

Full Length Research Paper

Prostate cancer epidemiology and risk factors on North-West – Bank: A retrospective study

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Abstract

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To investigate the enormity of prostate cancer in the North West-Bank, and shed light on underlying risk factors affecting its distribution. We performed a retrospective study among hospitalized patients in West-Bank. 70.000 men aged 40 years or older were our study target. Analysis was based on patient admissions, and statistical methods (ANOVA Test, T-test, Correlation, Chi square test, Descriptive statistics and frequencies and percentile methods) were used. 78 prostate cancers were reported with incidence rate of 10.4 per 100.000 populations. We revealed that the majority of patients (64.1%) were diagnosed in Nablus town and the lowest (6.4%) in Tulkarem town. Risk factors such as type of occupation, number of children, Age and obesity, showed a Pearson correlation and statistical significance at P-Value = 0.05 which was respectively ($p=0.016$, $p=0.018$, $p=0.003$, $p=0.004$). Significant relationship was found between age and infection (P-value = 0.032) and between cancer stage and age (0.021). Prostatic carcinoma strikes disproportionately in different regions in west-Bank, employment types, extended families; aging and obesity were found to be risk factors and vegetarian diet as protective factor. However, lower prevalence was observed when we compared our results with Western Countries. Impact Screening with PSA testing, digital rectal examination and traditional Mediterranean diets with lower consumption of saturated fat altogether may decrease, and hold the promise for early detection and sustained decline in prostate cancer mortality.

Keywords: Vegetarians diet, Prostate Cancer, Epidemiology, Risk Factors, North-West – Bank.

INTRODUCTION

The prostate gland is a small walnut-shaped exocrine glandular organ in man, produces the seminal fluid that nourished and transports sperm. Normally its size about 3 cm long; it weighs about 30 g and it located at the neck of the bladder and in the front of the rectum (Moore,

1992). The prostate surrounds the urethra that carries the urine out of the body during voiding and the sperm during ejaculation. In prostate cancer, normal cells undergo an abnormal transformation - divisions and multiplications of atypical cells without normal control and differentiation

and sometimes invasion to adjacent tissues and eventually invasion and metastasis to remote organs via the bloodstream and the lymphatic system such as; pelvic lymph nodes, bones, lung, and the liver are frequent - Almost all prostate cancers (95%) are adenocarcinomas arise from the secretory glandular cells, and the second most common type is transitional cell carcinoma, and the rarest types include small cell carcinoma and sarcomas (Stamey et al., 1987; Oesterling, 1991). Prostate cancer symptoms may include; difficulty starting or maintaining a urine stream (hesitancy), frequent urination (urgency), Frequent Urination at Night (Nocturia), painful urination and bone pain. Often there are no symptoms, which is why screening is so important (Denham et al., 2005). The relatively low death rate and increase survival statistics from prostate cancer is due to the increase public awareness; early screening and detection tests; preventative medical services; and developed efficient treatment, merit to the availability of sophisticated medical procedures that can help enormously in the early diagnosis (Frankel et al., 2003; Smith et al., 2001). Indeed, since the introduction of prostate-specific antigen (PSA) as a biologic tumor marker in the 1980s, a substantially higher proportion of prostate cancers have been early diagnosed. In fact, the widespread availability of PSA screening testing was found to be relatively effective to detect the disease in asymptomatic and at high risk population (Catalona et al., 1991), or to monitor patient's recurrence with a history of prostate cancer. Despite the uncertainty and incomplete specificity and sensibility of the PSA biomarker, the PSA test still useful in spotting prostate cancer (Rhodes et al., 2003). In the past and before the era of PSA, 35% of all prostate cancers were diagnosed at a metastatic stage with an unfavorable prognosis (World Health Organization (1996; Schmidt et al., 1986). Two decade ago, in the USA, only 60% of patients were diagnosed in incipient stages, while nowadays, due to the PSA detection the discovery rate in early stages has reached 90%, and the survival rate at 5 years after detection is at 100%, after 10 years – 98% and 91% after 15 years (American Cancer Society, 2012). Fritz H. Schröder et al. (2009) reported that PSA-based screening reduced the rate of death from prostate cancer by 20%. Hence, along with a digital rectal exam (DRE), which can detect cancers in men with normal PSA levels, and the availability of biopsy using transrectal ultrasound (TRUS), used to confirm prostate cancer diagnosis and to give extended picture of the cancer grading and location; all these factors pave the way to early treatment strategies, effective surgical treatment and in the end decrease mortality (Schröder et al., 2009). Currently, new specific diagnostic strategies are available. The appropriate diagnosis of prostate cancer is a positive histopathologic examination, feasible with prostate biopsy. Actually, the cornerstone diagnosis method for prostate cancer is prostate biopsy, whether it

is transrectal, perineal or transurethral resection of the prostate (TUR-P). Correct prostate biopsy of the peripheral prostate, apical lower portion as well as posterolateral region, might increase the detection rate up to 96% for adenocarcinoma over 0.5cc volumes (Chen et al., 1997). Epidemiologically, prostate cancer causes more deaths than any other cancer in men aged 55–74 years in many industrialized countries, (Jemal et al., 2011) 4 It is the 2nd most common cancer worldwide for males, and the 5th most common cancer overall, with an estimated 900,000 new cases diagnosed in 2008 (14% of the total in males and 7% of the total overall). It was reported that the incidence rates are highest in Australia/New Zealand and lowest in south-central Asia, with around 25-fold variation in World Age-Standardised (AS) Incidence Rates between the regions of the world (Ferlay et al., 2010). Substantial increases in incidence have been reported in recent years for many countries globally. In fact, incidence rates increased more than threefold (218% increase) between 1975-1977 and 2008-2010 in European Union. Within the 27 countries of the European Union, the highest prostate cancer incidence rates are estimated to be in Ireland (around 183 cases per 100,000) and the lowest rates are estimated to be in Greece (around 28 cases per 100,000) (Malvezzi et al., 2012). This overall rise comprises periods of particularly rapid increase during the early 1990s (44%) and early 2000s (34%). These periods correspond with the introduction of PSA testing from the late 1980s, (Brewster et al., 2000; Pashayan et al., 2006; UK National Screening Committee, 2010) and with increasing rates of PSA testing around the late 1990s (Hsing et al., 2000; Bray et al., 2010; Quinn and Babb, 2002; Melia and Moss, 2001; Melia et al., 2003; Lane et al., 2010). According to American Cancer Society, prostate cancer estimate incidence and deaths in 2013 in the USA is 238,590 and 29,720 respectively. However, only 3% of men with prostate cancer die from the disease comparing to other aggressive cancer types such as lung cancer, where Cancer incidence and mortality statistics estimate incidence and deaths in 2013 is 228.190 and 159.480 respectively (American Cancer Society, 2013). The distribution and variation in the frequency of the prostate cancer is globally different, even is dissimilar in the same country, for example, for decades, African-American men have had the highest prostate cancer incidence rate of any racial ethnic group in the world. At 261.9 new cases per 100,000 in 1993, their rate is two-thirds higher than whites and more than twice as high as rates for Asian-Americans (U.S. Cancer Statistics Working Group, 2010; Ben-Shlomo et al., 2008). The lopsided incidence rates may be multifactorial; where genetics and environmental factor play in harmony to cause the diseases (American Cancer Society, 2013; McIntosh, 1997; Lois Swirsky Gold et al., 2002). In this study we conducted a large retrospective screening and survey among hospitalized, confirmed prostate cancer

Table 1. The Tables below shows the frequencies and the percentages of the study sample: The Relationship between Family History and Prostate Cancer.

