Original Article

Perception of Prostate Cancer in Mexican Men and Willingness for Digital Rectal Examination

Percepción del cáncer prostático en hombres mexicanos y disposición para el tacto rectal

Judith Balderas-Ortega,[*] Nazario U. Arellano-Romero,[*] Daniela Vergara-Sánchez.[**]

Summary

Objective: identify the association between risk perception for prostate cancer and willingness for a digital rectal examination. **Method:** cross-sectional analytical study, 361 people participated through a non-probabilistic sampling by convenience. Risk perception was assessed with the health belief model for prostate cancer, a Likert-type scale validated in Mexican population was used for this purpose, and the willingness for a digital rectal examination was determined through a question. The χ^2 test was used to explore the relation between the risk perception level for prostate cancer, and willingness to perform a digital rectal examination. OR was calculated for the magnitude of association. **Results:** 13.57% of the participants had a good perception of risk, 33.24% had an inconclusive perception, and 53.19% had a poor perception. 35.18% of the participants were willing for a digital rectal examination, and 64.82% refused. 18.9% of the rectal exams performed were abnormal. There is a statistically significant association between risk perception for prostate cancer, and willingness for a digital rectal examination ($p<0.05$). Inconclusive and poor risk perception for prostate cancer were risk factors for a digital rectal examination willingness (OR=16.72, CI 6.54-42.77, and OR=21.5, CI8.62-53.65 respectively), these values were statistically significant. **Conclusion:** risk perception for prostate cancer can influence men's decision making, and performance of digital rectal examination. Interventions aimed at patient education are required to increase men's participation in comprehensive prostate cancer screening.

Keywords: Perception, Prostate Cancer, Digital Rectal Examination, Screening

Received: 08/08/2022
Approved: 10/26/2022

[*]Family Medicine Unit N° 28, Mexican Institute of Social Security. Mexico City, Mexico.
[**]National Center for Gender Equity and Reproductive Health (Centro Nacional de Equidad de Género y Salud Reproductiva). Mexico City, Mexico.

Correspondence:
Judith Balderas-Ortega
judith.mc27@gmail.com

Suggestion for quotation: Balderas-Ortega J, Arellano-Romero NU, Vergara-Sánchez D. Perception of prostate cancer in Mexican men and willingness for digital rectal examination. Aten Fam.2023;30(2):87-92. http://dx.doi.org/10.22201/fm.14058871p.2023.2.85025

Resumen

Objetivo: identificar la asociación entre percepción de riesgo para cáncer prostático y disposición para el tacto rectal. **Método:** estudio transversal analítico, participaron 361 personas mediante muestro no probabilístico por conveniencia. La percepción de riesgo se evaluó con el modelo de creencias en salud para cáncer prostático, se utilizó para ello una escala tipo Likert validada en población mexicana y la disposición para el tacto rectal mediante una pregunta. Se utilizó la prueba χ^2 para explorar la relación entre el grado de percepción de riesgo para cáncer prostático y la disposición para realizar un tacto rectal. Se calculó OR para la magnitud de asociación. **Resultados**: 13.57% de los participantes resultó tener buena percepción de riesgo, 33.24% tuvo percepción no concluyente y 53.19% mala percepción. 35.18% de los participantes tuvo disposición para el tacto rectal y 64.82% se negó. 18.9% de los tactos rectales realizados fue anormal. Existe una asociación estadísticamente significativa entre la percepción de riesgo para cáncer prostático y la disposición para el tacto rectal ($p<0.05$). La percepción de riesgo para cáncer prostático no concluyente y mala fueron factores de riesgo para disposición del tacto rectal (OR=16.72, IC 6.54-42.77 y OR=21.5, IC 8.62-53.65 respectivamente), estos valores fueron estadísticamente significativos. **Conclusión**: la percepción de riesgo para cáncer prostático puede influir en los hombres para la toma de decisiones y la realización del tacto rectal. Se requiere de intervenciones encaminadas a la educación del paciente para incrementar la participación de los hombres en el cribado completo para cáncer prostático.

