

# Islamic Republic of Iran, Golestan Province

## REGISTRATION AREA

The Golestan Population-based Cancer Registry (GPCR) covers Golestan Province in the north-eastern Islamic Republic of Iran. The province's land area is 20 438 km<sup>2</sup> (about 1.3% of the country's total land area). About half of the province's residents live in urban areas.

## CANCER CARE FACILITIES

Golestan has 20 hospitals. Almost all cancer diagnostic and therapeutic services, including open and laparoscopic surgeries, radiotherapy, chemotherapy, computed tomography, magnetic resonance imaging, upper endoscopy, colonoscopy, sonography, mammography, and pathological examination, are available throughout the province. The provincial health network also includes 120 health care centres that provide various public health services for residents, including cancer prevention programmes.

## REGISTRY STRUCTURE AND METHODS

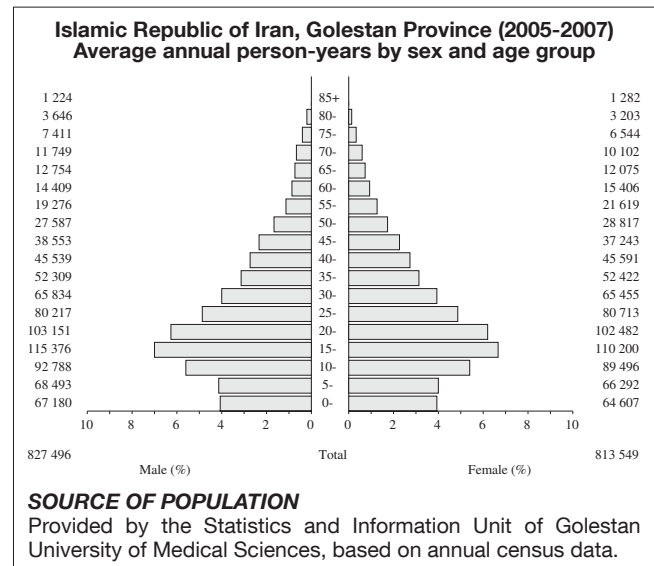
The GPCR was established by the Golestan Research Center of Gastroenterology and Hepatology, Golestan University of Medical Sciences (GOUMS) under the supervision of the Digestive Disease Research Center, Tehran University of Medical Sciences. The registry collects information from 68 public and private sources within the province, including hospitals, pathology laboratories, imaging centres, and specialists. It also obtains information from medical centres and regional registries in neighbouring provinces (particularly Razavi Khorasan, Mazandaran, and Tehran), to minimize the loss of data on resident cases diagnosed outside of Golestan. Data are collected both actively and passively, by well-trained staff members who regularly visit all sources. The GPCR also regularly receives information on cancer-related deaths from the death registry within the health department of GOUMS, and matches these data against the registry database to identify previously unreported cases, which are defined as death-certificate-only (DCO) cases. Procedures are in place to ensure the confidentiality, quality, and optimal use of data.

## USE OF THE DATA

The GPCR publishes an annual report on cancer incidence and mortality. Registry data have also been used in several cross-sectional, case-control, and survival studies.

## CONTRIBUTORS

Gholamreza Roshandel  
Shahryar Semnani  
Alireza Sadjadi  
Mohsen Aarabi  
Hooman Khademi  
Abbasali Keshtkar  
Seyed Mehdi Sedaghat  
Honeyeh Sadat Mirkarimi  
Seyed Mehdi Nouraei  
Reza Malekzadeh



## NOTES ON THE DATA

\*Low MV%. Low M:I ratios.

## 10 MAJOR CANCERS, ASR (WORLD) PER 100 000

| Male                       |       | Female                     |       |
|----------------------------|-------|----------------------------|-------|
| Stomach                    | 30.4  | Breast                     | 28.0  |
| Oesophagus                 | 23.2  | Oesophagus                 | 18.8  |
| Trachea, bronchus and lung | 17.5  | Stomach                    | 12.6  |
| Non-melanoma skin cancer   | 11.0  | Colon                      | 7.7   |
| Prostate                   | 10.6  | Non-melanoma skin cancer   | 7.7   |
| Colon                      | 9.9   | Ovary                      | 6.1   |
| Bladder                    | 8.5   | Trachea, bronchus and lung | 5.6   |
| Brain, nervous system      | 7.8   | Cervix uteri               | 5.4   |
| Non-Hodgkin lymphoma       | 7.2   | Brain, nervous system      | 5.3   |
| Lymphoid leukaemia         | 5.2   | Non-Hodgkin lymphoma       | 3.3   |
| All sites                  | 176.3 | All sites                  | 142.0 |

