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Prevalence of cancer and its types among urban-rural populations, the impact of socioeconomic status on cancer in Punjab, Pakistan

Abstract

Objective: To determine the prevalence and types of cancer among urban-rural populations and their relation to socioeconomic status.

Methodology: A cross sectional study was carried out in three hospitals in Punjab named Mayo Hospital, Lahore, Nishtar hospital and civil hospital in Multan, Pakistan. All new cases of cancers were recorded during the months of August 2013 through February 2014. Details of age, sex, socioeconomic status, address whether rural or urban, stage, type of cancer and hemoglobin levels at the time of presentation were recorded after verbal consent from the patients and attendees. For data analysis, Statistical Package of Social Sciences (SPSS v. 21) software was used.

Results: A total of 305 patients were investigated in the three health facilities during the six months (August 2013 – February 2014), after taking verbal consent the data of 305 patients were gathered and analyzed. 150 (49.2%) participants of the study were females and 155 (50.8%) were male out of 305 participants. Out Of 305 cancer patients, 176 were from rural areas (57.7%) and 129 from urban areas (42.3%). The 305 patients coming from different socioeconomic backgrounds; 201 subjects (65.9%) were found to be poor, whereas 104 subjects (34.1%) were rich. Of all the types of cancers mainly patients seek medical attention for Breast carcinoma with 67 cases (22%) out of which 37 (55.2%) were poor and 30 (44.8%), 33 (49.25%) were rural patients and 34 (50.75%) were urban. Non-Hodgkin Lymphoma with 40 cases (13.1%) out of which 26 (65%) were poor and 14 (35%) were rich, 21 (52.5%) were rural patients and 19 (47.5%) urban. Squamous cell carcinoma with 29 cases (9.5%): 23 (79.3%) were poor and 6 (20.7%) were rich, 22 (75.86%) were rural patients and 7 (24.16%) urban. Carcinoma of cervix with 22 cases (7.2%); 16 (72.72%) were poor and 6 (27.3%) were rich, 13 (59.1%) patients were from rural areas 9 (40.9%) were from urban areas. Several other rare carcinomas resembling Wilms tumor, with as few cases as 1 case in the time period of 6 months are also discussed.

Conclusion: The study shows that in general, cancer is prevalent in poor socioeconomic population and those patients that live in rural areas. Further studies should be carried out to observe the effects of other variables reminiscent of screening, knowledge to pursue medical attention, the time to search for medical attention, and implementation of preventive methods. Justification of environmental factors and increased geographical area should definitely be considered so that the study can be carried on a larger scale.

Keywords: non-hodgkin lymphoma, carcinoma

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Introduction

Cancers of multiple types remain one of the foremost challenging and significant obstacles faced by health providers with numbers rising to an epidemic in recent years. It is a leading cause of death worldwide. In 2007 it accounted for approximately 8 million deaths (around 13% of all deaths); and exceeding 70% of these deaths occurred in low and middle income countries.[1-7] These figures are just a tip of the iceberg; they are understood to be rising rapidly unless significant interventions are implemented. To not recognize the differences in rural and urban populations is unwise. Either its health care access, utilization, cost or geographic distribution of providers of the health services (doctors, nurses, health workers, and midwives, etc.), Pakistan is haphazardly divided into rural and urban populations, 63% in rural and 37% in urban areas.[8] Even if rapid urbanization is considered in the recent decades, one still can't ignore the vast portion of the population which is still settled in rural areas. Pakistan's, an agricultural country, maximum of the agricultural land situates in the province of Punjab, which has the enormous irrigation system, thus the majority of the population lives in the rural areas.

Broadly rural areas remain under served by primary health care givers, the availability and access to proper health care is an immense reason that portrays a large population suffering from different diseases (if they are ever screened at all). The rural population has to travel remarkable distances just to get primary medical care, requiring substantial travel time in reaching and receiving care as compared to its urban counterpart. Additionally, Pakistani rural population is poor with a majority of the population unemployed and a literacy rate of 49%. The literacy rate of Pakistan jumps to 75% in urban areas, which is still significantly low compared to other countries.[9] Rural Pakistani women are less educated, even extensively less as compared to men of the same geographical location. The shortage of basic amenities available to rural population, such as primary health care and lack of proper education system results in less screening for cancers and amplified chances of high grade tumors at the time of diagnosis in rural women.

