IARC Impact in practice series
The Islamic Republic of Iran

Since becoming an IARC Participating State in **2018**, the **Islamic Republic of Iran** has used membership as a practical instrument for strengthening cancer research, surveillance, and prevention. The partnership built on a much longer scientific relationship dating back to **1968**, and on major joint platforms such as the **Golestan Cohort Study**, which connected Iranian institutions to IARC's international networks in cancer epidemiology, early detection, and risk-factor research. Since then, Iran has used IARC as a platform to connect national priorities to internationally recognised standards, comparative evidence, and collaborative research infrastructures.

Why IARC membership made the difference for Qatar:

- **Global research connections rooted in long-standing scientific strengths:** Between **2016 and 2026**, Iran co-authored **180 oncology publications** with IARC, spanning **168 countries** and **1,677 organisations**. When IARC is involved, the median number of institutions per paper rises from **3 to 11**, showing how IARC connects Iranian teams to highly networked international research platforms.
- **International platforms that turn Iranian data into globally relevant evidence:** Through IARC, Iranian cohorts, registries, and biospecimen resources are embedded in shared research infrastructures on oesophageal cancer, colorectal screening, bladder-cancer biomarkers, gastric-cancer metabolomics, tobacco exposure, opioid use, and early detection. Major examples include the **Golestan Cohort Study**, the **Tehran colorectal cancer screening pilot**, and Iran's contribution to the **Opioid Cohort Consortium (OPICO)**.
- **Stronger evidence for national planning and prevention:** IARC-linked analyses have helped Iran anticipate future cancer burden and identify where prevention and early diagnosis need to be strengthened, including national projections to **2025** and subnational burden analyses in **Golestan**.
- **Practical implementation evidence for cancer control:** Collaboration with IARC has gone beyond surveillance into real-world delivery research. The **Tehran colorectal cancer screening pilot** provided concrete local evidence on the feasibility and acceptability of FIT-based screening, while also identifying the referral and colonoscopy bottlenecks that would need to be addressed before wider implementation.
- **A stronger voice in global standards and scientific priorities:** Iran also contributes to IARC's flagship evaluations and wider scientific agenda, including expert input to **IARC Monographs Volume 126 on opium consumption**.

Part I. Scientific leadership through international collaboration

Exceptional intensity and depth of collaboration

Iran's partnership with IARC is a deeply rooted and highly strategic collaboration built on long-standing joint work in cancer epid emiology, surveillance, and prevention. Although the Islamic Republic of Iran became an IARC Participating State in 2018, collaboration dates back to 1968 and was transformed by the launch of the Golestan Cohort Study in 2004, which created a major platform for internationally coordinated research on oesophageal and other cancers.

Box #1: Cancer in Iran: unmet needs in research and evidence

Based on **GLOBOCAN 2022** estimates, cancer is a major and growing public health challenge in the **Islamic Republic of Iran**, with around **137,200 new cases** and **87,200 deaths** each year, and nearly **357,900 people living with cancer within five years of diagnosis. Stomach, breast, and colorectal cancers** are the most common, while **stomach and lung cancer** are leading causes of cancer death.

In a large and ageing population, this underlines the need for stronger prevention, earlier diagnosis, and better evidence to guide cancer-control planning.

The publication footprint gives one indication of this collaboration: **180 oncology publications** were co-authored with IARC between 2016 and 2026. More revealing, however, is the structure of that work. Iran–IARC papers involve a **median of 11 institutions per publication, compared with 3 in the non-IARC baseline**,

suggesting that collaboration with IARC is associated with a much more international and networked research model. In total, these co-authored publications connect **1,677 organisations across 168 countries**, embedding Iranian teams in a global research network that would be difficult to assemble through domestic mechanisms alone.

Web of Science micro-topic analysis of these outputs shows a tight concentration in high-impact, policy-relevant areas, led by:

- **Oesophageal cancer**;
- **Screening disparities**;
- **Nutrition and obesity**;
- **Bladder cancer**;
- **Smoking cessation**;
- **Colonoscopy**;
- **Breast cancer imaging**;
- **Hypertension management**;
- **HPV and cervical cancer**;
- **Metabolic syndrome**.

