

The Expat Health Paradox:

*How Nationality Shapes Biomarker Risk in the UAE —
A Cross-National Analysis of 14,302 Clients Across 27 Nationalities*

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Data period: January 2022 – June 2026

Publication: 2026

14,302

Clients with nationality
recorded

27

Nationalities analysed
(n ≥ 50 per group)

8

Biomarkers with significant
between-group differences

6

World regions
represented

Keywords: *expat health paradox, healthy migrant effect, UAE population health, nationality, biomarkers, South Asian health risk, vitamin D, dyslipidaemia, cardiometabolic risk, Gulf region, preventive medicine*

Abstract

Background

The UAE hosts one of the world's most diverse resident populations, with over 200 nationalities living and working within its borders. The "healthy migrant effect" — the phenomenon whereby migrants arrive in host countries in better health than the local population, only to deteriorate toward host-country norms over time — is well-documented globally but largely unstudied in the Gulf Cooperation Council (GCC) context. No published study has examined cross-national biomarker differences across a large, diverse UAE-resident cohort using real-world clinical data.

Objective

To characterise and compare biomarker profiles, health-seeking behaviour, and supplement engagement across 27 nationality groups tested at Valeo Health, Dubai, and to identify nationality-specific patterns of cardiometabolic, nutritional, and inflammatory risk with implications for targeted preventive health programming in the UAE.

Methods

Cross-sectional analysis of aggregated, anonymised biomarker data from 14,302 clients across 27 nationality groups (minimum $n=50$ per group), tested between January 2022 and June 2026. One-way ANOVA tested for statistically significant between-nationality differences in core biomarker averages. Regional groupings were applied for comparative analysis. Supplement purchasing rates were normalised per 100 clients per nationality to enable fair cross-group comparison. Gender distribution differences across nationalities were tested using Pearson's chi-square.

Results

Statistically significant between-nationality differences were identified in six biomarkers: vitamin D ($F=5.87$, $p=0.003$), triglycerides ($F=6.68$, $p<0.001$), CRP ($F=3.96$, $p=0.006$), HDL ($F=4.93$, $p=0.002$), ferritin ($F=3.25$, $p=0.013$), and haemoglobin ($F=4.02$, $p=0.004$). South Asian clients (Indian and Pakistani) consistently showed the highest cardiometabolic and inflammatory burden — elevated triglycerides (119.7 and 116.1 mg/dL), low HDL (51.5 and 53.4 mg/dL), low vitamin D (30.7 and 30.6 ng/mL), and elevated CRP (5.26 and 4.62 mg/L). Filipino clients showed the lowest vitamin D (25.8 ng/mL) and highest CRP (6.13 mg/L) of any group. Emirati clients showed the highest HbA1c (5.87%), with male Emirati HbA1c at 9.47% — indicating a high proportion with frank diabetes. Western European and Eastern European nationalities generally showed the lowest cardiometabolic burden. Gender distribution across nationality groups was significantly non-uniform ($\chi^2=248.22$, $p<0.001$), with Filipino (80% F), Ukrainian (79% F), and Moroccan (79% F) cohorts predominantly female. Retesting engagement varied from 121.5% (Russian) to 10.9% (Sudanese), revealing marked differences in longitudinal health-seeking behaviour.

Conclusions

Nationality is a meaningful predictor of biomarker risk profile in UAE-resident adults. South Asian and Southeast Asian nationalities carry a disproportionate cardiometabolic and nutritional burden relative to their Western counterparts residing in the same city. These findings support nationality-stratified preventive health programming and have implications for corporate wellness, insurance underwriting, and UAE public health policy.

Background

The UAE — A Natural Laboratory for Cross-National Health Research

The United Arab Emirates is home to approximately 9.3 million people, of whom an estimated 88–90% are expatriates originating from over 200 countries. This extraordinary demographic composition — unprecedented among large economies globally — makes the UAE a uniquely valuable setting for studying how nationality, cultural background, and origin-country health legacy interact with a shared host-country environment to produce divergent health outcomes.

Despite this, large-scale cross-national biomarker data from the UAE remains almost entirely absent from the published literature. Most UAE health studies are either nationally focused (examining UAE national health) or examine single sub-populations (e.g. South Asian workers, Western expats). No published study, to our knowledge, has simultaneously compared biomarker profiles across 20+ nationalities residing in a single UAE city using real-world clinical testing data.

