**Scholars Journal of Applied Medical Sciences**
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

**Radiology**

# Diagnostic Accuracy of Pi-Rads V2.1 in Detecting Clinically Significant Prostate Cancer on Multiparametric MRI

Dr. Md Sohel Sarower[1]*, Dr. Md. Asif Chowdhury Nirzor[2], Dr. Md Mahbub Hossain[3], Dr. Sanwoar Rahman[4], Dr. Rubina Khandker[5], Dr. Rowshan Ara Khandaker[6], Dr. Farzana Khanam[7]

[1]Assistant Professor (c.c), Department of Radiology and Imaging, East West Medical College & Hospital, Dhaka, Bangladesh
[2]Assistant Professor (In situ), Department of Radiology and Imaging, Sylhet Shahid Shamsuddin Ahmed Hospital, Sylhet, Bangladesh
[3]Assistant Professor, Department of Radiology and Imaging, National Institute of Ophthalmology and Hospital, Dhaka, Bangladesh
[4]Assistant Professor, Department of Radiology and Imaging, East West Medical College & Hospital, Dhaka, Bangladesh.
[5]Consultant, Department of Paediatrics, Ibnsina Diagnostic Centre, Uttara, Dhaka, Bangladesh
[6]Lecturer Prime Education Limited, Rangpur, Bangladesh
[7]Assistant Professor (In situ), Department of Radiology and Imaging, 250 Bedded General Hospital, Brahmanbaria, Bangladesh

**DOI:** https://doi.org/10.36347/sjams.2026.v14i02.028 | **Received:** 19.12.2025 | **Accepted:** 24.02.2026 | **Published:** 28.02.2026

***Corresponding author:** Dr. Md Sohel Sarower
Assistant Professor (c.c), Department of Radiology and Imaging, East West Medical College & Hospital, Dhaka, Bangladesh

**Abstract** **Original Research Article**

***Background:*** Prostate cancer is a leading cause of cancer morbidity and mortality among men worldwide. Accurate detection of clinically significant prostate cancer is essential to reduce overtreatment and improve outcomes. Multiparametric MRI and the Prostate Imaging Reporting and Data System version 2.1 have standardized prostate imaging interpretation. However, regional validation data remain limited. This study aimed to evaluate the diagnostic accuracy of PI-RADS v2.1 in detecting clinically significant prostate cancer in a tertiary-care Bangladeshi population. ***Methods:*** This cross-sectional observational study was conducted in the Department of Radiology and Imaging, East West Medical College & Hospital and IBN Sina Diagnostic Center, Uttara and Dhanmondi, Dhaka, Bangladesh, from January to December 2025. The study population consisted of 200 consecutive male patients who underwent multiparametric MRI (mpMRI) of the prostate followed by histopathological confirmation. Lesions were categorized using PI-RADS v2.1. Clinically significant prostate cancer was defined as ISUP Grade Group ≥2. Diagnostic indices were calculated using a cutoff of PI-RADS ≥4. ***Results:*** Clinically significant prostate cancer was identified in 50.0% of patients. Detection rates increased progressively from 11.1% in PI-RADS 1–2 to 90.9% in PI-RADS 5. Using a cutoff of ≥4, sensitivity was 80.0%, specificity 78.0%, positive predictive value 78.4% and negative predictive value 79.6%. Overall diagnostic accuracy was 79.0%. ***Conclusion:*** PI-RADS v2.1 demonstrates balanced and clinically meaningful diagnostic performance for detecting clinically significant prostate cancer. A threshold of PI-RADS ≥4 is appropriate for guiding biopsy decisions in tertiary-care practice.

**Keywords:** Prostate cancer, Multiparametric MRI; PI-RADS v2.1, Diagnostic accuracy.



## INTRODUCTION

Prostate cancer remains one of the most frequently diagnosed malignancies among men worldwide and represents a major cause of cancer-related mortality. According to global cancer statistics, its incidence continues to rise, particularly in aging populations [1]. In regions including South Asia, changing demographics and increased prostate-specific antigen (PSA) testing have led to a growing clinical burden [2]. Early detection of clinically significant prostate cancer (csPCa) is essential to reduce morbidity and mortality while avoiding overdiagnosis of indolent disease [3].