Palabras clave: percepción, cáncer prostático, tacto rectal, tamizaje

Introduction

Prostate cancer is a public health problem due to the fact that is the second most common tumor in men.[1] During 2020, according to the Global Cancer Observatory (GLOBOCAN), the worldwide incidence of this cancer was 7.3%.[2] In Mexico, prostate cancer had an incidence of 15.2% in 2020 and was the leading cause of death from tumors in men over 60 years old with a mortality of 7.4%. [2-4] Screening for prostate cancer by digital rectal examination is essential for early detection. Four out of ten men are diagnosed with an advanced stage cancer, which impacts years of healthy life, as well as the economics of the patient and the healthcare system. This is alarming in comparison with what is registered in developed countries where five out of every one hundred men present metastasis at the time of diagnosis. In Mexico, two out of every one hundred men have a digital rectal examination done as a screening procedure; therefore, it is necessary to study the causes of the low participation observed in the Mexican population.[5]

According to previously published reports,[6-8] there are factors involved in screening for prostate cancer, ranging from rejection of digital rectal examination due to sociocultural influences on masculinity, to lack of knowledge of its benefits. In the case of Mexico, there is little information on this subject.[9] For this reason, it is important to consider the risk perception for prostate cancer using the health belief model, which explains behaviors regarding preventive actions for different diseases, including prostate cancer.[10,11] Psychosocial factors are fundamental in the decisions, and actions chosen by the individual, being the biopsychosocial model one of the pillars of the Family Medicine approach.

Clinical aptitude, defined as: "The ability to face and solve clinical problems, which involves skills such as reflection, where one's own judgment comes into play",[12] is one of the characteristics that Primary Care level physicians must have when performing a rectal examination as a screening method, since prostate cancer, due to its prevalence and magnitude, is a public health problem in Mexico.

Given the interrelation of the factors above mentioned, this study has the purpose to identify whether there is an association between the risk perception of prostate cancer, and the willingness for a digital rectal examination done in a sample of Mexican patients.

Methods

Cross-sectional analytical study, including male patients between 50 and 70 years of age, patients entitled to the Family Medicine Unit No. 28 of the Mexican Institute of Social Security who attended the Family Medicine outpatient clinics in Mexico City. With prior authorization from the institutional ethics and research committee, the present study was conducted between April and September 2021. The sample size was obtained through a sample calculation for a finite population. The type of sampling was non-probabilistic by convenience. Patients with a diagnosis of prostate cancer, history of prostatectomy, diagnosis of colorectal cancer, diagnosis of hemorrhoid disease, sensory disabilities (blindness and/or deafness), motor

disabilities affecting the lower extremities, and illiterate men were excluded. Patients who did not complete or answered the questionnaire incorrectly were eliminated and replaced by others to complete the sample size.

After informed consent, the age, schooling, and occupation of the participants were collected. Subsequently, a questionnaire, with a Cronbach's alpha of 0.74[9] was applied to assess the risk perception for prostate cancer using the subscale of the health belief model for prostate cancer previously validated, for Mexican population, by Murillo in 2014. The questionnaire consisted of the following questions: 1. I have a high probability of having prostate cancer, 2. I have a high probability of having prostate cancer in the next few years, 3. I have a feeling that I will have prostate cancer at some point in my life, 4. I am afraid that I might die from prostate cancer, and 5. I have a high chance of having prostate cancer compared to other men my age. A Likert-type scale was used with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The interpretation of the total score was made under the following parameter: 20 to 25 points = good perception, 15 to 19 points = inconclusive perception, and 5 to 14 points = poor perception.

Once the questionnaire was answered, the participants were asked if they were willing to have a digital rectal examination, the participants with a positive response were classified as "willing," and those with a negative response were classified as "unwilling". Patients willing for a digital rectal examination, they underwent it at the moment, referring those with abnormal findings to a second care level. Abnormal examinations were considered when palpation revealed a hard consistency of the prostate, and/or a stony-hard nodule.[13]

Participants with inconclusive or poor risk perception were provided with educational guidance regarding prostate cancer screening.

