

The economic burden of diabetes in Algeria: An Analysis of direct costs

Phd. Student Abdennour Deddouche ¹, and Pr. Assia Kara Terki ²

¹ Laboratory LARMHO, University Abou Bakr Belkaid of Tlemcen, Algeria.
Email: abdenmour.deddouche@univ-tlemcen.dz

² Laboratory LARMHO, University Abou Bakr Belkaid of Tlemcen, Algeria.
Email: assiaterkikara@yahoo.fr

Abstract---This study aims to assess the economic burden of diabetes in Algeria by analysing direct costs. The study adopts the cost-of-illness (COI) methodology and is based on the most recent data available from the International Diabetes Federation. The results reveal a concerning increase in the prevalence of diabetes in Algeria, reaching 17.5% in 2024 compared to 7.0% in 2011, with projections indicating an expected rise to 19.3% by 2050. In 2024, the total costs associated with diabetes in Algeria amounted to US\$3.11 billion, with projections indicating an increase to US\$4.39 billion by 2050. Direct costs account for approximately 65% of total costs, while indirect costs represent 35%. The study provides recommendations for decision-makers and health policy stakeholders to help them develop effective strategies for the prevention and management of the disease and improve the allocation of health resources. This will help to contain the escalating economic burden of diabetes in Algeria.

Keywords---type 2 diabetes in Algeria, economic burden, costs, healthcare systems, public health, medical expenditure.

JEL Classification: I10, I11, I13, I15, I18, H51

Introduction

The world is experiencing an increasingly rapid epidemiological transition, characterised by the growing prevalence of non-communicable diseases. Among these, diabetes mellitus has become a significant and expanding global public health and economic challenge. According to the International Diabetes Federation's most recent report, the number of people living with diabetes worldwide reached 589 million in 2024, and this figure is projected to increase to 853 million by 2050 — a 45% increase

How to Cite:

Deddouche, A., & Terki, A. K. (2026). The economic burden of diabetes in Algeria: An Analysis of direct costs. *The International Tax Journal*, 53(3), 1837–1848. Retrieved from <https://internationaltaxjournal.online/index.php/itj/article/view/720>

The International tax journal ISSN: 0097-7314 E-ISSN: 3066-2370 © 2026

ITJ is open access and licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

Submitted: 23 November 2025 | Revised: 25 February 2026 | Accepted: 15 May 2026

(International Diabetes Federation, 2025). The Middle East and North Africa region is among the areas most affected by this disease, with one of the highest diabetes prevalence rates globally, at approximately 17.6% among adults — meaning roughly 1 in every 6 adults is living with the condition.

Like many other developing countries, Algeria faces a dual challenge of addressing traditional infectious diseases and the rising burden of non-communicable diseases, particularly diabetes mellitus. Over the past few decades, Algeria has experienced a significant rise in diabetes cases, primarily due to lifestyle changes, rapid urbanisation and dietary shifts towards high-calorie, high-fat foods (Boudoukhah, 2019).

According to the most recent data from the International Diabetes Federation, the number of people with diabetes in Algeria increased from 1.43 million in 2011 (corresponding to a prevalence rate of 6.34% among adults) to 4.8 million in 2024, with a prevalence rate of 17.5%, which is approximately double within just 14 years. This trend is expected to continue, with the number of people with diabetes projected to reach 7.9 million by 2050 (International Diabetes Federation, 2025).

Diabetes imposes a substantial economic burden on national economies, health systems, individuals and households. This burden is primarily manifested through direct healthcare costs (such as treatment, medication, and hospitalisation) (International Diabetes Federation, 2025).

Despite the considerable health and economic impacts of diabetes in Algeria, there is a lack of studies that comprehensively assess the disease's economic burden. Therefore, this study aims to address this issue by analysing the direct and indirect costs of type 2 diabetes in Algeria based on the most recent available data.

Study problem statement

Based on the foregoing, the study's main research problem can be formulated as follows:

What is the magnitude of the direct economic burden of diabetes on the Algerian health system, and how will this burden evolve up to 2050?

