

PATIENT KNOWLEDGE AND ATTITUDE CONCERNING CONTRIBUTING FACTORS AND EARLY DIAGNOSIS OF PROSTATE CANCER

Omer Ahmed Abed¹, Haider Mohammed Majeed²

¹BSN, Ministry of Health, Directorate of Health of Anbar /Fallujah Teaching Hospital for Maternity and Children, Anbar Iraq. omer.abd2202m@conursing.uobaghdad.edu.iq

²PhD Nursing, Assistant Professor, Department of Adult Nursing, College of Nursing, University of Baghdad, Baghdad, Iraq. haidermm@conursing.uobaghdad.edu.iq

Abstract

Background: Inadequate knowledge and poor attitudes about prostate cancer (PC) negatively affect early screening practices among males. The PC mortality rate is increasing due to late reporting, screening, and treatment.

Objectives: This study explored the knowledge, attitudes, and early diagnosis of prostate cancer among males in Fallujah state, Iraq.

Methodology: This descriptive cross-sectional study involved 150 males who visit outpatient clinics (Urology Consultation) at Fallujah teaching hospital, Iraq. Study period extended from 18th September 2023, to 20th January, 2024. Non-probability purposive sampling was used. Data were collected using a structured questionnaire, the data was collected from December 20th, January 2st ,2022. The data collected was analysed SPSS version 26. Chi-Square was used to examine the association between sociodemographic variables, knowledge, and attitudes towards PC.

Results: One hundred and fifty (150) men participated in the study. Participants ranged from 40 to 60 years, with a mean age of 48.4. The majority of men, 153 (90.0 %), were married, while 10 (6.7%) were single. Nearly more than third of all participants (37.3%) hold bachelor education. Our findings revealed that 55.3% demonstrated inadequate knowlege about PC, in addition nearly to half of participant 44.7% had adequate knowlege. The overall mean score (97.3%) showed had positive attitude towards PC. However, 2.7% had a negative attitude towards PC. There was a significant positive correlation between knowledge and attitudes toward prostate cancer ($r = 0.033$, $p < 0.001$).

Conclusion: The study found that most men in the study area had inadequate knowlege toward contrubuting factors of prostate cancer, only a small percentage had a fair knowledge of prostate cancer screening, with a strong positive perception of screening. The study highlights the need to increase awareness of prostate cancer screening in Fallujah state, Iraq.

Keywords: Patients, Knowledge, attitude Contributing Factors, Early Diagnosis, Prostate Cancer.

INTRODUCTION

Prostate cancer (PC) is the malignancy that affects most adult males globally and has a devastating impact if not discovered early. It is currently regarded as the second most diagnosed type of cancer and contributes to the increasing death rate in adult males ⁽¹⁾. According to the Global Cancer Observatory (GLOBOCAN) report of 2020, about 1414,259 new prostate cancer (PC) cases were reported in 2020, representing 7.3% of all cancers worldwide. It explained that the mortality due to prostate cancer is estimated to be 375 304, representing 3.8% of all cancer deaths globally⁽²⁾. Studies revealed a high prevalence of PC among older men because they have moderate knowledge about the symptoms, while some have a negative attitude towards early screening ⁽³⁾. Recent studies have shown that lower rates of PC incidence and mortality in several developed countries because of widespread use of Prostate Specific Antigen (PSA) testing to detect prostate cancer ⁽⁴⁾. While screening for prostate cancer using non-confirmatory prostate-

specific antigen blood (PSA) test and digital rectal examination (DRE) are electively available measures for early detection of disease globally, the utilization of these services ⁽⁵⁾. Arabic, Eastern, and Asian ethnic groups have different prevalence rates for prostate cancer. The United States and Canada have the greatest incidence rates, followed by Europe. While the incidence rate is lower in Asian countries, especially among Arabic communities⁽⁶⁾.

Although there is no single cause of prostate cancer, several factors can have an impact. These components include age, with men over the age of 50 accounting for 60% of new cases of prostate cancer, while cases in people under the age of 40 are rare. The chance of developing prostate cancer doubles when a family member already has the disease because it can run in families ⁽⁷⁾. Various factors associated with utilization of prostate cancer screening have been documented both in developed and developing countries. A recent study reported that African and African American men were less likely than European and

European American men to seek prostate cancer-screening as a direct or indirect consequence of financial barriers, lack of health insurance, and/or poor health-seeking behaviour. Studies have also found that perceived risk of prostate cancer and low knowledge about the disease and prostate cancer screening methods play an important role in cancer screening utilization⁽⁸⁾. Problems associated with prostate cancer screening alongside the reported paucity of local data on the knowledge of prostate cancer among at risk men as well as the documented poor knowledge even where awareness was present underscores the need for this study⁽⁹⁾.