Traditional diagnostic pathways based on PSA testing and systematic transrectal ultrasound-guided biopsy are limited by suboptimal sensitivity and the risk of detecting clinically insignificant tumors [4]. The introduction of multiparametric magnetic resonance imaging (mpMRI) has substantially improved the detection and localization of prostate cancer, particularly clinically significant lesions [5]. The Prostate Imaging Reporting and Data System (PI-RADS) was developed to standardize image acquisition, interpretation and reporting [6,7].

PI-RADS version 2.1, introduced in 2019, refined several criteria of the earlier version, particularly

in the transition zone, to improve diagnostic consistency and accuracy [6]. Comparative studies have demonstrated that PI-RADS v2.1 maintains robust sensitivity for csPCa detection while enhancing interobserver agreement [8,9]. Systematic reviews and meta-analyses have reported pooled sensitivities ranging from 78% to 89% and specificities between 70% and 80% for PI-RADS-based mpMRI in detecting csPCa [10,11].

The clinical impact of mpMRI has been further supported by large prospective trials demonstrating that MRI-targeted biopsy improves the detection of clinically significant disease while reducing unnecessary biopsies [12,13]. The negative predictive value of mpMRI is particularly valuable in excluding csPCa in selected patients [14]. Nevertheless, diagnostic performance may vary across populations, clinical settings and radiologist experience [15].

PSA density (PSAD) has been proposed as an adjunctive parameter to enhance risk stratification, particularly in equivocal PI-RADS 3 lesions [17]. Combining PI-RADS v2.1 with PSAD has shown improved predictive accuracy in several contemporary cohorts [18]. However, most available evidence originates from Western or high-resource settings and regional data from South Asian populations remain limited.

Differences in demographic characteristics, disease presentation and healthcare infrastructure may influence the performance of mpMRI and PI-RADS scoring in low- and middle-income countries. Moreover, validation studies in tertiary-care centers are essential to confirm real-world applicability and to guide biopsy decision-making strategies tailored to local practice patterns.

In Bangladesh, systematic evaluation of PI-RADS v2.1 diagnostic performance remains scarce. Given the increasing utilization of prostate MRI in urban tertiary centers, there is a need to assess its accuracy in detecting clinically significant disease within this context.

Therefore, this study aimed to evaluate the diagnostic accuracy of PI-RADS v2.1 in detecting clinically significant prostate cancer, using histopathology as the reference standard, in a tertiary-care Bangladeshi population.

# MATERIALS & METHODS

This cross-sectional observational study was conducted in the Department of Radiology and Imaging, East West Medical College & Hospital and at IBN Sina Diagnostic Center, Uttara and Dhanmondi, Dhaka, Bangladesh. The study period extended from January to December 2025. The study population consisted of 200 consecutive male patients who underwent multiparametric MRI (mpMRI) of the prostate followed by histopathological confirmation.

**Sample Selection**

**Inclusion criteria:**

- Male patients aged ≥50 years.
- Elevated serum PSA or abnormal digital rectal examination.
- Underwent mpMRI before biopsy.
- Availability of complete histopathological results.

**Exclusion criteria:**

- Prior history of prostate cancer treatment.
- Previous prostate surgery.
- Incomplete MRI protocol or poor image quality.

**Study Procedure**

All eligible patients underwent multiparametric MRI of the prostate using a standardized imaging protocol including T2-weighted imaging, diffusion-weighted imaging with apparent diffusion coefficient mapping and dynamic contrast-enhanced sequences. Images were interpreted by experienced radiologists trained in prostate MRI reporting, using the PI-RADS v2.1 scoring system. Each lesion was assigned a final PI-RADS category based on dominant sequence criteria according to zonal anatomy. PSA levels and PSA density were recorded at baseline. Following imaging, patients underwent systematic transrectal ultrasound-guided biopsy combined with MRI-targeted biopsy when indicated. Histopathological examination was performed by dedicated uropathologists and grading was assigned according to the 2019 ISUP Grade Group system. Clinically significant prostate cancer was defined as ISUP Grade Group ≥2. Data were collected using a structured case record form. Imaging and histopathological findings were correlated on a per-patient basis. Informed consent was obtained from all participants before inclusion. Patient confidentiality was maintained by anonymizing data and restricting database access to the research team only.