Family History		Frequency	Percent
Valid	Brother	2	2.6
	Brother: Lung Cancer	4	<u>5.1</u>
	Father: Prostate Cancer	1	1.3
	Mother: Breast Cancer	4	<u>5.1</u>
	Total	11	14.1
Missing	System	67	85.9
Total		78	100.0

cases located under medication and follow up in different hospitals in North West-Bank, Palestine. This study to our best knowledge is unique in this field where epidemiological studies have rarely been reported in this geographically isolate population. Our primary goals were to enhance the awareness among the population by encouragement the routinely and periodically checkups. The early detection of the disease among males up to 40 years in general, and among males who had a genetic susceptibility or relatives suffered or still suffering from urinary disturbances or prostate cancer is extremely important and has many advantages: firstly, to increase survival and reduce any disease complication in the future and secondly, to facilitate early medical or surgical intervention, thirdly, to increase quality of life. Hence, our specific aims were; 1) To estimate the incidence rate of prostate cancer, and shed light on the different risk factors affecting its distribution, taking in consideration; employment types, geographical location, socio-economical status, diet, lifestyle and habits. 2) To encourage our medical teams to consider proper procedures, medical exams and appropriate technological equipments to detect the disease in its early stages and evaluating any complain from the population at risk seriously. 3) To encourage collaborations and exchange of medical information with other centers within the country and abroad, asking for support, medical help and any new treatment available.

METHODS

A retrospective study which included prostate cancer patients diagnosed between October 1, 1998, and October 31, 2006 was performed for the first time in the northern governorates of West-Bank, Palestine. The patients were recruited from four governmental hospitals in the north of the country (Nablus, Jenin, Tulkarem,

Qalqelya and surrounding rural area). The total numbers of inhabitants in this geographical area are about 750.000, of whom 70.000 men aged 40 years or older.

After obtaining consent forms from the diagnosed patients, medical record abstracts and self-administered survey questionnaires were used to obtain information regarding age, marital status, educational level, household income, employment status, comorbidity, urinary function, prostate-specific antigen level, tumor grade, and clinical stage. Consequently, we asked for further investigations for every subject at risk for prostate disease, such as PSA-blood test followed by imaging. We classified our patients according to the PSA outcomes in four groups: The first group: comprised patients with old history and confirmed cancer and have been cured by different treatment even if had not been detected by screening. Their lives will not be improved by an earlier diagnosis. The second group: are those patients with late stage disease and poor prognosis at the time of screening. These patients will die, and screening does not help them. The third group: included patients whose cancer would not have been found without screening, but who die of causes other than prostate cancer. The quality of life (QOL) could be reduced by treatment. The main beneficiaries of screening program are those patients whose cancer would have been incurable if it had been diagnosed clinically, but is curable if found early through screening. A fourth group (the largest) are men tested who do not have malignancy. The net harm done to this group is relatively small unless they go to biopsy when morbidity and anxiety can be significant. The purpose of our statistical analysis is to examine the difference between the groups of every independent variable relative to carcinoma of the prostate, and to examine the relation and the correlation between the independent variables and prostrate carcinoma.

Statistical analysis based on patient admissions, and statistical methods were (ANOVA test; T-test

Table 2.The distribution of Prostate cancers according to different regions (Towns) in West-Bank, Palestine, 1998-2006.

Prostate cancer cases according to Residence, 1998-2006.			
		Frequency	Percent
Valid	Nablus city	51	64.1
	Jenin city	14	17.9
	Qalqelia town	8	10.3
	Tulkarem city	5	6.4
	Total	78	100.0