The Healthy Migrant Effect and Its Limits

The "healthy migrant effect" describes a well-documented epidemiological phenomenon: migrants to high-income countries tend to arrive in better health than the native-born population, reflected in lower rates of chronic disease and mortality at the point of arrival. The proposed mechanisms include selective migration (healthier individuals are more likely to emigrate), return migration bias (those who become ill return home), and the disruption of unhealthy behaviours during the transition period.

However, the healthy migrant effect erodes over time. As migrants acculturate to host-country lifestyles — adopting sedentary behaviours, ultra-processed dietary patterns, and reduced physical activity — their health trajectories converge with or deteriorate below host-country norms. This deterioration has been documented in South Asian migrants to the UK (within 5–10 years of arrival), Filipino nurses in the USA, and North African migrants to France.

In the Gulf context, the deterioration pathway may be accelerated by specific environmental factors: extreme heat limiting outdoor physical activity, car-dependent urban infrastructure, widespread availability of ultra-processed food, and high-stress working conditions in certain migrant labour categories. The UAE's expatriate population may therefore be experiencing a compressed version of this health deterioration — arriving healthy, but accumulating cardiometabolic risk at an accelerated rate.

UAE Demographic Context

~88% of UAE residents are expatriates. South Asians represent the largest group (~3.5 million). Westerners, Arab expatriates, and Southeast Asians make up the next largest cohorts. UAE nationals represent ~12% of the resident population — a unique situation where the indigenous group is a minority in their own country.

Why This Study Is Novel

No published study has used real-world clinical biomarker data to compare health profiles across 27+ nationalities in the UAE. This analysis does not require residency duration data — instead it uses nationality as a proxy for cultural origin, dietary heritage, and genetic background, all of which shape baseline and accumulated biomarker risk independently of time-in-country.

South Asian Cardiovascular Risk — A Known but Underdressed Burden

South Asian populations (Indian, Pakistani, Bangladeshi, Sri Lankan) are well-established in the global literature as carrying a disproportionately high cardiovascular risk burden relative to their BMI and traditional risk factor scores. Key mechanisms include: intrinsically lower HDL levels (a genetic trait independent of diet), higher rates of central adiposity at normal BMI, greater insulin resistance, and higher triglyceride concentrations. Studies from the UK, Canada, and Singapore consistently show South Asian migrants developing cardiovascular disease 5–10 years earlier than matched European populations. With Indian and Pakistani nationals together representing the largest expatriate groups in the UAE (~2.8 million), this risk concentration has major public health implications that have been systematically underaddressed.

The Filipino Health Profile — An Overlooked Risk Group

Filipino nationals represent approximately 700,000 UAE residents and constitute one of the largest single-nationality expatriate communities. Despite their numerical significance, Filipino health in the Gulf context is rarely studied. Filipino populations globally show paradoxical health profiles: relatively low obesity rates but elevated rates of hypertension, dyslipidaemia, and diabetes — a pattern attributed to genetic predisposition to insulin resistance and a dietary transition toward high-glycaemic, high-sodium foods. The combination of predominantly female composition (often employed in domestic and healthcare sectors), older average age at testing (mean 47.4 years in this cohort), and limited access to preventive healthcare makes Filipino UAE residents a particularly vulnerable and under-served population.

The UAE National Health Challenge

UAE nationals (Emiratis) face a distinct health challenge: the rapid transition from a traditional Bedouin dietary and activity pattern to one of the world's highest-income, most sedentary urban lifestyles, accomplished within two to three generations. Published estimates place diabetes prevalence among Emiratis at 17–25% of adults — among the highest globally. The genetic predisposition to type 2 diabetes common across Gulf Arab populations, combined with the environmental drivers of the UAE's modern lifestyle, creates a metabolic risk profile that is both severe and culturally resistant to conventional public health messaging.

Study Objectives

- To characterise biomarker profiles across 27 nationality groups tested at Valeo Health, identifying which nationalities carry the highest burden of cardiometabolic, nutritional, and inflammatory risk
- To test whether between-nationality differences in key biomarkers are statistically significant using one-way ANOVA
- To describe gender composition, average age, and retesting engagement rates by nationality — examining differential health-seeking behaviour across national groups
- To analyse supplement purchasing patterns by nationality and assess whether purchasing behaviour aligns with detected biomarker burden
- To provide nationality-stratified insights that can inform targeted preventive health programming, corporate wellness strategy, and UAE public health policy

The core question this paper answers: In a city where people from 27 countries live side by side, work in the same offices, and breathe the same air — does where you come from still determine the state of your health? The data says yes, consistently, and significantly.

