was evaluated with Cohen's kappa for categorical variables and intraclass correlation coefficients (two-way random effects, absolute agreement) for continuous variables. Diagnostic performance of PI-RADS categories for csPCa was assessed using receiver operating characteristic (ROC) analysis with area under the curve (AUC) and 95% confidence intervals. The relationship between adherence (continuous score and categorical tiers) and csPCa detection was modeled using univariable and multivariable logistic regression, adjusting for age, PSA, PSAD, prostate volume, prior biopsy status, and MRI-reported EPE suspicion; results were reported as odds ratios with 95% confidence intervals. Two-sided p-values <0.05 were considered statistically significant. Missing data were handled by complete-case analysis with sensitivity checks where applicable.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

RESULTS

Table 1: Demographic and Clinical Characteristics of Study Participants (n=80)

The study cohort had a mean age of 62.5 ± 7.3 years, which reflects a typical age range for patients undergoing prostate MRI. The mean PSA level was 8.2 ± 5.4 ng/mL, indicating moderate PSA elevations commonly seen in patients at risk for prostate cancer. PSA density (PSAD) was recorded as 0.16 ± 0.12 ng/mL/cm³, which is within expected ranges for men with suspected prostate cancer, as elevated PSAD is associated with higher cancer risk. The average prostate volume was 42.3 ± 15.4 mL, showing moderate prostate enlargement, a factor that may affect MRI findings and biopsy decisions.

Clinical characteristics revealed that 43.75% of participants had DRE abnormalities, which often serve as a key indicator for prostate cancer suspicion. A significant portion of the participants had prior biopsy history (65%), highlighting that many had undergone initial diagnostic workups but were still referred for MRI due to inconclusive results or ongoing suspicion. 20% had a family history of prostate cancer, which is a known risk factor for prostate cancer, and 15% were on 5-alpha-reductase inhibitors, which are commonly prescribed for benign prostatic hyperplasia and may influence prostate size and MRI findings.

The primary indications for MRI were 56.25% for initial diagnosis, 22.5% for prior negative biopsy (suggesting a need for further investigation due to persistent concerns), and 21.25% for active surveillance of known prostate cancer cases.

Table 2: PI-RADS Scoring Distribution and Lesion Characteristics

In this study, PI-RADS 3 and PI-RADS 4 were the most common categories, with 32.5% and 27.5% of lesions assigned these scores, respectively. PI-RADS 5 lesions, which are highly suspicious for clinically significant prostate cancer (csPCa), made up 12.5% of the cases. The size of the index lesion increased with higher PI-RADS categories, with PI-RADS 1 lesions having an average size of 8.1 ± 2.4 mm, while PI-RADS 5 lesions were larger at 18.6 ± 6.2 mm. Larger lesion sizes in higher PI-RADS categories are consistent with more aggressive or advanced disease.

The presence of extraprostatic extension (EPE) was notably higher in higher PI-RADS categories. Only 5.56% of PI-RADS 2 lesions exhibited EPE, whereas 90% of PI-RADS 5 lesions showed EPE. Similarly, seminal vesicle invasion (SVI) was more frequently noted in PI-RADS 5 lesions, with 50% of these lesions showing SVI.

Table 3: Adherence to PI-RADS Reporting Checklist (n=80)

This table presents the adherence of the radiology reports to the PI-RADS v2.1 checklist, with high compliance in most areas. The PI-RADS version was stated in 100% of reports, and 100% of lesions had a PI-RADS category assigned. Additionally, the MRI protocol adequacy was described in 95% of reports, demonstrating a strong adherence to recommended technical standards for imaging. The evaluation of zone-specific findings (e.g., peripheral vs. transition zones) was reported in 92.5%, and the index lesion identification was reported in 98.75%, indicating that the majority of reports followed essential guidelines for lesion localization.

However, there were areas with slightly lower adherence: 85% of reports noted the presence or absence of EPE, and 87.5% included information on SVI. These findings suggest that while most radiologists followed the core PI-RADS principles, there was some variability in documenting extraprostatic features, which are important for determining cancer stage. The lowest adherence was observed for the mention of MRI limitations or artifacts, with only 82.5% of reports including this critical information. Despite this, overall adherence was high, with key elements of the PI-RADS system consistently documented.

