THERAPEUTIC ADVANCES in
Medical Oncology

Original Research

UFO registry: final analysis of baseline data from patients with advanced prostate cancer in Asia

Ther Adv Med Oncol

2024, Vol. 16: 1–15

DOI: 10.1177/17588359241293393

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Abstract

Background: The incidence of prostate cancer (PC) is increasing in Asian countries. The epidemiology of PC, its treatment including the use of novel therapeutic options, impacts on quality of life, and clinical outcomes of patients with PC in Asia, are not well documented.

Objectives: To describe the demographic and disease features of the full cohort of patients enrolled in the United in Fight against prOstate cancer (UFO) registry.

Design: The UFO registry was a multi-national, longitudinal, observational study of patients with PC presenting to participating tertiary care hospitals in eight Asian countries/regions.

Methods: Patients with high-risk localized PC (HRL), non-metastatic biochemically recurrent, or metastatic PC were consecutively enrolled from September 14, 2015 until September 1, 2020 and followed for up to 5 years.

Results: Among the full cohort of 3635 patients, 425 had HRL, 389 had non-metastatic biochemically recurrent, and 2821 had metastatic PC. Median follow-up time was 4.2, 4.2, and 2.6 years, respectively. At first diagnosis, the mean age ranged from 65.7 to 69.1 years, 38.5% had extra-capsular tumor extension, 34.0% had regional lymph node metastases, and 65.1% had distant metastases. Quality-of-life scores at enrollment were significantly worse in patients with metastatic disease. Decisions to start therapy were mainly driven by treatment guidelines and disease progression. The decision to discontinue hormonal therapy was often due to disease progression. Few patients received novel hormonal therapies despite their availability.

Conclusion: The UFO registry provides a detailed, contemporary picture of the characteristics, treatment, and outcomes of patients with PC in Asia. There is an unmet medical need to improve access to novel agents in Asia, aiming to improve quality of life and clinical outcomes.

Trial registration: Clinicaltrials.gov Identifier: NCT02546908, Registry Identifier: NOPRODPCR4001.

Keywords: Asia, epidemiology, prostate cancer, quality of life, registry

Received: 15 February 2024; revised manuscript accepted: 7 October 2024.

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Introduction

Prostate cancer (PC) is the second most common cancer in men worldwide after lung cancer,[1] and is the fourth most prevalent cancer amongst men in Asian countries.[1] While the incidence of PC has stabilized or decreased in many Western countries over the last decade, the incidence in Asian countries continues to climb.[1,2] In 2022, there were an estimated 386,424 new cases of PC diagnosed in Asia and 120,485 deaths.[1] PC

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incidence rates, when available, vary across the region; the highest reported incidences (age-adjusted) are from Japan (50.1 per 100,000 male population), Singapore (32.8 per 100,000), and Korea (29.3 per 100,000), with lower rates in Thailand (12.5 per 100,000), China (9.7 per 100,000), and India (5.6 per 100,000).[1] This contrasts with incidence rates of up to 135.0 per 100,000 in Western countries.[1]

Differences in PC incidence across Asia are likely to reflect regional differences in the prevalence of risk factors, such as older age, ethnicity, a Western-style diet, obesity, differing access to treatment, and national cancer surveillance capacity.[3–8] Routine prostate-specific antigen (PSA) screening is not currently practiced in most of Asia because of a lower incidence of PC compared to Western countries, and because the benefits of screening in Asian populations have not been conclusively demonstrated.[9,10]

The epidemiology of PC, treatment patterns, impacts on quality of life, and clinical outcomes of patients with PC in Asia are not well documented. The United in Fight against prOstate cancer (UFO) registry was established to collect data about PC diagnosis, management, and outcomes in real-world practice in Asia (www.clinicaltrials.gov NCT02546908, Registry Identifier: NOPRODPCR4001).[11] The study commenced on September 15, 2015, in eight participating countries/regions: mainland China, India, Japan, Malaysia, Singapore, South Korea, Chinese Taiwan, and Thailand. Baseline demographic and disease features, treatment, and reasons for initiating and discontinuing treatment for the first 2063 patients enrolled were published previously.[12] Here, we report the final analysis of baseline data from 3635 enrolled patients from September 14, 2015 until study end on September 1, 2020.

Patients and methods

Registry design

The registry design is described in detail in Liu et al.[11] This was a multi-center, prospective, longitudinal, observational registry of patients with PC presenting to participating tertiary care hospitals in Asian countries/regions. Patients were men aged at least 21 years with a documented diagnosis of either high-risk localized PC (HRL), non-metastatic biochemically recurrent PC (M0, castration resistant), or metastatic PC (M1, castration sensitive or castration resistant). Enrollment into the HRL and M0 PC groups was capped at 600 per cohort to ensure a high proportion of patients with M1 disease in the study. Standardized disease staging definitions were used for registry enrollment (Supplemental Material).

Patients were enrolled consecutively during routine visits and were followed for up to 5 years to capture real-world information on the clinical progression of PC, changes in PC treatments, and health-related quality of life. Upon patients' consent, routine clinical practice data were abstracted and entered into the electronic data capture system at a minimum frequency of once every 3 months during the observation period. Patients were asked to fill out quality-of-life questionnaires once every 6 months. Patients presented either with a new PC diagnosis or for follow-up care after an earlier diagnosis. These latter patients may have been diagnosed some years earlier but were enrolled once the Registry opened. Data were therefore prospectively collected from the date of enrollment and retrospectively from available medical records for patients diagnosed prior to enrollment.

Treatment decisions and the clinical management of patients followed routine clinical practice, and medical care was not influenced by participation in the registry. Patients were able to withdraw consent and discontinue participation at any time with no effect on their medical care or access to treatment. No clinical visits, interventions or procedures, treatment, or laboratory tests/imaging were mandated or recommended as part of this study.

At the time the registry opened in 2015, docetaxel was indicated (approved and re-imbursed where applicable) for the treatment of (metastatic) castrate-resistant prostate cancer ((m)CRPC) in all eight participating countries/regions, and for treatment of high-risk metastatic castration-sensitive PC (mCSPC), high-risk metastatic PC, or any metastatic PC in four. Abiraterone acetate plus prednisone was indicated for mCRPC (any CRPC in Japan) at the study start in seven countries and for all eight by study end (2020). An indication for high-risk mCSPC or hormone-naïve PC was added for abiraterone acetate plus prednisone in six countries during the study. Enzalutamide was indicated for mCRPC in five countries at the study start and by all countries/regions by the study end, and for non-metastatic

CRPC or any metastatic PC in five countries by the study end. Apalutamide was not available at the study start and approved/re-imbursed for non-metastatic CRPC and/or mCSPC in six countries in 2019.