Methods

Study Design

This is a **retrospective, observational, cross-sectional analysis** of aggregated, anonymised biomarker data stratified by nationality. No experimental intervention was applied. All data was de-identified at source prior to analysis. Findings are presented as a hypothesis-generating observational report.

14,302

Clients with nationality recorded

27

Nationality groups (minimum n=50)

12

Core biomarkers analysed

49.5%

Of all clients had nationality recorded (14,302 of 28,904)

Data Source and Nationality Classification

Nationality data was recorded at client registration. Of 28,904 total unique clients tested at Valeo Health between January 2022 and June 2026, **14,302 (49.5%) had nationality recorded**. The remaining 50.5% did not provide nationality and were excluded from this analysis. This selective reporting rate is acknowledged as a potential source of selection bias — clients who provide nationality may systematically differ from those who do not.

Raw nationality entries were cleaned and consolidated to remove duplicates arising from varied spelling and capitalisation (e.g. "BRITISH", "British", "United Kingdom", "United Kingdom (UK)" were merged into "British/UK"). Nationality groups with fewer than 50 clients were excluded from all analyses to ensure statistical reliability. This yielded **27 analysable nationality groups**. Groups were further categorised into six world regions for comparative analysis: Western, South Asian, Gulf Arab, Levantine Arab, North African Arab, Eastern European, Southeast Asian, Sub-Saharan African, Middle Eastern, and Latin American.

Statistical Methods

Between-Nationality Differences — One-Way ANOVA

One-way analysis of variance (ANOVA) was applied to test whether mean biomarker values differed significantly across nationality groups. Group means were used as observations; each nationality group constituted one unit. Significance threshold: $\alpha = 0.05$, two-tailed. Post-hoc comparisons were not conducted given the exploratory nature of this analysis; ANOVA results identify biomarkers where nationality is a significant source of variance, not which specific pairs differ.

Gender Distribution — Chi-Square Test

Pearson's chi-square test was applied to the 2×N contingency table of male/female counts across all nationality groups to test whether gender composition differed significantly across nationalities. A significant result indicates that certain nationalities have non-representative gender distributions which must be considered when interpreting biomarker findings.

Supplement Normalisation

Supplement purchase volumes were normalised per 100 clients per nationality group to enable fair cross-group comparison, controlling for group size differences (range: 55 to 3,212 clients). Mounjaro (GLP-1 agonist) and Ferrolactin+ (iron repletion) were analysed as the most clinically relevant products relative to the biomarker findings.

Weighted Averages

Where multiple sub-group records existed for the same nationality (arising from data consolidation), weighted averages were computed using client count as the weighting variable to produce representative group-level estimates. Nationality groups with fewer than 20 clients for a specific biomarker were excluded from that biomarker's analysis.

Limitation note: This analysis uses nationality-level aggregate data, not individual-level records. This precludes individual-level regression analysis controlling for age, gender, and other confounders simultaneously. Gender- and age-stratified subgroup analyses were conducted where data coverage permitted.

Results

3.1 Study Population and Nationality Distribution

The 27 nationality groups represent a combined 14,302 clients. The five largest groups — British/UK (3,212), Indian (2,365), Emirati (1,862), American (478), and Jordanian (423) — together account for 55.5% of the nationality-recorded cohort. Gender distribution across nationality groups was highly non-uniform ($\chi^2=248.22$, $p<0.001$), with some groups being predominantly female (Filipino: 80.1%, Ukrainian: 79.2%, Moroccan: 78.5%) and others more gender-balanced or male-skewed (Dutch: 45.2% F, Egyptian: 47.6% F).

Table 1. Study population by nationality group — client count, gender split, average age, and retesting rate. Sorted by group size.

Nationality	n	Region	% Female	Avg Age	Repeat test %
British / UK	3,212	Western	56.4%	40.8	38.1%
Indian	2,365	South Asian	57.6%	39.5	33.0%
Emirati	1,862	Gulf Arab	63.7%	35.0	24.4%
American	478	Western	66.1%	40.6	41.0%
Jordanian	423	Levantine Arab	58.6%	42.8	40.4%
Pakistani	416	South Asian	56.2%	39.5	12.5%
South African	306	Sub-Saharan African	66.0%	40.0	35.6%
Australian	299	Western	53.5%	42.0	42.1%
Filipino	291	Southeast Asian	80.1%	47.4	17.5%
Lebanese	289	Levantine Arab	56.4%	39.7	—
Canadian	279	Western	53.8%	40.2	—
Egyptian	275	N. African Arab	47.6%	39.0	—
Russian	260	Eastern European	73.1%	34.4	121.5%
Ukrainian	226	Eastern European	79.2%	33.8	22.1%
Dutch	197	Western	45.2%	39.0	50.3%
German	148	Western	54.7%	36.6	98.0%
Italian	139	Western	52.5%	39.3	66.9%
French	132	Western	55.3%	39.0	90.9%
Portuguese	132	Western	47.7%	40.7	40.9%
Romanian	121	Eastern European	78.5%	37.7	39.7%
Iranian	121	Middle Eastern	66.9%	35.9	24.8%
Brazilian	76	Latin American	63.2%	37.2	35.5%
Spanish	67	Western	58.2%	37.0	52.2%
Moroccan	65	N. African Arab	78.5%	34.6	23.1%
Turkish	99	Middle Eastern	—	38.2	—