## \*Islamic Republic of Iran, Golestan Province (2005-2007)

| SITE                         | Male      |           |                          |           |                     |                     | Female    |           |                          |           |                     |                     | ICD-10          |
|------------------------------|-----------|-----------|--------------------------|-----------|---------------------|---------------------|-----------|-----------|--------------------------|-----------|---------------------|---------------------|-----------------|
|                              | No. cases | Freq. (%) | Crude rate (per 100,000) | ASR world | Cum. rates 0-64 (%) | Cum. rates 0-74 (%) | No. cases | Freq. (%) | Crude rate (per 100,000) | ASR world | Cum. rates 0-64 (%) | Cum. rates 0-74 (%) |                 |
| Lip                          | 3         | 0.1       | 0.1                      | 0.1       | 0.01                | 0.01                | 5         | 0.2       | 0.2                      | 0.2       | 0.02                | 0.02                | C00             |
| Tongue                       | 10        | 0.4       | 0.4                      | 0.6       | 0.04                | 0.07                | 4         | 0.2       | 0.2                      | 0.2       | 0.01                | 0.01                | C01-02          |
| Mouth                        | 11        | 0.4       | 0.4                      | 0.6       | 0.04                | 0.06                | 11        | 0.5       | 0.5                      | 0.7       | 0.03                | 0.10                | C03-06          |
| Salivary glands              | 6         | 0.2       | 0.2                      | 0.4       | 0.03                | 0.04                | 3         | 0.1       | 0.1                      | 0.2       | 0.01                | 0.02                | C07-08          |
| Tonsil                       | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | 1         | 0.0       | 0.0                      | 0.1       | 0.01                | 0.01                | C09             |
| Other oropharynx             | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | C10             |
| Nasopharynx                  | 11        | 0.4       | 0.4                      | 0.7       | 0.04                | 0.08                | 11        | 0.5       | 0.5                      | 0.4       | 0.03                | 0.03                | C11             |
| Hypopharynx                  | 5         | 0.2       | 0.2                      | 0.3       | 0.02                | 0.04                | 3         | 0.1       | 0.1                      | 0.1       | 0.01                | 0.02                | C12-13          |
| Pharynx unspecified          | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | 1         | 0.0       | 0.0                      | 0.1       | 0.00                | 0.00                | C14             |
| Oesophagus                   | 370       | 13.3      | 14.9                     | 23.2      | 1.08                | 2.88                | 285       | 11.9      | 11.7                     | 18.8      | 0.99                | 2.37                | C15             |
| Stomach                      | 476       | 17.1      | 19.2                     | 30.4      | 1.51                | 3.48                | 199       | 8.3       | 8.2                      | 12.6      | 0.63                | 1.47                | C16             |
| Small intestine              | 25        | 0.9       | 1.0                      | 1.4       | 0.08                | 0.17                | 16        | 0.7       | 0.7                      | 0.9       | 0.03                | 0.11                | C17             |
| Colon                        | 163       | 5.8       | 6.6                      | 9.9       | 0.62                | 1.13                | 128       | 5.3       | 5.2                      | 7.7       | 0.51                | 0.94                | C18             |
| Rectum                       | 55        | 2.0       | 2.2                      | 3.1       | 0.19                | 0.34                | 41        | 1.7       | 1.7                      | 2.3       | 0.18                | 0.22                | C19-20          |
| Anus                         | 10        | 0.4       | 0.4                      | 0.6       | 0.05                | 0.07                | 5         | 0.2       | 0.2                      | 0.4       | 0.00                | 0.06                | C21             |
| Liver                        | 60        | 2.1       | 2.4                      | 3.6       | 0.23                | 0.40                | 36        | 1.5       | 1.5                      | 2.0       | 0.11                | 0.23                | C22             |
| Gallbladder etc.             | 17        | 0.6       | 0.7                      | 1.2       | 0.06                | 0.11                | 24        | 1.0       | 1.0                      | 1.6       | 0.07                | 0.18                | C23-24          |
| Pancreas                     | 48        | 1.7       | 1.9                      | 2.8       | 0.12                | 0.34                | 17        | 0.7       | 0.7                      | 1.0       | 0.07                | 0.14                | C25             |
| Nose, sinuses etc.           | 1         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | 3         | 0.1       | 0.1                      | 0.2       | 0.01                | 0.01                | C30-31          |