Outcome variables

At the study entry, information was captured about demographic and lifestyle characteristics, family medical history, PC characteristics at diagnosis including the detection method, staging, Gleason score, treatment history and reasons for treatment changes, and health-related quality of life. Quality of life was measured using the European Quality of Life-5 Dimensions, 5 Levels (EQ-5D-5L) and Functional Assessment of Cancer Therapy for Prostate Cancer (FACT-P) tools as previously described.[13–15] The overall survival rate was evaluated in all patients from the time of enrollment until the study end.

Statistical analysis

The analysis period included all data collected from enrollment until the end of the registry, as well as data from previous medical records prior to registry entry. Data were summarized with associated 95% confidence intervals (CIs) using the Clopper-Pearson Method. A time-to-event survival analysis was performed using Kaplan-Meier methods.

For binomial and categorical variables, the number and percentage per category were summarized using non-missing data. For time-to-event endpoints, if the dates of events or censoring were missing, then the date of visit was used for the date of progression or censor. Missing dates for PC diagnosis and treatment onset were imputed. Missing items in validated instruments were to be handled according to the recommendations of the developers of the instruments. For quality-of-life measures, an analysis of variance with patient cohort and country as main effects was used to test the differences in visual analog score and among patient cohorts.

This report follows STROBE guidelines (Supplemental File).[16]

Results

There were 3635 patients enrolled in the registry: 887 (24.4%) from Japan, 862 (23.7%) from mainland China, 421 (11.6%) from Chinese Taiwan, 370 (10.2%) from Malaysia, 362 (10.0%) from Thailand, 310 (8.5%) from South Korea, 247 (6.8%) from India, and 176 (4.8%) from Singapore. There were 425 patients with HRL, 389 with M0, 2148 with metastatic hormone-sensitive prostate cancer (mHSPC), and 673 with mCRPC disease. The number of patients enrolled in each country/region by disease stage is provided in Supplemental Table S1.

The median time from PC diagnosis to registry enrollment was 1.8 years. The median follow-up time after enrollment was 4.2 years (interquartile range (IQR 3.1–4.4)) in the HRL group, 4.2 years (4.0–4.5) in the M0 group, 2.7 years (2.1–3.3) in the mHSPC group, and 2.5 years (1.3–3.3) in the mCRPC group.

At the end of the study, 17.9% of patients with HRL and 20.6% of patients with biochemically recurrent M0 disease had developed metastases or had died. Additionally, 12.2% of patients with mHSPC had developed castration resistance.

A total of 812 (22.3%) discontinued the registry due to reasons other than death. Of these, 655 (18.0%) patients were lost to follow-up and 157 (4.3%) withdrew consent.

Disease features at diagnosis

The diagnosis of PC was first suspected because of the onset of symptoms in 57.4% of patients with HRL, 36.8% with M0, and 72.1% with M1 disease. PC was detected during regular health screening in 17.5% of patients overall and was an incidental finding in 13.0%. A family history of PC was present in 6.4% ($n = 233$) of all patients, and a family history of breast cancer in 4.8% ($n = 173$).

The mean age of patients at the time of PC diagnosis ranged from 65.6 to 69.1 years (Table 1). At diagnosis, 59.5% of all patients had extra-capsular extension of their tumor, 34.0% had regional lymph node metastases, and 65.1% had distant metastases. Gleason scores of 8–10 were recorded in 72.5% of patients with HRL, 26.0% with M0, 70.5% with mHSPC, and 67.3% with mCRPC.

Disease features at enrollment

The time between the first PC diagnosis and registry enrollment was 1.3 years in HRL, 6.2 years

Table 1. Age and disease features at the time of PC diagnosis.

Clinical characteristic	HRL, *N* = 425	M0, *N* = 389	mHSPC, *N* = 2148	mCRPC, *N* = 673	Total, *N* = 3630
Age, mean (SD)	68.3 (7.25)	65.6 (6.76)	68.6 (8.12)	67.3 (8.69)	68.0 (8.05)
PSA (ng/mL), median (IQR)[a]	31.3 (16.2–68.1)	13.4 (7.8–26.2)	100 (42.7–100.0)	100 (32.1–100.0)	85.4 (22.5–100.0)
TNM, *n* (%)					
<T3a	54 (12.7)	239 (65.5)	791 (38.2)	310 (47.2)	1424 (40.5)
⩾T3a	370 (87.3)	126 (34.5)	1251 (60.4)	347 (52.8)	2094 (59.5)
T3x	27 (6.4)	7 (1.8)	169 (7.9)	46 (6.8)	249 (6.9)
Nx	43 (10.1)	28 (7.2)	549 (25.6)	201 (29.9)	821 (22.6)
N0	284 (66.8)	323 (83.0)	667 (31.1)	204 (30.3)	1478 (40.7)
N1	96 (22.6)	16 (4.1)	870 (40.5)	254 (37.7)	1236 (34.0)
Mx	33 (7.8)	26 (6.7)	58 (2.7)	29 (4.3)	146 (4.0)
M0	392 (92.2)	357 (91.8)	196 (9.1)	150 (22.3)	1095 (30.1)
M1	0	0	1878 (87.4)	489 (72.7)	2367 (65.1)
Gleason score, *N* (%) with data	417 (98.1)	371 (95.4)	1949 (90.7)	622 (92.4)	3359 (92.4)
2–6	22 (5.2)	100 (25.7)	87 (4.1)	37 (5.5)	246 (6.8)
7	87 (20.5)	170 (43.7)	347 (16.2)	132 (19.6)	736 (20.2)
8–10	308 (72.5)	101 (26.0)	1515 (70.5)	453 (67.3)	2377 (65.4)

[a]Due to limitations of the equipment, values greater than 100 were recorded as 100.
HRL, high-risk localized prostate cancer; IQR, interquartile range; M0, non-metastatic, biochemically recurrent prostate cancer; mCRPC, metastatic castrate-resistant prostate cancer; mHSPC, metastatic hormone-sensitive prostate cancer; PC, prostate cancer; PSA, prostate-specific antigen; SD, standard deviation.

in M0, 0.9 years in mHSPC, and 3.6 years in mCRPC (Table 2). The most frequently reported comorbidities in all cohorts were hypertension (38.1%–44.3% in each cohort), non-insulin-dependent diabetes (14.6%–18.6%), hypercholesterolemia (7.7%–15.8%), and other cardiovascular disease (7.8%–12.9%). Eastern Cooperative Oncology Group (ECOG) performance scores of 0–1 were recorded in 96.8% of patients with HRL, 95.4% with M0, 90.1% with mHSPC, and 89.5% with mCRPC.