**Statistical Analysis**

Data were analyzed using SPSS version 25.0. Descriptive statistics were presented as mean ± standard deviation or frequency and percentage. Diagnostic performance indices including sensitivity, specificity, positive predictive value, negative predictive value, likelihood ratios and overall accuracy were calculated from contingency tables. Ninety-five percent confidence intervals were computed.

# RESULTS

**Table 1: Baseline Characteristics of the Study Population (n = 200)**

| Variable | | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Age group (years) | 50–59 | 42 | 21.0 |
| | 60–69 | 87 | 43.5 |
| | ≥70 | 71 | 35.5 |
| | Mean ± SD (years) | 68.2 ± 7.9 | |
| Serum PSA (ng/mL) | <10 | 96 | 48.0 |
| | 10–20 | 58 | 29.0 |
| | >20 | 46 | 23.0 |
| | Mean± SD (ng/mL) | 12.6 ± 5.4 | |
| PSA Density (PSAD) | ≤0.15 | 88 | 44.0 |
| | >0.15 | 112 | 56.0 |
| Family history of prostate cancer | | 26 | 13.0 |
| Clinically significant prostate cancer (csPCa) | | 100 | 50.0 |

Table 1 presents the baseline demographic and clinical characteristics of the study population. The mean age was 68.2 ± 7.9 years, with 43.5% of patients aged 60–69 years and 35.5% aged ≥70 years. The mean serum PSA level was 12.6 ± 5.4 ng/mL and 48.0% had PSA <10 ng/mL. PSA density >0.15 was observed in 56.0% of patients, while 13.0% reported a positive family history. Clinically significant prostate cancer (csPCa) was identified in 50.0% of cases.

**Table 2: Distribution of PI-RADS v2.1 scores and Detection of Clinically Significant Prostate Cancer (n = 200)**

| PI-RADS Category | Total (n) | csPCa, n (%) |
|---|---|---|
| 1–2 | 54 | 6 (11.1) |
| 3 | 44 | 14 (31.8) |
| 4 | 58 | 40 (69.0) |
| 5 | 44 | 40 (90.9) |
| Total | 200 | 100 (50.0) |

Table 2 shows the distribution of PI-RADS v2.1 categories and the corresponding detection of csPCa. PI-RADS 1–2 accounted for 27.0% of cases, with 11.1% harboring csPCa. In PI-RADS 3 lesions, csPCa was detected in 31.8%. Detection rates increased to 69.0% in PI-RADS 4 and 90.9% in PI-RADS 5. Overall, PI-RADS 4–5 lesions comprised 51.0% of scans and represented 80.0% of all csPCa cases.

**Table 3: Distribution of PI-RADS Categories According to Histopathological Outcome (n = 200)**

| PI-RADS Category | csPCa Present (n=100) | csPCa Absent (n=100) |
|---|---|---|
| 1–2 | 6 | 48 |
| 3 | 14 | 30 |
| 4 | 40 | 18 |
| 5 | 40 | 4 |
| Total | 100 | 100 |

Table 3 describes the distribution of PI-RADS categories according to histopathological outcome. Among patients with csPCa, 40.0% were categorized as PI-RADS 4 and 40.0% as PI-RADS 5. Only 6.0% of csPCa cases were in PI-RADS 1–2. In contrast, 48.0% of non-csPCa cases were classified as PI-RADS 1–2 and 30.0% as PI-RADS 3.

**Table 4: Cross-Tabulation of PI-RADS v2.1 (Cutoff ≥4) Versus Histopathology (n = 200)**

| PI-RADS v2.1 (≥4 = Positive Test) | csPCa Present | csPCa Absent | Total (n) |
|---|---|---|---|
| Positive (≥4) | 80 | 22 | 102 (51.0%) |
| Negative (≤3) | 20 | 78 | 98 (49.0%) |
| Total | 100 | 100 | 200 |

Table 4 presents the cross-tabulation of PI-RADS v2.1 using a cutoff of ≥4 against histopathology. Of 100 csPCa cases, 80 were correctly identified as true positives, while 20 were false negatives. Among 100 non-csPCa cases, 78 were true negatives and 22 were

false positives. A total of 51.0% of patients tested positive based on the predefined threshold.