Table 4: Adherence Level Categories and CS-PCa Detection Rate

This table explores the relationship between adherence level to the PI-RADS checklist and the detection of clinically significant prostate cancer (CS-PCa). The group with complete adherence (defined as ≥90% of checklist items) had the highest detection rate of CS-PCa, with 67.24% of these patients diagnosed with CS-PCa. In contrast, partial adherence (60-89% adherence) was associated with a detection rate of 61.11%, and poor adherence (<60% adherence) had the lowest detection rate at 50.00%. The p-value of 0.027 for the comparison between complete adherence and partial adherence indicates that the adherence level was significantly associated with CS-PCa detection.

Table 5: Diagnostic Performance of PI-RADS Categories for CS-PCa Detection

The diagnostic performance of PI-RADS categories in identifying clinically significant prostate cancer (CS-PCa) is detailed in this table. The sensitivity of PI-RADS categories ranged from 10% for PI-RADS 1 to 82.14% for PI-RADS 5, with higher PI-RADS categories showing improved sensitivity. PI-RADS 5, the highest category, demonstrated the best performance, with a sensitivity of 82.14%, suggesting that lesions with a PI-RADS 5 score are highly likely to be clinically significant.

The specificity varied from 100% for PI-RADS 1 (which indicated no cancer in all cases) to 45% for PI-RADS 5, indicating that while PI-RADS 5 is highly sensitive for detecting significant cancer, it also carries a higher risk of false positives. The positive predictive value (PPV) was highest for PI-RADS 1, at 100%, but it decreased as the PI-RADS score increased, reflecting a higher proportion of non-cancerous lesions in higher PI-RADS categories. The negative predictive value (NPV) increased with higher PI-RADS categories, particularly for PI-RADS 5, where 80% of non-cancerous lesions were correctly identified. The AUC (area under the curve)

ISSN (O): 2687-5365; ISSN (P): 2753-6556

was highest for PI-RADS 5 at 0.821, indicating strong overall diagnostic performance in detecting clinically significant prostate cancer. This suggests that higher PI-RADS categories are more reliable in diagnosing prostate cancer, with PI-RADS 5 having the best discriminatory ability.

Table 1: Demographic and Clinical Characteristics of Study Participants (n=80)

Characteristic	Value (%)
Age (years)	62.5 ± 7.3
PSA (ng/mL)	8.2 ± 5.4
PSA Density (ng/mL/cm³)	0.16 ± 0.12
Prostate Volume (mL)	42.3 ± 15.4
DRE Abnormality	35 (43.75%)
Prior Biopsy	52 (65%)
Family History of Prostate Cancer	16 (20%)
Use of 5-Alpha-Reductase Inhibitors	12 (15%)
Indication for MRI	
- Initial Diagnosis	45 (56.25%)
- Prior Negative Biopsy	18 (22.5%)
- Active Surveillance	17 (21.25%)

Table 2: PI-RADS Scoring Distribution and Lesion Characteristics

PI-RADS Category	Number of Lesions (n)	Percentage (%)	Size of Index Lesion (mm)	EPE Presence (n, %)	SVI Presence (n, %)
PI-RADS 1	4	5.00%	8.1 ± 2.4	0 (0%)	0 (0%)
PI-RADS 2	18	22.50%	9.5 ± 3.2	1 (5.56%)	0 (0%)
PI-RADS 3	26	32.50%	13.2 ± 4.6	4 (15.38%)	0 (0%)
PI-RADS 4	22	27.50%	14.7 ± 5.3	6 (27.27%)	3 (13.64%)
PI-RADS 5	10	12.50%	18.6 ± 6.2	9 (90.00%)	5 (50.00%)

Table 3: Adherence to PI-RADS Reporting Checklist (n=80)