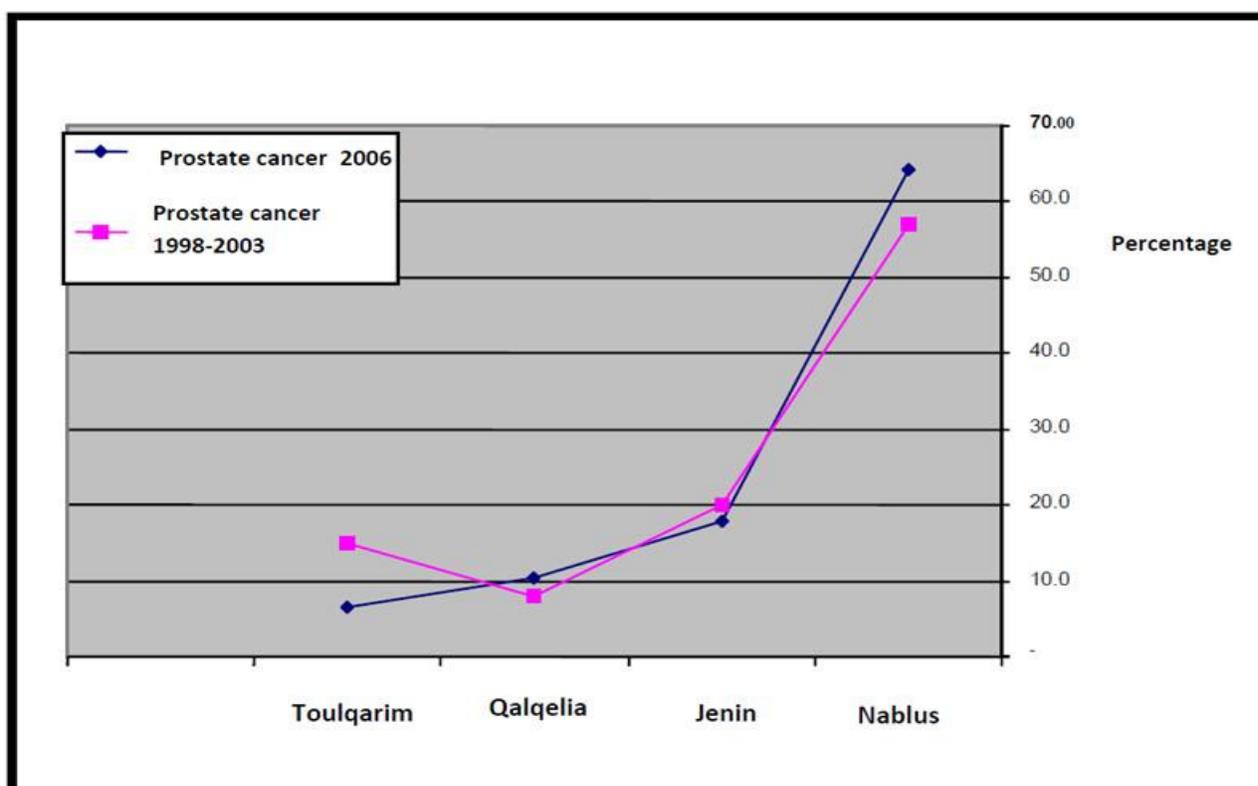


Figure 1. The figure above shows comparison in the distribution of prostate cancer in different cities in North West-Bank between the previous study (1992-2002- blue color line) and our study (1998-2006, purple color line).

(independent sample t-test); Correlation; Chi square test; Descriptive statistics and frequencies and percentile methods).

FINDINGS

78 Prostate Cancers Patients (CaP) were reported in North West-Bank, Palestine. This result represents an incidence rate of 10.4 per 100.000 populations. Cancers

seems to have partial familiar distributions, as we notified from the (Table 1); where a slight percentage tendency of cancers were localized in families with genetics background history of cancers ((brother with lung carcinoma and mother with breast cancer (5.1% vs. 5.1% respectively)).

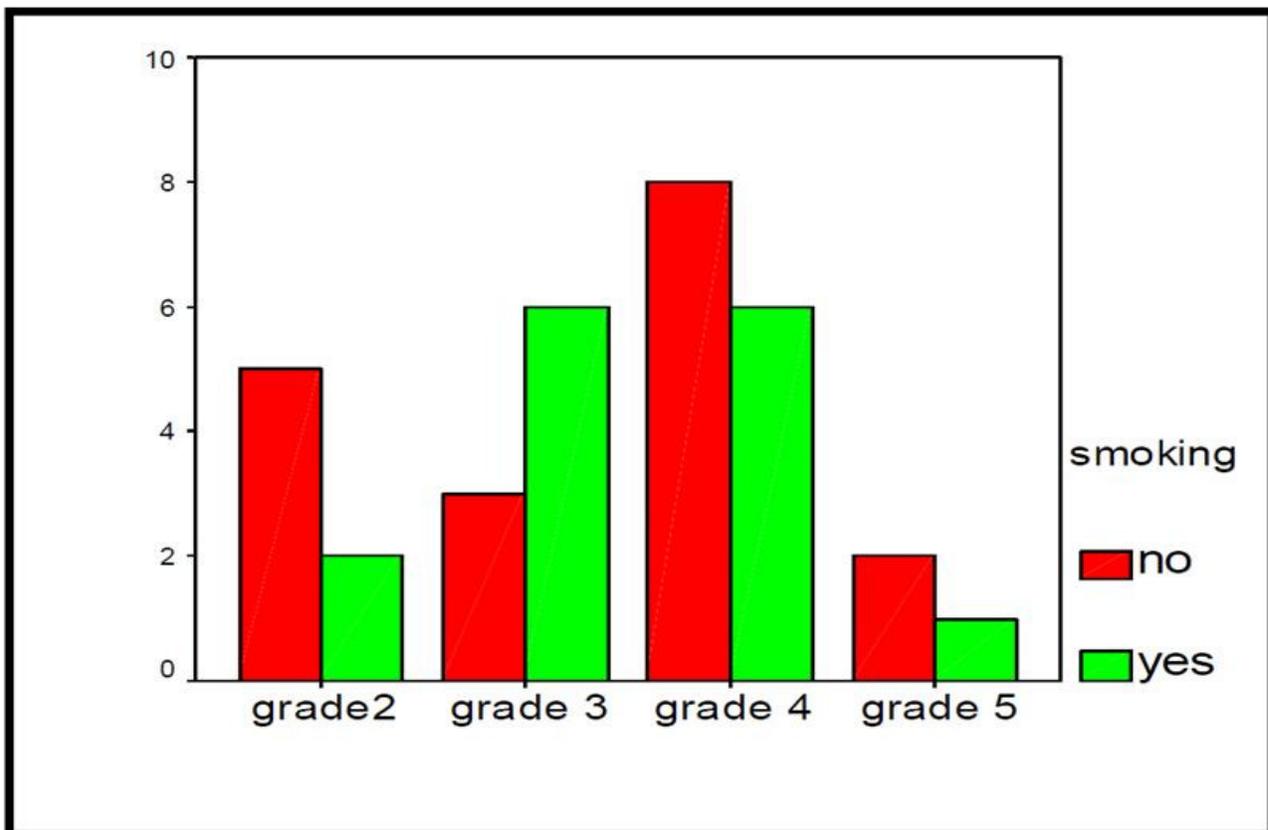
Regional variations in cancer distribution were observed, with highest rate (64.1%) was diagnosed in Nablus town, and the lowest (6.4%) in Tulkarem town (Tables 2 and figure 1). Surprisingly, the high rates of

Table 3. The relationship between smoking and prostate cancer, 1998- 2006.

The impact of smoking			
		Frequency	Percent
Valid	No	48	<u>61.5</u>
	Yes	29	<u>37.2</u>
	Total	77	98.7
Missing	System	1	1.3
Total		78	100.0

Table 4. The relationship between smoking and prostate cancer for 1992-2002.