Even though poor air quality and crimes are trivial in rural areas, insufficiencies in the built environment render it difficult for rural residents to exercise and maintain healthy habits. In the Urban context, the people living in these environments are more prone to experience superior disparities in socioeconomic status, higher crime and violence rates.[9] The existence of marginalized populations, i.e. sex workers, people with high risk behavior or psychological stressor, leads to a wide spectrum of diseases which are less prone to cause and lead to cancers. When considering cancers, which are not hereditary and are a result of exposure to different chemicals and pollutants, one might find overlapping incidences. People with inferior socioeconomic status and minorities are favorable to live in urban settings, thus often lead to vast differences in health care outcomes.10-17

Methodology

A cross sectional study carried out in three hospitals in Punjab Mayo Hospital, Lahore, Nishtar hospital and civil hospital Multan. All new cases of cancers (all cancers) coming to three hospitals were recorded during the months of August 2013 through February 2014 from all the willing patients.[14] Details of age, sex, socioeconomic status, address whether rural or urban, stage, type of cancer and hemoglobin levels at the time of presentation were recorded after taking verbal consent from the patients and the attendees. There were no exclusion criteria and all the cases were recorded. The cancers were diagnosed by different means for various cancers like biopsy, blood smear but mainly through pathology report. Full confidentiality was maintained and patients were reassured of their privacy by keeping them anonymous and no names were recorded. Informed consent acquired verbally from the patients. In the six months data collection of 305 patients with a response rate of 56.5% was obtained. Patients were divided into groups; Rural, Urban, Rich and Poor. Patients coming from villages and minor towns with small populations were set as rural. Urban populations were the ones coming from the cities and larger towns resembling Lahore and Multan.[17-29] The population earning less than two dollars a day listed in poor group. For data analysis, Statistical Package of Social Sciences (SPSS v.21) software was used.

Results

A total of 305 patients were investigated in the three health facilities during the six months (August 2013–February 2014), after taking verbal consent the data of 305 patients were gathered and analyzed with a response rate of 56.5%. Of all the participants in the study, 150 (49.2%) participants were females and 155 (50.8%) were male. There was not a considerable gender difference in the cancer rates seeking medical attention (Table 1 & 2) (Figure 1-3). Various other rare carcinomas comparable to Wilm's tumor with as few cases as 1 case in the time period of 6 months were considered too. All the rare cancers with cases less than 5 cases were excluded for simplicity and the stages of the cancer has been excluded but will be discussed nevertheless.

Taking into consideration the five extremely common cancers encountered; a visual presentation in the form of a histogram for better understanding.[30-39] The first histogram shows the data of the five cancers; breast, non-Hodgkin, Hodgkin, squamous cell and cervical cancers as encountered in rural and urban areas and the second histogram shows the same data according to socioeconomic status. It would be wise to present all the cancers encountered during the period, consequently it will be presented only in a graphical view. The graph shows all the cases; hence the graph may not be a fantastic visual pleasure (Table 3) (Figure 4).

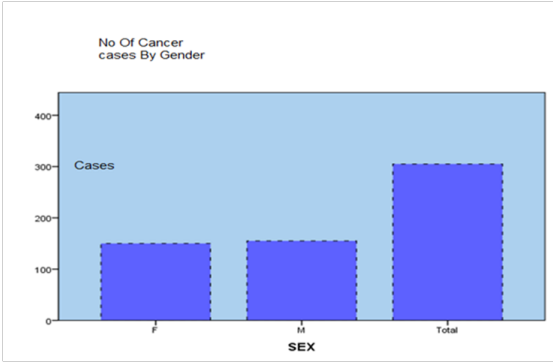

Figure 1A Number of cancer cases by gender.

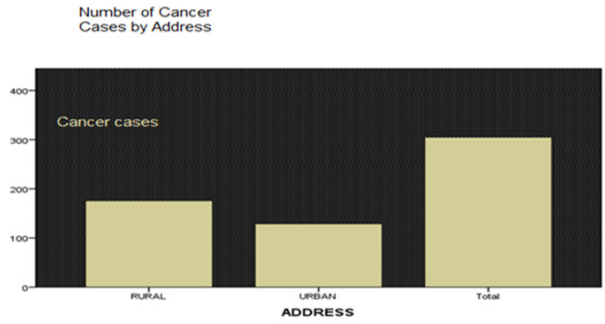

Figure 1B Number of cancer cases by area.

