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Research Article

The Trend of Cancers Among the Elderly in Guilan: An Emerging Public Health Concern

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Abstract

Background: The increase in the elderly population in recent years has led to an increase in age-related diseases, especially cancers. Cancer is the third leading cause of death in Iran after cardiovascular diseases and accidents.

Objectives: Epidemiological studies can be a very helpful tool for planning the policies of cancer prevention in the future.

Methods: In a cross-sectional study, the records of all patients older than 60 years old were gathered from the cancer registry in Guilan province from April 2014 to April 2017. Necessary data such as age, sex, type of cancer, diagnosis methods, and grading of the tumor were extracted. Data were analyzed by SPSS software (version 21). The World Health Organization (WHO) standard population 2000 was used to calculate the age-standardized incidence rate (ASIR).

Results: A total of 10,624 cases of cancer were reported in the elderly during the study period; 63.1% were men. The age-adjusted standardized incidence of cancers increased from 636.4 per 100,000 people in 2014 to 963.1 per 100,000 people in 2017. The most common cancers were stomach (14.2%), colorectal (11.9%), non-melanoma skin cancer (10.5%), prostate (9.1%), and bladder (8.1%). The most common cancers in men were stomach, prostate, colorectal, bladder, and non-melanoma skin cancers, respectively, while in women, breast, colorectal, stomach, non-melanoma skin cancers, and cervix were the most prevalent ones.

Conclusions: This study shows an increasing trend of cancers of old age in both sexes, predominantly in men. Education programs for reducing risk factors and screening for early diagnosis of common cancers are highly recommended.

Keywords: Cancer, Elderly, Epidemiology, Incidence

1. Background

Cancer is a large group of non-communicable diseases that result from the uncontrolled growth of abnormal cells and can affect various organs. It is a leading cause of death worldwide, responsible for nearly 10 million deaths in 2020- approximately one in six deaths (1). In the United States, cancer is reported the second-leading cause of death in the general population and the leading cause among people younger than 85 years (2). The estimates suggest that approximately one in five individuals, regardless of sex, develop cancer in their lifetime, while around one in nine men and one in 12 women die from disease. Demographics-based predictions indicate that the number of new cases of cancer will reach 35 million by 2050 (3). The burden of cancer is particularly relevant in the Middle East, where more than 430,000 new cancer cases were reported in 2020 (4). Cancer is also a public health problem in Iran and is increasing significantly in both sexes (5). According to research, this disease is the third cause of death in Iran after cardiovascular diseases and accidents, which leads to the death of 50,000 people annually (6-8). Due to many reasons, such as the increase in the aging population, changes in lifestyle, increase in cancer-causing behaviors such as tobacco

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use, unhealthy diet, lack of physical activity, and high-risk jobs, the overall burden of cancer is increasing (9). The incidence of cancer has been dramatically affected by aging, which is considered one of the main causes of cancer development (3). Mortality from cancer is also directly related to increasing age, so that more than 80% of invasive and fatal cancers occur at the age of 55 and older (9). According to the last census conducted in 2015 in Iran, the proportion of elderly people aged 60 and above was 9.3% which has been increasing since 1995 (5.3%), and Guilan province in southern boundary of Caspian sea, with the most elderly population in Iran, has a significant prevalence of cancers (10, 11). Previous studies confirmed that advanced age is associated with insufficient diagnosis, treatment and shorter survival rate (12).

2. Objectives

Studying the trend of cancer in this age group can help determine the priorities of prevention and treatment programs in developing health policies. The aging of the population, along with some unhealthy dietary behaviors such as consuming salted or smoked seafood, as well as prolonged exposure to sunlight due to jobs such as fishing in Guilan, were the main reasons for conducting this study.

3. Methods

In this cross-sectional study, data were gathered from the National Cancer Registry, Guilan province branch. This registry receives notifications from physicians, hospitals, pathology, and hematology laboratories. Incomplete information about cases was defined as unknown data. Primary tumors were coded based on the International Classification of Diseases 10 (ICD-10). Metastases or recurrences of previously recorded primary cancers are not included as new cases. This study was approved by the ethics committee of Guilan University of Medical Sciences (GUMS), Rasht, Iran (ethics code: IR.GUMS.REC.1400.166). Necessary information such as sex, age, type of cancer, site of cancer, source of confirmation, and vital status were extracted from the cancer registry and the death registry of GUMS, the inclusion criteria were age of older 60 years, and residence in Guilan at the time of diagnosis. Exclusion criteria were duplicated records or residents of another provinces. The data were analyzed with SPSS software (version 21) and Excel software. Descriptive statistics were used for the analysis of quantitative data. For calculating the age-standardized rate, the direct method of standardization was implemented (12), and the World Health Organization (WHO) standard population 2000 was applied for standardization purposes (13).

4. Results

During the study period, 10624 new cases of cancer were recorded among elderly patients, showing an increasing trend of cancers from 2014 to 2017, as shown in Table 1.