Prostate cancer cases among smokers, for 1992-2002			
		Frequency	Percent
Valid	No	50	<u>54.8</u>
	Yes	43	<u>46.2</u>
	Total	93	100



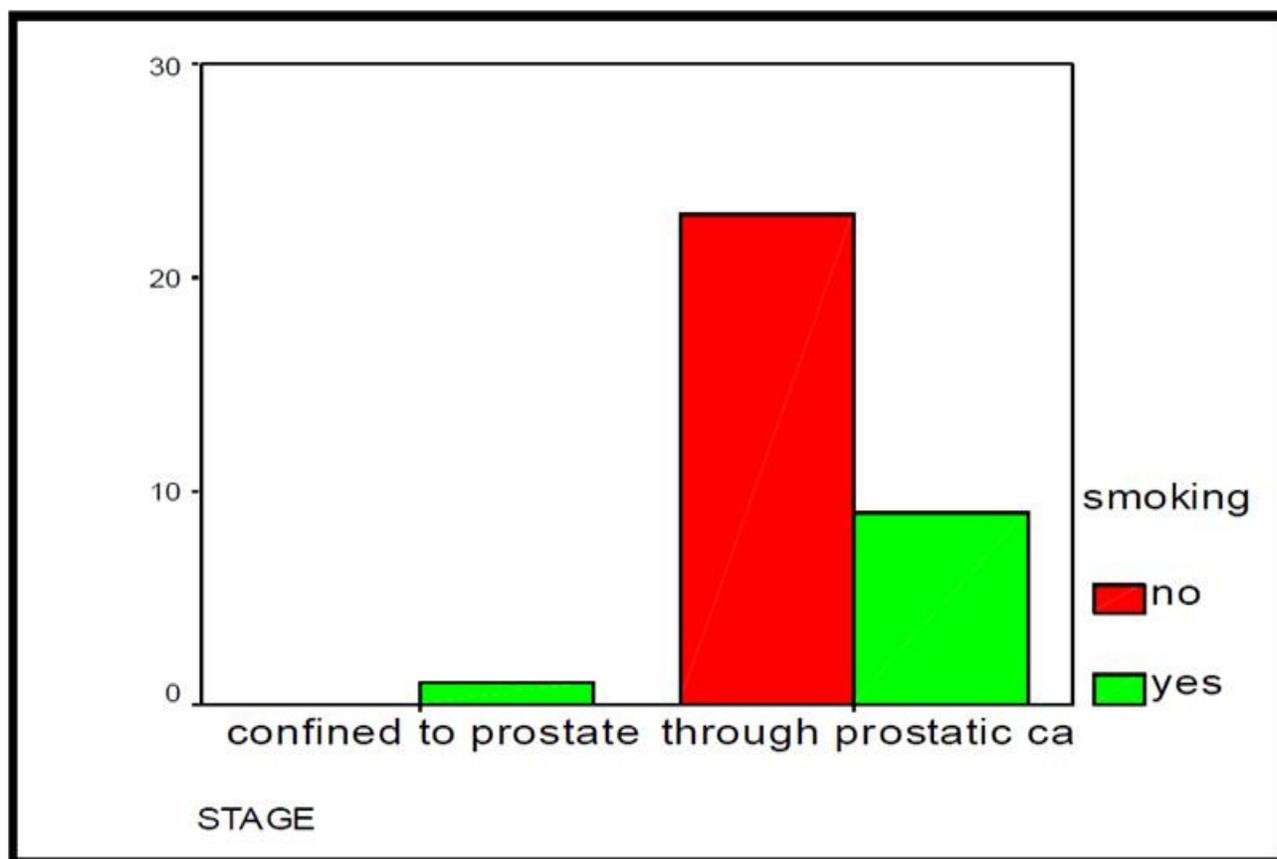
Bar Chart 1. The bar chart above shows the frequencies between the grade of prostate carcinoma and smoking.

prostate cancer were observed among non-smokers, comparing to smokers ((61.5% vs. 37.2% respectively), (Table 3 and Table 4 and Chart Bar 1)). We also found a

high rates of capsulated cancer comparing to confined into the prostate gland (41.% vs. 1.3%, respectively, Table 5, Chart Bar 2); High frequency among industrial

Table 5. Distribution of prostate cancer according to Cancer stages and grades. Prostate cancer stages (capsulated vs. non capsulated cancer).

Stages		Frequency	Percent
Valid	confined to prostate gland	1	1.3
	through prostate capsule	32	41.0
	Total	33	42.3
Missing	System	45	57.7
Total		78	100.0



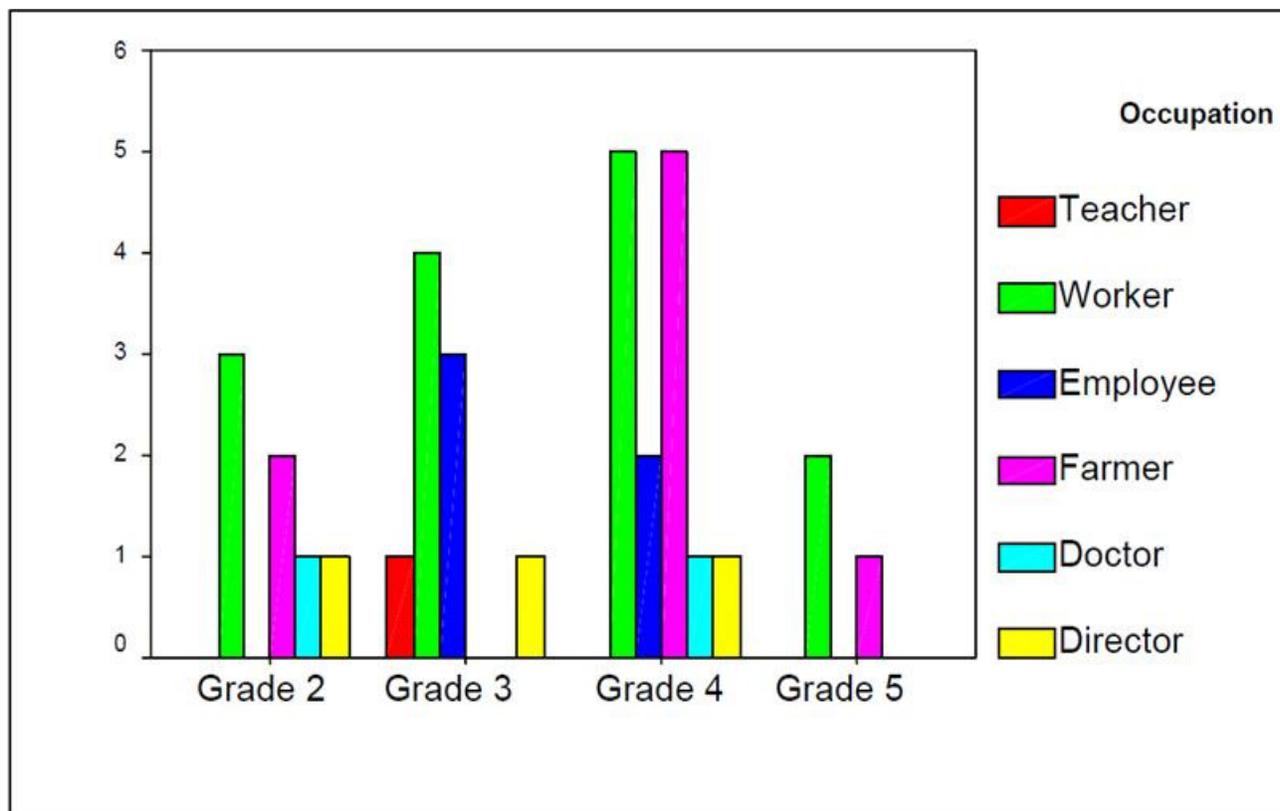
Bar Chart 2. The bar chart above show the frequencies of the between the stage of CA prostate and smoking.