It can be prevented and its prevalence reduced by increasing knowledge attitude, identifying risk factors and conducting frequent screenings. This study aimed to assess the level of knowledge and attitude of prostate cancer and its associated factors among men visiting the urology department at Fallujah teaching hospital, Iraq.

Materials and Methods

3.1. Study design:

The study was a descriptive cross-sectional study conducted among men (aged 40 years and above) residing in Fallujah, Al-anbar State, Iraq.

3.2. Setting and period:

The study was conducted among 150 patients who visit the outpatient Clinics (Urology Consultation) at Fallujah teaching hospital, that receives all cases related to diseases of the reproductive and urinary system. The study was conducted over a three-month period from December 2023, to January, 2024.

3.3. Study Population and Sampling size:

The study population was patients who visit the outpatient clinic (Urology Consultation) at Fallujah teaching hospital, Iraq. Non-probability purposive sampling was used to include 150 patients. The sample size was determined using Raosoft because of its great strength, exceptionally robust reliability, and its proven system that possesses high data integrity. Also utilizing the sample size is determined using a single population proportion formula, taking into account the following assumptions: = total population (patient) = 420, 95% confidence, 5% error $5/100 = 0.05$; if $N = 420$, $n = \text{sample size}$ $E = \text{margin of error}$ $n = N / [1 + (N)(E)^2]$ $n = 420 / [1 + 150(0.05)^2]$, $n = 420 / [1 + 420(0.0025)]$, $n = 420 / [1 + 0.3325]$, $n = 420 / 1.3325$ $n = 201$.

3.4. Inclusion and exclusion criteria:

The study sample frame was composed of all males aged 40 years and above, the men with diseases of the reproductive and urinary system. The men without prostatic cancer. Exclusion criteria: The men who had undergone Prostatectomy, the men who already have prostate cancer, the men age under 40 years old.

3.5. Study instruments and Data collection procedure:

A structured self-administered questionnaire was used that contained questions organized in three sections. Section A: sociodemographic information with seven items; Section B: prostate cancer knowledge with 20 items to measure the level of knowledge about prostate cancer and screening, which consisted of (20) items developed by researcher based on the existing resources to assess knowledge of patient regarding risk factors, signs and symptoms of prostate cancer and diagnosis and early detection methods patients' knowledge of prostate cancer was

ranked according to its score. Two-point was awarded for a correct response, while a wrong response received (1) point. This gives a minimum score of '20' and a maximum score of (40) points; Section C: attitude towards prostate cancer screening with 20 items on personal attitudes about prostate cancer and screening, and each item was measured on a four-point Likert-type scale (i.e., 1=strongly disagree, 2=sort of disagree, 3=sort of agree, 4=strongly agree). This gave possible minimum and maximum sum total scores of 20 and 80 for attitude. The data were gathered face-to-face using a questionnaire based on the objectives and study questions. To prevent variance in data collection, data collectors were trained on how to Arabize the questions in a session designed specifically for this purpose, prepared by Majeed and Atiyah (2021)⁽¹⁰⁾.

3.6. Ethical considerations:

Ethical clearance and approval were granted by the ethical permission obtained from the scientific and research committee at the college of Nursing- university of Baghdad (No. 30/11/2023-2307), the researcher submitted description including the objectives and project of the study to the Ministry of Planning (Central Statistical Organization) and to the Ministry of Health/ Anbar Health Directorate in order to obtain an official permission to accomplish the research at Fallujah teaching hospital. Participation was completely voluntary and written informed consent from patients and were assured that their responses would be confidential.

3.7. Data analysis:

The collected data were coded and entered twice independently on Microsoft Excel then later exported and analysed using the Statistical Package for Social Science (SPSS) version 26.0. Descriptive statistics were used to summarize the data frequency and percentages were used to describe categorical variables. Inferential statistics were utilized Chi-square test was used to determine the association between the socio-demographic data and the level of knowledge and attitude. The Pearson correlation coefficient (r) was used to establish the association between knowledge, and attitudes towards PC. At P value less than or equal to 0.05 was considered statistically significant. The duration of the study started from 20th December 2023, to 1st January, 2024.