The standard population for estimation was the WHO standard population 2000. Most (63.1%) of the patients were male and 63.9% of participants were in the 60 - 74 years age group, 26.9% were in the 75 - 84 years age group, and others (9.2%) were aged 85 years and older (Table 2). The common source of cancer diagnosis was cytological pathology (70.8%). The death certification accounted for 15.5% of the cases and clinical investigations were the last source of diagnosis in 13.7% of cases. The primary site of cancer was unknown in 256 (2.4%) cases, such as metastatic misclassified.

Unfortunately, in the majority of cases [6729 cases (63.3%)], the grades of cancer were not recorded. Among the recorded cases, 1758 (16.5%) were in grade 2, and 1259 (11.9%) were in grade 3.

The most common cancers were stomach (14.2%), colorectal (11.9%), non-melanoma skin cancer (10.5%), prostate (9.1%), and bladder (8.1%). Among men, the most frequent cancers were stomach, prostate, colorectal, bladder, and non-melanoma skin cancers, respectively, while in women, the most prevalent were breast, colorectal, stomach, non-melanoma skin cancers, and cervical cancers (Figures 1 - 3).

In 2014, the five most common cancers were stomach, non-melanoma skin cancer, colorectal, bladder, and prostate. By 2017, colorectal and prostate cancer had risen to the second and third most common cancers. In women, the most common cancers in 2014 were breast, stomach, colorectal, non-melanoma, and esophagus, which shifted in 2017 to breast, colorectal, stomach, non-melanoma, and cervix. In men, the most common cancers in 2014 were stomach, prostate, non-melanoma, bladder, and colorectal. By 2017, the ranking had changed, with prostate cancer first, followed by stomach, colorectal, bladder, and non-melanoma skin (Figure 4).

5. Discussion

In the 2016 census, Guilan province had the highest proportion of elderly people in Iran, with more than 8.8% populationulation aged over 65 years (14). This study also demonstrated a rising trend in cancer incidence over time. Based on the age-standardized

Table 1. Age-standardized Incidence Rate of Cancer by Year in the Elderly in Guilan Province During 2014 - 2017

Years	Count	Total Population of Old Ages (≥ 60 y)	Incidence Rate per 100,000	ASIR per 100,000
2014	2003	313170	639.59	636.42(633.08 - 639.75)
2015	2687	323754	829.95	821.18 (817.48 - 824.89)
2016	2652	335313	790.90	787.69 (784.10 - 791.28)
2017	3282	345000	951.30	963.14 (959.20 - 967.09)

Abbreviation: ASIR, age-standardized incidence rate.

Table 2. Cancers Incidence in Old Ages According to Period, Age Groups, and Sex in Guilan [a]

Periods	Women's Age Groups (y)				Men's Age Groups (y)			
	Total (≥ 60 y)	60 - 74	75 - 84	≥ 85	Total (≥ 60 y)	60 - 74	75 - 84	≥ 85
2014	715 (100)	480 (67.6)	183 (25.2)	52 (7.2)	1288 (100)	839 (65.1)	337 (26.2)	112 (8.7)
2015	957 (100)	643 (67.2)	240 (25.1)	74 (7.7)	1730 (100)	1010 (58.4)	549 (31.7)	171 (9.9)
2016	975 (100)	656 (67.3)	238 (24.4)	81 (8.3)	1677 (100)	1033 (61.6)	471 (28.1)	173 (10.3)
2017	1271 (100)	867 (68.2)	290 (22.8)	114 (10)	2011 (100)	1261 (62.7)	552 (27.4)	198 (9.9)

[a] Values are expressed as No. (%).

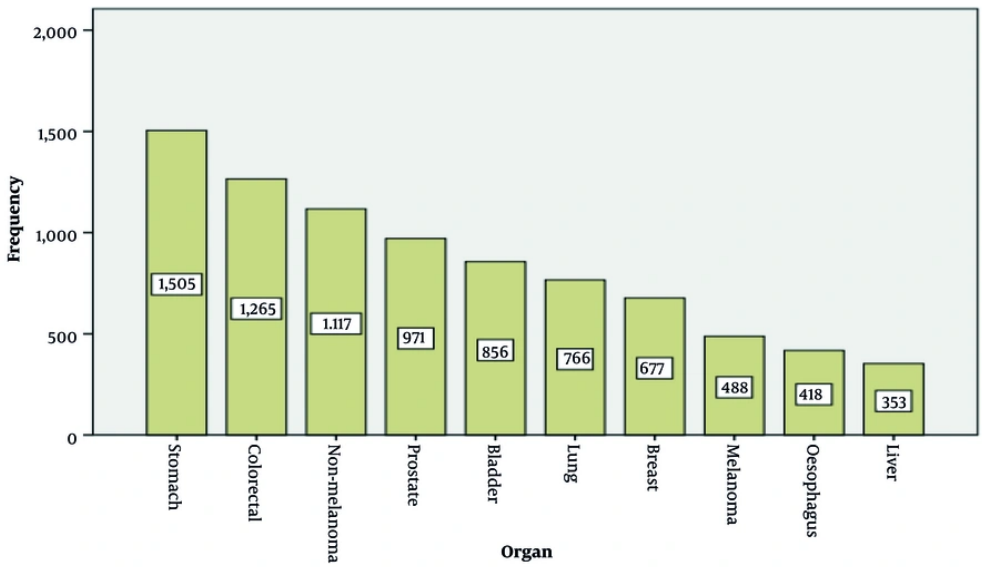

Figure 1. Ten most common cancers of both sexes in Guilan, Iran (2014 - 2017)