At the time of enrollment, 4.1% of patients with mHSPC and 10.7% with mCRPC had experienced a skeletal-related event, and 27.3% and 36.6%, respectively, had received bone-targeted therapy (Table 2). Among patients with M1 disease, 89.4% had bone metastases at enrollment, of which 75.7% were axial and 34.1% appendicular (Supplemental Table S2). In patients with M1 disease, nodal metastases were present in 15.3% (13.9% sub-diaphragmatic) and visceral metastases in 12.6% (5.0% in lung).

Treatment pattern at registry enrollment

Radiotherapy. There were 40.9% of patients with HRL, 53.0% with M0, 16.7% with mHRPC, and 14.8% with mCRPC who had received radiotherapy prior to enrollment (Table 3). Most radiotherapy was intended to be curative in patients with HRL or M0, whereas more patients with M1 disease received palliative radiotherapy.

Hormonal therapy. Prior to registry enrollment, hormonal drug therapy was prescribed for 63.1%–77.6% of patients with HRL, M0, or mHSPC, and 91.7% with mCRPC (Table 3). Luteinizing

Table 2. Demographic and disease features at the time of registry enrollment.

Characteristic	HRL, *N* = 425	M0, *N* = 389	mHSPC, *N* = 2148	mCRPC, *N* = 673
Years from diagnosis until enrollment, median (IQR)	1.3 (0.3–3.3)	6.2 (3.7–9.8)	0.9 (0.2–3.0)	3.6 (2.0–6.2)
Castration status at baseline, *n* (%)				
Medically or surgically castrated	291 (70.8)	245 (64.6)	1643 (81.1)	639 (100)
Years from diagnosis to castration, median (IQR)	0.1 (0.1–0.3)	2.3 (0.3–4.7)	0.1 (0.03–0.3)	0.2 (0.04–0.9)
Ten most common co-morbidities,[a] *n* (%)				
Hypertension	171 (40.2)	151 (38.8)	819 (38.1)	298 (44.3)
Non-insulin dependent diabetes	62 (14.6)	59 (15.2)	316 (14.7)	125 (18.6)
Hypercholesterolemia	53 (12.5)	43 (11.1)	165 (7.7)	106 (15.8)
Other cardiovascular	35 (8.2)	45 (11.6)	168 (7.8)	87 (12.9)
Other renal disease	9 (2.1)	18 (4.6)	76 (3.5)	29 (4.3)
Insulin-dependent diabetes	15 (3.5)	9 (2.3)	63 (2.9)	24 (3.6)
Other respiratory disease	18 (4.2)	6 (1.5)	50 (2.3)	20 (3.0)
Other neurological	5 (1.2)	19 (4.9)	50 (2.3)	18 (2.7)
Arrhythmia	9 (2.1)	15 (3.9)	52 (2.4)	8 (1.2)
Cerebrovascular accident	12 (2.8)	8 (2.1)	47 (2.2)	14 (2.1)
Skeletal-related event,[b] *n* (%)	1 (0.2)	4 (1.0)	88 (4.1)	72 (10.7)
Prior bone-targeted therapy,[c] *n* (%)	12 (3.6)	15 (4.0)	371 (27.3)	234 (36.6)
Zoledronic acid	8 (2.4)	13 (3.4)	228 (16.8)	167 (26.1)
Denosumab	4 (1.2)	2 (0.5)	133 (9.8)	81 (12.7)
Radium 223	0	0	12 (0.9)	6 (0.9)
Others	1 (0.3)	1 (0.3)	24 (6.5)	8 (1.3)
Baseline ECOG, *n* (%)	315 (74.1)	239 (61.4)	1741 (81.1)	535 (79.5)
0–1	305 (96.8)	228 (95.4)	1568 (90.1)	479 (89.5)
⩾2	10 (3.2)	11 (4.6)	173 (9.9)	56 (10.5)

[a]Numbers are not additive as patients may have had more than one co-morbidity.
[b]Defined as clinical fractures, spinal cord compression, palliative radiation to bone, or surgery to bone.
[c]Denominator is the number of patients who received at least 1 anti-cancer at enrollment (Table 2).
ECOG, Eastern Cooperative Oncology Group; HRL, High-risk localized prostate cancer; IQR, interquartile range; M0, non-metastatic, biochemically recurrent prostate cancer, mCRPC, metastatic castrate-resistant prostate cancer; mHSPC, metastatic hormone-sensitive prostate cancer.

hormone-releasing hormone (LHRH) agonists/antagonists were prescribed for 45.9%–55.5% of patients in each disease cohort. Leuprorelin was the most frequently used LHRH analog in all cohorts (29.4% in patients with HRL, 39.3% with M0, 23.4% in HSPC, and 33.8% in mCRPC), followed by goserelin (12.1%, 20.1%, 15.9%, and 17.5%, respectively). Anti-androgens were

Table 3. Treatments received by patients with prostate cancer prior to registry enrollment.

Treatment[a]	HRL, *N* = 425	M0, *N* = 389	mHSPC, *N* = 2148	mCRPC, *N* = 673
	n (%)	*n* (%)	*n* (%)	*n* (%)
Received any anti-cancer treatment	330 (77.6)	379 (97.4)	1357 (63.2)	640 (95.1)
Prior treatment				
Radiotherapy	135 (40.9)	201 (53.0)	226 (16.7)	159 (24.8)
Chemotherapy	11 (3.3)	4 (1.1)	179 (13.2)	156 (24.4)
Hormonal drug therapy	227 (68.8)	239 (63.1)	1053 (77.6)	587 (91.7)
Orchiectomy	13 (3.9)	12 (3.2)	264 (19.5)	167 (26.1)
Prostatectomy	159 (48.2)	263 (69.4)	186 (13.7)	72 (11.3)
None	95 (22.4)	10 (2.6)	791 (36.8)	33 (4.9)
Prior radiotherapy				
Definitive only	106 (32.1)	158 (41.7)	83 (6.1)	57 (8.9)
Palliative only	14 (4.2)	18 (4.7)	105 (7.7)	76 (11.9)
Definitive and palliative	13 (3.9)	8 (2.1)	20 (1.5)	18 (2.8)
Type of radiotherapy				
External beam therapy	59 (17.9)	110 (29.0)	142 (10.5)	105 (16.4)
Conformal	67 (20.3)	66 (17.4)	60 (4.4)	49 (7.7)
Brachytherapy	14 (4.2)	25 (6.6)	18 (1.3)	5 (0.8)
Robotic radiosurgery (cyberknife)	0	2 (0.5)	4 (0.3)	0
Unspecified	4 (1.2)	5 (1.3)	6 (0.4)	4 (0.6)
Prior systemic therapy				
Hormonal therapy	227 (68.8)	239 (63.1)	1053 (77.6)	587 (91.7)
LHRH analogs	183 (55.5)	208 (54.9)	674 (49.7)	349 (54.5)
Leuprorelin	97 (29.4)	149 (39.3)	317 (23.4)	216 (33.8)
Goserelin	40 (12.1)	76 (20.1)	216 (15.9)	112 (17.5)
Degarelix	37 (11.2)	10 (2.6)	173 (12.7)	55 (8.6)
Triptorelin	29 (8.8)	30 (7.9)	70 (5.2)	60 (9.4)
LHRH unspecified	1 (0.3)	0	2 (0.1)	2 (0.3)
Buserelin	0	0	0	1 (0.2)
Antiandrogens	147 (44.5)	178 (47.0)	745 (54.9)	516 (80.6)
Bicalutamide	130 (39.4)	150 (39.6)	674 (49.7)	474 (74.1)
Flutamide	8 (2.4)	12 (3.2)	133 (9.8)	118 (18.4)