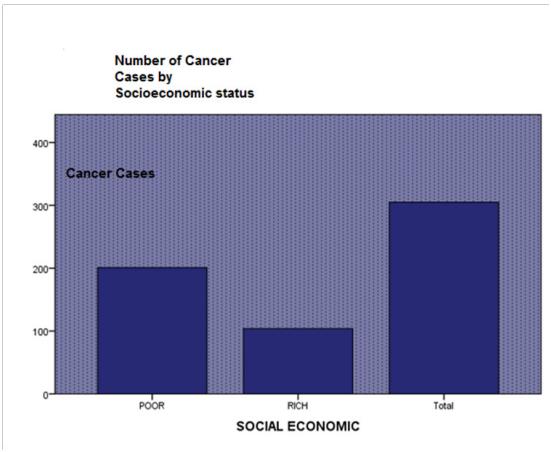

Figure 1C Number of cases by socioeconomic status.

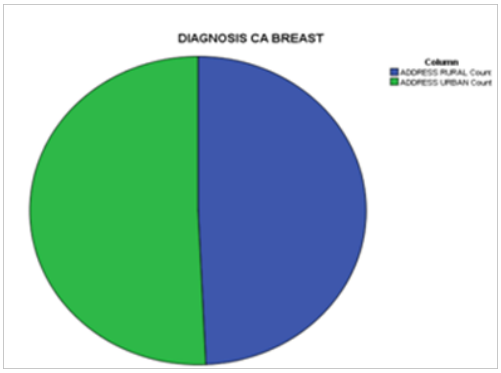

Figure 2A Diagnosis of breast cancer in areas.

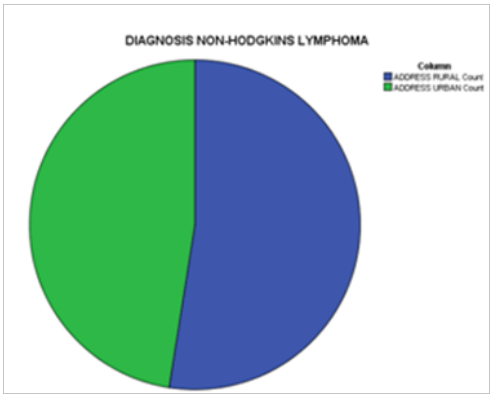

Figure 2B Diagnosis of non-hodgkins lymphoma in areas.

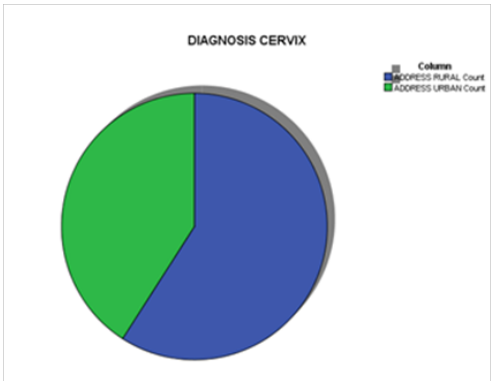

Figure 2F Diagnosis of cervical cancer in areas.

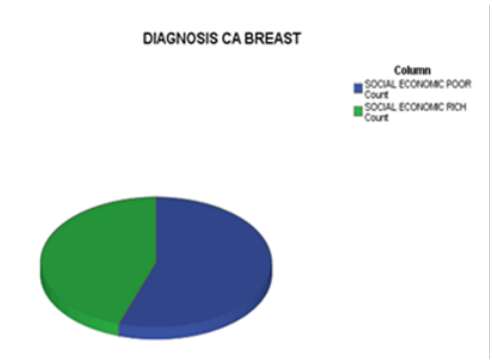

Figure 2C Diagnosis of breast cancer in socio-economic status.

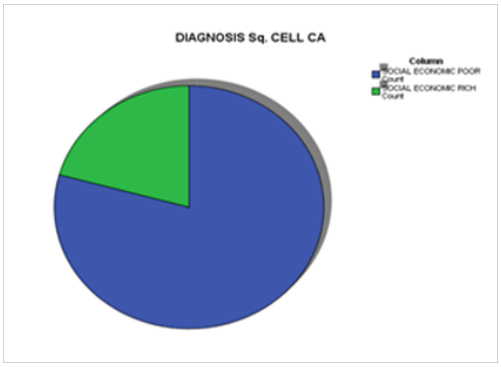

Figure 2G Diagnosis of squamous cell cancer in socioeconomic status.