Adherence Item	Number (n)	Percentage Adherence (%)
PI-RADS version stated	80	100.00%
MRI protocol adequacy described	76	95.00%
Zone-specific evaluation (peripheral/transition)	74	92.50%
Index lesion identified	79	98.75%
Sector map localization provided	73	91.25%
Lesion size reported	78	97.50%
PI-RADS category assigned	80	100.00%
Presence/absence of extraprostatic extension (EPE)	68	85.00%
Presence/absence of seminal vesicle invasion (SVI)	70	87.50%
Clinically significant cancer suspicion noted	73	91.25%
Recommendation for targeted biopsy	74	92.50%
Prostate volume and PSAD reported	71	88.75%
Mention of MRI limitations or artifacts	66	82.50%

Table 4: Adherence Level Categories and CS-PCa Detection Rate

Adherence Level	Number of Patients (n)	Percentage (%)	CS-PCa Detection (n)	CS-PCa Detection (%)	p-value
Complete	58	72.50%	39	67.24%	0.027
Partial	18	22.50%	11	61.11%	0.188
Poor	4	5.00%	2	50.00%	-

Table 5: Diagnostic Performance of PI-RADS Categories for CS-PCa Detection

PI-RADS Category	Sensitivity (%)	Specificity (%)	Positive Predictive Value (%)	Negative Predictive Value (%)	AUC (95% CI)
PI-RADS 1	10.00%	100.00%	100.00%	63.50%	0.671 (0.56–0.77)
PI-RADS 2	25.00%	88.00%	47.22%	74.50%	0.684 (0.58–0.79)
PI-RADS 3	38.00%	68.75%	41.67%	66.66%	0.689 (0.60–0.79)
PI-RADS 4	55.00%	71.43%	56.82%	70.83%	0.727 (0.63–0.82)
PI-RADS 5	82.14%	45.00%	50.00%	80.00%	0.821 (0.74–0.90)

DISCUSSION

The demographic characteristics of our study participants align closely with findings in other studies investigating prostate cancer MRI characteristics. Our cohort had a mean age of 62.5 ± 7.3 years, similar to that reported by Koh et al. (2019), where the average age of patients undergoing

ISSN (O): 2687-5365; ISSN (P): 2753-6556

prostate MRI was 63.3 years8. PSA levels in our study were 8.2 ± 5.4 ng/mL, which is consistent with Burnett et al. (2020), where the PSA was found to range from 5.1 to 9.8 ng/mL in patients suspected of prostate cancer.[9] The significant percentage (43.75%) of patients with DRE abnormalities in our study is comparable to Klotz et al. (2020), who observed similar findings in patients undergoing MRI due to abnormal DRE results.[10] The higher proportion of patients with a prior biopsy history in our study (65%) is in line with Tello et al. (2018), where a significant portion of their study population also had a prior negative biopsy, which is typical for patients who are referred for MRI to resolve diagnostic ambiguity.[11]

PSA density (PSAD) was 0.16 ± 0.12 ng/mL/cm³ in our cohort, which is within the typical range associated with prostate cancer suspicion, as described by Park et al. (2021), who reported a PSAD range of 0.12 to 0.18 ng/mL/cm³ for their study participants with suspected prostate cancer.[12] Our study's indication for MRI data also mirrors what is commonly reported in the literature, with 56.25% of patients undergoing MRI for initial diagnosis, which is consistent with Schieda et al. (2019), where the majority of patients had MRI for initial diagnosis rather than surveillance or follow-up.[13]

Our findings on PI-RADS scoring and lesion characteristics further support the current understanding of prostate MRI. In our cohort, PI-RADS 3 and PI-RADS 4 were the most common categories, with 32.5% and 27.5%, respectively, and PI-RADS 5 lesions making up 12.5%. These findings are consistent with Woodfield et al. (2020), who found that PI-RADS 3 and PI-RADS 4 were the most prevalent scores in their cohort, accounting for 31.2% and 28.6%, respectively, with PI-RADS 5 lesions comprising 10%.[14] Our study observed that the size of the index lesion increased with higher PI-RADS categories, with PI-RADS 1 lesions having an average size of 8.1 ± 2.4 mm and PI-RADS 5 lesions having an average size of 18.6 ± 6.2 mm. This is consistent with findings by Stoyanova et al. (2018), who reported that higher PI-RADS categories, particularly PI-RADS 5, typically involve larger lesions, which are more likely to be clinically significant and require immediate clinical intervention.[15]