| Larynx                       | 64        | 2.3       | 2.6                      | 4.1       | 0.26                | 0.54                | 22        | 0.9       | 0.9                      | 1.4       | 0.11                | 0.18                | C32             |
| Trachea, bronchus and lung   | 278       | 10.0      | 11.2                     | 17.5      | 1.07                | 2.13                | 93        | 3.9       | 3.8                      | 5.6       | 0.35                | 0.68                | C33-34          |
| Other thoracic organs        | 7         | 0.3       | 0.3                      | 0.3       | 0.01                | 0.03                | 4         | 0.2       | 0.2                      | 0.2       | 0.01                | 0.01                | C37-38          |
| Bone                         | 31        | 1.1       | 1.2                      | 1.3       | 0.07                | 0.15                | 33        | 1.4       | 1.4                      | 1.5       | 0.14                | 0.14                | C40-41          |
| Melanoma of skin             | 14        | 0.5       | 0.6                      | 0.9       | 0.07                | 0.10                | 12        | 0.5       | 0.5                      | 0.7       | 0.04                | 0.04                | C43             |
| Other skin                   | 176       |           | 7.1                      | 11.0      | 0.60                | 1.23                | 124       |           | 5.1                      | 7.7       | 0.41                | 0.83                | C44             |
| Mesothelioma                 | 1         | 0.0       | 0.0                      | 0.1       | 0.01                | 0.01                | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | C45             |
| Kaposi sarcoma               | 10        | 0.4       | 0.4                      | 0.7       | 0.06                | 0.09                | 1         | 0.0       | 0.0                      | 0.1       | 0.01                | 0.01                | C46             |
| Connective and soft tissue   | 39        | 1.4       | 1.6                      | 2.1       | 0.15                | 0.20                | 44        | 1.8       | 1.8                      | 2.1       | 0.17                | 0.20                | C47+C49         |
| Breast                       | 3         | 0.1       | 0.1                      | 0.1       | 0.00                | 0.01                | 558       | 23.3      | 22.9                     | 28.0      | 2.27                | 2.88                | C50             |
| Vulva                        |           |           |                          |           |                     |                     | 1         | 0.0       | 0.0                      | 0.1       | 0.01                | 0.01                | C51             |
| Vagina                       |           |           |                          |           |                     |                     | 3         | 0.1       | 0.1                      | 0.2       | 0.01                | 0.04                | C52             |
| Cervix uteri                 |           |           |                          |           |                     |                     | 91        | 3.8       | 3.7                      | 5.4       | 0.44                | 0.62                | C53             |
| Corpus uteri                 |           |           |                          |           |                     |                     | 28        | 1.2       | 1.1                      | 1.7       | 0.11                | 0.21                | C54             |
| Uterus unspecified           |           |           |                          |           |                     |                     | 17        | 0.7       | 0.7                      | 0.9       | 0.05                | 0.09                | C55             |
| Ovary                        |           |           |                          |           |                     |                     | 118       | 4.9       | 4.8                      | 6.1       | 0.52                | 0.68                | C56             |
| Other female genital organs  |           |           |                          |           |                     |                     | 1         | 0.0       | 0.0                      | 0.1       | 0.01                | 0.01                | C57             |
| Placenta                     |           |           |                          |           |                     |                     | 5         | 0.2       | 0.2                      | 0.2       | 0.01                | 0.01                | C58             |
| Penis                        | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                |           |           |                          |           |                     |                     | C60             |
| Prostate                     | 172       | 6.2       | 6.9                      | 10.6      | 0.27                | 1.20                |           |           |                          |           |                     |                     | C61             |
| Testis                       | 53        | 1.9       | 2.1                      | 2.3       | 0.18                | 0.22                |           |           |                          |           |                     |                     | C62             |