Frequencies, percentages, and mean of the sociodemographic variables were obtained through descriptive analysis. Likewise, the behavior of each question of the applied questionnaire was analyzed according to the score obtained on the Likert-type scale.

The Shapiro-Wilk test was used to evaluate the normality of the study variables. The bivariate analysis was performed using the χ^2 test to find a dependency relation between the level of risk perception for cancer, and the willingness to perform a digital rectal examination, statistical significance was considered for a p value<0.05. Subsequently, the OR was calculate using logistic regression in which the categories of inconclusive risk perception were included, compared with the group with good risk perception (reference group) in order to measure the magnitude of the association. Stata v. 16.0 software was used for statistical analysis.

Results

Sample of 361 male participants, age range was 50 to 70 years with an average of 63.9 years of age. 176 patients were between 65 and 70 years old (48.75%). In relation to the level of education, 15 patients had a postgraduate education (4.16%), 135 bachelor's degree (37.40%), and 104 high school degree (28.81%); the rest had a lower level of education. In terms of occupation, 191 were retired (52.91%), 147 employees (40.72%), 15 unemployed (4.16%), while 8 were laborers (2.22%).

Regarding risk perception for prostate cancer, 49 participants were found to have a good risk perception (13.57%), 120 had an inconclusive perception (33.24%) and, 192 had a poor risk perception for the disease (53.19%). The majority of the participants with good risk perception (n=49) had higher levels of education,

Table 1. Characteristics of Participants According to the Perception of Risk for Prostate Cancer

Variables		Risk Perception for Prostate Cancer		
		Good n=49 (%)	Inconclusive n=120 (%)	Poor n=102 (%)
Level of Education	Elementary	0 (0)	7 (5.83)	26 (13.54)
	Junior High-School	2 (4.08)	12 (10)	60 (31.25)
	High-School	6 (12.24)	40 (33.33)	58 (30.20)
	Bachelor's Degree	33 (67.34)	56 (46.66)	46 (23.95)
	Postgraduate	8 (16.34)	5 (4.18)	2 (1.06)
Occupation	Laborer	0 (0)	4 (3.33)	4 (2.08)
	Employee	32 (65.30)	51 (42.50)	64 (33.33)
	Retired	16 (32.65)	61 (50.83)	114 (59.37)
	Unemployed	1 (2.05)	4 (3.34)	10 (5.22)

and were employees. It was found that, of the participants with inconclusive perception (n=120), 56 had a bachelor's degree (46.66%), and 61 were retired (50.83%); compared to those with poor risk perception (n=192), of whom 60 had completed high school (31.25%), and 114 were retired (59.37%), see table 1.

The behavior of each question of the applied questionnaire, on the perception of risk for prostate cancer was analyzed. Scores of questions 1 and 4 were the highest on the Likert-type scale (good risk perception). Of the total number of participants (n=361), 117 strongly agreed that they were afraid of dying from this cancer (question 4), (32.4%), and 87 responded that they agreed that they had a high probability of having prostate cancer (question 1), (24%). On the other hand, scores of questions 3 and 5 were the lowest on the Likert-type scale (poor risk perception). 150 participants strongly disagreed that they had a feeling that they would have prostate cancer at some point in their lives (question 3), (41.5%), and 138 reported strongly disagreeing that they had a high probability of having prostate cancer compared to other men of the same age (question 5), (38.2%).