(Continued)

Table 3. (Continued)

Treatment[a]	HRL, *N* = 425	M0, *N* = 389	mHSPC, *N* = 2148	mCRPC, *N* = 673
	n (%)	*n* (%)	*n* (%)	*n* (%)
Cyproterone	17 (5.2)	29 (7.7)	55 (4.1)	71 (11.1)
Chlormadinone	0	7 (1.8)	5 (0.4)	4 (0.6)
Others	3 (0.9)	7 (1.8)	9 (0.7)	11 (1.78)
Estrogens and derivatives	21 (6.4)	8 (2.1)	35 (2.6)	49 (7.7)
Steroids alone	0	3 (100)	25 (100)	22 (100)
Adrenal biosynthesis inhibitor	0	0	7 (0.5)	20 (3.1)
ARPIs	1 (0.3)	2 (0.5)	57 (4.2)	73 (11.4)
Zytiga—a biraterone acetate plus prednisone	0	2 (0.5)	47 (3.5)	59 (9.2)
Non-branded abiraterone acetate	0	2 (0.5)	57 (4.2)	73 (11.4)
Enzalutamide	5 (1.5)	6 (1.6)	39 (2.9)	56 (8.8)
Apalutamide	0	17 (4.4)	0	0
Chemotherapy				
Docetaxel	10 (3.0)[b]	4 (1.1)[b]	174 (12.8)	154 (24.1)
Cabazitaxel	0	0	6 (0.4)	8 (1.3)
Platinum	0	0	6 (0.4)	5 (0.8)
Investigational drug	0	0	2 (0.1)	4 (0.6)
Other	1 (0.3)	0	5 (0.4)	8 (1.3)
Radical prostatectomy				
Open	56 (17.0)	118 (31.1)	90 (6.6)	40 (6.3)
Laparoscopic	47 (14.2)	61 (16.1)	60 (4.4)	20 (3.1)
Robotic	56 (17.0)	83 (21.9)	36 (2.7)	11 (1.7)

ARPI, androgen receptor pathway inhibitor; HRL, high-risk localized prostate cancer; LHRH, luteinizing hormone-releasing hormone; M0, non-metastatic, biochemically recurrent prostate cancer; mCRPC, metastatic castrate-resistant prostate cancer; mHSPC, metastatic hormone-sensitive prostate cancer.
[a]Numbers are not additive as patients could have undergone more than one treatment.
[b]Some patients were enrolled in clinical trials, others were treated according to local guidelines which allow the use of chemotherapy in these stages.

prescribed for 44.5% of patients with HRL, 47.0% with M0, 54.9% with mHSPC, and 80.6% with mCRPC. The most frequently used anti-androgens were bicalutamide, followed by flutamide in mHSPC and mCRPC, and cyproterone in HRL and M0 cohorts. Enzalutamide was prescribed for 8.8% of patients with mCRPC but for <3% in other disease cohorts. Apalutamide was used by 17 patients (4.4%) all with M0 disease.

Few patients received adrenal biosynthesis inhibitors (0.5% with mHSPC and 3.1% with mCRPC). Abiraterone acetate plus prednisone was prescribed for 4.2% of patients with mHSPC and 11.4% with mCRPC (Table 3).

A total of 13.2% of patients with mHSPC and 24.4% with mCRPC were prescribed chemotherapy, most frequently docetaxel (12.8% and

21.4%, respectively). Fewer than 1% of patients with M1 disease received cabazitaxel- or platinum-based chemotherapy.

Radical prostatectomy and orchiectomy. The percentage of patients who had undergone prostatectomy at baseline was 69.4% for M0, 48.2% for HRL, and <14% for M1 (Table 3).

Orchiectomy was conducted in <4% of patients in HRL or M0 cohorts, 29.1% with mHSPC, and 26.1% with mCRPC (Table 3).

Rationale for treatment decisions

Decisions to initiate hormonal therapy were driven by different factors in different disease cohorts (Table 4). In patients with HRL and M1 disease, treatment was commenced in response to treatment guidelines, disease progression, and PSA level. Hormonal treatment in M0 was initiated based on disease progression and PSA level and less frequently in response to treatment guidelines.

Hormonal therapy was discontinued in 25.6% of patients with HRL, 19.3% with M0, 21.7% with mHSPC, and 38.2% with mCRPC. The most common reasons given for discontinuation were "completed therapy" in HRL and M0, and disease progression in M1 cohorts. Treatment-related side effects were a reason for discontinuation in ⩽7% of patients in each disease cohort.

Chemotherapy was initiated in 21.8% of patients with mHSPC and 33.1% with mCRPC, most commonly due to disease progression (48.5% and 75.3%, respectively), and PSA level (34.4% and 54.3%). Treatment guidelines were also an important driver for commencing chemotherapy in mHSPC (31.6%).

Approximately one-half of patients with HRL, M0, and mHSPC, and 36% with mCRPC, who underwent chemotherapy had completed treatment at enrollment. Other common reasons for discontinuation of chemotherapy were disease progression despite treatment and treatment-related side-effects.