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➔ **Leadership in global research infrastructure**

Through IARC, Iranian institutions participate in - and help shape - major international platforms that generate evidence for cancer surveillance, prevention, screening, and early detection. These collaborations plug Iranian cohorts, registries, and biospecimen resources into multi-country architectures with shared protocols and pooled analyses. Examples from the past decade include:

Box #2: Golestan: turning Iranian data into prevention priorities

One of the clearest examples of Iran's scientific partnership with IARC is the **Golestan Cohort Study.** Launched in **2004** by Tehran University of Medical Sciences, IARC, and the United States National Cancer Institute, it has followed **50,000 people for more than 10 years** in one of the world's highest-risk regions for oesophageal cancer.

The study moved the debate from speculation about why oesophageal cancer is so common in north-eastern Iran to robust prospective evidence on **preventable causes**. IARC reported that six main modifiable risk factors were strongly linked to the area's high oesophageal-cancer burden: **drinking hot tea, smoking opium, low fruit and vegetable intake, drinking unpiped water, exposure to indoor air pollution, and excessive tooth loss**.

For decision-makers, that matters because it shows that a substantial share of a very high cancer burden is linked to risks that can be addressed through **prevention policy, primary care, environmental health action, and public awareness.** It also shows the practical value of sustained investment in high-quality Iranian cohorts and cancer epidemiology: they generate evidence that is directly usable for setting national priorities and targeting interventions where the burden is highest.

- **Golestan Cohort platforms on oesophageal cancer and major preventable risk factors**, including international work showing the combined effect of six main preventable risk factors on the very high rates of oesophageal cancer in north-eastern Iran (see Box #2).
- **Real-world colorectal cancer screening and implementation research in Tehran**, where a pilot across 33 primary health centres tested the feasibility and acceptability of FIT-based screening in routine practice (see Part II).
- **Bladder-cancer biomarker research**, notably work towards a non-invasive urine-based test using ultra-sensitive detection of **TERT promoter mutations** for screening and follow-up.
- **Metabolomics and gastric-cancer risk platforms**, comparing French, European, and high-risk populations to investigate metabolic disturbances and modifiable pathways in gastric carcinogenesis.
- **Tobacco exposure studies using urine samples from the Golestan Cohort Study**, enabling large-scale biomarker-based work on smoking and related exposures.
- **Prospective studies on major risk factors for oesophageal cancer in north-eastern Iran**, taking advantage of a uniquely informative high-risk population where diet, hot drinks, and opium can be studied with reduced recall bias.
- **The Opioid Cohort Consortium (OPICO)**, which links cohorts across countries to investigate long-term opioid use, mortality, and cancer outcomes, with Iran contributing uniquely informative data on opium exposure (see Box #3).
- **Targeted sequencing of circulating cell-free DNA in oesophageal squamous cell carcinoma cases from the Golestan Cohort Study**, exploring plasma-based biomarkers for earlier detection.

➔ **Shaping the global cancer research agenda and standards**

Iranian experts and diplomats help steer IARC's direction. Through seats on the **Scientific Council and Governing Council**, and active involvement in developing the Medium-Term Strategy (MTS), Iran contributes directly to setting IARC's research and capacity-building priorities. This high-level engagement is a form of **soft power**. By shaping IARC's work programme, Iran brings national and regional realities into global decision-

Box #2: OPICO: turning Iran's opium evidence into global policy-relevant research

The **Opioid Cohort Consortium (OPICO)** is an IARC-led international platform designed to clarify the long-term health effects of opioid use, including cancer risk and mortality. IARC says the project will harmonize data from **nearly 2 million individuals** drawn from sources across the **USA, Europe, Asia, and Australia**, creating a uniquely large resource for studying outcomes that single cohorts cannot assess reliably on their own.

Iran's relevance to OPICO is distinctive. Much of the strongest epidemiological evidence on **opium** and cancer has come from Iranian research, especially the **Golestan Cohort Study**, and IARC notes that the available human studies on opium consumption and cancer have come **almost entirely from the Islamic Republic of Iran**. That evidence helped underpin IARC's conclusion that **opium consumption is carcinogenic to humans (Group 1)** and causes cancers of the **larynx, lung, and urinary bladder**.

making while gaining early insight into emerging priorities, methods, and partnership opportunities, aligning its own cancer plans and investments with cutting-edge international evidence.