Regarding willingness for a digital rectal examination,127 of the participants reported willingness (35.18%), while 234 refused the procedure (64.82%). Of the total number of participants willing for a digital rectal examination (n=127), 46 prostate examinations were normal (36.22%), 24 had abnormal findings (18.9%), and 57 were deferred due to patient refusal at the time of starting the procedure (44.88%). Of the participants willing to undergo digital rectal examination (n=127), 70 had a bachelor's degree (55.11%), and 73 were

Table 2. Characteristics of Participants According to Willingness for Digital Rectal Examination

Variables		Willingness for Digital Rectal Examination	
		Willing n=127 (%)	Unwilling n=234 (%)
Level of Education	Elementary	6 (4.72)	27 (11.53)
	Junior High-School	13 (10.23)	61 (26.06)
	High-School	28 (22.04)	76 (32.47)
	Bachelor's Degree	70 (55.11)	65 (27.77)
	Postgraduate	10 (7.90)	5 (2.17)
Occupation	Laborer	3 (2.36)	5 (2.17)
	Employee	73 (57.48)	74 (31.62)
	Retired	46 (36.22)	145 (61.96)
	Unemployed	5 (3.94)	10 (4.25)

Table 3. χ^2 Test for Risk Perception for Prostate Cancer and Willingness for Digital Rectal Examination

Willingness for Digital Rectal Examination	Risk Perception for Prostate Cancer			p
	Good	Inconclusive	Poor	
Willing	43	36	48	<0.001
Unwilling	6	84	144	
Total	49	120	202	

Table 4. Calculation of OR and Pseudo R2 Between Digital Rectal Examination Willingness and Risk Perception Level for Prostate Cancer

Willingness for Digital Rectal Examination	OR	CI 95%	p	Pseudo R2
Inconclusive risk perception for prostate cancer	16.72	6.54 - 42.77	<0.001	14.79%
Poor risk perception for prostate cancer	21.5	8.62 - 53.65	<0.001	

OR = Odds ratio, CI = Confidence interval, Pseudo R2 = Maximum plausibility estimation

employees (57.48%); compared to those without willingness for the procedure (n=234), of whom 76 had completed high school (32.47%), and 145 were retired (61.96%), see table 2.

A statistically significant relation (p<0.05) was found between the variable of risk perception for prostate cancer and the variable of willingness for digital rectal examination, see table 3.

To determine the association between the variables of interest and their magnitude, a logistic regression was performed, and it was identified that having an inconclusive risk perception for prostate cancer increases 16.72 times the probability of not being willing to undergo a digital rectal examination, compared to having a good risk perception, with statistical significance. While having a poor risk perception for prostate cancer increases 21.5 times the likelihood of not being willing to undergo a digital rectal examination, these values were statistically significant. The variability of willingness for a digital rectal examination is explained by 14.79% by the level of risk perception for prostate cancer (pseudo R2), see table 4.

Discussion

In this research, it was found that 13.57%, a low percentage, of the participants had a good risk perception for prostate cancer, compared to other national and international publications. In Mexico, according to Murillo,[9] 55.3% of the studied population presented a good risk perception for this cancer; while in countries such as Ghana, the percentage reported was 81.8%.[14]

Regarding the percentage of patients willing to undergo a digital rectal examination, this study showed that 35.18% of the participants accepted this procedure; this result was similar to that reported by Fajardo and Jaimes,[15] who reported 33.8%, which exceeds that reported by the National Cancer Institute, where two out of every one hundred men undergo a digital rectal examination (2%).[5] This contrasts studies conducted in other countries. According to Yeboah et al.[14] (Ghana), and Paredes and Shishido[8] (Peru), 95.6% and 100% of men, respectively, were willing to have this procedure. This could be related to the findings in literature where Mexican sociocultural context influences the unwillingness of patients to have a digital rectal examination done. According to the research of Cordoba et al.,[7] the rejection for digital rectal examination in Mexican men is secondary to sociocultural influences on traditional homophobic masculinity, shame, modesty, and fear of feeling pain when imagining digital rectal examination as a diagnostic test for prostate cancer.