Results:

A total of 150 males completed the questionnaire, of whom the majority were between 40–49 years old (54.7%) with an average age of 48.48 ± 9.402 years. Around 90% were married and about nearly to half had a university level of education with only 1% reporting no formal education. More than one third of the respondents (44%) were employed. Regarding monthly income, indicates that 53.3% of participants have a monthly income of (300000-600000) Iraqi dinars. Most of the participants (95.3%) reported a no have personal history of prostate conditions such as prostatic cancer. Three-quarters of the sample were from the urban region (72.7%), while the rest were distributed across other regions of Fallujah city. [Table 1]. Table (2) showed that presents the results of the participants' responses to each of the PC knowledge questions. Around 55.7% of the respondents had inadequate level of knowledge about risk factors and early diagnosis of prostate cancer based on mean of score (1.30). In addition, 44.3% had adequate knowledge about PC according to total of mean (1.45). Table (3) represents respondents' attitudes towards prostate cancer early diagnosis screening. More than half

of all men (97.3%) positively responded towards adults PC screening, 4% had a negative attitude towards the effectiveness of treatment for PC, about 2.7% had a negative attitude towards screening for PC if a person is healthy and fit, reported that they would only consider going for PC screening when sick/ill.

Figure 1 depicts that approximately more than half of the participants (55.3%) possess insufficient knowledge level of prostate cancer, nearly half of them (44.7%) have a fair level of knowledge. Figure (2), shows that, majority of participants (97.3%) had strong positive attitudes towards and early diagnosis detection of prostate cancer and intention to perform screening test, while (2.7%) of the participants had negative

attitudes towards early detection of prostate cancer and no one had strong negative attitude towards early detection of prostate cancer. Table 4 shows statistically significant differences between socio-demographic characteristics and level of knowledge regarding marital status, educational level, occupation, monthly income, and residence at a P- value <0.05. Additionally, this table showed statistically significant differences between socio-demographic characteristics and attitude levels regarding age, educational level, occupation, monthly income, and residence at a P- value <0.05. Table (5) indicated that there is moderate positive correlation between knowledge and attitude variables ($r=0.330$).

Table (1): Distribution of Sample According to their Socio-Demographic Characteristics

Demographic Variables	Study Participants (N=150)		
	Groups	Frequency	Percentage
1. Age groups	40-49 Years	82	54.7
	50-59 Years	35	23.3
	60 Years & above	33	22.0
2. Marital status	Single	10	6.7
	Married	135	90.0
	Widowed	2	1.3
	Divorced	2	1.3
	Separated	1	0.7
3. Educational level	Illiterate	1	0.7
	Read & write	1	0.7
	Primary	22	14.7
	Intermediate	24	16.0
	Secondary	18	12.0
	Diploma	21	14.0
	College	56	37.3
	Post-graduate	7	4.7
4. Occupation	Employee	66	44.0
	Free work	57	38.0
	Retired	19	12.7
	No working	8	5.3
5. Monthly Income	300.000-600.000	80	53.3
	601.0000-900.0000	50	33.3
	900.1000 & Above	20	13.3
6. Family history related to PCa	No	143	95.3
	Yes	7	4.7
7. Residence	Urban	109	72.7
	Rural	41	27.3

F= Frequency, %= Percentage

Table (2) Descriptive Analysis of Overall Patients Knowledge Toward Contributing Factors and Early Detection of Prostate Cancer

Assessment	Frequency	Percentage	Ms+Sd
Poor knowledge	83	55.3	1.30 ±
Fair knowledge	67	44.7	1.45±0.499
Good knowledge	0.00	0.00	

F=Frequency, %= percent, M.S= mean score, SD=standard deviation, Assess=Level of assessment, 1-1.33= Poor (P), 1.34-1.66= Fair (F), 1.67-2= Good (G)

Table (3) Descriptive Analysis of Overall Patients attitude Toward Contributing Factors and Early diagnosis of Prostate Cancer

Assessment	Frequency	Percentage	Ms+Sd
Strong positive attitude	74	49.3	3.47±0.552
positive attitude	72	48.0	
Strong negative attitude	0.00	0.00	
Negative attitude	4	2.7	

*M.S. = Mean of score, SD=Standard deviation, *Ass. = the level of assessment, 1- 1.74 = Strong negative (Sn), 1.75-2.49= Negative (N), 2.50-3.24= Positive (P), 3.25-4= Strong positive (SP)