Quality of life at enrollment

Quality-of-life scores using EQ-5D and FACT-P were significantly lower (indicating a perception of worse health) at enrollment in patients with M1 disease than with HRL or M0 disease (Figure 1). The mean EQ-5D visual analog score was 75.5 (maximum score = 100) in patients with mHSPC and 72.6 in mCRPC versus 80.0 and 79.0 in patients with HRL and M0 disease, respectively ($p < 0.001$). The greatest impacts on quality of life were observed in the mobility, pain/discomfort, and anxiety/depression domains. The FACT-P mean total score was 114.0 (out of a possible 156) in patients with mHSPC and 112.0 in mCRPC versus 119.1 and 117.1, in HRL and M0, respectively ($p < 0.001$) (Figure 1).

Overall survival rate

At the end of the study, 770 patients (21.2%) had died, 4.9% in the HRL group, 5.4% in the M0 group, 21.6% in the mHSPC group, and 39.4% in the mCRPC group. The 3-year overall survival rate was 96.5% (95% CI 94.2–97.9) in the HRL group, 97.6% (95% CI 5.3–98.8) in the M0 group, 77.8% (95% CI 75.9–79.7) in the mHSPC group, and 60.4% (95% CI 56.2–64.3) in the mCRPC group (Supplemental Table S3 and Supplemental Figure S1).

Discussion

The UFO disease registry captured the real-world characteristics and treatments of patients with advanced PC in Asia and provides contemporary insights into how PC is managed across the region. In patients presenting with M1 disease, the majority of diagnoses (72.1%) were symptom-driven. At registry enrollment, 89.4% of patients with M1 had bone metastases and quality-of-life scores were significantly reduced compared to patients with HRL or M0, particularly in the mobility, pain/discomfort, and anxiety/depression domains. These data suggest that many patients with PC in Asia would benefit from earlier diagnosis, whether through screening or regular health checks, which could lead to improved treatment outcomes, reduced suffering, and potentially lower treatment costs. Bone metastases were present in the majority of patients with M1 disease at enrollment, and skeletal events were not uncommon. However, bone-targeted therapy was used infrequently.

The Pan-Asian adapted ESMO Clinical Practice Guidelines for the diagnosis, treatment, and follow-up of patients with PC were published in 2022.[17] Experts from Asian countries/regions (Mainland China, India, Japan, Korea, Malaysia, Singapore, and Chinese Taiwan) continued to

Table 4. Most frequent reasons for initiating and discontinuing treatment from enrollment until the study end.[a]

Reason	HRL, *N* = 425	M0, *N* = 389	mHSPC, *N* = 2148	mCRPC, *N* = 673
	n (%)	*n* (%)	*n* (%)	*n* (%)
Initiated hormonal therapy	308 (72.5)	253 (65.0)	1974 (91.9)	627 (93.2)
Disease progression	86 (27.9)	135 (53.4)	444 (22.5)	225 (35.9)
PSA	51 (16.6)	107 (42.3)	280 (14.2)	171 (27.3)
Radiological	3 (1.0)	9 (3.6)	35 (1.8)	39 (6.2)
Clinical	37 (12.0)	26 (10.3)	166 (8.4)	41 (6.5)
Toxicity of previous therapy	2 (0.6)	2 (0.8)	6 (0.3)	5 (0.8)
Disease related	10 (3.2)	7 (2.8)	120 (6.1)	46 (7.3)
Safety profile of this anticancer treatment	16 (5.2)	9 (3.6)	66 (3.3)	11 (1.8)
Treatment guidelines[b]	157 (51.0)	75 (29.6)	1107 (56.1)	254 (40.5)
Treatment cost	3 (1.0)	5 (2.0)	9 (0.5)	7 (1.1)
Patient's preference	5 (1.6)	3 (1.2)	57 (2.9)	34 (5.4)
Reimbursement scheme	0	0	24 (1.2)	8 (1.3)
Other	29 (9.4)	17 (6.7)	137 (6.9)	34 (5.4)
Discontinued hormonal therapy	109 (25.6)	75 (19.3)	467 (21.7)	257 (38.2)
Disease progression	23 (21.1)	15 (20.0)	172 (36.8)	113 (44.0)
Treatment-related side effects	3 (2.8)	5 (6.7)	13 (2.8)	18 (7.0)
New or deterioration of existing co-morbidities	0	2 (2.7)	19 (4.1)	18 (7.0)
Patient's affordability	2 (1.8)	3 (4.0)	11 (2.4)	4 (1.6)
Inconvenience	3 (2.8)	0	9 (1.9)	1 (0.4)
Patient's decision	1 (0.9)	10 (13.3)	42 (9.0)	22 (8.6)
Enrollment into other clinical trials	0	0	7 (1.5)	2 (0.8)
Completed therapy	53 (48.6)	21 (28.0)	65 (13.9)	27 (10.5)
Death	3 (2.8)	3 (4.0)	65 (13.9)	33 (12.8)
Other	21 (19.3)	17 (22.7)	69 (14.8)	34 (13.2)
Initiated chemotherapy	21 (4.9)	22 (5.7)	468 (21.8)	223 (33.1)
Disease progression	12 (57.1)	19 (86.4)	227 (48.5)	168 (75.3)
PSA	8 (38.1)	16 (72.7)	161 (34.4)	121 (54.3)

(Continued)

Table 4. (Continued)

Reason	HRL, *N* = 425	M0, *N* = 389	mHSPC, *N* = 2148	mCRPC, *N* = 673
	n (%)	*n* (%)	*n* (%)	*n* (%)
Radiological	5 (23.8)	4 (18.2)	48 (10.3)	52 (23.3)
Clinical	0	3 (13.6)	39 (8.3)	24 (10.8)
Toxicity of previous therapy	0	0	3 (0.6)	6 (2.7)
Patient's characteristics	0	1 (4.5)	20 (4.3)	10 (4.5)
Comorbidities	0	0	3 (0.6)	0
Disease-related	0	1 (4.5)	17 (3.6)	10 (4.5)
Safety profile of this anticancer treatment	0	0	15 (3.2)	3 (1.3)
Treatment guidelines[b]	8 (38.1)	1 (4.5)	148 (31.6)	18 (8.1)
Site	7 (33.3)	0	79 (16.9)	5 (2.2)
National	0	1 (4.5)	26 (5.6)	4 (1.8)
International	1 (4.8)	0	71 (15.2)	12 (5.4)
Treatment cost	0	0	1 (0.2)	1 (0.4)
Patient's preference	0	1 (4.5)	27 (5.8)	6 (2.7)
Reimbursement scheme	0	0	0	0
Other	1 (4.8)	0	27 (5.8)	11 (4.9)
Discontinued chemotherapy	15 (3.5)	12 (3.1)	303 (14.1)	172 (25.6)
Disease progression	3 (20.0)	4 (33.3)	78 (25.7)	59 (34.3)
Treatment-related side effects	2 (13.3)	1 (8.3)	25 (8.3)	34 (19.8)
New or deterioration of existing co-morbidities	1 (6.7)	0	2 (0.7)	9 (5.2)
Patient's affordability	0	0	3 (1.0)	1 (0.6)
Inconvenience	0	0	1 (0.3)	0
Patient's decision	1 (6.7)	1 (8.3)	10 (3.3)	7 (4.1)
Enrollment into other clinical trials	0	0	3 (1.0)	0
Completed therapy	8 (53.3)	5 (41.7)	156 (51.5)	62 (36.0)
Death	0	1 (8.3)	7 (2.3)	2 (1.2)
Other	0	0	20 (6.6)	6 (3.5)