incidence rate (ASIR) for both sexes, the incidence increased from 636.4 per 100,000 populations in 2014 to 963.1 per 100,000 populations in 2017. This increasing rate can be attributed to several factors such as an increase in predisposing risk factors rates or an increase in the number of elderly populations (11), and improvements in the reporting and registration of cancer cases. This can lead to more accurate and comprehensive data collection, resulting in a higher recorded incidence and an increase in people's awareness and referrals. These results are in line with other studies conducted in other geographic areas,

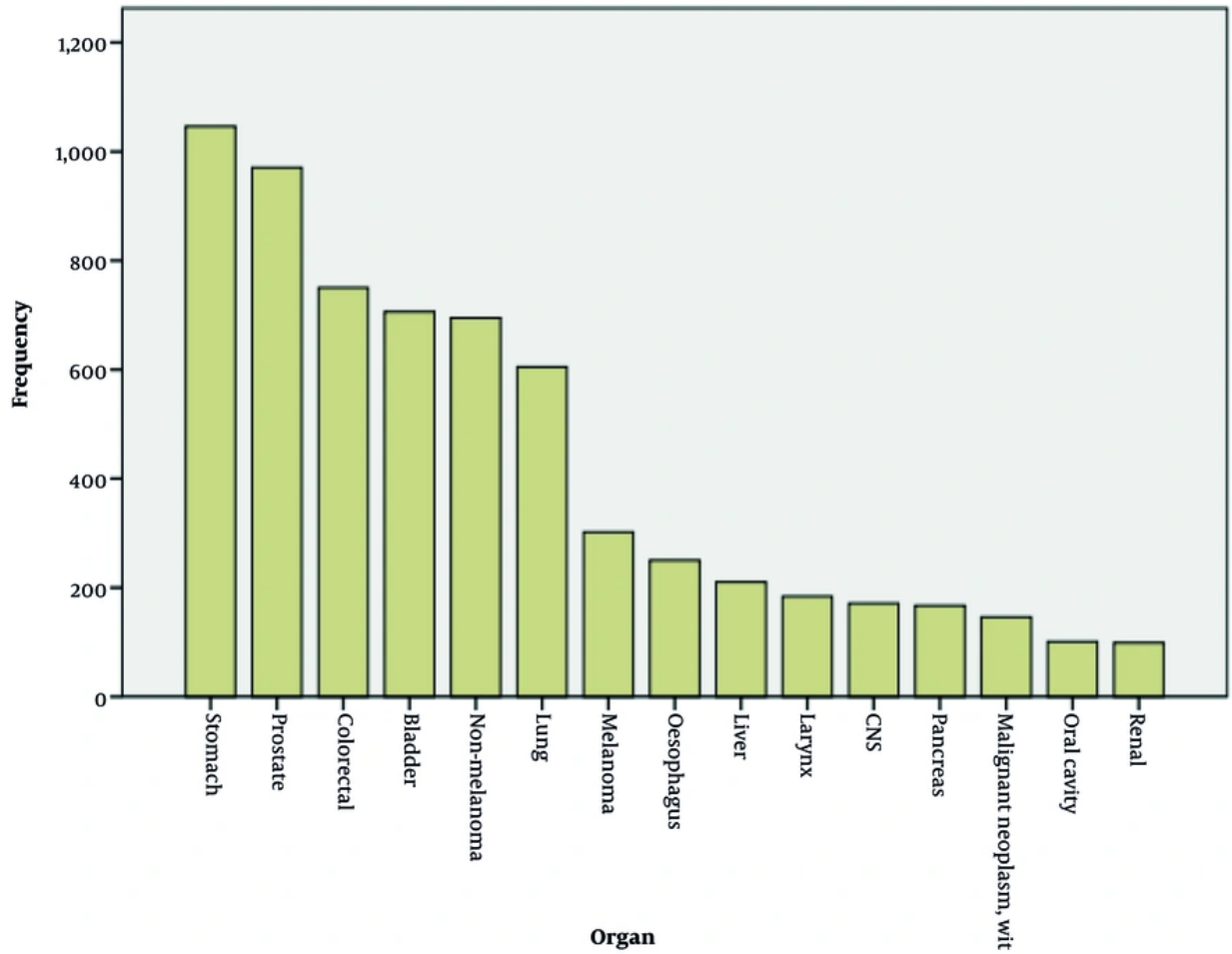

Figure 2. The most common cancers among men in Guilan, Iran (2014 - 2017)

which indicate the increasing trend of cancers in the elderly group (15-17). Based on the global cancer incidence prediction from 2012 to 2035 in older adults, the largest relative increase in incidence is predicted in the Middle East and Northern Africa (17).