Iran also plays a distinctive role in developing internationally respected evidence frameworks and hazard-evaluation standards that shape global cancer science, prevention, and regulation. During the **2021–2025** period, **4 Iranian experts** contributed to IARC's flagship evaluations, notably through the **IARC Monographs Volume 126: *Opium consumption***.

Part II. From evidence to action: IARC's impact on national Public Health

➔ Stronger data for better decisions

Iran's collaboration with IARC has strengthened the use of cancer surveillance data for planning and priority-setting. Through long-standing work on cancer registration and trend analysis, Iranian institutions are connected to IARC platforms that make national and subnational cancer patterns more comparable, policy-relevant, and usable for forward planning. This includes the establishment in 2018 of the **IARC–GICR Iran Collaborating Centre** to improve the quality of cancer registration in Iran and the wider region, building on a collaboration that dates back to the **Caspian Cancer Registry** in 1968.

This collaboration has already generated directly usable evidence for decision-makers. National analyses led with IARC projected that the number of new cancer cases in Iran would rise from **112,000 in 2016 to 160,000 in 2025**, with increases driven by both changing risk and population structure. In **Golestan Province**, IARC-linked work projected a **61.3%** increase in annual cancer cases between 2016 and 2025, even as oesophageal cancer declines, with rising burdens expected for stomach, colorectal, lung, breast, and prostate cancers as well as leukaemia. Together, these studies help identify where prevention, early diagnosis, and service capacity need to be strengthened.

➔ Testing readiness for colorectal cancer screening

Iran's collaboration with IARC has also moved beyond surveillance into practical implementation research. A key example is the **colorectal cancer screening pilot project in Tehran**, which tested whether the first step of an organised screening programme could work in routine primary care. Conducted with researchers from Tehran University of Medical Sciences, the study showed that implementation was feasible from organisational and acceptability standpoints, while also identifying the system constraints that would need to be addressed before wider roll-out.

In this pilot, community health workers in **33 primary health centres** offered screening to **more than 7,000 adults aged 50–75 years**. Almost **5,000** accepted a faecal immunochemical test (FIT), **97%** returned a sample, and **471** people with positive tests were referred for colonoscopy. However, only about **one third** of those referred underwent colonoscopy, highlighting the importance of strengthening referral pathways, colonoscopy capacity, and public awareness before scaling up an organised national programme. The study therefore provided Iran with concrete, local evidence not only on the acceptability of screening, but also on what would need to change for implementation at scale.

Part III. Building people and skills

➔ Iran's cancer evidence workforce of the future

Iran's collaboration with IARC extends beyond individual research projects to long-term capacity building at the human level. Iranian scientists have maintained a presence in IARC's fellowship programmes over several

decades, with **two Iranian researchers** receiving highly competitive postdoctoral IARC fellowships since 1966. Training and knowledge exchange complement this foundation. In the **2020–2021** biennium, **six Iranian early-career and visiting scientists** undertook short and medium-term placement at IARC. Together, these placements give Iranian researchers exposure to advanced methods in epidemiology, multicountry collaboration, and international cancer research practice, while helping sustain links between Iranian institutions and IARC's global scientific networks.

This engagement is part of IARC's wider capacity-building ecosystem, which includes the Postdoctoral Fellowship Programme, the IARC Summer School, the IARC Learning Platform, and global networks for cancer registries, screening, and biobanking. Together, these initiatives train thousands of professionals worldwide and generate durable benefits: in a 2024 outcome survey, **98% of postdoctoral respondents reported transferable skills, 72% maintained research ties with IARC after training, and over half progressed to leadership roles (53%) or managed independent research funding (52%)**. This creates a **two-way multiplier effect**: expertise gained at IARC is reinvested in national institutions, while the priorities, data, and methodological strengths of participating countries feed back into IARC's networks, helping shape future research, standards, and capacity-building efforts.