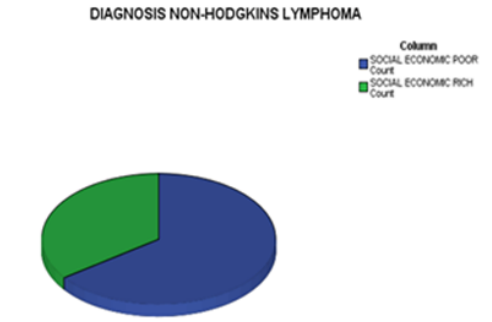

Figure 2D Diagnosis of non-hodgkins lymphoma in socioeconomic status.

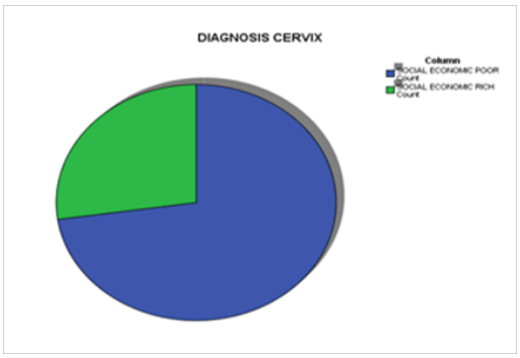

Figure 2H Diagnosis of cervical cancer in socioeconomic status.

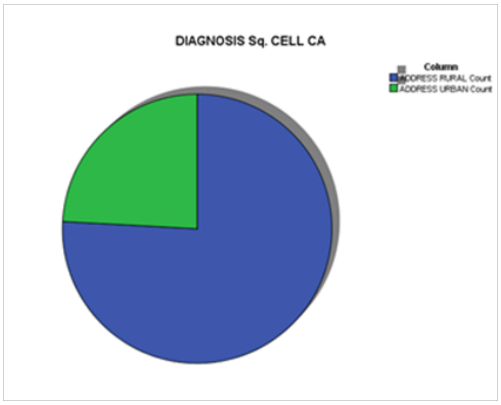

Figure 2E Diagnosis of squamous cell cancer in areas.

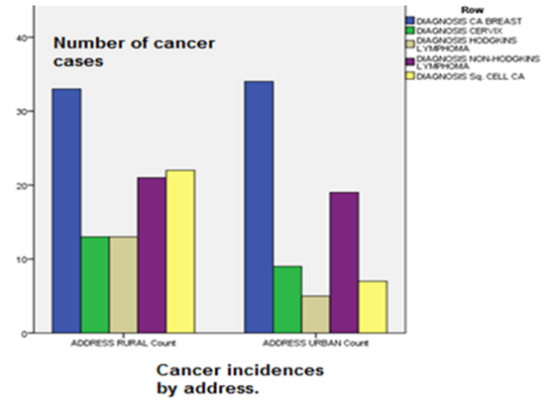

Figure 3A Number of different cancer incidences by areas.

Citation: Bashir U, Wahid K, Baqar MA, et al. Prevalence of cancer and its types among urban-rural populations, the impact of socioeconomic status on cancer in Punjab, Pakistan. *J Cancer Prev Curr Res.* 2015;2(3):75–80. DOI: 10.15406/jcpcr.2015.02.00041

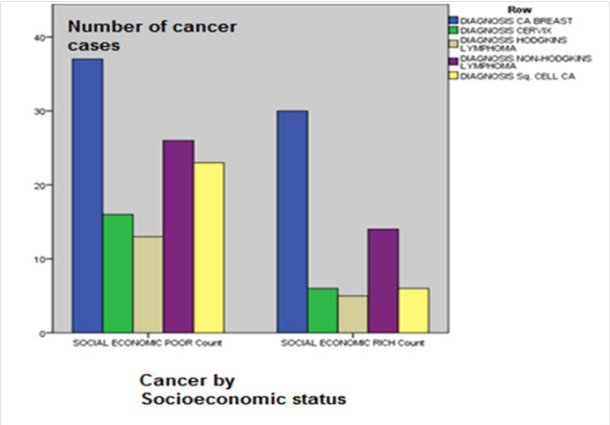

Figure 3B Number of different cancer incidences by socioeconomic status.