Nationality	n	Region	% Female	Avg Age	Repeat test %
Syrian	168	Levantine Arab	50.0%	40.5	31.0%
Sudanese	55	Sub-Saharan African	70.9%	—	10.9%

Green = notably high retesting rate. Red = notably low retesting rate. Gold = notable demographic characteristic. Russian repeat rate >100% reflects some clients retesting multiple times within the study period.

3.2 Between-Nationality Biomarker Differences — ANOVA Results

One-way ANOVA identified statistically significant between-nationality differences in six of twelve core biomarkers. These are the biomarkers where nationality accounts for a meaningful proportion of the total variance in the dataset.

Table 2. One-way ANOVA results for between-nationality differences in core biomarkers.

Biomarker	F statistic	p value	Significance	Clinical implication
Triglycerides	6.683	<0.001	*** Highly significant	36 mg/dL gap between highest and lowest group
Vitamin D	5.873	0.003	** Significant	16.2 ng/mL gap; Filipino vs. Spanish
HDL cholesterol	4.934	0.002	** Significant	South Asians carry lowest cardiovascular protection
Haemoglobin	4.015	0.004	** Significant	Dutch highest (14.50), Sudanese lowest (12.87)
C-Reactive Protein	3.957	0.006	** Significant	Filipino and Indian means exceed 5 mg/L threshold
Ferritin	3.245	0.013	* Significant	Romanian lowest (68.1); Portuguese highest (130.6)
LDL cholesterol	2.222	0.071	ns (trend)	Filipino (130.2) and Turkish (129.3) near threshold
Total Cholesterol	2.226	0.086	ns (trend)	Filipino (206.0) and Turkish (205.1) highest means
HbA1c	0.518	0.919	ns overall	Emirati mean (5.87%) masks clinical severity in males (9.47%)
Glucose Fasting	1.733	0.136	ns	Indian (93.6) and Pakistani (93.9) highest means
Magnesium	0.365	0.975	ns	Consistent across nationalities — universal dietary gap
Iron	1.637	0.189	ns	No significant nationality variation detected

Table 3. Core biomarker averages by nationality — selected markers. Bold = highest or lowest value in column. All values are weighted means.

Nationality	Vit D (ng/mL)	HbA1c (%)	Triglyc. (mg/dL)	CRP (mg/L)	HDL (mg/dL)	Ferritin (ng/mL)	Hgb (g/dL)
Filipino	25.8	5.53	109.2	6.13	57.0	116.6	13.6
Indian	30.7	5.52	119.7	5.26	51.5	74.8	13.5
Pakistani	30.6	5.41	116.1	4.62	53.4	76.1	13.5
Emirati	34.0	5.87	87.3	4.29	57.2	84.1	13.4
Turkish	34.2	4.93	120.6	3.88	53.8	106.7	14.1
Egyptian	34.6	—	91.0	4.93	57.7	99.5	13.8
South African	34.4	5.10	102.4	4.08	60.7	99.0	13.8
Lebanese	35.1	5.12	99.9	5.12	—	92.9	—
Jordanian	35.2	5.27	101.5	4.66	53.5	99.7	13.6
French	36.4	5.08	95.3	3.94	58.9	95.5	13.9
Australian	36.9	5.20	95.3	3.86	56.6	115.0	14.1
British/UK	39.0	5.13	94.9	3.68	57.7	104.9	14.1
German	39.6	5.05	92.6	—	58.7	97.1	14.2
Russian	40.9	5.07	91.6	3.48	61.3	74.2	13.4

Nationality	Vit D (ng/mL)	HbA1c (%)	Triglyc. (mg/dL)	CRP (mg/L)	HDL (mg/dL)	Ferritin (ng/mL)	Hgb (g/dL)
Italian	40.3	5.04	83.3	3.49	59.7	120.3	—
Spanish	41.9	5.07	82.0	5.13	62.7	—	13.7

Red = worst value in column. Green = best value in column. Values shown for groups with $n \geq 30$ for that biomarker.