workers vs. Doctors and directors (42.3% vs. 5.1%, Table 6, Bar chat 3 and 4); among numerous families of seven children or over vs. less than three children (56.4% vs. 5.1%, Table 7 and Bar chart 5 and 6); and high cancer rates (64.1%) among patients over 65 years (Table 8 and Chart Bar 7), with high PSA serum levels (20ng/ml or over), Table 9 and Table 10). Obesity with BMI > 30 was found to be associated with increased incidence of

prostate cancer compared to Overweight subjects (BMI <30), (53% vs. 16% respectively). Person Chi Square df, significant values of PSA categorized and dependent variables (Type of occupation, number of children, Age and obesity), showed a Pearson correlation and statistical significance at P-Value = 0.05 which was respectively ((p=0.016, p=0.018, p= 0.003, p=0.004) Tables 10 - 14)). Statistical Significant relationship was

Table 6. Distribution of Prostate cancer by occupation among different groups. The frequency of Prostate cancer among different groups.

Occupation		Frequency	Percent
Valid	Teachers	10	12.8
	Workers	33	42.3
	Employees	13	16.7
	Farmers	14	17.9
	Doctors	4	5.1
	Directors	4	5.1
	Total	78	100.0



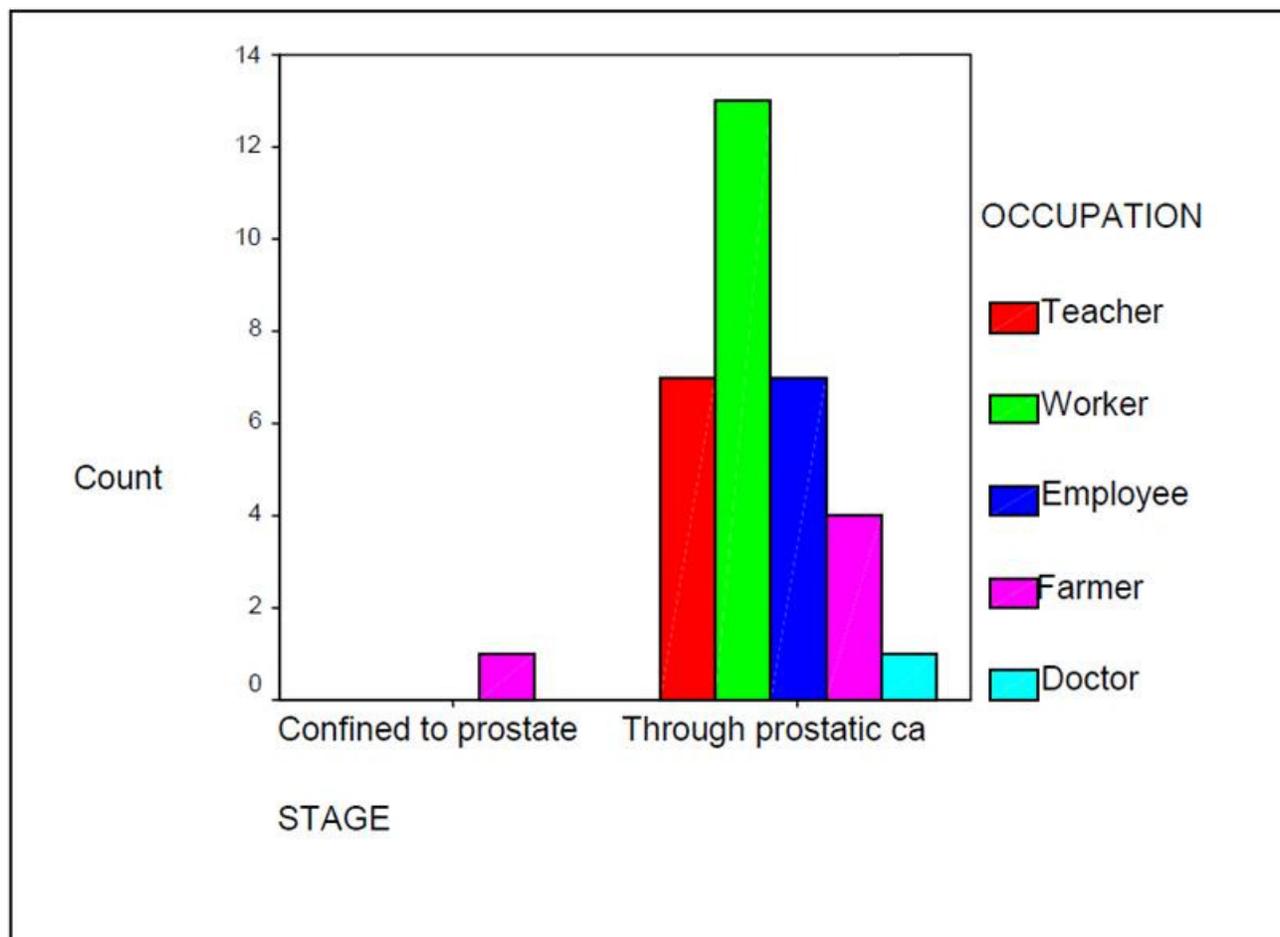
Bar Chart 3. The bar chart above show the frequencies of the between the grade of CA prostate and occupation.

also found between aged person and infection (P-value = 0.032, Table 12) and between cancer stage and age (0.021, Table 13). Multiple Comparisons Dependent Variable: LSD were used also, and from the (Table 15) we found there a statistically significant relationship between infection and patients 70 years and older. We use one way ANOVA in the variable of the study from age 40-59, 60-70, more than 70 years, we found there is a statistically significant relationship at statistical level

0.05, between infection and patients 70 years and older (Table 16).