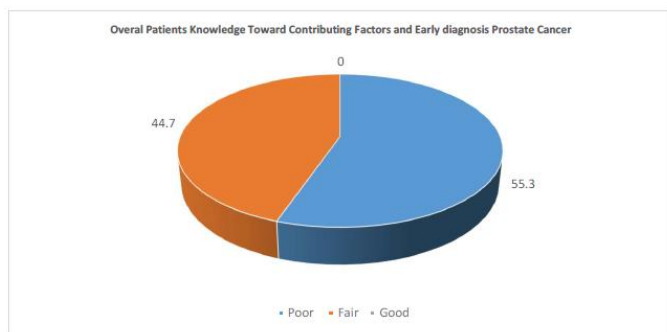


Figure (1): Distribution of the studied patients regarding knowledge concerning contributing factors and early detection of prostate cancer (N=150).

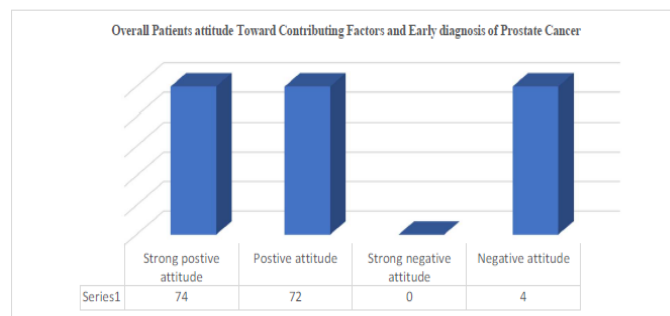


Figure (2): Distribution Of The Studied Patients Attitude Concerning Contributing Factors and Early Diagnosis of Prostate Cancer (N=150)

Table (4) Association between Socio-Demographic Characteristics and Level of Patients Knowledge Toward Prostate Cancer

Variables	Knowledge level			Attitudes level		
	Chi-Square	P value	Sig.*	Chi-Square	P value	Sig.
Age groups	.400	.161	NS	.273	.014	H.S
Marital status	.637	.000	H.S	.798	.058	N.S
Educational level	.462	.014	H.S	.445	.000	H.S
Occupation	.462	.014	H.S	.310	.002	H.S
Monthly Income	.384	.025	H.S	.810	.000	H.S
Family history	.241	.189	NS	.404	.174	N.S
Residence	.303	.020	HS	.465	.016	H.S

* Sig. = significance level ≤ 0.05 = significant

Table (5) Association of the Sample Knowledge and Attitudes by Pearson Correlations

Pearson Correlation	P value	Sig.
0.033	.0044	Significant

Sig. = significance level

Discussion:

This study was carried out to explore males' knowledge, and attitude, toward risk factors and early diagnosis of PC in Fallujah, Alanbar State, Iraq. A total of 150 respondents participated in this study. Table 1 represents the demographic profile of respondents; 54.7% were aged between 40-49 years with an average age of 48.4 ± 9.402 years, 90% were married, nearly of half of participants 44% were employed and more than one third of the respondents (37.7%) hold bachelor degree. Similar findings were also found in a many studies⁽¹¹⁻¹²⁾. The marital status shows that 90% of responding were married this results are similar findings have been observed in different study in world indicated that majority of study participants were married^(12,13,14). Nearly of half of the participants (37.3 %) had a university level of education and were (44%) of patients were employee. These findings are consistent with findings by⁽¹⁵⁻¹⁷⁾ who reported More than half (43 %) of respondents had bachelor education, followed by secondary (28. %) and primary (8.30%). 3.00% of respondents had no formal education. The occupational status refers that 44 % of participants are working as governmental employees and this concurs with the findings from other studies⁽¹⁸⁻²⁰⁾. Regarding residency, most of Participants are resident in urban areas (72. 7%). This finding are in the same line with results obtained from many studied⁽²¹⁻²³⁾. Regarding family history related to PCa, 95.3% of participants stated that no had family history related to PCa, only few percentage 4.7% had family hisyory. This results are agree with results from study indicated either don't know or

