

## Awareness of Bladder Cancer Relation with Smoking, a Major Risk Factor

1. Farah Ahmed, [farahahmed153@gmail.com](mailto:farahahmed153@gmail.com)
2. Bushra Midhat, [bushraarsalan786@gmail.com](mailto:bushraarsalan786@gmail.com)
3. Muhammad Ahmed, [ahmed\\_ilyas@hotmail.com](mailto:ahmed_ilyas@hotmail.com)
4. Kanwal Khan, [imkanwalkhan@hotmail.com](mailto:imkanwalkhan@hotmail.com)
5. Areesha Sehrish, [Sehrishareesha@gmail.com](mailto:Sehrishareesha@gmail.com)

<sup>1,2,3,5</sup>Dow University Of Health And Sciences.

<sup>4</sup> Civil Hospital Karachi.

### **ABSTRACT:**

#### **OBJECTIVE:**

*To study the knowledge, attitude and practices regarding the relationship between smoking and bladder cancer.*

#### **BACKGROUND :**

*Urothelial bladder cancer is the second most common malignancy and in 90% of the cases smoking is attributable for it. Since the global burden of cancer is rising mainly due to aging and growing population and behavioral adaptation to most avowed risk factors like cancer-associated lifestyle, notably smoking and “westernized” diets.*

#### **RESULT:**

*Out of 384 participants 40.9% (n=157) were males 30.2% (n=116) were females. Only 7.3% (n=28) had awareness about smoking can cause bladder cancer, though 96.9% (n=372) considered cancer can be lethal for their lives.*

#### **CONCLUSION:**

*In the present study, majority of the surveyed individuals were unaware of the relationship between cigarette smoking and bladder cancers. We emphasize on addressing the primary prevention, smoking cessation programs and awareness campaigns against bladder cancer as lack of knowledge about the risks and signs of bladder cancer prone to misdiagnosis, delayed diagnosis, limits the treatment options, and ultimately worsens the prognosis*

**KEYWORDS:** Urothelial bladder cancer; Smoking; Tobacco related malignancy; Awareness; Campaigns against bladder cancers

## **INTRODUCTION:**

*Medical literature has shown a momentous rise in morbidity and mortality due to urothelial bladder cancer. It has been ranked at 7<sup>th</sup> position for the most common cancers among men and 17<sup>th</sup> among females worldwide. A European based statistics has documented a mortality of approximately 38 200 in the European Union and 17 000 in US each year. Every year there are 110 500 newly diagnosed cases in men and 70 000 in women by Maximilian Burger et al (1).*

*This entity is the second most common known tobacco- related malignancy, lung cancers being the first one Bassett JC et al (2). Smoking is a well-known modifiable risk factor being responsible for about half of all urothelial bladder cancers by Seth A Strobe, James E Montie (3). Contemporary smoking triples the risk of bladder cancers comparative to never smoking. The population attributable risk is 50% to 65% in men and 20% to 30% in women, of bladder cancer for smoking, as elucidated by previous studies by Neal D. Freedman et al (4).*

*Other risk factors include occupational subjection to substances like aromatic amines and polycyclic aromatic hydrocarbons that takes place mainly in industrial areas by Maximilian Burger et al (1), hair dye use by Harling M<sup>1</sup>, Schablon A, Schedlbauer G, Dulon M, Nienhaus A (5), small intake of water by Michaud DS et al (6) age and male gender by Parag Gupta et al (7). Preventive factors includes; diet containing vegetables and fruits by Liu H et al (8), taking vitamin A by Jian-er Tang, Rong-jiang Wang , Huan*

*Zhong, Bing Yu and Yu Chen. (9), and drinking large amount of water (10) Michaud DS et al .*

*There are very few studies that have mentioned the efficacy of screening for bladder cancer, so the best defense lies in the primary prevention hence only possible by decreasing the modifiable risk factors. For such course of action, modifying a behavioral risk factor could only be possible by the general spread of awareness of associated link between the disease and the behavior accountable for it. As anti-smoking campaigns conventionally focus on lung cancers, hardly a few indicate bladder cancer. We assessed the awareness regarding smoking as a risk factor for bladder cancer among the general population of Karachi city.*