A study conducted by Roshandel et al. in 2014 in Iran reported a total of 3,524 cancer cases across all population groups and both sexes in Guilan. Notably, it appears that more than half of these cases were found in older age (18). Other studies have shown that over 60% of all new cancer cases and more than 70% of deaths from malignant tumors occur in older individuals (19, 20), although this percentage is reported to be much lower in some countries (21). Considering the increase in the elderly population in the whole country and especially in Guilan in the near future, this amount is very alarming. The highest incidence of cancer was observed in the age group of 75 to 84 years old. The crude incidence rate in this study increased from 824.8 per 100,000 people in 2014 to 1351.5 in 2017. The results of this study are consistent with the Italian (22) and Finnish (14) studies but are lower than the incidence reported in Tehran province (23).

The cancer diagnosis was based on the death certificate or clinical in about 30% of the cases, which was consistent with the previous study in Iran (24) but data quality was expected to improve over time. About

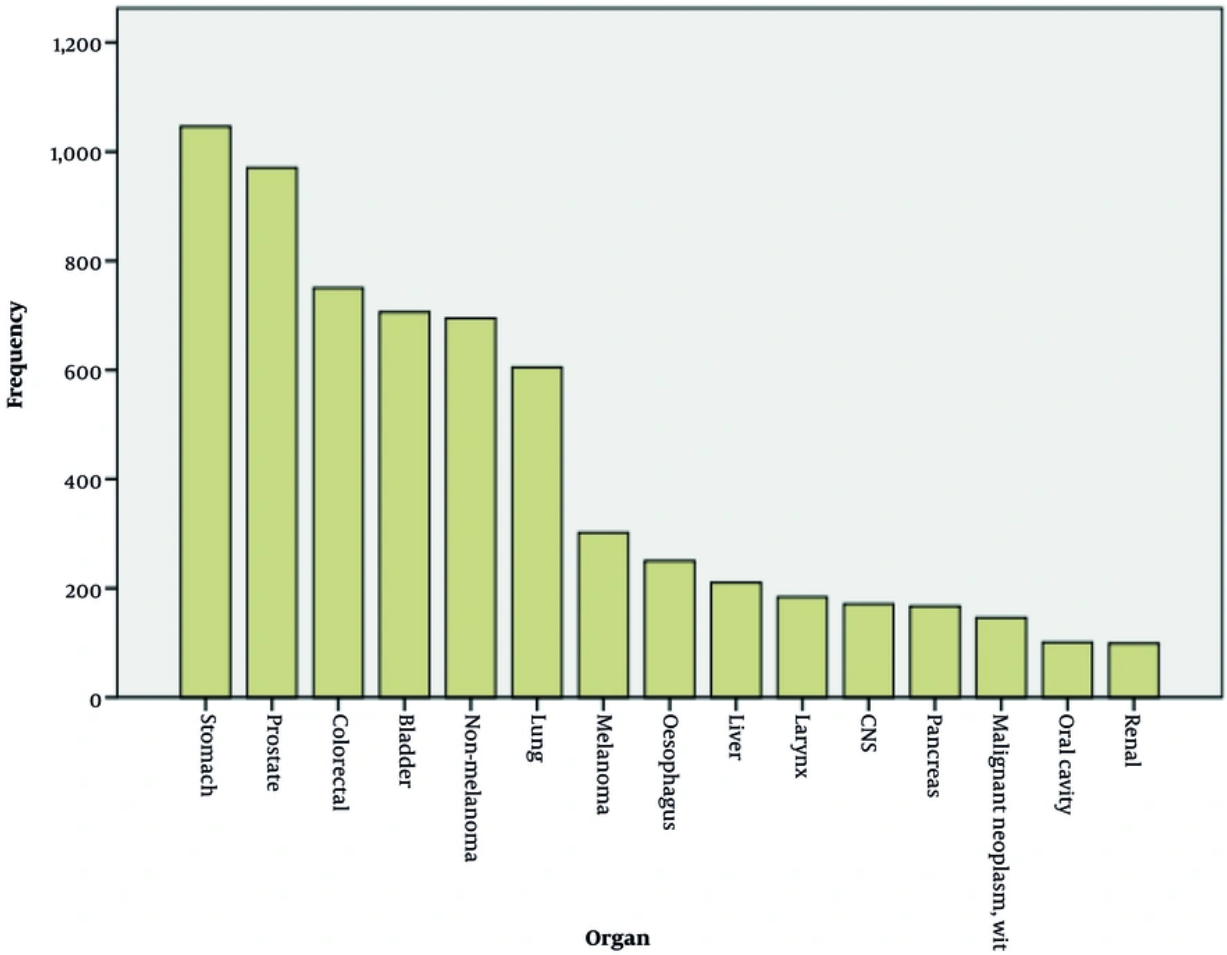

Figure 3. The most common cancers among women in Guilan, Iran (2014 - 2017)

two-thirds of cancer cases were in men, which was also seen in previous studies (15-18, 25).