doesn't have a family history of prostate cancer⁽¹⁰⁾. Our findings indicate that more than half of the men in this population (55.3%) have poor knowledge about prostate cancer. Similar ndings have recently been reported among men in Nigeria, South Africa and black men in the Caribbean, America and Africa^(8,10,21). Our study ndings also corroborate with similar study conducted in Ghana which support the assertion that poor knowledge about prostate cancer is associated with low utilization of screening services⁽²²⁾. Similar findings have been observed in Italy, where physicians, family, and friends were informants. On the contrary, television and newspapers were identified as sources^(23,24). This findings agree with study conducted in 2022 on Jordanian men awareness of PC, there was a remarkable lack of knowledge about PC screening among men aged 40 years or more⁽²⁵⁾. Similar findings were observed in a study conducted among men in Ghana, where 69.6% of the respondents reported that they were not aware that prostate cancer was an asymptomatic disease⁽²⁶⁾. The lack of knowledge about the location of the prostrate and prostate cancer symptoms implies the risk of disregarding local symptoms such as urinary frequency, urgency, dysuria which often present due to the enlargement of the prostate hence a risk of late presentation and consequently poor prognosis⁽²⁷⁾. There are also similar results of another study conducted to assessing knowledge, practice and attitude towards prostate cancer screening among male patients aged 40 years and above at Kitwe Teaching Hospital, Zambia. results of the study revealed that (33.5%) had heard about prostate cancer and 58 (29%) expressed knowledge of prostate cancer out of which 37 (63.8%) had low knowledge⁽²⁸⁾. Similar findings were also found in a study conducted in Muldersdrift among patients attending a Urology clinic where more than half (54.4%) had never heard about PC, and 90.2% of respondents never knew of the existence of prostate cancer⁽²⁹⁾. Majority participants had a positive attitude; the median attitude score is

79.3%. The majority of participants accepted their responsibility of prostate early detection and screening. In addition, most participants recognized their role in providing information and recommendation on PC screening. Finally, most participants are interested in learning more about PC. this results is agree with study done by⁽³⁰⁾. Who stated that attitude There was an overall prevalence of a neutral attitude (58.6%) among the participants. In a Saudi Arabian study, the mean total attitude score was greater than the midpoint. In the same Saudi Arabian study, most participants believed that early detection of PCa through screening could improve the survival of men. Similarly, the majority of the participants in this study believed there is value in early diagnosis through screening. In our study, more than three quarters of respondents (84.9%) demonstrated positive attitudes towards the PC. Above 67.8% of men showed positive attitudes towards undergoing PC screening⁽³¹⁾. The current results are slightly different from a study conducted in SA in which only one out of 182 men had been screened for PC ⁽²⁹⁾ . Poor PC screening rates among men might be connected to the fact that the primary health care in rural communities might not readily have screening services available. To attain a sustainable, effective control and treatment of this cancer, the health care sector and other NGOs should incorporate and strengthen their services to focus more on raising awareness about PC to the public and providing screening services in all primary health care facilities. This results are accordance with results of study showed that, between 9.00% and 66.00% of respondents perceived a negative attitude, whereas between 33.00% and 90.00% of respondents perceived a positive attitude amongst items related to attitudes towards prostate cancer⁽³²⁾. Regarding association between socio-demographic variables and knowledge the showed that there is significant association between socio-demographic variables and knowledge contributing factors and early detection of prostate cancer there are high significant between knowledge and sociodemographic variables in all variables except age groups and residence. at p value ≤ 0.05 and this concurs with the findings from other studies ⁽³³⁻³⁵⁾. The correlatioship between knowledge and attitudes' had a statistically significant effect on the knowledge level and attitudes towards prostate cancer in which participants had a higher level of knowledge and a more positive attitude ($P < 0.001$). In contrast, the age, education level, and occupation status had significant effect on both the level of knowledge and attitude ($P \geq 0.05$) (Table 4,5). The results of our study regarding association between socio-demographic variables and knowledge can also be supported by results from global research conducted in many countries around the world ⁽³⁶⁻³⁷⁾. Attitude towards prostate cancer had a significant association with age group with a p-value of 0.001. The higher number of participants with good attitude towards prostate cancer was from the older adult age group. This was supported by a study conducted in Negeri Sembilan, where the highest number (15.10%) of good attitudes was seen in the age group of 51-60 years old. Besides that, there was a significantly higher number of participants with good attitude from the higher income group with a p-value of <0.001 ⁽³⁸⁾.

Limiation of study: The study was conducted on a small sample size of 150 male, which may not be representative of the larger population. A larger sample size would have provided more accurate results. The data collected in the study was based on selfreported responses, which may have introduced biases or inaccuracies in the results. Respondents may have provided

socially desirable answers or may not have accurately recalled their knowledge or family history.