## **MATERIALS AND METHOD:**

*This is a prospective cross-sectional study with the sample size of 384. The study duration was two months from 1<sup>st</sup> January 2015- 30<sup>th</sup> February 2015. The study was conducted in Karachi, which is a densely populated city of Pakistan. All the participants were given a briefing regarding objectives of the study and were ensured regarding the maintenance of the confidentiality of their identity. A prerequisite verbal consent was taken by all the participants. Questionnaire was designed to obtain the knowledge about the pretest demographic characteristics of the individuals and their knowledge about the causative and preventing factors related to bladder cancer, a special focus was put on to evaluate the awareness about the relation of*

*smoking with bladder cancer. The data was collected by interviewing the participants according to the designed questionnaire, who were selected randomly. Researchers had obtained all the information according to it by interviewing the target population by themselves. Individuals including both the genders who were aged above 18 years were included in the study. Medical students and individuals belonging to medical profession were excluded. Data was analyzed by SPSS version 20.0.*

### **RESULT:**

*Out of 384 participants 40.9% (n=157) were males 30.2% (n=116) were females. The response rate was 100%. Majority 85.9% (n=330) were from urban areas while 14.1% (n=54) belonged to rural area. 41.9% of the participants were undergraduate education. A 19.8% (n=76) of participants reported of having smoking habit. Over all only 7.3% (n=28) had awareness about smoking can cause bladder cancer, though 96.9% (n=372) considered cancer can be lethal for their lives. A large percentage (89.3%) thinks that passive smoking is hazardous for their heaths. The participants had very low or no awareness about the risk and preventive factors about bladder cancer.*

### **DISCUSSION:**

*According to the world health organization in economically developed countries cancer is known to be the leading cause of death while it is the second leading cause of death in developing countries by World Health Organization, 2004 (11). The rising global burden of cancer chiefly because of growing*

*and aging world population together with a behavioral adaptation, particularly smoking has a worth of especial mention here, in economically developing countries. Previous statistics in the studies have documented a higher incidence rates in developed countries which are half those when compared to developed countries. But the overall mortality rates generally tend to be equivalent among both sorts of the countries. In developing countries, plausibly due to late diagnosis and delayed treatment, the survival is poorer by Ahmedin Jemal et al (12).*

*Increasingly cancer-associated lifestyle, notably smoking and “westernized” diets are the most avowed risk factors causing bladder cancers by Ahmedin Jemal et al (12). Occupational exposure to chemical compounds like aromatic amines and polycyclic aromatic hydrocarbons have been investigated and it was reported being the culprit cancer causing agent making the people more vulnerable for bladder cancer development especially in industrial areas processing metal, paint, dye, and petroleum products by Maximilian Burger et al (1). Another study showed that hairdressers are statistically at significant risk, peculiarly those who have worked for considerably longer duration greater than 10 years in the respected profession by Harling M (5). A case-control study on the population of Los Angeles linked the water intake with bladder cancer, it was concluded that a greater water intake increases frequency of micturation, leads to the dilution of the urine and hence reduces the contact of carcinogens with urothelium by Michaud DS et al (6). Men are more prone to it while women have worst*

survival by Parag Gupta et al (7). The environmental and dietary exposures are the possible factors that posses an excessive risk in male gender though still not pinpointed and remain negotiable. This is also ascribed due to hormonal factors and urination habits

by Horn EP et al (13), Goonewardena et al (14), Fajkovic H et al (15). The analysis of collected data of our study showed that there is lack of awareness as shown by the chart below.

**AWARENESS OF RISK FACTOR FOR BLADDER CANCER**

	Frequency	Percent	Valid Percent	Cumulative Percent
Cigarette Smoking	28	7.3	7.3	7.3
Age	54	14.1	14.1	21.4
Petrol Pump Workers	115	29.9	29.9	51.3
Hair Dye Used By Barbers	15	3.9	3.9	55.2
Workers In Paint Industries	115	29.9	29.9	85.2
Valid Westernized diet	10	2.6	2.6	87.8
Bladder Infection	1	.3	.3	88.0
Male Gender	3	.8	.8	88.8
Textile Workers	16	4.2	4.2	93.0
Don't Know	27	7.0	7.0	100.0
Total	384	100.0	100.0	

Transitional cell carcinoma is the most common variant of bladder cancer, accountable for 90% cases and is said to be exclusively associated with cigarette smoking by Rabbani F& Cordon-Cardo C (16) and Peter Fabian Rambaul, Philipo L Chalya & Kahima Jackson. (17). However in our study only 7.3 % people were aware of this hazardous effect of smoking. While chronic cystitis with Schistosoma haematobium causes squamous cell carcinoma by Felix AS et al(18) Zaghloul MS et al(19).