The most common types of cancer identified in this study were stomach, followed by colorectal, non-melanoma skin, prostate, and bladder. These findings differ from a global study conducted by Bray et al. and Pilleron et al. (17, 26), which lung cancer was reported as the most common cancer in both sexes. Also, our results are different from the findings of Vercelli et al. in Italy in the period of 1976 - 1992 (22), which can be due to the research time and lifestyle differences, geographical, and environmental factors. The study conducted by Rouhani-Rasaf et al. in Tehran province in 2007 found that prostate and breast cancers were the most common types of cancer in both men and women (23). Other studies in Iran showed nearly the same pattern of common cancers in older ages. Roshandel et al. in 2015 reported breast cancer, prostate cancer, skin cancer (non-melanoma), stomach cancer, and colon cancer as the most common cancers in Iran (18). Another study by Akbari et al. found that skin cancer had the highest incidence among elderly people (11). Similar to this study, the previous studies conducted in the province assigned the highest prevalence rate to stomach cancer. In the study by Hoda et al. (27), stomach cancer was identified as the most common cancer in both sexes, with a prevalence rate of 8.17%. Similarly, in the study by Rafiemanesh et al. in the Caspian Sea region, including

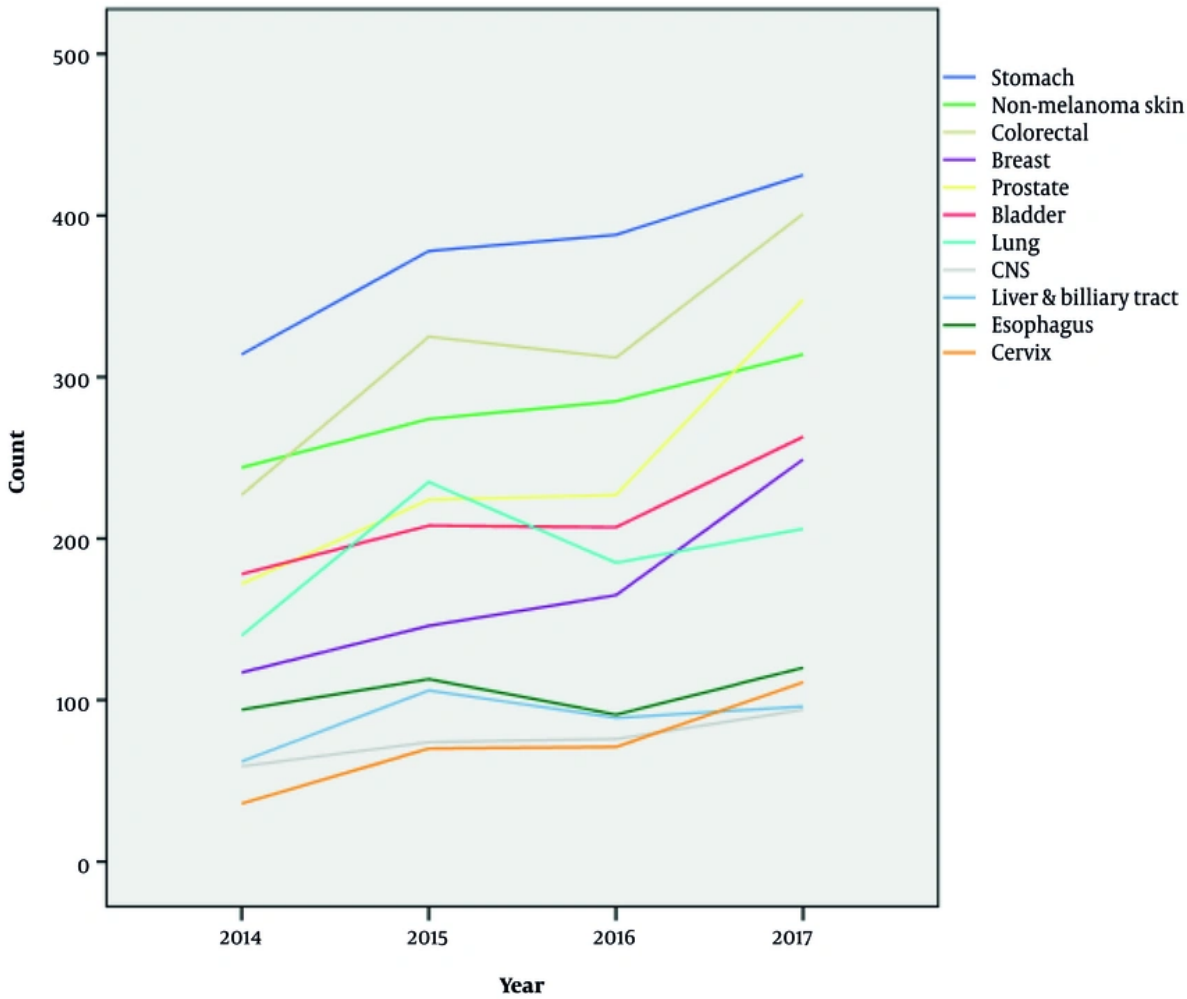

Figure 4. Trend of common cancers in old ages, 2014 - 2017

Guilan, Mazandaran, and Golestan provinces, stomach cancer was reported as one of the most common cancers, along with breast, skin, colon, and bladder cancer (28). Based on research performed by Tayibi et al. in Mazandaran (29), breast, esophageal, brain, stomach, and uterine cancer were the most incident diagnosed cancers in women. Another study in the northwest of Iran showed that the five most common cancers (excluding skin cancer) were stomach, bladder, esophagus, prostate and lung in males and esophagus, stomach, breast, colorectal cancer, and bladder in females (30). According to the statistics mentioned, it does appear that cancers of the digestive system, such as stomach and colorectal cancer, are prevalent in different provinces of Iran. High prevalence of gastrointestinal cancers in the north of Iran may be due to environmental conditions and nutritional habits, such as consumption of dried, smoked, or salted seafood, pickles, or high prevalence of *Helicobacter pylori* infection (31) in this area. Decreasing the incidence of gastric cancer in the US and developed countries suggests the role of environmental exposures in the pathogenesis of the cancer. Some authors have suggested that genetic susceptibility plays an important role in the different proportions of colorectal cancer (30). In addition, age plays an important role in the survival of GI cancer (32). To further understand and address this rise in digestive system cancers, it is crucial

to conduct national and periodic studies that evaluate the risk factors associated with these types of cancers in different provinces.

Non-melanoma skin cancers were the third most common cancer of the elderly in this geographical area, after gastric and colorectal. Guilan is located on the southern boundary of the Caspian Sea, and for this reason, the occupation of a number of people is fishing and exposure to UV. On the other hand, using the sea for recreation is also very popular. These factors cause the people of the region to be more exposed to sunlight; on the other hand, most of the people of the region have pale skin, fair hair, and blue eyes, which increases the chance of skin cancer.