Referral to second care level of patients with abnormal findings during rectal examination is relevant since, according to the literature, approximately 18% of prostate cancers were detected by an abnormal digital rectal examination, regardless the level of Prostate-Specific Antigen.[16]

Risk perception for prostate cancer is a dependent factor for willingness to perform a digital rectal examination, since in this study a statistical significance was found (p<0.05); both for the category of inconclusive perception compared to having a good risk perception. These findings coincide with those described in the research carried out by Chamorro et al.[17]

On the other hand, it is important to point out that the level of education is relevant to understand the factors that can influence a patient to have a good risk perception for prostate cancer, and to accept a digital rectal examination as a method of early detection of this cancer. Participants with a higher level of education had a higher percentage of acceptance. Participants with undergraduate and graduate degrees, 51.85% and 66.66%, respectively, accepted to undergo a digital rectal examination. These findings in Mexican population support the findings of other published reports, such as Zare et al.,[18] Baratedi et al.[19] Coughlin et al.,[20] and, finally, Cowman et al.,[21] which demonstrate that higher levels of education can positively influence preventive behaviors for prostate cancer, while perceptions, attitudes and beliefs are relevant in men's decisions to accept or refuse prostate cancer screening.

One of the main strengths of this study was the sample size that allowed the observation of the association between risk perception for prostate cancer, and acceptance for a digital rectal examination. In addition, learning was provided to those participants who required it, since part of the role of the Family Physician is health education. Participants with abnormal findings on digital rectal examination were referred to a second care level for comprehensive, and timely care.

One of the limitations of the present study was the presence of a third group of participants, those who responded that they were willing for a digital rectal examination, but refused, at the time of starting, to undergo this procedure. This could represent a bias for the results, as these participants were not really willing to have a digital rectal examination.

One of the recommendations for further studies is to include the perception of Primary Care physicians towards the practice of digital rectal examination as a screening method for prostate cancer.

Conclusion

The results of this study showed the importance of considering the patient's risk perception with respect to a disease, in this case prostate cancer, since it can influence the decision making process to accept to undergo a digital rectal examination. It is necessary to design interventions aimed at patient education, in order to increase the participation of men in prostate cancer screening; this long-term strategy will allow timely diagnosis and a decrease in complications and costs.

Authors' Contribution

J B-O: conceptualization, development, writing, survey application, analysis, and discussion of results; N A-R: conceptualization, development, and writing; D V-S: development, writing, analysis, and discussion of results. All authors approve the publication of this text.

Funding

This research did not receive external funding.

Conflicts of interest

The authors declare not having conflicts of interest.