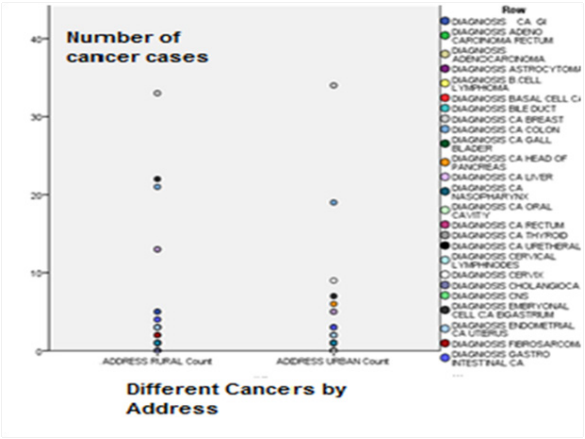

Figure 4A Number of all cancer cases by areas.

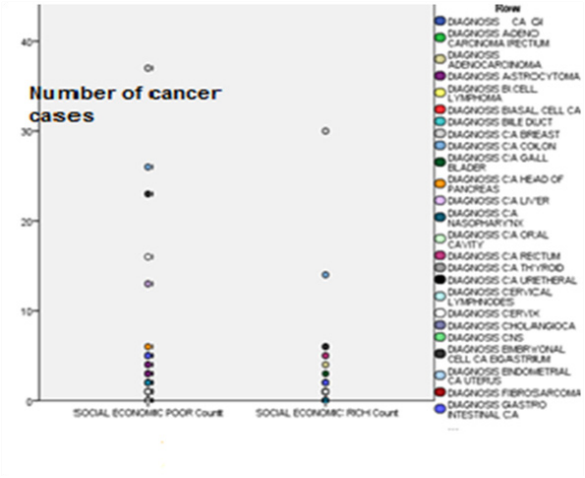

Figure 4B Number of all cancer cases by socioeconomic status.

Table 1 Number of cancer cases by gender

Gender	Number of cases	Percentage	95% confidence interval
Female	150	49.20%	-+2.9%(46.3-53.1)%
Male	155	50.80%	-+2.9%(47.9-53.7)%

Table 2 Number of cancer cases by area

Area	Number of cases	Percentage	95% confidence interval
Rural	176	57.70%	-+3.3%(55.4-60)%
Urban	129	42.30%	-+2.4%(39.9-44.7)%

Table 3 Number of cases by socioeconomic status

Socioeconomic status	Number of cases	Percentage	95% confidence interval
Poor	201	65.90%	-+3.6%(62.6-69.5)%
Rich	129	34.10%	-+1.8%(32.3-35.9)%

Discussion

There was not a considerable gender difference in the cancer rates seeking medical attention in the study. These results could be due to the reason that there is particularly male dominance in Squamous cell cancer of the mouth and oral cavity however, breast cancer incidences remain high in female (Breast cancer occurring exclusively in females in the study). Breast cancer is one of the exceedingly common cancers and globally the leading cause of deaths amongst women.[39] According to the study performed breast cancer was found to be the commonest cancer in both urban and rural populations, but less of a difference in prevalence in the poor and rich population. The commonest malignancy in Pakistani women is breast cancer. It is the highest reported in any Asian population second to Jews from Israel.[11,13,39] Consequently the best way to control breast cancer is by early detection and prompt treatment. Women from immensely deprived areas (reminiscent of rural areas) are less probable to get screened, thus the rate of breast cancer seems to be higher in socially poor population.[11,13,39]

Cervical Cancer is one of the top three common malignancies in female population worldwide. Its contribution to cancer burden is significant across all cultures and economies. It accounts for over two hundred and seventy thousand deaths globally, the majority of which are in the less developed areas[8,9,11] The cause of higher mortality in developing countries is owing to tremendous health differences compare to their developed counterparts. This is due to the government spending less resource on cancer prevention and treatment. Similar to other countries Pakistan also faces double burden of the disease. In Pakistan, cervical cancer is the fourth commonest cancer with an age standardized rate (ASIR) of 6.5/100,000.[11] Even though the incidences of cervical cancer are lower as compared to major developed countries, the mortality rates are higher because of late presentation and no or decreased screening for it. It is noteworthy, that the major bulk of worldwide resources spent on cancer are for screening alone. According to the study performed cervical cancer was found to be the third frequent cancer in both urban and rural populations.