Almost all prostate cancers occur in older adults. Therefore, as the population of elderly men continues to grow, we can expect an increase in the incidence of this cancer. However, the rising trend of the prostate cancer cases observed from 2014 to 2017 is concerning. The reasons for this rise could be due to awareness about this cancer also increasing of screening by physicians. Breast cancer is the most frequently seen malignancy among women aged 65 and older in different parts of the world (16, 17, 21, 25, 30). Breast cancer screening has been included in Iran's health system since previous decades. It seems that the majority of breast cancers are diagnosed before old age; however, this cancer still has the highest incidence in elderly women.

Every year, nearly 500.000 women are diagnosed with cervical cancer, and approximately 80% of them are seen in developing countries (21). There is a simple, easy, and cheap method with a highly sensitive and specific Pap smear test for screening of this cancer.

In terms of the grading of cancer in the study, it is concerning that in over 63% of cases, the tumor grading was not clear, and in many of these cases, the primary location of the tumor was also unknown. This lack of clarity highlights the need for improved diagnostic procedures and accurate reporting of tumor grading and primary tumor location. This information is essential for determining appropriate treatment plans and predicting the prognosis for patients.

Among the cases with available grading, most were classified as grade 2 or grade 3. This indicates that a substantial proportion of patients were diagnosed with moderately to poorly differentiated tumors, suggesting a tendency toward more aggressive disease. This finding emphasizes the importance of public education and awareness campaigns to encourage early detection and screening programs for common cancers. Early diagnosis is particularly crucial for certain types of cancer, such as skin, breast, and gastrointestinal cancers. Prompt detection of these cancers can significantly impact the final outcome and improve the patient's survival rate.

5.1. Conclusions

This study shows the high rate of cancer in the elderly group, presenting a clear picture of the trend of cancer development in Guilan, the province with the highest elderly population. It is important to note that cancer incidence tends to increase with age. On the other hand, most of the common cancers can be detected early and treated successfully. Therefore, implementation of screening programs, especially for common cancers such as GI system cancers (with more focus on stomach and colorectal), and an educational program for people at risk, such as fishermen, is highly recommended.

5.2. Limitations

This study, like other cancer registry studies, had many limitations, such as a lack of access to all information, such as cancer grading, primary site of cancers, underlying diseases, occupation, and family history.

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Footnotes

Authors' Contribution: Z. M. A., L. K. V., and A. D. K. designed this study. D. P. collected the data. Z. M. A., L. K. V., and A. D. K. performed the data analysis. D. P. and L. K. V. drafted the manuscript. Z. M. A., L. K. V., and A. D. K. revised the manuscript. All authors read and approved the final manuscript.