References

1. Gandaglia G, Leni R, Bray F, Fleshner N, Freedland S, Kibel A, et al. Epidemiology and Prevention of Prostate Cancer. Eur Urol Oncol. 2021;4(6):877-92. DOI: 10.1016/j.euo.2021.09.006
2. Global Cancer Observatory. Prostate fact sheet [Internet]. [Accessed May 19, 2022]. Available at: https://gco.iarc.fr/today/data/factsheets/cancers/27-Prostate-fact-sheet.pdf
3. Global Cancer Observatory. Cancer today [Internet]. [Accessed May 20, 2022]. Available at: http://gco.iarc.fr/today/home
4. National Institute of Statistic and Geography. EAP CANCER22 [Internet]. [Accessed May 19, 2022]. Available at: https://www.inegi.org.mx/contenidos/saladeprensa/aproposito/2022/EAP_CANCER22.pdf
5. National Cancer Institute. OPUS. Prostate cancer [Internet]. [Accessed May 20, 2022]. Available at: https://prostatamexico.org/cancer-de-prostata/
6. Almeida É, Souzas R, Dos-Santos E. "Affected by tocuh": meanings attributed by men to prostate cancer prevention practices. Salud Colect. 2020;16:e2176. DOI: 10.18294/sc.2020.2176
7. Córdoba D, Sapién J, Corchado Á, Flores V, Hernández A, Horta P, et al. Rectal examination: meanings of prostate examination for the diagnosis of prostate cancer. Rev Elec Psic Izt. 2018;21(2):772-795.
8. Paredes-Ajalla A, Shishido-Sánchez S. Perception and willingness for a rectal examination in the prevention of prostate cancer. An Fac Med. 2022;83(1):49-53. DOI: 10.15381/anales.v83i1.20779
9. Murillo J. Health beliefs about the timely detection of prostate cancer with the determination of prostate antigen in male patients between 45 and 69 years old in Family Medicine Unit 1 IMSS Aguascalientes Delegation. [Thesis to obtain a specialty degree] Aguascalientes Autonomous University, Mexico; 2014. Available at: http://bdigital.dgse.uaa.mx:8080/xmlui/bitstream/handle/11317/1034/387303.pdf?sequence=1&isAllowed=y
10. Avci I, Altinel B. The Validity and Reliability of Health Belief Scale for Testicular Cancer Self-Examination. Am J Mens Health. 2018;12(3):531-8. DOI: 10.1177/1557988315611226
11. Çapık C, Gözüm S. Development and validation of health beliefs model scale for prostate cancer screenings (HBM-PCS): Evidence from exploratory and confirmatory factor analyses. Eur J Oncol Nurs. 2011;15(5):478-85. DOI: 10.1016/j.ejon.2010.12.003
12. Casas D, Rodríguez A, Tapia E, Camacho E, Rodríguez R. Clinical aptitude in family physicians adhered to clinical practice guidelines. Med E Investig. 2014;2(2):100-6. DOI: 10.1016/S2214-3106(15)30005-4
13. Robles A, Garibay T, Acosta E, Morales S. The prostate: generalities and most frecuente pathologies. UNAM Medical School Magazine. 2019;62(4):41-54. DOI: 10.22201/fm.24484865e.2019.62.4.07
14. Yeboah-Asiamah B, Yirenya-Tawiah D, Baafi D, Ackumey M. Perceptions and knowledge about prostate cancer and attitudes towards prostate cancer screening among male teachers in the Sunyani Municipality, Ghana. Afr J Urol. 2017;23(3):184-91. DOI: 10.1016/j.afju.2016.12.003
15. Fajardo-Zapata Á, Jaimes-Monroy G. Knowledge, perception and willingness about the prostate examination in men older tan 40 years. Rev Fac Med. 2016;64(2):223. DOI: 10.15446/revfacmed.v64n2.53039
16. European Association of Urology. UpDate [Internet]. [Accessed May 19, 2022]. Available at: https://d56bochluxqnz.cloudfront.net/documents/full-guideline/EAU-EANM-ESTRO-ESUR-ISUP_SIOG-Guidelines-on-Prostate-Cancer-2022_2022-04-25-063938_yfos.pdf
17. Chamorro-Jimenez L, Lanazca-DelaCruz C, Figueroa-Gamarra L. Perception of prostate cancer screening in Huánuco, Perú. 2018. Rev Peru Investig En Salud. 2019;3(4):158-66. DOI: 10.35839/repis.3.4.491
18. Zare M, Ghodsbin F, Jahanbin I, Ariafar A, Keshavarzi S, Izadi T. The Effect of Health Belief Model-Based Education on Knowledge and Prostate Cancer Screening Behaviors: A Randomized Controlled Trial. Int J Community Based Nurs Midwifery. 2016;4(1):57-68. PMID: 26793731
19. Baratedi W, Tshiamo W, Mogobe K, McFarland D. Barriers to Prostate Cancer Screening by Men in Sub-Saharan Africa: An Integrated Review. J Nurs Scholarsh. 2020;52(1):85-94. DOI: 10.1111/jnu.12529
20. Coughlin S, Vernon M, Klaassen Z, Tingen M, Cortes J. Knowledge of prostate cancer among African American men: A systematic review. The Prostate. 2021;81(3):202-13. DOI: 10.1002/pros.24097
21. Cowman S, Cowman J, Almumin A, Altailasan F, Weathers E. Knowledge and Attitudes of Men in Bahrain Toward Prostate Cancer. Semin Oncol Nurs. 2021;37(3):151158. DOI: 10.1016/j.soncn.2021.151158