[a]Numbers are not additive as more than one reason could be reported.
[b]International, national, or site guidelines.
HRL, high-risk localized prostate cancer; M0, non-metastatic, biochemically recurrent prostate cancer; mCRPC, metastatic castrate-resistant prostate cancer; mHSPC, metastatic hormone-sensitive prostate cancer; PSA, prostate-specific antigen.

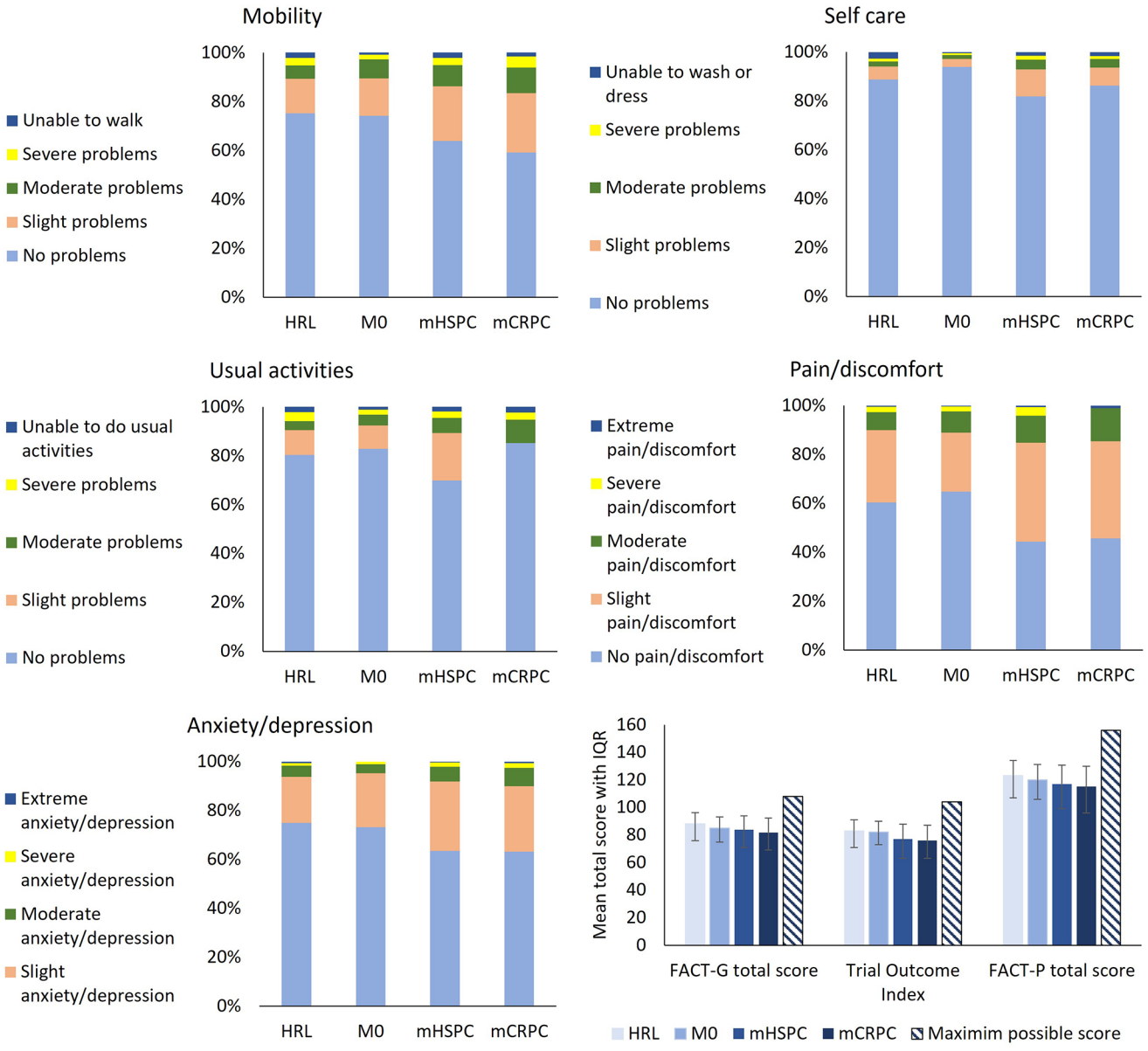

Figure 1. Quality of life at enrollment by disease cohort using EQ-5D-5L and FACT-P.
EQ-5D-5L, European Quality of Life-5 Dimensions, 5 Levels; FACT-P, Functional Assessment of Cancer Therapy for Prostate Cancer; HRL, high-risk localized prostate cancer; IQR, interquartile range; M0, non-metastatic, biochemically recurrent prostate cancer; mCRPC, metastatic castrate-resistant prostate cancer; mHSPC, metastatic hormone-sensitive prostate cancer.

endorse a no screening policy in Asia, but recommended ADT plus docetaxel and abiraterone acetate plus prednisone as a first-line treatment for fit patients with mHSPC, especially in those with de novo multiple bone metastases (>3) or visceral metastases; and ADT with abiraterone acetate plus prednisone, apalutamide, docetaxel, or enzalutamide in other patients with mHSPC.[17] It has been noted elsewhere that the cost of these therapies is substantial and their economic consequences can be significant.[18] Docetaxel, abiraterone acetate plus prednisone, and enzalutamide are now available in all eight countries/regions that participated in the registry, and apalutamide is currently available in seven (excluding India).[17] However, we observed minimal use of novel agents in patients with metastatic PC until enrollment, suggesting other issues with drug access such as cost, local availability, or clinician preferences in Asia. For example, Korea,

Singapore, Japan, mainland China, and Taiwan all offer reimbursed healthcare under national insurance programs. However, co-payments are required in Korea (5%–30%) and mainland China (20%–50%) for reimbursed medicines. In Singapore, co-payments may be required depending on the eligibility for a subsidy and patient income. In Japan, approved drugs are subsidized up to 70%–90% depending on the age of the patient. Drugs not included in reimbursement lists in these countries must be paid for in full by the patient. Thailand, Malaysia, and India have no national insurance. Private insurance is available and some central and state government departments in these countries do provide health coverage for their employees; however, many patients pay for their treatment in full. The Pan-Asia Guidelines indicate the use of ADT alone in mHSPC only in patients who cannot tolerate treatment intensification. Approximately, 90% of patients with mHSPC in our study had an ECOG score of 0 or 1, suggesting that frailty was unlikely to have contributed to the decision to use ADT alone in most patients. Further analysis of treatment regimens over the full study period is ongoing.