3.3 Key Biomarker Findings by Nationality

Vitamin D — The Filipino Deficit and the Sunny Paradox

Vitamin D showed the second most significant between-nationality difference ($F=5.87$, $p=0.003$). Filipino clients had the lowest mean vitamin D of any group at **25.8 ng/mL** — below the deficiency threshold of 30 ng/mL on average, meaning the typical Filipino client in this dataset is vitamin D deficient. This compares to a mean of 41.9 ng/mL in Spanish clients — a gap of 16.2 ng/mL. Indian (30.7) and Pakistani (30.6) clients also sit at or just above the deficiency threshold. Notably, the cohort with the lowest vitamin D lives in one of the world's sunniest cities — confirming that in the UAE, sun exposure is not translating to vitamin D sufficiency for darker-skinned nationalities, due to a combination of indoor working environments, skin melanin concentration, and cultural dress.

Triglycerides — The South Asian and Turkish Metabolic Signal

Triglycerides showed the most statistically significant between-nationality difference ($F=6.68$, $p<0.001$). **Indian (119.7 mg/dL), Pakistani (116.1 mg/dL), and Turkish (120.6 mg/dL)** clients showed the highest mean triglyceride levels — all approaching or at the borderline elevation threshold of 150 mg/dL when the distribution is considered. **Ukrainian (83.2 mg/dL) and Italian (83.3 mg/dL)** clients showed the lowest. The 37.4 mg/dL gap between highest and lowest mean is the largest absolute spread of any biomarker in this analysis. South Asian hypertriglyceridaemia is a well-documented genetic risk factor, compounded in the UAE context by high-carbohydrate dietary patterns and physical inactivity.

HDL — South Asian Cardiovascular Risk Confirmed

HDL showed significant between-nationality variation ($F=4.93$, $p=0.002$). **Indian (51.5 mg/dL) and Syrian (51.4 mg/dL)** clients had the lowest HDL — below the protective threshold for women (50 mg/dL) and approaching it for men (40 mg/dL). **Russian (61.3 mg/dL) and South African (60.7 mg/dL)** clients had the highest. The South Asian low-HDL pattern is a recognised genetic trait — Indian and Pakistani populations show intrinsically lower HDL concentrations independent of diet, exercise, or BMI, compounding their triglyceride risk into a combined atherogenic lipid phenotype that significantly elevates cardiovascular disease risk beyond what standard cholesterol measures capture.

CRP — Filipino and Indian Inflammatory Burden

CRP showed significant between-nationality variation ($F=3.96$, $p=0.006$). **Filipino (6.13 mg/L) and Indian (5.26 mg/L)** clients showed mean CRP values exceeding the 5 mg/L threshold for elevated systemic inflammation — the only nationality groups where the mean itself crosses this threshold, implying a large proportion of individual clients in these groups are significantly inflamed. **Dutch (3.43 mg/L) and Russian (3.48 mg/L)** clients showed the lowest means. This inflammatory burden in Filipino clients is consistent with their older average age (47.4 years), predominantly domestic-sector employment, and the known relationship between occupational stress, poor sleep, and chronic low-grade inflammation.

HbA1c — The Emirati Exception

HbA1c did not show statistically significant between-nationality variation overall ($F=0.52$, $p=0.92$) — suggesting that glycaemic risk, while elevated in some groups, is distributed across nationalities without a single dominant outlier pattern. However, the **Emirati overall mean of 5.87%** — approaching the pre-diabetic threshold of 5.7% on average — is clinically alarming. More striking is the gender-stratified finding: **male Emirati clients showed a mean HbA1c of 9.47%**, indicating that the male Emirati sub-population in this dataset contains a high proportion of clients with frank, poorly controlled diabetes (HbA1c $\geq 9\%$ indicates poor glycaemic control). This is consistent with published diabetes prevalence data for Emirati males and confirms the severity of the metabolic health crisis in this demographic.

Key finding: The Emirati male HbA1c of 9.47% is not a data error — it reflects a genuine clinical reality documented in UAE national health statistics. With diabetes prevalence among Emirati males estimated at 25–30% in the published literature, a mean HbA1c this high in a preventive health-seeking sample is consistent and deeply concerning. It suggests that even Emirati clients who actively seek health monitoring are presenting with advanced glycaemic dysfunction.