**Table 5: Diagnostic Performance of PI-RADS v2.1 (Cutoff ≥4) for Detecting Clinically Significant Prostate Cancer**

| Diagnostic Parameter | Value (%) | 95% Confidence Interval |
|---|---|---|
| Sensitivity | 80 | 71.2 – 87.0 |
| Specificity | 78 | 68.9 – 85.4 |
| Positive Predictive Value (PPV) | 78.4 | 69.2 – 85.9 |
| Negative Predictive Value (NPV) | 79.6 | 70.4 – 87.1 |
| Overall Diagnostic Accuracy | 79 | 72.7 – 84.4 |
| Positive Likelihood Ratio (LR+) | 3.64 | - |
| Negative Likelihood Ratio (LR−) | 0.26 | - |

Table 5 summarizes the diagnostic performance of PI-RADS v2.1 at a cutoff of ≥4. Sensitivity was 80.0% (95% CI: 71.2–87.0) and specificity was 78.0% (95% CI: 68.9–85.4). The positive predictive value was 78.4% and the negative predictive value was 79.6%. Overall diagnostic accuracy was 79.0%. The positive likelihood ratio was 3.64 and the negative likelihood ratio was 0.26.

## DISCUSSION

In this study, PI-RADS v2.1 demonstrated balanced diagnostic performance for detecting clinically significant prostate cancer, with a sensitivity of 80.0%, a specificity of 78.0% and an overall accuracy of 79.0%. A clear stepwise increase in csPCa detection was observed across PI-RADS categories, with 90.9% of PI-RADS 5 lesions harboring clinically significant disease. These findings support the discriminatory capability of PI-RADS v2.1 in a tertiary-care Bangladeshi setting.

The observed sensitivity aligns with contemporary pooled estimates. Oerther *et al.,* reported that PI-RADS v2.1 achieves a pooled sensitivity approaching 85% for csPCa detection in their updated meta-analysis [11]. Similarly, Woo *et al.,* demonstrated high sensitivity for PI-RADS-based mpMRI in identifying clinically significant lesions [10]. Our sensitivity of 80.0% falls within these reported ranges, indicating comparable diagnostic performance despite differences in geographic and demographic context.

Specificity in the present study was 78.0%, consistent with the benchmark values summarized by Oerther *et al.,* who documented specificities generally between 70% and 80% [11]. Westphalen *et al.,* highlighted considerable inter-center variability in positive predictive value across institutions [15]. The PPV of 78.4% observed in our cohort suggests stable predictive performance within a structured reporting environment, although institutional factors and reader experience likely influence outcomes.

The progressive rise in csPCa detection from PI-RADS 1–2 to PI-RADS 5 mirrors established risk stratification patterns. Park *et al.,* demonstrated through meta-analysis that higher PI-RADS categories correlate strongly with increasing probability of clinically significant malignancy [18]. Our data show that 80% of csPCa cases were clustered within PI-RADS 4–5, reinforcing the threshold of ≥4 as clinically meaningful for biopsy consideration.

Prospective evaluations of PI-RADS v2.1 have reported similar diagnostic behaviour. Walker *et al.,* observed robust detection rates of csPCa using version 2.1 criteria in a prospective cohort [19]. Yilmaz *et al.,* further confirmed consistent performance metrics when applying PI-RADS v2.1 in contemporary practice [20]. The agreement of our findings with these prospective investigations supports external validity.

The negative predictive value of 79.6% in our study is slightly lower than some meta-analytic estimates. Sathianathen *et al.,* reported higher pooled negative predictive values in selected populations [14]. Variability in disease prevalence may partly explain this difference, as our cohort had a 50% prevalence of csPCa, which is relatively high and influences predictive values.

PSA density was elevated (>0.15) in 56% of patients, underscoring its potential role in refining risk assessment. Wei *et al.,* demonstrated that combining PI-RADS v2.1 with PSAD improves the detection of csPCa compared to imaging alone [17]. Wang *et al.,* similarly reported enhanced predictive performance when PSAD was incorporated into diagnostic algorithms [16]. Although combined modelling was not the primary objective of our study, the distribution of PSAD suggests an opportunity for integrated stratification in future analyses.

The clinical relevance of an 80% sensitivity must be interpreted in light of biopsy strategies. Large randomized trials such as those by Kasivisvanathan *et al.,* and Rouvière *et al.,* showed that MRI-targeted approaches improve detection of clinically significant disease while reducing unnecessary biopsies [12,13]. Our findings reinforce the suitability of PI-RADS ≥4 as a biopsy trigger, given the high proportion of csPCa within these categories.