Other potential study limitations include the risk of selection bias and case ascertainment bias, which we minimized by enrolling patients consecutively and by classifying patients using standardized disease stage definitions, and which is therefore unlikely to have substantially impacted our results. Data in medical records from patients who were diagnosed before enrollment may have been incomplete. Treatment decision-making was collected based on recall. As such these data could be validated and could be subject to recall bias. Finally, defining the baseline period with cohort allocation at the date of enrollment, we were unable to easily track individuals whose disease had already advanced, limiting cohort analyses of clinical outcomes such as survival. The analysis of survival was therefore conducted on the overall PC population within the limitations and caveats highlighted above.

Strengths of the study include the large size of the cohort which included 2148 men with mHSPC and 673 with mCRPC providing meaningful information about disease characteristics, treatment, and quality of life in advanced PC. Patients were enrolled from eight high-income, middle-income, and low-income countries/regions with different healthcare systems, and potentially different levels of access to treatments. The use of real-world data provides a granular picture of PC and its current management across Asia that is applicable at a country level.

Our study raises several questions such as, what are the underlying factors preventing higher uptake of novel agents in Asian countries/regions? What potential strategies or policies could be implemented to address this need? How can economic considerations be adequately addressed to improve patient access to standard-of-care treatment? Further research in these areas is needed to understand the main drivers of PC treatment in individual countries/regions.

Conclusion

The UFO registry of advanced PC provides a detailed picture of PC characteristics, treatment, and outcomes in a large cohort of men living in Asia. This study provides valuable descriptive data on current disease characteristics and the treatment landscape which can be used to inform clinicians, guide policy development for best practice and patient outcomes, and direct clinical study design evaluating new treatments. There is an unmet medical need to improve access to novel agents for patients with PC in Asia, aiming to improve the quality of life and outcomes of patients with advanced PC.

Declarations

Ethics approval and consent to participate

The protocol for this research project has been approved by a suitably constituted Ethics Committee of the institution and it conforms to the provisions of the Declaration of Helsinki. All informed consent was obtained from the subject(s) and/or guardian(s). The protocol was reviewed and approved by the following Institutional Review Boards/Independent Ethics Committees:

Mainland China

- Ethics Committee of Fudan University, Shanghai Cancer Center (1508151-9)
- Third affiliated hospital of Zhongshan University Clinical Medical Research Ethics Committee ([2015]2-186)
- West China Hospital, Sichuan University Ethics Committee (2015年审(180)号)

- Ethics Committee of Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology (TJ-IRB20160904)
- Ethics Committee of the First Affiliated Hospital, College of Medicine, Zhejiang University (2016伦审第(30)号)
- Ethics Committee of Cancer Institute and Hospital, Chinese Academy of Medical Sciences (15-105/1032)
- The First Hospital of China Medical University Medical Scientific Research Ethics Committee ([2016]No.2016-148-2)
- Clinical Study Ethics Committee of Peking University First Hospital (2015[983])
- Ethics Committee of the Second Affiliated Hospital of Soochow University (JD-LK-2017-016-01)
- Ethics Committee of Beijing Hospital (2017BJYYEC-123-02)

India

- HCG—Central Ethics Committee (EC/236/15/1)
- Institutional Review Board Rajiv Gandhi Cancer Institute & Research Centre (RGCIRC/IRB/99/2015)
- P.D Hinduja Hospital & Medical Research Centre (1046-16-HT)
- Institute Ethics Committee, All India Institute of Medical Sciences (IEC-31/17.11.2015, RP-19/Feb-2016)
- Institutional Ethics Committee, Tata Memorial Hospital (IEC/0916/1720/001)

Japan

- Independent Ethics Committee of Kindai University Faculty of Medicine (27-130)
- Institutional Review Board of Dokkyo Medical University Koshigaya Hospital (1542)
- Osaka University Hospital Ethics Committee for Observational Studies (15368)
- Independent Ethics Committee of Hirosaki University School of Medicine and Hospital (2015-191)
- Kobe University Hospital Medical Ethics Committee (1839)
- Institutional Review Board of Kindai University Nara Hospital (387)
- Independent Administrative Corporation, National Hospital Organization Shikoku Cancer Center (2016-97)
- Chiba Cancer Center Institutional Review Board Rules (124)

Korea

- Asan Medical Center Institution Review Board (2015-0908)
- Seoul St. Mary's Hospital Institutional Review Board (KC15OSGI0588)
- Yonsei University Gangnam Severance Hospital, Institutional Review Board (3-2015-0237)
- Seoul National University Hospital Institutional Review Board (H-1508-069-695)
- Association for the Accreditation of Human Research Protection Programs (SMC 2015-08-031-004)

Malaysia

- Medical Ethics Committee
- Medical Research and Ethics Committee ((13)KKM/NIHSEC/P15-906)

Singapore

- NHG Domain Specific Review Board (2015/00676)

Chinese Taiwan

- Kaohsiung Veterans General Hospital Institutional Review Board (VGHKS15-CT10-03)
- National Taiwan University Hospital Research Ethics Committee (201508010RSB)
- Institutional Review Board, National Cheng Kung University Hospital (8800-4-07-001)
- Taipei Veterans General Hospital (2017-01-002CC)

Thailand

- Institutional Review Board—Faculty of Medicine, Chulalongkorn University (894/2015)
- Siriraj Institutional Review Board (Si619/2015)
- Research Ethics Committee, Faculty of Medicine Chiang Mai University (488/2015)
- Faculty of Medicine, Prince of Songkla University (58-233-10-1).

Written informed consent was obtained from each patient (or their legally acceptable representative) to allow source data collection and verification in accordance with local laws.

Consent for publication
Not applicable.

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Bannakij Lojanapiwat: Investigation; Writing – review & editing.

Yeong-Shiau Pu: Investigation; Writing – review & editing.