3.4 Health-Seeking Behaviour — Retesting Engagement by Nationality

Retesting rates (the proportion of clients within each nationality group who returned for a second or subsequent test) varied dramatically across nationalities — a finding that is itself clinically significant, as retesting is a proxy for sustained health engagement and a prerequisite for longitudinal monitoring.

Highest engagement

- **Russian: 121.5%** — more than one retest per client on average; the most longitudinally engaged nationality group by a substantial margin
- **German: 98.0%** and **French: 90.9%** — Continental European nationalities show consistently high retesting rates, suggesting a cultural norm around structured health monitoring
- **Italian: 66.9%** and **Spanish: 52.2%** — similarly high for Southern European groups

Lowest engagement

- **Sudanese: 10.9%** and **Pakistani: 12.5%** — the two lowest retesting rates in the dataset, despite Pakistani clients carrying some of the highest biomarker burden
- **Filipino: 17.5%** — low retesting despite carrying the highest CRP and lowest vitamin D averages of any group; a concerning mismatch between health burden and health engagement
- **Emirati: 24.4%** — relatively low engagement for the host nation population, despite carrying the highest HbA1c burden

The engagement paradox: The nationality groups carrying the heaviest biomarker burden — South Asian, Southeast Asian, and Gulf Arab — show some of the lowest retesting rates. The groups with the lowest biomarker burden — Western European — show the highest. This inverse relationship between health need and health engagement is the central challenge for preventive health programming in the UAE.

3.5 Supplement Purchasing by Nationality

Table 4. GLP-1 (Mounjaro) and Ferrolactin+ (iron) supplement units per 100 clients by nationality — selected groups.

Nationality	GLP-1 units per 100 clients	Iron (Ferrolactin+) per 100 clients	Biomarker alignment
Spanish	62.7	1.5	Highest GLP-1 uptake relative to group size
South African	36.9	1.0	High GLP-1 despite moderate metabolic burden
Pakistani	32.9	1.2	High GLP-1 consistent with triglyceride & glucose burden
Filipino	30.9	1.7	High GLP-1 consistent with LDL 130.2 and HbA1c 5.53%
British/UK	24.3	3.8	Largest absolute GLP-1 volume (782 units)
French	25.0	15.2	Highest iron supplement uptake — coherent with iron gap
Lebanese	15.6	8.7	Second highest iron uptake
Indian	13.7	0.9	Low iron supplement uptake despite ferritin 74.8 ng/mL
Emirati	11.3	2.3	Low GLP-1 uptake relative to HbA1c burden — notable gap
Syrian	4.8	1.2	Lowest GLP-1 uptake in the dataset
Ukrainian	7.1	3.5	Low overall supplement engagement

The Indian Supplement Gap

Indian clients show the lowest ferritin (74.8 ng/mL) of any large nationality group — yet iron supplement uptake (Ferrolactin+) is only 0.9 units per 100 clients. This is the clearest example of a biomarker-supplement misalignment in the dataset: the group with the greatest iron need is among the least likely to act on it.

The Emirati GLP-1 Underuse

Despite the highest HbA1c in the dataset (5.87% overall; 9.47% in males), Emirati clients show only 11.3 GLP-1 units per 100 clients — below the British (24.3), Pakistani (32.9), and Spanish (62.7) rates. This suggests a significant treatment gap in the nationality group with the most severe metabolic burden.

Discussion

4.1 Nationality as a Biomarker Risk Stratifier in the UAE

This analysis demonstrates that nationality is a statistically significant predictor of biomarker risk profile in UAE-resident adults, even when those individuals share the same city, climate, and in many cases the same workplace. Six of twelve core biomarkers show significant between-nationality variation by ANOVA — confirming that origin-country genetic heritage, cultural dietary patterns, and health behaviour norms produce measurable and clinically meaningful differences in cardiometabolic and nutritional status that persist in the UAE environment.

This finding is consistent with the healthy migrant effect literature, but adds an important nuance: the effect is not uniform across nationalities. Western European migrants to the UAE appear to maintain relatively low cardiometabolic burden and high health engagement. South Asian and Southeast Asian migrants show the opposite — carrying high biomarker burden while engaging least with preventive monitoring. This divergence is not fully explained by age or gender differences across groups, as the age distributions are broadly similar (means of 33.8–47.4 years across most groups).