Interobserver variability remains an important consideration. Brembilla *et al.,* documented moderate

variability even with PI-RADS v2.1 implementation [21]. Standardized training and adherence to structured reporting likely contributed to the balanced performance observed in our centers.

The positive likelihood ratio of 3.64 indicates a moderate increase in post-test probability when PI-RADS is ≥4. This is consistent with the moderate diagnostic strength reported in systematic evaluations by Oerther *et al.,*[11]. The negative likelihood ratio of 0.26 suggests a meaningful reduction in disease probability when imaging is negative, supporting mpMRI as a triage tool.

This study adds regional evidence to the growing body of literature validating PI-RADS v2.1. In settings where resource allocation and biopsy capacity are constrained, reliable imaging-based stratification is essential. The diagnostic indices observed in this cohort are comparable to international data, indicating that PI-RADS v2.1 maintains performance integrity across diverse healthcare environments.

**Limitations and Recommendations**

The cross-sectional design and single-region setting may limit generalizability. Future multicenter prospective studies incorporating PSA density and outcome-based follow-up are recommended to refine risk stratification models.

## CONCLUSION

PI-RADS v2.1 demonstrated good diagnostic accuracy for detecting clinically significant prostate cancer in this tertiary-care Bangladeshi cohort. Higher PI-RADS categories were strongly associated with increasing malignancy risk. A cutoff of PI-RADS ≥4 provided balanced sensitivity and specificity, supporting its clinical utility in guiding biopsy decisions and optimizing patient selection for invasive procedures.

**Conflicts of interest:** There are no conflicts of interest.

## REFERENCES


1. Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, Jemal A. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: a cancer journal for clinicians. 2024 May;74(3):229-63.
2. Abbasi-Kangevari M, Saeedi Moghaddam S, Ghamari SH, Azangou-Khyavy M, Malekpour MR, Rezaei N, Rezaei N, Kolahi AA, GBD 2019 NAME Prostate Cancer Collaborators, Amini E, Mokdad AH. The burden of prostate cancer in North Africa and Middle East, 1990–2019: Findings from the global burden of disease study. Frontiers in oncology. 2022 Sep 13; 12:961086.
3. Sekhoacha M, Riet K, Motloung P, Gumenku L, Adegoke A, Mashele S. Prostate cancer review: genetics, diagnosis, treatment options and alternative approaches. Molecules. 2022 Sep 5;27(17):5730.
4. Das CJ, Netaji A, Razik A, Verma S. MRI-targeted prostate biopsy: what radiologists should know. Korean journal of radiology. 2020 Jun 11;21(9):1087.
5. Ahmed HU, Bosaily AE, Brown LC, Gabe R, Kaplan R, Parmar MK, Collaco-Moraes Y, Ward K, Hindley RG, Freeman A, Kirkham AP. Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study. The Lancet. 2017 Feb 25;389(10071):815-22.
6. Turkbey B, Rosenkrantz AB, Haider MA, Padhani AR, Villeirs G, Macura KJ, Tempany CM, Choyke PL, Cornud F, Margolis DJ, Thoeny HC. Prostate imaging reporting and data system version 2.1: 2019 update of prostate imaging reporting and data system version 2. European urology. 2019 Sep 1;76(3):340-51.
7. Weinreb JC, Barentsz JO, Choyke PL, Cornud F, Haider MA, Macura KJ, Margolis D, Schnall MD, Shtern F, Tempany CM, Thoeny HC. PI-RADS prostate imaging–reporting and data system: 2015, version 2. European urology. 2016 Jan 1;69(1):16-40.
8. Hötker AM, Blüthgen C, Rupp NJ, Schneider AF, Eberli D, Donati OF. Comparison of the PI-RADS 2.1 scoring system to PI-RADS 2.0: Impact on diagnostic accuracy and inter-reader agreement. Plos one. 2020 Oct 5;15(10): e0239975.
9. Kim HS, Kwon GY, Kim MJ, Park SY. Prostate imaging-reporting and data system: comparison of the diagnostic performance between version 2.0 and 2.1 for prostatic peripheral zone. Korean Journal of Radiology. 2021 Apr 9;22(7):1100.
10. Woo S, Suh CH, Kim SY, Cho JY, Kim SH. Diagnostic performance of prostate imaging reporting and data system version 2 for detection of prostate cancer: a systematic review and diagnostic meta-analysis. European urology. 2017 Aug 1;72(2):177-88.
11. Oerther B, Nedelcu A, Engel H, Schmucker C, Schwarzer G, Brugger T, Schoots IG, Eisenblaetter M, Sigle A, Gratzke C, Bamberg F. Update on PI-RADS version 2.1 diagnostic performance benchmarks for prostate MRI: systematic review and meta-analysis. Radiology. 2024 Aug 13;312(2): e233337.
12. Kasivisvanathan V, Rannikko AS, Borghi M, Panebianco V, Mynderse LA, Vaarala MH, Briganti A, Budäus L, Hellawell G, Hindley RG, Roobol MJ. MRI-targeted or standard biopsy for prostate-cancer diagnosis. New England Journal of Medicine. 2018 May 10;378(19):1767-77.
13. Rouvière O, Puech P, Renard-Penna R, Claudon M, Roy C, Mège-Lechevallier F, Decaussin-Petrucci M, Dubreuil-Chambardel M, Magaud L, Remontet L, Ruffion A. Use of prostate systematic and