Conclusions:

In conclusion, this research study was fundamental because it was the first study to be conducted in the city of Fallujah to evaluate men's knowledge about prostate cancer in the group most at risk of developing prostate cancer. The results of the current study showed that the study participants do not have a sufficient level of knowledge, with knowledge varying in specific aspects in some questionnaire items about contributing factors, early detection of prostate cancer, and intention to be screened. The study recommended that male patients at Fallujah Teaching Hospital be encouraged to undergo prostate cancer screening and recommended that they should undergo prostate cancer screening as part of their routine medical examination. The increase in PC morbidity and mortality calls for studies to explore men's knowlege, attitudes, and and early diagnosis screening behaviours to detected PC. Although men reported positive attitudes, our respondents' lack of knowledge regarding PC control, early detection, diagnosis, and effective management among men in Fallujah province. Demographic variables were significantly associated with male PC knowlege and attitudes. Health status predicted awareness about PC, while age and health status predicted attitudes towards PC among men. We recommended conducted programmes and heightened awareness campaigns are needed to conscientize men about the risk factors, symptoms, diagnosis, and treatment of this deadly disease in Fallujah province.

Acknowledgment

The authors acknowledges all participants for taking part in this study and the Chief for granting us permission to conduct the study in Fallujah teaching hospital.

Funding:

Funded by authors

Author contribution

All authors contributed to the study conception and design and material preparation. All authors have agreed on the final version by drafting the article and revising it critically for important intellectual content.

Conflict of interest

The authors declare no conflict of interest.

References

1. SungH., Ferlay J., Siegel R L., Laversanne M., Soerjomataram I., Jemal A., Bray F. *Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: a cancer journal for clinicians.* 2021; 71(3):209-249. doi: 10.3322/caac.21660
2. Ferlay J., Colombet M., Soerjomataram I., Mathers C., Parkin D.M., Piñeros M., Znaor A., Bray F. *Estimating the global cancer incidence and mortality in 2018: GLOBOCAN sources and methods. Int. J. Cancer.* 2019;144:1941–1953. doi: 10.1002/ijc.31937.
3. Maladze N, Maphula A, Maluleke M, Makhado L. *Knowledge and Attitudes towards Prostate Cancer and Screening among Males in Limpopo Province, South Africa. Int J Environ Res Public Health.* 2023 Mar 22;20(6):5220. doi: 10.3390/ijerph20065220.
4. Alqudah MAY, Al-Samman R, Matalgah O, Abu Farhah R. *Early Detection of Prostate Cancer: Self-Reported Knowledge*