DISCUSSION

The worldwide load of cancer continues to increase basically because of the aging and growth of the world population alongside an enhancing adoption of



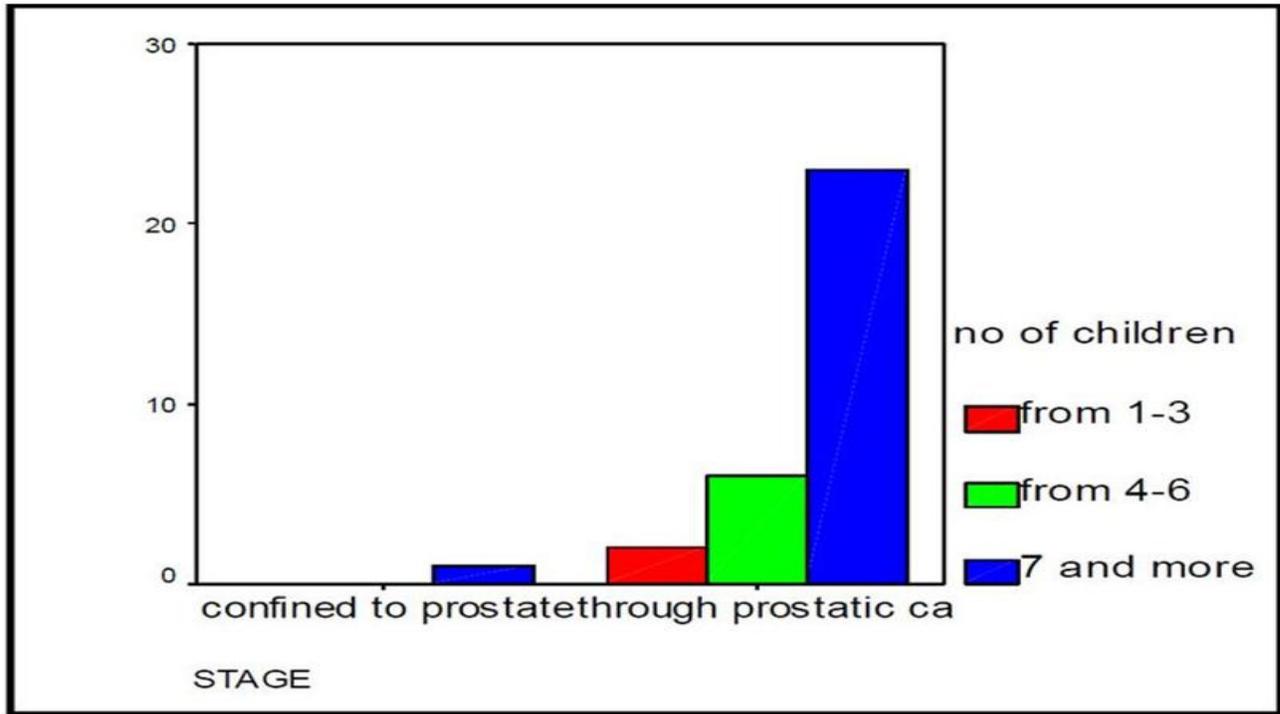
Bar Chart 4. The bar chart above show the frequencies of the between the stage of CA prostate and occupation.

Table 7. Spreading of prostate cancer and its relationship to the number of children. Number of children and prostate cancer.

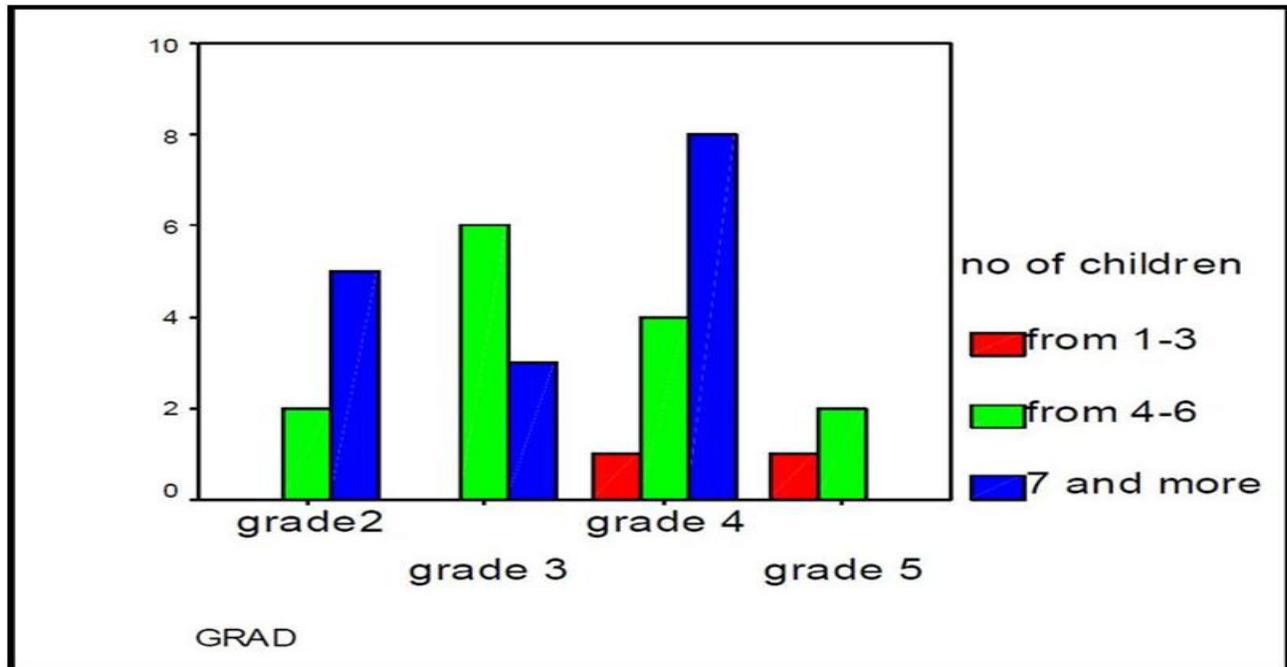
Number of children		Frequency	Percent
Valid	from 1-3	4	5.1
	from 4-6	27	34.6
	7 and more	44	56.4
	Total	75	96.2
Missing	System	3	3.8
Total		78	100.0

cancer-causing behaviors, particularly smoking, higher consumption of saturated fat and calories “westernized diets”, obesity and physical inactivity in economically developing countries, including Palestine (Whittemore et al., 1995; Pelsler et al., 2013; Abdul-Rahim et al., 2001). The relatively rapid modernization and urbanization leads

to dramatic lifestyle changing, and epidemiologic transition characterized by a persisting burden of infectious diseases, and a rise in chronic diseases including diabetes, hypertension, obesity, coronary heart diseases and cancers (Stamey et al., 1987) among Palestinians (Demographic Health Survey, 2004;



Bar Chart 5. The bar chart above show the frequencies of the between the stage of CA prostate and number of children.