Conflict of Interests Statement: The authors declare no conflict of interest.

Data Availability: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethical Approval: The study was ethically approved by the Deputy of Research, Guilan University of Medical Sciences (GUMS) (IR.GUMS.REC.1400.166). This study is in accordance with the principles of the 1983 Declaration of Helsinki.

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Informed Consent: Informed consent was obtained from the participants.

References

1. World Health Organization. *Cancer*. Geneva, Switzerland: World Health Organization; 2025. Available from: https://www.who.int/news-room/fact-sheets/detail/cancer.
2. Siegel RL, Giaquinto AN, Jemal A. Cancer statistics, 2024. *CA Cancer J Clin*. 2024;**74**(1):12-49. [PubMed ID: 38230766]. https://doi.org/10.3322/caac.21820.
3. Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2024;**74**(3):229-63. [PubMed ID: 38572751]. https://doi.org/10.3322/caac.21834.
4. Mansour R, Al-Ani A, Al-Hussaini M, Abdel-Razeq H, Al-Ibraheem A, Mansour AH. Modifiable risk factors for cancer in the middle East and North Africa: a scoping review. *BMC Public Health*. 2024;**24**(1):223. [PubMed ID: 38238708]. [PubMed Central ID: PMC10797965]. https://doi.org/10.1186/s12889-024-17787-5.
5. Enayatrad M, Mirzaei M, Salehiniya H, Karimirad MR, Vaziri S, Mansouri F, et al. Trends in Incidence of Common Cancers in Iran. *Asian Pac J Cancer Prev*. 2016;**17**(S3):39-42. [PubMed ID: 27165205]. https://doi.org/10.7314/apjcp.2016.17.s3.39.
6. Mirzaei M, Pournamdar Z, Salehiniya H. Epidemiology and Trends in Incidence of Kidney Cancer in Iran. *Asian Pac J Cancer Prev*. 2015;**16**(14):5859-61. [PubMed ID: 26320463]. https://doi.org/10.7314/apjcp.2015.16.14.5859.
7. Razi S, Salehiniya H, Fathali Loy Dizaji M. [Epidemiology of Prevalent Cancer Among Iranian Women and its Incidence Trends from 2003-2009 in Iran]. *J Arak Univ Med Sci*. 2015;**18**(2):17-24. FA.
8. Mansour-Ghanaei F, Heidarzadeh A, Naghipour MR, Joukar F, Valeshabad AK, Fallah MS, et al. A 10-year study of esophageal cancer in Guilan province, Iran: the Guilan Cancer Registry Study (GCRS). *Asian Pac J Cancer Prev*. 2012;**13**(12):6277-83. [PubMed ID: 23464445]. https://doi.org/10.7314/apjcp.2012.13.12.6277.
9. Moradpour F, Fatemi Z. Estimation of the projections of the incidence rates, mortality and prevalence due to common cancer site in Isfahan, Iran. *Asian Pac J Cancer Prev*. 2013;**14**(6):3581-5. [PubMed ID: 23886149]. https://doi.org/10.7314/apjcp.2013.14.6.3581.
10. Kousheshi M, Khosravi A, Alizadeh M, Torkashvand M, Aghaei N. *Population Ageing in I. R. Iran.Socio-economic, demographic and health Characteristics of The Elderly*. 2014, [cited 2024]. Available from: https://iran.unfpa.org/sites/default/files/pub-pdf/Population%20Ageing%20in%201.%20R.%20Iran_2.pdf.
11. Akbari ME, Rafiee M, Khoei MA, Eshrati B, Hatami H. Incidence and survival of cancers in the elderly population in Iran: 2001-2005. *Asian Pac J Cancer Prev*. 2011;**12**(11):3035-9. [PubMed ID: 22393986].
12. Mohamad K, Malekafzali H. *[Statistical methods and health indices]*. Tehran, Iran: Publisher Author; 2022. FA.
13. National Cancer Institute. *World (WHO 2000-2025) Standard*. 2025. Available from: https://seer.cancer.gov/stdpopulations/world.who.html.
14. Statistical centerof Iran. *[Total results od Iran census 2016]*. 2017. FA. Available from: https://amar.org.ir/population-and-housing-census#app3146.
15. Tanskanen T, Seppa KJM, Virtanen A, Malila NK, Pitkaniemi JM. Cancer Incidence and Mortality in the Oldest Old: A Nationwide Study in Finland. *Am J Epidemiol*. 2021;**190**(5):836-42. [PubMed ID: 33089310]. [PubMed Central ID: PMC8096474]. https://doi.org/10.1093/aje/kwaa236.
16. Koohi F, Enayatrad M, Salehiniya H. [A Study of the Epidemiology and Trends in Cancer Incidence in Iranian Elderly 2003-2009]. *J Arak Univ Med Sci*. 2015;**18**(3):57-66. FA.
17. Pilleron S, Sarfati D, Janssen-Heijnen M, Vignat J, Ferlay J, Bray F, et al. Global cancer incidence in older adults, 2012 and 2035: A population-based study. *Int J Cancer*. 2019;**144**(1):49-58. [PubMed ID: 29978474]. https://doi.org/10.1002/ijc.31664.
18. Roshandel G, Ghanbari-Motlagh A, Partovipour E, Salavati F, Hasanpour-Heidari S, Mohammadi G, et al. Cancer incidence in Iran in 2014: Results of the Iranian National Population-based Cancer Registry. *Cancer Epidemiol*. 2019;**61**:50-8. [PubMed ID: 31132560]. https://doi.org/10.1016/j.canep.2019.05.009.
19. Yancik R, Ries LA. Aging and cancer in America. Demographic and epidemiologic perspectives. *Hematol Oncol Clin North Am*. 2000;**14**(1):17-23. [PubMed ID: 10680069]. https://doi.org/10.1016/s0889-8588(05)70275-6.
20. Retornaz F, Seux V, Sourial N, Braud AC, Monette J, Bergman H, et al. Comparison of the health and functional status between older inpatients with and without cancer admitted to a geriatric/internal medicine unit. *J Gerontol A Biol Sci Med Sci*. 2007;**62**(8):917-22. [PubMed ID: 17702885]. https://doi.org/10.1093/gerona/62.8.917.
21. Cinar D, Tas D. Cancer in the elderly. *North Clin Istanb*. 2015;**2**(1):73-80. [PubMed ID: 28058345]. [PubMed Central ID: PMC5175057]. https://doi.org/10.14744/nci.2015.72691.
22. Vercelli M, Quaglia A, Parodi S, Crosignani P. Cancer prevalence in the elderly. ITAPREVAL Working Group. *Tumori*. 1999;**85**(5):391-9. [PubMed ID: 10665856]. https://doi.org/10.1177/030089169908500506.
23. Rohani-Rasaf M, Rohani-Rasaf MR, Hashemi Nazari SS, Mohammadian-Hafshejani A, Asadi-Lari M. Cancer Incidence Rate in the Elderly Inhabitants of Tehran: Is there Really any Cluster? *Int J Cancer Manag*. 2017;**10**(7). https://doi.org/10.5812/ijcm.5753.
24. Weir HK, Sherman R, Yu M, Gershman S, Hofer BM, Wu M, et al. Cancer Incidence in Older Adults in the United States: Characteristics, Specificity, and Completeness of the Data. *J Registry Manag*. 2020;**47**(3):150-60. [PubMed ID: 33584972]. [PubMed Central ID: PMC7879958].
25. Priscila Maria Stolses Bergamo F, Oliveira Friestino JK, Rosemeire de Olanda F, Aldiane Gomes de Macedo B, Sheila Rizzato S, Djalma de Carvalho MF. Prevalence of diagnosis and types of cancer in the elderly: data from National Health Survey 2013. *Rev Bras Geriatr Gerontol*. 2020;**23**(2). e200023.
26. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2018;**68**(6):394-424. [PubMed ID: 30207593]. https://doi.org/10.3322/caac.21492.
27. Hoda S, Aliee A, Shakiba M, Odi M, Ghasemi Poor M, Poor Rasooli Z. [A Study of Frequency of Cancerous Organs in Guilan Province (1999-2000)]. *J Guilan Univ Med Sci*. 2003;**12**(46):84-92. FA.
28. Rafiemanesh H, Maleki F, Mohammadian-Hafshejani A, Salemi M, Salehiniya H. The Trend in Histological Changes and the Incidence of Esophagus Cancer in Iran (2003-2008). *Int J Prev Med*. 2016;**7**:31.