- and Attitude of Physicians in Jordan. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*. 2022;59. doi:10.1177/00469580221095822.
4. Lin L, Li Z, Yan L, Liu Y, Yang H, Li H. Global, regional, and national cancer incidence and death for 29 cancer groups in 2019 and trends analysis of the global cancer burden, 1990–2019. *Journal of Hematology & Oncology* [Internet]. 2021 Nov 22;14(1). Available from: <https://doi.org/10.1186/s13045-021-01213-z>
 5. Makungu M L., Mweya C N. Assessing knowledge, attitude and practice towards prostate cancer screening among males in Southwest Tanzania: A cross-sectional study. *Cancer Treatment and Research Communications*.2023; 36: 100716. <https://doi.org/10.1016/j.ctarc.2023.100716>.
 6. Ghunaim A., Aljohani H., Alharbi Y. The extent of knowledge and awareness of prostate cancer screening among Saudi men aged more than 40 years. *Egypt J Hosp Med*. 2018; 70:1185-9. 10.12816/0044547
 7. Zakaria E., Alahmadi E. Prostate cancer awareness and knowledge among men residents in Al-Madinah Al-Munawarah, Saudi Arabia: a surveillance study. *Acta Sci Med Sci*. 2022; 6:35-44. 10.31080/asms.2022.06.1158.
 8. Bugoye F C., Leyna GH., Moen K., MmbagaE J. Knowledge, perceived risk and utilization of prostate cancer screening services among men in Dar Es Salaam, Tanzania. *Prostate cancer*.2019;1-6. <https://doi.org/10.1155/2019/2463048>.
 9. Onilude OO., Vaz E. Urban sprawl and growth prediction for Lagos using globeLand30 data and cellular automata model. *Sci*. 2021; 3: 23. <https://doi.org/10.3390/sci3020023>
 10. Majeed HM, Atiyah HH. Assessment of Employees' Knowledge Concerning Contributing Factors and Early Detection for Prostate Cancer in Baghdad University Colleges in bab-Almudam. *Indian Journal of Forensic Medicine & Toxicology*. 2021;15(1):1712-7.
 11. Atiyah HH, Majeed HM. Determination of Employees' Attitudes Concerning Contributing Factors and Early Detection for Prostate Cancer in Baghdad University Colleges in bab-Almudam. *Kufa Journal for Nursing Sciences*. 2020 Dec 20;10(2):31-7.
 12. Majeed HM, Hassan AF, Jasim AH, Al-Ganmi AHA. Evaluation of nurses' practices and perceived barriers related to pain assessment in critically ill patients at Baghdad teaching hospitals. *Azerbaijan Pharmaceutical and Pharmacotherapy J* [Internet]. 2023 Jun 30;22(1):64–9. Available from: <https://doi.org/10.61336/appj/22-1-14>
 13. Hassan AF, Majeed HM, Jasim AH. Assessment of Undergraduate Critical Care Nursing Students' Knowledge and Attitudes toward Caring of Dying Patients In Colleges of Nursing at Baghdad University. *Indian Journal of Forensic Medicine & Toxicology*. 2020 Jul 30;14(3):1142-6.
 14. Majeed HM. Determination of Factors Affecting Treatment Compliance among Hypertension Patients in Baghdad Teaching Hospital. *International Journal of Science and Research (IJSR)*. 2017 Apr;6(4):2319-7064. DOI: 10.21275/ART20173025.
 15. Kadhim AJ, Majeed HM, Khudur KM. Evaluation of Nurses' Interventions for Adult Patients with Thrombocytopenia at Baghdad City. *ResearchGate* [Internet]. 2017 Nov 27; Available from: <https://doi.org/10.9790/1959-0604043337>
 16. Kareem, S. H., Muslim, M. S., Abdulhassan, S. A., & Majeed, H. M. (2023). Nurses' Perception Toward Therapeutic Strategies for Children with Pneumonia. *Journal of Pioneering Medical Sciences*, 12(1).
 17. Majeed HM, Hassan AF, Abid RI. Evaluation of nurses' knowledge and attitudes toward pain management at Baghdad Teaching Hospitals. *Indian Journal of Forensic Medicine & Toxicology*. 2020 Apr 29;14(2):1575-9.
 18. Jasim AH, Majeed HM, Mohammed TR. Knowledge and Protective Health Behaviors Concerning Risk Factors for Coronary Heart Disease among Baghdad University Students. *Medico Legal Update*. 2020 Apr 1;20(2):234-9.
 19. Al-Alreda JJA, Majeed HM .Assessment of nursing students knowledge regarding Hepatitis B virus at Iraqi Nursing Colleges. . *International Journal of Science and Research (IJSR)*. 2017 Apr;6(5):236-240. DOI: 10.21275/ART20173025.
 20. Saeed AE, Mohammed TR, Hameed DM, Majeed HM. Critical care Nurses' Knowledge concerning Metabolic Syndrome: A Cross Sectional Design Study. *Azerbaijan Pharmaceutical and Pharmacotherapy J* [Internet]. 2023 Dec 31;22(2):40–4. Available from: DOI: 10.21275/ART20173025 10.61336/appj/22-2-12
 21. Ojewola RW., Oridota ES., Balogun OS., Ogundare EO, Alabi TO., Banjo OO., Laoye A., Adetunmbi B., Adebayo BO., Oluyombo R. Knowledge, attitudes and screening practices regarding prostatic diseases among men older than 40 years: a population-based study in Southwest Nigeria. *Pan Afr Med J*. 2017 Jun 30;27:151. doi: 10.11604/pamj.2017.27.151.10605.
 22. Yeboah-Asiamah., B Yirenya-Tawiah., D Baafi D.,Ackumey MM. Perceptions and knowledge about prostate cancer and attitudes towards prostate cancer screening among male teachers in the Sunyani Municipality, Ghana. *African Journal of Urolog* 2017;23(4) 26-31. <https://doi.org/10.1016/j.afju.2016.12.003>
 23. Morlando M., Pelullo CP., Di Giuseppe G. Prostate cancer screening: Knowledge, attitudes and practices in a sample of men in Italy. A survey. *PLoS ONE*.2017; 12(10): e0186332. <https://doi.org/10.1371/journal.pone.0186332>.
 24. Ojewola RW., Oridota ES., Balogun OS., Ogundare EO., Alabi TO., Banjo OO., Laoye A., Adetunmbi B., Adebayo BO., Oluyombo R. Knowledge, attitudes and screening practices regarding prostatic diseases among men older than 40 years: a population-based study in Southwest Nigeria. *Pan Afr Med J*. 2017 Jun 30;27:151. doi: 10.11604/pamj.2017.27.151.10605.
 25. Alqudah MAY, Al-Samman R, Matalgah O, Abu Farhah R. Early Detection of Prostate Cancer: Self-Reported Knowledge and Attitude of Physicians in Jordan. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*. 2022;59. doi:10.1177/00469580221095822
 26. Maladze N., Maphula A., Maluleke M., Makhado L. Knowledge and attitudes towards prostate cancer and screening among males in Limpopo Province, South Africa. *International Journal of Environmental Research and Public Health*.2023; 20(6): 5220.
 27. Rosario E., Rosario DJ. Localized Prostate Cancer. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan. [Updated 2021 Oct 1]. Available from: <https://www.ncbi.nlm.nih.gov/books/NB K563248/>
 28. Gift S, Nancy K, Mwanakasale V. Assessment of knowledge, practice and attitude towards prostate cancer screening among male patients aged 40 years and above at Kitwe Teaching Hospital, Zambia. *African Journal of Urology* [Internet]. 2020 Nov 7;26(1). Available from: <https://doi.org/10.1186/s12301-020-00067-0>
 29. Baaitse B. Knowledge, Attitudes and Practices of men concerning prostate cancer in MuldersDrift, South Africa (Doctoral dissertation, University of the