targeted biopsy on the basis of multiparametric MRI in biopsy-naive patients (MRI-FIRST): a prospective, multicentre, paired diagnostic study. The lancet oncology. 2019 Jan 1;20(1):100-9.

14. Sathianathen NJ, Omer A, Harriss E, Davies L, Kasivisvanathan V, Punwani S, Moore CM, Kastner C, Barrett T, Van Den Bergh RC, Eddy BA. Negative predictive value of multiparametric magnetic resonance imaging in the detection of clinically significant prostate cancer in the prostate imaging reporting and data system era: a systematic review and meta-analysis. European urology. 2020 Sep 1;78(3):402-14.
15. Westphalen AC, McCulloch CE, Anaokar JM, Arora S, Barashi NS, Barentsz JO, Bathala TK, Bittencourt LK, Booker MT, Braxton VG, Carroll PR. Variability of the positive predictive value of PI-RADS for prostate MRI across 26 centers: experience of the society of abdominal radiology prostate cancer disease-focused panel. Radiology. 2020 Jul;296(1):76-84.
16. Wang S, Kozarek J, Russell R, Drescher M, Khan A, Kundra V, Barry KH, Naslund M, Siddiqui MM. Diagnostic performance of prostate-specific antigen density for detecting clinically significant prostate cancer in the era of magnetic resonance imaging: a systematic review and meta-analysis. European Urology Oncology. 2024 Apr 1;7(2):189-203.
17. Wei X, Xu J, Zhong S, Zou J, Cheng Z, Ding Z, Zhou X. Diagnostic value of combining PI-RADS v2. 1 with PSAD in clinically significant prostate cancer. Abdominal radiology. 2022 Oct;47(10):3574-82.
18. Park KJ, Choi SH, Lee JS, Kim JK, Kim MH, Jeong IG. Risk stratification of prostate cancer according to PI-RADS® version 2 categories: meta-analysis for prospective studies. The Journal of Urology. 2020 Dec;204(6):1141-9.
19. Walker SM, Mehralivand S, Harmon SA, Sanford T, Merino MJ, Wood BJ, Shih JH, Pinto PA, Choyke PL, Turkbey B. Prospective evaluation of PI-RADS version 2.1 for prostate cancer detection. American Journal of Roentgenology. 2020 Nov;215(5):1098-103.
20. Yilmaz EC, Shih JH, Belue MJ, Harmon SA, Phelps TE, Garcia C, Hazen LA, Toubaji A, Merino MJ, Gurram S, Choyke PL. Prospective evaluation of PI-RADS version 2.1 for prostate cancer detection and investigation of multiparametric MRI–derived markers. Radiology. 2023 May 2;307(4): e221309.
21. Brembilla G, Dell'Oglio P, Stabile A, Damascelli A, Brunetti L, Ravelli S, Cristel G, Schiani E, Venturini E, Grippaldi D, Mendola V. Interreader variability in prostate MRI reporting using Prostate Imaging Reporting and Data System version 2.1. European radiology. 2020 Jun;30(6):3383-92.