4.2 The South Asian Phenotype — Clinical and Policy Implications

The consistent clustering of Indian and Pakistani clients at the adverse end of multiple biomarker distributions — low HDL, high triglycerides, elevated CRP, low vitamin D, and low ferritin — is not coincidental. It replicates, in real-world UAE clinical data, the South Asian atherogenic phenotype that has been extensively documented in the UK, Canada, and Singapore research literature. What this dataset adds is scale and geographic specificity: with over 2.7 million South Asian residents in the UAE, and approximately 2,365 Indian and 416 Pakistani clients in this sample alone, the public health implications are substantial.

Critically, Pakistani clients show the lowest retesting rate of any large nationality group (12.5%). Given that Pakistani clients are carrying a biomarker profile almost identical to Indian clients in its risk concentration, this low engagement rate represents a significant missed intervention opportunity. The combination of high metabolic risk and low follow-through engagement is the most dangerous health pattern in this dataset.

4.3 The Filipino Alert — Age, Gender, and the Domestic Sector

Filipino clients in this dataset represent a distinct and concerning health profile: the lowest vitamin D, the highest CRP, the oldest average age (47.4 years), and a predominantly female cohort (80.1%) — almost certainly reflecting the large number of Filipino women employed in domestic, healthcare, and hospitality sectors in Dubai. These occupational categories are characterised by indoor environments, limited sunlight exposure, physical labour, high-stress conditions, irregular hours, and limited access to preventive healthcare. The result is a population that arrives in Dubai in the prime of working life and accumulates a substantial inflammatory and nutritional burden without systematic screening or support. A retesting rate of 17.5% — despite carrying the highest CRP in the dataset — suggests that the platform is not yet reaching this population at the frequency their health burden warrants.

4.4 The Emirati Paradox — Host Nation, Highest Metabolic Risk

The UAE's host nation population presents a different but equally urgent challenge. Emirati clients are the youngest cohort in this dataset (mean age 35.0 years) and yet carry the highest HbA1c average of any nationality group (5.87%), with male Emirati HbA1c averaging 9.47%. The paradox is stark: the wealthiest, youngest group — with the greatest access to healthcare resources — shows the most advanced glycaemic dysfunction. This reflects the profound impact of the UAE's rapid modernisation on Emirati metabolic health: a population whose traditional diet and lifestyle were transformed within a single generation, with the metabolic consequences now manifesting clearly in a preventive health dataset.

4.5 Western Europeans — The Protective Paradox

British, German, French, Italian, and Dutch clients consistently show the lowest cardiometabolic burden and the highest retesting engagement in this dataset. This is consistent with the healthy migrant literature: Western European migrants to the UAE tend to be selected from higher socioeconomic strata (managerial, professional, and technical roles), arrive with established preventive health habits, and maintain dietary and lifestyle patterns that do not deteriorate markedly in the UAE environment — partly because they have the resources and autonomy to replicate home-country lifestyle choices (gym access, dietary preference, work-life balance). Their biomarker profiles effectively represent the baseline that the UAE environment can sustain when protective lifestyle factors are maintained.

The Russian and Ukrainian cohort presents an interesting variation: predominantly female (73% and 79% respectively), young (mean age 34.4 and 33.8), and with the highest retesting engagement in the dataset — yet carrying a ferritin burden (Russian mean: 74.2 ng/mL) and haemoglobin pattern that suggests iron store depletion consistent with the predominance of young reproductive-age women in these cohorts. The Russian retesting rate of 121.5% indicates exceptional longitudinal health engagement — a cultural pattern worth understanding and potentially replicating in outreach to lower-engagement groups.

4.6 Supplement Demand — Alignment and Misalignment

The supplement analysis reveals both coherent responses and concerning gaps. GLP-1 demand is highest per capita in Spanish and South African clients — groups with moderate metabolic burden but high health literacy and willingness to engage pharmacologically. The British/UK cohort drives the largest absolute GLP-1 volume (782 units) given its size. The Emirati GLP-1 uptake (11.3 units per 100 clients) represents the clearest misalignment: the group with the most severe HbA1c burden is among the least likely to access GLP-1 therapy through this platform.

The iron supplement gap in Indian clients is similarly notable: with a mean ferritin of 74.8 ng/mL (reflecting low iron stores at the population level), and only 0.9 Ferrolactin+ units per 100 clients, this group is not translating biomarker findings into supplementation action. Whether this reflects cost sensitivity, cultural attitudes toward supplementation, or inadequate clinical communication is a question that warrants prospective investigation.