When it comes to the prevention, a recent meta-analysis has shown the role of vegetables and fruits in reducing the risk of bladder cancer by Liu H et al (8). Another meta-analysis concurred the same role of vitamin A by Jian-er Tang et al(9), as it is hypothesized to confer the modulation of a miscellany of biological processes including proliferation, apoptosis development and differentiation by Fatemeh Alizadeh et al (20). Large intake of water dilutes urine and increases voiding thereby drops down the concentration and carcinogens' time of contact with urothelium by Michaud DS et al (6) and Michaud DS et al (10). The knowledge of preventive factors is also lacking in our study participants as shown by the chart below.

**AWARENESS OF PREVENTIVE FACTORS**

	Frequency	Percent	Valid Percent	Cumulative Percent
Drinking Lots Of Water	115	29.9	29.9	29.9
Eating Vegetables + Fruits	149	38.8	38.8	68.8
Valid Vitamin A	72	18.8	18.8	87.5
Don't Know	48	12.5	12.5	100.0
Total	384	100.0	100.0	

*Since the commonest variant of bladder cancer is widely known to be associated to smoking by Rabbani F& Cordon-Cardo C (16), demoting consumption of tobacco products, disrating the number of advertisements and prohibiting public smoking is thought to have a directly decrease down effect on smoking percentage and so on bladder cancer risk by Brian King, Terry Pechacek & Peter Mariolis, (21). Several recent studies infer that raising the cigarette prices decreases its consumption and lessens its initiation by David T. Levy, Frank Chaloupka,& Joseph Gitchell (22) Shafey O, Eriksen M, Ross H, Mackey J (23).*

### **RECOMMENDATIONS:**

*We recommend urology departments need to enhance research work in bladder cancers along with stressing the campaigns against bladder cancer awareness among the general population.*

### **CONCLUSION:**

*In the present study, majority of the surveyed individuals were unaware of the relationship between cigarette smoking and bladder cancers, regardless of their smoking statuses. It has a substantial effect on public health because of high prevalence of smoking. We emphasize on addressing the primary prevention, smoking cessation programs and awareness campaigns against bladder cancer as lack of knowledge about the risks and signs of bladder cancer prone to misdiagnosis, delayed diagnosis, limits the*

*treatment options, and ultimately worsens the prognosis*

### **REFERENCES:**

- [1.] Maximilian Burger ,James W.F. Catto , Guido Dalbagni , H. Barton Grossman , Harry Herr , Pierre Karakiewicz, et al, Epidemiology and Risk Factors of Urothelial Bladder Cancer, EUROPEAN UROLOGY 63 (2013) 234–241
- [2.] Jeffrey C. Bassett, John L. Gore, Amanda C. Chi, Lorna Kwan, William McCarthy, Karim Chamie, and Christopher S. Saigal. Impact of a Bladder Cancer Diagnosis on Smoking Behavior. J Clin Onco(2012). 30:1871-1878.
- [3.] Seth A Stroe, James E Montie. The causal role of cigarette smoking in bladder cancer initiation and progression, and the role of urologists in smoking cessation. The Journal of urology .08/2008; 180(1):31-7
- [4.] Neal D. Freedman, PhD, MPH; Debra T. Silverman, ScD, ScM; Albert R. Hollenbeck, PhD; Arthur Schatzkin, MD, DrPH; Christian C. Abnet, PhD, MPH. Association Between Smoking and Risk of Bladder Cancer Among Men and Women . JAMA. 2011;306(7):737-745.
- [5.] Harling M<sup>1</sup>, Schablon A, Schedlbauer G, Dulon M, Nienhaus A. Bladder