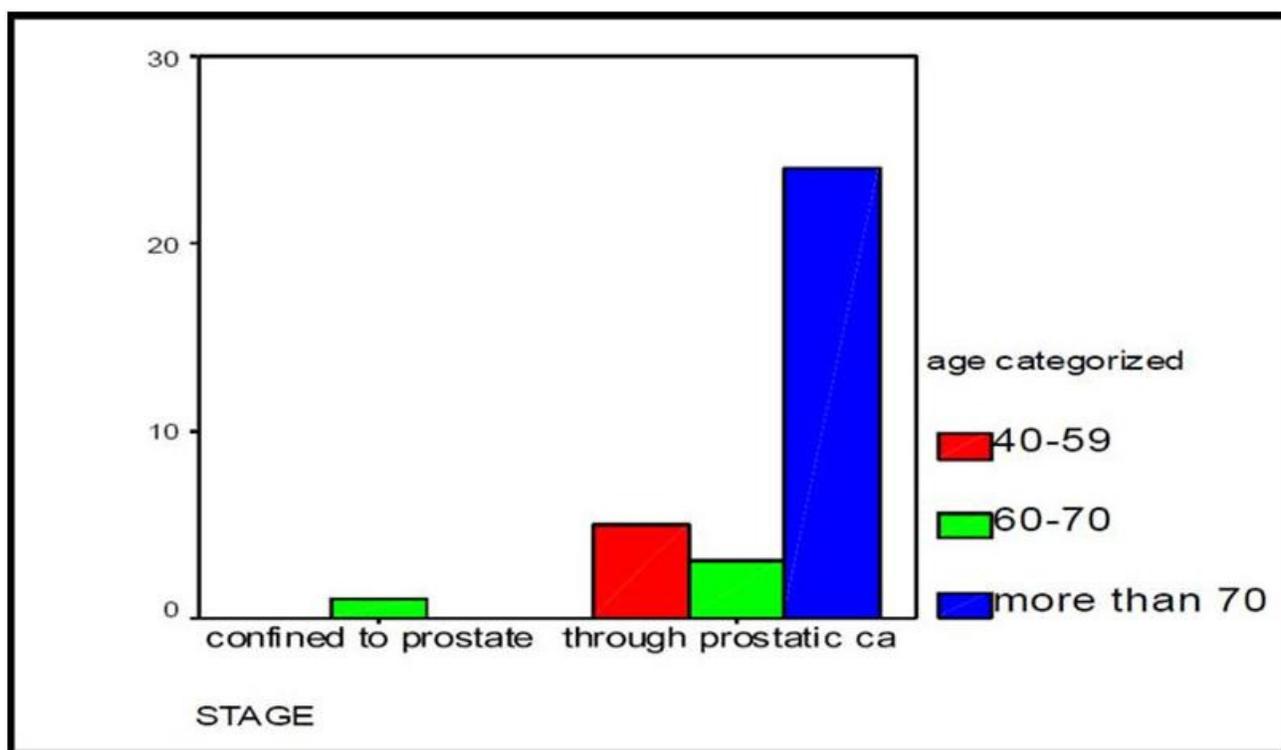
Bar Chart 6. The bar chart above show the frequencies of the between the grade of CA prostate and number of children.

Population projections in the Palestinian Territory, 2006). Other factors along increased insults in the Palestinian territories, is the severe restriction on the movement of

people and goods, and difficult access to health services which negatively affected living conditions and health status (Husseini et al., 2009; Rionda and Clements,

Table 8. Distribution of prostate cancer according to Age. Relationship between age and prostate cancer.

Age		Frequency	Percent
Valid	40-59	12	15.4
	60-70	21	26.9
	more than 70	45	57.7
	Total	78	100.0



Bar Chart 7. The bar chart above show the frequencies of the between the stage of CA prostate and age.

2000). However, medical research is very rare in the less developed nations, especially in countries like Palestine, where the field of research remains in marginal priority and in the latest list of the population needs, where research resources are extremely stumpy. Nevertheless, despite the conditions and challenges Niveen M. Abu-Rmeileh et al. (2008) reported that total cancers mortality rate in the West Bank accounted for (10%) of total mortalities from 1999 through 2003 and the crude cancer incidence in the west bank in 1999 was 6.6 per 100,000 (Abu-Rmeileh et al., 2008). Consequently, we compare our results of 1998-2006 with the previous prostate cancer study of 1992-2002. We were surprised to find a significant regional variation difference and

unequal distributions of Prostate cancer among the different cities in North West-Bank; Decreasing in several town and increasing in frequency rates in other ones; For example the rate frequency in Tulkarem town was 15% during 1992-2002, and this frequency decreases considerably to be 6.4%, opposite finding were observed in Nablus, Jenin and Qalqelia towns; the rate frequencies were (48.4%, 16.6% and 7%, respectively during 1992-2002 study, and increased dramatically in Nablus town to the rate of 65.4% during our 1998-2006 study and moderately increase in Jenin and Qalqelia cities (17.9% and 10.3% respectively).

In conclusion, the importance of our study lies in its inequity and originality. Prostatic cancer strikes

Table 9. Distribution of Prostate cancer and its influence by the level of Prostate-Specific Antigen (PSA). Prostate cancer and PSA.

PSA categorized		Frequency	Percent
Valid	0 to 2.5 ng/ml- low	5	6.4
	10-19.9 ng/ml	2	2.6
	20 ng/ml or more	50	64.1
	Total	57	73.1
Missing	System	21	26.9
Total		78	100.0

Table 10. The person chi square df and significant values of stage of Prostate Carcinoma and dependent variable

Dependent variable	Pearson Chi-Square	Df	Asymp. Sig. (2-sided)
Smoking	2.372	1	0.124
Occupation	5.775	4	0.217
N°. of children	0.344	2	0.842
age	7.447	2	0.024
Obesity (BMI > 30)	7.348	2	0.017

Table 11. The Pearson correlation and significant values of PSA categorized and dependent variable.

Dependent variable	Pearson correlation	Asymp. Sig. (2-sided)
Occupation	21.858	0.016
N°. of children	- 0.320	0.018
Age	- 0.383	0.003
Obesity (BMI > 30)	-0.361	0.004

Table 12. The person chi square df and significant values of age and dependent variable – Infection

Dependent variable	Pearson correlation	Asymp. Sig. (2-sided)
Infection	0.354	0.032

Table 13. The significant values of stage and dependent variable age

Dependent variable	Asymp. Sig. (2-sided)
Age	0.021

disproportionately in different regions in West-Bank, employment types, extended families numbers and old age, obesity, infection and cancer stage were found to be

risk factors, and surprisingly high rate of cancer among non-smokers compared to smokers was notified. Notwithstanding, the challenges and the environmental

Table 14. Pearson correlation between PSA categorized and number of child.

		N°. child	PSA categorized
N°. child	Pearson Correlation	1	-.320 (*)
	Sig. (2-tailed)	.0	<u>0.018</u>
	N	75	54
PSA categorized	Pearson Correlation	-.320 (*)	1
	Sig. (2-tailed)	.018	.0
	N	54	57

Table 15. Multiple Comparisons Dependent Variable; LSD.