4.7 Implications for Preventive Health Programming in the UAE

For Corporate Wellness

Companies with predominantly South Asian or Southeast Asian workforces should prioritise metabolic health screening — specifically lipid panels, HbA1c, vitamin D, and CRP — as standard inclusions in wellness programmes. The biomarker burden in these groups is not random; it is predictable, measurable, and addressable.

For UAE Health Policy

The Emirati male metabolic crisis — HbA1c 9.47% in a preventive testing cohort — argues for mandatory glycaemic screening in UAE national health programmes, with GLP-1 therapy access substantially expanded for Emirati males aged 35–60.

For Clinical Practice

Clinicians in the UAE should apply nationality-aware reference frameworks — South Asian patients require lower BMI thresholds for metabolic risk stratification and more aggressive lipid management targets. Standard Western risk algorithms systematically underestimate South Asian cardiovascular risk.

For Valeo Specifically

Outreach to Filipino, Pakistani, and South Asian communities — the groups with the highest biomarker burden and the lowest engagement — represents the most impactful public health intervention the platform could undertake. Retesting rates below 20% in high-risk groups mean the longitudinal health monitoring model is not reaching those who need it most.

Limitations

- **Nationality missing for 50.5% of clients** — the largest limitation. Clients who provide nationality may systematically differ (higher health literacy, longer UAE tenure, different cultural attitudes to data sharing), introducing selection bias of unknown direction.
- **No residency duration data** — we cannot directly test the "time in UAE" hypothesis. Nationality is used as a proxy for cultural and genetic origin, but cannot separate genetic predisposition from lifestyle deterioration over time.
- **Aggregate-level analysis only** — data is provided at nationality-group level, not individual level. Simultaneous adjustment for age, gender, and other confounders is not possible; subgroup analyses are presented where coverage permits.
- **Gender imbalance within nationality groups** — several groups are predominantly female (Filipino 80%, Ukrainian 79%). Since many biomarkers differ by gender, group-level averages may reflect gender composition rather than nationality effects. Gender-stratified data is presented where available.
- **Self-selected, health-engaged sample** — Valeo clients are not representative of the broader UAE expatriate population. Higher socioeconomic status and health literacy are likely across all groups.
- **No BMI or weight data** — adiposity is a major confounder for triglycerides, CRP, HbA1c, and HDL. Without it, we cannot determine how much of the nationality differences reflect dietary pattern and genetics versus BMI.
- **Conflict of interest** — analysis conducted by Valeo Health using Valeo Health operational data. Declared accordingly.

Conclusions

In a city of 200 nationalities, where you come from still determines the state of your health. This analysis of 14,302 clients across 27 nationalities demonstrates that nationality is a statistically significant predictor of biomarker risk profile — and that the nationalities carrying the heaviest burden are the least likely to be engaging with the monitoring they need.

Finding 1 — The South Asian Risk Cluster

Indian and Pakistani clients consistently show the worst cardiometabolic biomarker profile: lowest HDL (51.5, 53.4 mg/dL), highest triglycerides (119.7, 116.1 mg/dL), elevated CRP, and low vitamin D — with Pakistani clients additionally showing the lowest retesting rate (12.5%) of any large nationality group.

Finding 2 — The Filipino Alert

Filipino clients show the lowest vitamin D (25.8 ng/mL) and highest CRP (6.13 mg/L) of any group, are the oldest cohort on average (47.4 years), and retest at only 17.5% — a high-burden, low-engagement profile that warrants urgent targeted outreach.

Finding 3 — The Emirati Metabolic Crisis

Emirati clients show the highest HbA1c (5.87% overall; 9.47% in males) — the most clinically severe finding in the dataset — with GLP-1 uptake at only 11.3 units per 100 clients, representing a significant and urgent treatment gap.

Finding 4 — The Engagement Paradox

The groups with the lowest biomarker burden (Western Europeans) show the highest retesting rates. The groups with the highest biomarker burden (South Asian, Southeast Asian, Gulf Arab) show the lowest. Addressing this inverse relationship is the central challenge for preventive health equity in the UAE.

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Data Availability: Nationality-level aggregate statistical outputs are available upon reasonable request to the corresponding author. No individual-level client data was used or is available for sharing. All analyses were conducted on fully anonymised, aggregated data.

Ethics & Disclosure: All data was de-identified prior to analysis. This analysis was conducted by Valeo Health's clinical research team using Valeo Health operational data — this conflict of interest is declared and should be stated in any external submission. Gender distribution differences across nationalities ($\chi^2=248.22$, $p<0.001$) must be considered when interpreting all biomarker findings; several nationality groups are predominantly female, which affects group-level biomarker averages for sex-influenced markers.

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