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Anildeep Singh: Investigation; Project administration; Supervision; Validation; Writing – review & editing.

Yanfang Liu: Conceptualization; Investigation; Methodology; Writing – review & editing.

Hirotsugu Uemura: Investigation; Writing – review & editing.

Acknowledgements
Investigators and site coordinators from the following sites have graciously given their time and effort in entering and reviewing data for the benefit of this registry: Gao Xin, the 3rd Affiliated Hospital, Sun Yansen University, China; Hu, Zhiquan Tongi Hospital, Tongi Medical College, Huazhong University, China; Radheshyam Devanna Naik, Healthcare Global (HCG) Hospital, India; Amlesh Seth, All India Institute of Medical Sciences, India; Amit Joshi, Tata Memorial Hospital, India; Gaku Arai, Dokkyo Medical University Koshigaya Hospital, Japan; Motohide Uemura, Osaka University Hospital, Japan. Junya Furukawa, Kobe University Hospital, Japan; Katsuyoshi Hashine NHO Shikoku Cancer Center, Japan; Ji Youl Lee, The Catholic University of Korea, Seoul St. Mary's Hospital, South Korea; Cheol Kwak, Seoul National University Hospital, South Korea; Hyun Moo Lee, Samsung Medical Center South Korea; Yew Lam Chong, Tan Tock Seng Hospital, Singapore; Apirak Santingamkun, King Chulalongkorn Memorial Hospital, Thailand; Choosak Pripatananont, Songkhla Hospital, Thailand; Tong-Lin Wu, Kaohsiung Veterans General Hospital, Taiwan. Writing assistance was provided by Joanne Wolter (independent on behalf of Janssen).

Funding
The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: All costs associated with the development of this manuscript were funded by Janssen. The corresponding author had final responsibility for the decision to submit for publication.

Competing interests
Y.-S.P. reports grants from Janssen during the conduct of the study. R.K. reports personal fees from Astellas, Johnson & Johnson, MSD, BMS, Pfizer, Novartis, Merck, Ipsen, and Eisai outside the submitted work. C.O. reports personal fees from Janssen Pharmaceutical K.K., Astellas Pharma US, Inc., AstraZeneca K.K., Takeda Pharmaceutical Company Limited, Bayer Yakuhin, Ltd, Sanofi K.K., and Nippon Shinyaku Co., Ltd. outside the submitted work. H.U. reports grants and others from Takeda, Ono pharm. Astellas, Janssen, Astra Zeneca, personal fees from Bayer, MSD, BMS, Janssen, Takeda, Pfizer, Sanofi, Eisai, and Ono/BMS outside the submitted work. E.C. reports honoraria from Astellas, Janssen, Bayer, Astra Zeneca, Ferring, Amgen, Ipsen, Novartis, DCH Auriga outside the

submitted work. Y.L. and A.S. are employees of Janssen and hold stock/shares in Johnson & Johnson. D.Y., O.T.A., Z.H., B.L., Y.-S.T., C.S.K., A.H.A.R., B.H.C., M.Y.N.A., H.Z., and S.K.R. report no conflict of interest.

Availability of data and materials

The data sharing policy of Janssen Pharmaceutical Companies of Johnson & Johnson is available at https://www.janssen.com/clinical-trials/transparency. As noted on this site, requests for access to the study data can be submitted through Yale Open Data Access (YODA) Project site at http://yoda.yale.edu.

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Supplemental material

Supplemental material for this article is available online.

References

1. World Health Organization; International Agency for Research on Cancer. GLOBOCAN 2022, https://gco.iarc.fr/ (2022, accessed 16 April 2024).
2. Zhu Y, Wang HK, Qu YY, et al. Prostate cancer in East Asia: evolving trend over the last decade. *Asian J Androl* 2015; 17: 48–57.
3. Baade PD, Youlden DR, Cramb SM, et al. Epidemiology of prostate cancer in the Asia-Pacific region. *Prostate Int* 2013; 1: 47–58.
4. Hsing AW, Devesa SS, Jin F, et al. Rising incidence of prostate cancer in Shanghai, China. *Cancer Epidemiol Biomarkers Prev* 1998; 7: 83–84.
5. Katanoda K, Matsuda T, Matsuda A, et al. An updated report of the trends in cancer incidence and mortality in Japan. *Jpn J Clin Oncol* 2013; 43: 492–507.
6. Lim GH, Chow KY and Lee HP. Singapore cancer trends in the last decade. *Singapore Med J* 2012; 53: 3–9.
7. Ito K. Prostate cancer in Asian men. *Nat Rev Urol* 2014; 11: 197–212.
8. Kimura T and Egawa S. Epidemiology of prostate cancer in Asian countries. *Int J Urol* 2018; 25: 524–531.
9. Chen R, Ren S, Chinese Prostate Cancer Consortium, et al. Prostate cancer in Asia: a collaborative report. *Asian J Urol* 2014; 1: 15–29.
10. Zhang K, Bangma CH and Roobol MJ. Prostate cancer screening in Europe and Asia. *Asian J Urol* 2017; 4: 86–95.
11. Liu Y, Uemura H, Ye D, et al. Prostate cancer in Asia: design of a patient registry to inform real-world treatments, outcomes, and quality of life. *Prostate Int* 2019; 7: 108–113.
12. Uemura H, Ye D, Kanesvaran R, et al. United in Fight against prOstate cancer (UFO) registry: first results from a large, multi-centre, prospective, longitudinal cohort study of advanced prostate cancer in Asia. *BJU Int* 2020; 125: 541–552.
13. EuroQol G. EuroQol—a new facility for the measurement of health-related quality of life. *Health Policy* 1990; 16: 199–208.
14. Esper P, Mo F, Chodak G, et al. Measuring quality of life in men with prostate cancer using the functional assessment of cancer therapy-prostate instrument. *Urology* 1997; 50: 920–928.
15. Liu Y, Uemura H, Ye D, et al. Prostate cancer in Asia: design of a patient registry to inform real-world treatments, outcomes and quality of life. *Prostate Int* 2019; 7: 108–113.
16. Equator Network. STROBE checklist. https://www.equator-network.org/reporting-guidelines/strobe/ (accessed April 16, 2024).
17. Kanesvaran R, Castro E, Wong A, et al. Pan-Asian adapted ESMO Clinical Practice Guidelines for the diagnosis, treatment and follow-up of patients with prostate cancer. *ESMO Open* 2022; 7: 100518.
18. Martini A, Mottet N, Montorsi F, et al. A plea for economically sustainable evidence-based guidelines. *Eur Urol* 2022; 82: 449–451.