		Mean Difference (I-J)
(I) age categorized	(J) age categorized	
40-59	60-70	.2500 (*)
	more than 70	<u>.0000</u>
60-70	40-59	-.2500 (*)
	more than 70	-.2500 (*)
more than 70	40-59	<u>.0000</u>
	60-70	.2500 (*)

Table 16. One way ANOVA for age variable.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.220	2	.110	4.394	<u>0.021</u>
Within Groups	.750	30	.025		
Total	.970	32			

circumstances; the different risk factors mentioned above: the high caloric diet consumption such as high carbohydrates and speedy modernization and urbanization and the lifestyle changes that could increase the prostate cancer rates in West-Bank, fortunately the rate incidence still the lowest in our area. It seems that the Mediterranean and traditional diets represented by high consumption of local Olive oil, different local vegetables and fruits and the limited or lack of livestock and meat import play their role and positively impacted on the population health. Indeed, epidemiologic and case-control studies suggest that intake of vegetables such as tomatoes and tomato products are associated with a lower risk of prostate cancer (Miller et al., 2002). Indeed, the prostate cancer epidemiological study performed at An-Najah National University, Nablus in (1992–2002), showed an overall age-adjusted incidence of prostate cancer was 28.9 of 100,000, while our

present study (1998-2006), showed a dramatically decreased in incidence rate by more than two fold (10.8 of 100,000). In addition, comparing our results with Western European countries; we observed that our cancer incidence rate is very low (10.4 per 100.000), but roughly similar to the finding in Eastern Asian countries and Greece (8.3-10.3 per 100,000 population) (European Age-Standardised rates calculated by the Cancer Research UK Statistical Information Team, 2011; American Cancer Society, 2003; Kehinde et al., 2005).

INTERPRETATIONS OF THE RESULTS

To clarify and extent the effectiveness of our study results we used two different approaches: In the first approach we proposed a negative hypothesis: No correlation or statistical significant relationship between the different

variables (risk factors) and prostate cancer exist (Negative relationship) at the significant level of (P- value = 0.05) and in the second approach we proposed and examined the positive hypothesis (Positive relationship) between different variables and the prostate cancer.

We used Tables, Bars and Figures to explain: 1) the relationships between prostate cancer and different variables; we illustrated the distribution of the study sample which included eleven categories considered as risk factors (Family history; regions; smokers vs. nonsmokers; infection; date of prostate cancer onset; stage; grade; occupation; obesity, number of children in the family; age and PSA categories).

Distributions of the study simple which included eleven categories from Table 1 to Table 13, discussing the relationships between prostate cancer and different variables:

We notified from the Table 1. That the highest percent of cancers observed in families under study are among brother with lung carcinoma and among mother with breast cancer (5.1% vs. 5.1% respectively).

Table 2, shows the distribution of Prostate Carcinomas in different towns in West-Bank: the highest percentage frequency were observed in Nablus city with percent 64.1% and then in Jenin city with percent 17.9%, followed by Qalqelia town 10.3% and finally Tulkarem city 6.4%.

We observed from the tables above that the highest percent of prostate cancer are among nonsmokers; in 1998-2006 was 61.5% vs. 37.2% respectively, in 1992-2002 the percentage of prostate cancer among nonsmokers was 54.8%, comparing to 46.2% among smokers.

We verify from Table 5, above that the highest percent of prostate cancer was capsulated (41.0%) and confined to prostate gland with a percent 1.3%.

We notified from Table 6, above that the highest percent of cases are observed among simple worker with percent of 42.3%, and the lowest frequency was observed among doctors and directors with percentage of 5.1%.

We realize from the data presented in Table 7 that the highest percent of prostate cancer (56.4%) is observed among fathers of families with number of children of seven and over. Families with number of children lower than three have the lowest percentage (5.1%).

From our data listed in Table 8, we notice that the highest percent rate was among men with 70 years and older (57.7%) and the lowest percentage rate was among 40-59 aged men with percent rate of (15.4%).

Table 9, Describes the different level of PSA into the blood of patients, according to these results we observed that the highest frequency of prostate cancer was note in males with 20ng/ml or over and the frequency was (64.1%), the lowest percentage of prostate cancer (2.6%) was observed among men who has a moderately high PSA level (10 – 19.9ng/ml), but we observed that the

lowest level of PSA (0-2.5ng/ml), has a prostate cancer of 6.4%.

From the table results above we notice the level of significance 0.124, 0.217 and 0.842 of the dependant variable smoking, occupation and no. of children respectively is bigger than 0.05, so we accept the hypothesis and conclude that "There exists no significant relationship, in the significant level 0.05. Regarding age, it was a statistical significant (P=0.024) at the level of P= 0.05, so we reject the hypothesis and conclude that" There exists a significant relationship, in the significant level 0.05, between stage of CA prostate and age"

From the table above we notice the level of significance 0.016, 0.018 and 0.003, of the dependant variable occupation, number of children and age respectively is smaller than 0.05, so we reject the hypothesis and conclude that "There exists a significant relationship, in the significant level 0.05, between PSA categorized and dependent variable occupation, number of children and age".

From the table above we notice the level of significance P= 0.032, of the dependant variable infection is smaller than 0.05, so we reject the hypothesis and conclude that "There exists a significant relationship, in the significant level of (0.05), between age and infection"

From the table above we notice the level of significance 0.021, of the dependant variable age is smaller than 0.05, so we reject the hypothesis and conclude that "There exists a significant differences (P=0.021), in the significant level 0.05, between stage and age".

Table 14. Since the significance level i. e. 0.018, is smaller than that given in the hypothesis i. e., 0.05; we reject the hypothesis and say that: "There is a significant relationship, in the significant level 0.05, between the PSA categorized and number of children".

From the table above we found there a statistically significant relationship at statistical level 0.05, between infection and patients 70 years and older.

Since the level of significance (0.021) is smaller than 0.05, we reject the hypothesis and conclude that "There is a statistically significant differences, in the significance level 0.05, between the infection and age variable".

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

BA – Conceived the study, and participated in its design and coordination and wrote almost all manuscript (introduction and discussion) and helped to draft the manuscript. YM – carried out the study design and

participating in editing the manuscript. BB – Participated in the study design, and performed part of the tables and figures. SM – participated in the collections of data and study design, editing the manuscript and participated in writing part of the introduction. HA – Participated in writing part of the conclusion and editing the manuscript. AZ – helped in making part of the tables and figures and participated in performing statistical analysis. All coauthors have read and approved the final manuscript.

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