Non-Hodgkin lymphoma (NHL) was found to be the third commonest cancer among rich and fourth among the poorest. It is estimated that nearly 0.36 million new cases and 0.19 million deaths occurred in the year 2010due to NHL. In developed countries, the incidence rates are 8.6 per 100,000 while in less developed countries i.e. Pakistan the incidence rates are 3.5 per 100,000. In year 2002, NHL incidences increased to 8.4/100,000 in males and 6.5/100,000 in females nearly doubling the year 1995 rates.[13] NHL is 4th listed malignancy in all age-groups and sexes by the Shaukat Khanum Memorial Hospital and Lahore Cancer Registry of Pakistan.[16,35] On a gender basis, NHL was the 3rd collective malignancy in males and

stood at number six in females. NHL was found to be the second commonest in rural, third relative comparative to socioeconomic, fourth in urban populations, and second cancer overall in the study. According to the Punjab Cancer registry data, the most common cancer is breast, followed by NHL and squamous cell cancer of the mouth and lips. The study is a good representation of the data found in Punjab cancer registry and goes one step further to divide socioeconomic status, and rural or urban areas.[6,16]

The cause of differences in cases of urban and rural areas can be attributed to differences in healthcare access, utilization, cost and geographic distribution of health services. A range of hard to reach groups have unmet needs relating to information, support, and cancer services. Communities living in the rural areas have less access to services corresponding to infrastructure and often lead to poor outcomes. Living in rural area scan pose a serious problem for older and disabled people who usually have other co-morbidities. These conditions are there for years before they are presented to a doctor. They also affect the eligibility of the patient for a particular form of treatment and in turn decrease the chances of survival.

There can be a lot of reason for disparities in cancer cases comparatively in poor and rich. This can be attributed to the availability of appropriate health service and regular doctor visits. There is evidence of inequalities at each stage of the patient pathway, from information provision through to palliative care. Harder to reach groups with less information are less probable to adapt to a lifestyle and behaviors which would positively impact upon cancer and decrease the rates. The relationship amongst deprivation and cancer is multi factorial. Certain cancers such as mouth, esophagus and lungs are more probable to occur in poor groups. While Mortality rates vary, these tend to be higher in poor deprived rural populations. For other cancers, the incidences are not that different but slightly higher in the poorer deprived population.

Apart from higher possibility of being diagnosed with cancers, deprived people have worse outcomes after diagnosis. Higher income families tend to consume healthier and expensive food as compared to their counterparts that reduces the risk of certain cancers. An abundant of health information is in texts: websites, pamphlets, letters and leaflets. The majority of this information is hard to read, and difficult to understand. One of the research showed that the leaflets produced by hospices can only be read by 40% of the people.[40] One of the factors is the low literacy rate in Pakistan and majority of them not being able to read or write. Another research shows that 75% of cancer patients were not given the information beforehand and would have loved to change their lifestyles only if they were informed.[40]

Recommendations

Directed health facts and assistance should be established that increases awareness of healthy lifestyles and behavior.[40] Applicable and aimed service provision is essential to the diminution of cancer disparities. It is therefore vital that data and provision is delivered which competently meets the requests of hard to reach groups. Research should be established to proficiently comprehend how discrimination, and disparities in the delegation of services, impacts upon the proficiencies of tougher to reach populations. Such services and unequal access to services affects cancer occurrence and consequences. Health care professionals should, as a component of their ongoing career development, receive training in communication skills (with a focus upon harder to reach communities and groups). Researchers should particularly confront cancer in low-income Communities. The variances in the possibility of dying from cancer concerning the exceedingly affluent and the least affluent should be reduced.[40] People should know how to decrease their risk of cancer; this can be accomplished either through different media campaigns or through literary material distribution (Literacy rate should be raised for that to take effect). Public should be made aware of the core daily life selections they can accomplish to diminish their risk of acquiring cancer.[40]

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None.

Conflicts of interest

Authors declare that there is no conflict of interest.

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