| Other male genital organs    | 1         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                |           |           |                          |           |                     |                     | C63             |
| Kidney                       | 34        | 1.2       | 1.4                      | 2.1       | 0.14                | 0.26                | 20        | 0.8       | 0.8                      | 1.2       | 0.10                | 0.13                | C64             |
| Renal pelvis                 | 1         | 0.0       | 0.0                      | 0.1       | 0.00                | 0.01                | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | C65             |
| Ureter                       | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | C66             |
| Bladder                      | 133       | 4.8       | 5.4                      | 8.5       | 0.40                | 0.93                | 48        | 2.0       | 2.0                      | 2.8       | 0.15                | 0.31                | C67             |
| Other urinary organs         | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | C68             |
| Eye                          | 6         | 0.2       | 0.2                      | 0.4       | 0.02                | 0.05                | 3         | 0.1       | 0.1                      | 0.2       | 0.01                | 0.01                | C69             |
| Brain, nervous system        | 153       | 5.5       | 6.2                      | 7.8       | 0.57                | 0.89                | 101       | 4.2       | 4.1                      | 5.3       | 0.39                | 0.57                | C70-72          |
| Thyroid                      | 22        | 0.8       | 0.9                      | 1.2       | 0.09                | 0.12                | 64        | 2.7       | 2.6                      | 3.0       | 0.25                | 0.29                | C73             |
| Adrenal gland                | 3         | 0.1       | 0.1                      | 0.1       | 0.01                | 0.01                | 2         | 0.1       | 0.1                      | 0.1       | 0.01                | 0.01                | C74             |
| Other endocrine              | 10        | 0.4       | 0.4                      | 0.5       | 0.05                | 0.06                | 5         | 0.2       | 0.2                      | 0.3       | 0.02                | 0.04                | C75             |
| Hodgkin lymphoma             | 47        | 1.7       | 1.9                      | 1.8       | 0.13                | 0.15                | 29        | 1.2       | 1.2                      | 1.1       | 0.09                | 0.09                | C81             |
| Non-Hodgkin lymphoma         | 134       | 4.8       | 5.4                      | 7.2       | 0.46                | 0.81                | 65        | 2.7       | 2.7                      | 3.3       | 0.27                | 0.33                | C82-85,C96      |
| Immunoproliferative diseases | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | 0         | 0.0       | 0.0                      | 0.0       | 0.00                | 0.00                | C88             |
| Multiple myeloma             | 38        | 1.4       | 1.5                      | 2.4       | 0.15                | 0.31                | 34        | 1.4       | 1.4                      | 2.2       | 0.11                | 0.30                | C90             |
| Lymphoid leukaemia           | 103       | 3.7       | 4.1                      | 5.2       | 0.31                | 0.47                | 47        | 2.0       | 1.9                      | 2.4       | 0.14                | 0.25                | C91             |
| Myeloid leukaemia            | 45        | 1.6       | 1.8                      | 2.3       | 0.17                | 0.24                | 50        | 2.1       | 2.0                      | 2.8       | 0.17                | 0.30                | C92-94          |
| Leukaemia unspecified        | 62        | 2.2       | 2.5                      | 3.3       | 0.17                | 0.34                | 50        | 2.1       | 2.0                      | 2.5       | 0.15                | 0.26                | C95             |
| Myeloproliferative disorders | 3         | 0.1       | 0.1                      | 0.2       | 0.00                | 0.03                | 4         | 0.2       | 0.2                      | 0.3       | 0.01                | 0.01                | MPD             |
| Myelodysplastic syndromes    | 1         | 0.0       | 0.0                      | 0.1       | 0.00                | 0.01                | 4         | 0.2       | 0.2                      | 0.2       | 0.02                | 0.02                | MDS             |
| Other and unspecified        | 52        | 1.9       | 2.1                      | 3.3       | 0.18                | 0.43                | 48        | 2.0       | 2.0                      | 2.7       | 0.19                | 0.33                | O&U             |
| All sites                    | 2967      |           | 119.5                    | 176.3     | 9.70                | 20.24               | 2522      |           | 103.3                    | 142.0     | 9.42                | 15.82               | C00-96          |
| All sites except C44         | 2791      | 100.0     | 112.4                    | 165.3     | 9.10                | 19.02               | 2398      | 100.0     | 98.3                     | 134.3     | 9.01                | 14.99               | C00-96 exc. C44 |

\*See note following population pyramid