- Witwatersrand).2018;1-125. Available from: <https://wiredspace.wits.ac.za/server/api/core/bitstreams/ddade92c-1778-4684-960a-acd6086c67d6/content>
30. Benedict MOA., Steinberg WJ., Claassen FM., Mofolo N., Van Rooyen C. Knowledge, attitude and practice on screening and early diagnosis of prostate cancer of primary health care providers in the Free State. *Afr J Prim Health Care Fam Med*. 2023 Feb 28;15(1):e1-e12. doi: 10.4102/phcfm.v15i1.3688.
31. Maladze., Ndivhuwo., Angelina M., Mzamani M., Lufuno M. "Knowledge and Attitudes towards Prostate Cancer and Screening among Males in Limpopo Province, South Africa" *International Journal of Environmental Research and Public Health* .2023;20(6):5220. <https://doi.org/10.3390/ijerph20065220>
32. Yee B L., AniA C., Chang W C., Bakar RA. Knowledge And Attitude Towards Prostate Cancer Among Adult Males In Penang, Malaysia. *Journal of Health and Translational Medicine (JUMMEC)*.2020 25(2), 51-57.
33. Saeed AE, -Alreda JJ a. A, Majeed HM. Determination of coronary care unit nurses' knowledge regarding patient rehabilitation after myocardial infarction. *Journal of Pioneering Medical Sciences [Internet]*. 2023 Dec 31;12(3):32–5. Available from: <https://doi.org/10.61091/jpms20231237>
34. Al-Alreda JJA, Majeed HM, Hassan AF. Prevalence and contributed factors for varicose veins in intensive care unit nurses at Baghdad teaching hospitals. *Azerbaijan Pharmaceutical and Pharmacotherapy J [Internet]*. 2023 Dec 31;22(2):33–6. Available from: <https://doi.org/10.61336/appj/22-2-10>
35. Al-Reda JJ, Majeed HM, Hassan AF. Effectiveness of Instructional Program on Nurses' Knowledge Concerning Palliative and Supportive Care for old Adults with Heart Failure. *Bahrain Medical Bulletin*. 2023 Dec 1;45(4)1826-1823.
36. Hassan, Ahmed F.; Majeed, Haider M.; Isam, Safad Riyadh. Nurses' knowledge and protective health behaviors about prevention of COVID-19 pandemic complications at Baghdad Teaching Hospitals. *Journal of Education and Health Promotion* 13(1):107, March 2024. | DOI: 10.4103/jehp.jehp_844_23
37. Majeed HM., Hassan AF., Mousa AM. Students' knowledge and attitude concerning organ donation at Iraqi nursing colleges. *J Educ Health Promot*. 2024 Feb 26;13:60. doi: 10.4103/jehp.jehp_845_23.
38. smail, S., Zainuddin, H., Hamedon, T. R., Juni, M. H., Mohd Zulkefli, N. A., & Muhamad Saliluddin, S. bin. Factors associated with awareness, knowledge and attitude towards prostate cancer among Malay men in traditional Malay villages, negeri sembilan, Malaysia. *Malaysian Journal of Medicine and Health Sciences*. 2018; 14(2), 31–38.