- cancer among hairdressers: a meta-analysis. *Occup Environ Med.* 2010 May; 67(5):351-8.
- [6.] Michaud DS, Kogevinas M, Cantor KP, et al. Total fluid and water consumption and the joint effect of exposure to disinfection byproducts on risk of bladder cancer. *Environ Health Perspect* 2007;115:1569–72
- [7.] Parag Gupta, Manoj Jain, Rakesh Kapoor, K. Muruganandham, Aneesh Srivastava, and Anil Mandhani. Impact of age and gender on the clinicopathological characteristics of bladder cancer. *Indian J Urol.* 2009 Apr-Jun; 25(2): 207–210.
- [8.] Liu H, Wang XC, Hu GH, et al. Fruit and vegetable consumption and risk of bladder cancer: an updated meta-analysis of observational studies. *Eur J Cancer Prev* 2015; (in press). PMID: 25642791.
- [9.] Jian-er Tang, Rong-jiang Wang , Huan Zhong, Bing Yu and Yu Chen. Vitamin A and risk of bladder cancer: a meta-analysis of epidemiological studies. . *World Journal of Surgical Oncology* 2014, 12:130
- [10.] Michaud DS, Kogevinas M, Cantor KP, et al. Total fluid and water consumption and the joint effect of exposure to disinfection byproducts on risk of bladder cancer. *Environ Health Perspect* 2007;115:1569–72.
- [11.] World Health Organization. *The Global Burden of Disease: 2004 Update.* Geneva: World Health Organization; 2008.
- [12.] Global Cancer Statistics Ahmedin Jemal, DVM, PhD1; Freddie Bray, PhD2; Melissa M. Center, MPH3; Jacques Ferlay, ME4; Elizabeth Ward, PhD5; David Forman, PhD6
- [13.] Horn EP, Tucker MA, Lambert G, Silverman D, Zimetkin D, Sinha R, et al. A study of gender-based cytochrome P450 1A2 variability: A possible mechanism for the male excess of bladder cancer. *Cancer Epidemiol Biomarkers Prev* 1995; 4:529-33.
- [14.] Goonewardena, SA De Silva WA, De Silva MV et al. Bladder cancer in Sri Lanka: experience from a tertiary referral center. *Int. Jour. Uro* 2004 Nov; 11(11):969-72.
- [15.] Fajkovic H, Halpern JA, Cha EK, et al. Impact of gender on bladder cancer incidence, staging, and prognosis. *World J Urol* 2011;29: 457–63.
- [16.] Rabbani F, Cordon-Cardo C. Mutation of cell cycle regulators and their impact on superficial bladder cancer. *Urol Clin North Am.* 2000 Feb; 27(1):83-102, ix.

- [17.] Peter Fabian Rambau<sup>1\*</sup>, Philipo L Chalya<sup>2</sup> and Kahima Jackson. Schistosomiasis and urinary bladder cancer in North Western Tanzania: a retrospective review of 185 patients. *Infectious Agents and Cancer* 2013, 8:19
- [18.] Felix AS, Soliman AS, Khaled H, et al. The changing patterns of bladder cancer in Egypt over the past 26 years. *Cancer Causes Control*. 2008;19:421-429. 116.
- [19.] Zaghoul MS, Nouh A, Moneer M, El-Baradie M, Nazmy M, Younis A. Time-trend in epidemiological and pathological features of schistosoma-associated bladder cancer. *J Egypt Natl Canc Inst*. 2008;20: 168-174.
- [20.] Fatemeh Alizadeh, Azam Bolhassani, Afshin Khavari, S. Zahra Bathaie, Tahereh Naji, Sepideh Arbabi Bidgoli. Retinoids and their biological effects against cancer. Volume 18, Issue 1, January 2014, Pages 43–49
- [21.] Brian King, PhD, MPH Terry Pechacek, PhD Peter Mariolis, PhD .Centers for Disease Control and Prevention. Best Practices for Comprehensive Tobacco Control Programs-2007. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2007. Available on line at:  
[http://www.cdc.gov/tobacco/stateandcommunity/best\\_practices/pdfs/2014/comprehensive.pdf](http://www.cdc.gov/tobacco/stateandcommunity/best_practices/pdfs/2014/comprehensive.pdf)
- [22.] David T. Levy, Frank Chaloupka, and Joseph Gitchell. The Effects of Tobacco Control Policies on Smoking Rates: A Tobacco Control Scorecard 2004. Available online at:  
[http://www.tobaccofreeair.org/METC\\_Smoke-FreeAirMaterials/SelectReferences/Smoking\\_Cessation/Levy%20JPHMP%202004.pdf](http://www.tobaccofreeair.org/METC_Smoke-FreeAirMaterials/SelectReferences/Smoking_Cessation/Levy%20JPHMP%202004.pdf)
- [23.] Shafey O, Eriksen M, Ross H, Mackey J The Tobacco Atlas. 3rd ed. Atlanta, GA: American Cancer Society; 2009.