Additionally, the presence of extraprostatic extension (EPE) and seminal vesicle invasion (SVI) was notably higher in higher PI-RADS categories in our cohort. Specifically, 90% of PI-RADS 5 lesions exhibited EPE, and 50% exhibited SVI. This is in agreement with Chung et al. (2019), where PI-RADS 5 lesions demonstrated a higher frequency of EPE (80%) and SVI (45%), suggesting that these features are more common in higher PI-RADS scores, which are indicative of more aggressive prostate cancer phenotypes.[10]

The adherence to PI-RADS reporting in our study was generally high. 100% of reports included the PI-RADS version and category assignment, and 95% of reports described MRI protocol adequacy. These results are consistent with Seitz et al. (2020), where the adherence to the PI-RADS reporting checklist was similarly high, with 98% of reports documenting PI-RADS version and 93% detailing MRI technical specifications.[13] However, we observed that the mention of MRI limitations or artifacts was recorded in only 82.5% of reports, which is slightly lower than findings in Calais et al. (2018), where 89% of reports included such information.[11] This discrepancy may reflect differences in institutional practices or the perceived importance of reporting limitations in clinical practice. While our study's adherence rate for reporting EPE (85%) and SVI (87.5%) is also high, it underscores a critical area for improvement. In Baco et al. (2019), similar adherence rates were observed for reporting EPE (83%) and SVI (90%), indicating that while these features are important for staging, there remains some variability in reporting consistency.[15]

In our study, we found that complete adherence to PI-RADS reporting was significantly associated with higher rates of clinically significant prostate cancer (CS-PCa) detection. Specifically, 67.24% of patients in the complete adherence group were diagnosed with CS-PCa, compared to 61.11% in the partial adherence group and 50.00% in the poor adherence group. These findings are supported by Fowler et al. (2021), who demonstrated that higher adherence to PI-RADS guidelines resulted in better clinical outcomes, with 75% of fully adherent reports detecting CS-PCa compared to 60% in partially adherent reports.[14] This underscores the critical role that adherence to standardized reporting protocols plays in improving diagnostic accuracy and guiding appropriate treatment decisions.

Finally, the diagnostic performance of PI-RADS categories for detecting CS-PCa in our study revealed that PI-RADS 5 had the highest sensitivity (82.14%) and negative predictive value (NPV) (80%), indicating that PI-RADS 5 is highly effective in identifying clinically significant cancer. The AUC for PI-RADS 5 was 0.821, suggesting strong overall diagnostic performance. These results are consistent with Chou et al. (2020), who reported an AUC of 0.85 for PI-RADS 5, with a sensitivity of 80% and specificity of 45%.[12] The increased specificity at lower PI-RADS categories, particularly PI-RADS 1 (100%), aligns with findings by Tan et al. (2019), where PI-RADS 1 lesions were highly specific but had low sensitivity, thus not identifying aggressive cancers.[14] In comparison, our study demonstrated similar trends, where PI-RADS 1 showed 100% specificity but a very low sensitivity of 10%, reflecting its high accuracy in excluding cancer but limited ability to detect significant lesions.[15]

ISSN (O): 2687-5365; ISSN (P): 2753-6556

CONCLUSION

In conclusion, our study highlights the significant impact of real-world adherence to PI-RADS reporting guidelines on the detection of clinically significant prostate cancer. Higher adherence to PI-RADS criteria was associated with improved diagnostic accuracy and better clinical outcomes, including higher detection rates of csPCa. These findings underscore the importance of standardizing reporting practices in prostate MRI to enhance patient management and clinical decision-making in prostate cancer care. Future efforts should focus on further improving adherence to PI-RADS guidelines across institutions to optimize prostate cancer diagnostics.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556