[PubMed ID: 26955461]. [PubMed Central ID: PMC4763464]. https://doi.org/10.4103/2008-7802.175990.

29. Tayebi M, Shabestani Monfared A, Moslemi D. [A 10 Year Survey of Cancer in Patients Who Referred to Shahid Rajai Radiotherapy Center in North of Iran (2000-2009)]. *J Babol Univ Med Sci*. 2012;**14**(6):97-101. FA.
30. Somi MH, Mousavi SM, Rezaeifar P, Naghashi SH. Cancer incidence among the elderly population in the Northwest of Iran: A population based study. *IJCP*. 2009;**2**(3).
31. Moosazadeh M, Lankarani KB, Afshari M. Meta-analysis of the Prevalence of Helicobacter Pylori Infection among Children and Adults of Iran. *Int J Prev Med*. 2016;**7**:48. [PubMed ID: 27076886]. [PubMed Central ID: PMC4809131]. https://doi.org/10.4103/2008-7802.177893.
32. Choi Y, Kim N, Kim KW, Jo HH, Park J, Yoon H, et al. Gastric Cancer in Older Patients: A Retrospective Study and Literature Review. *Ann Geriatr Med Res*. 2022;**26**(1):33-41. [PubMed ID: 35298880]. [PubMed Central ID: PMC8984166]. https://doi.org/10.4235/agmr.21.0144.