Study Hypotheses

Building on the research problem, the following hypotheses are proposed:

1. First hypothesis: diabetes constitutes a significant and growing direct economic burden on the Algerian health system, exceeding US\$3 billion per year.
2. Second hypothesis: Drug and medical supply costs account for the largest share of the total direct costs of diabetes care in Algeria.
3. Third hypothesis: The direct economic burden of diabetes in Algeria is expected to grow continuously and substantially until 2050, reaching more than four times its current level. This is driven by an increase in the number of patients and rising healthcare costs.

Study objectives

The objectives of this study are:

1. To assess the current epidemiological situation of diabetes in Algeria and its future outlook.
2. To analyse the direct healthcare costs associated with diabetes patients.
3. To provide recommendations to healthcare decision-makers to help mitigate this burden.

This study is particularly important in light of the challenges faced by the Algerian healthcare system and the need to optimally allocate limited resources. Furthermore, a sound understanding of the economic impact of diabetes can inform the development of effective prevention and treatment strategies, enhance patients' quality of life and alleviate pressure on national healthcare resources.

2. Literature review:

2.1 The Global Burden of Diabetes

Health expenditure related to diabetes accounts for a significant proportion of healthcare budgets worldwide. According to a study by the NCD Risk Factor Collaboration (Zhou et al., 2016), the number of people living with diabetes globally increased from 108 million in 1980 to 529 million in 2021, and is projected to reach 783 million by 2050. The global costs associated with diabetes were estimated at US\$966 billion in 2021 and are expected to exceed US\$1.03 trillion by 2030 (International Diabetes Federation, 2025). Additionally, Bommer et al. (2018) reported that direct costs — including pharmacological treatment, diagnostic tests, physician visits, and hospitalisation — account for approximately 67% of total global costs.

The burden in the Middle East and North Africa

In the Middle East and North Africa (MENA) region, where diabetes prevalence is among the highest, the situation is particularly concerning. Although the region accounts for only about 17.6% of the adult population, the latest International Diabetes Federation report indicates that the number of people with diabetes in this region reached 84.7 million in 2024 and is expected to rise to 162.6 million by 2050, corresponding to an increase of approximately 92% (International Diabetes Federation, 2025).

Furthermore, Clarke et al. (2019) estimated the total cost of diabetes in the Middle East and North Africa at around US\$32.9 billion in 2019, with projections suggesting it will increase to US\$67.1 billion by 2030. The study also indicates that direct costs represent around 60% of total diabetes-related costs.

2.2 Previous studies on the economic burden of diabetes in Algeria

Despite the importance of this topic, there is a clear scarcity of comprehensive studies focusing specifically on the direct costs of diabetes in Algeria. Among the available studies, Lamri et al. (2014) conducted an analysis to estimate healthcare costs for patients with diabetes in Algeria. They concluded that the average annual cost per patient was approximately US\$542 in 2019, with significant variation depending on whether patients experienced complications.

In a more recent study, Yala et al. (2024) estimated the costs associated with major vascular complications of diabetes in Algeria. They found that the average annual cost for a patient suffering from these complications was approximately 3 million Algerian dinars (roughly equivalent to US\$22,000), representing a significant financial burden for both the healthcare system and households. Additionally, Nchida (2017) reported that spending on chronic diseases, including diabetes, consumes approximately 65% of Algeria's health budget, thereby placing considerable pressure on limited health resources.

2.3 Research gaps in previous literature

A careful review of the existing literature reveals several important research gaps in studies concerning the economic burden of diabetes in Algeria.

Firstly, the majority of existing studies rely on outdated data, which limits their ability to accurately reflect the current epidemiological situation and associated costs of diabetes in Algeria. Secondly, many studies focus on specific components, such as complications, rather than providing a comprehensive analysis of all direct cost elements. Thirdly, there is a scarcity of studies offering future projections of the direct economic burden, which hinders long-term strategic planning.

This study aims to address these gaps by providing an up-to-date, comprehensive analysis of the direct costs of diabetes in Algeria and by developing future projections to inform health policy formulation and planning.

3. Methodology:

3.1 Study design

This study uses an analytical descriptive design to estimate the direct economic burden of type 2 diabetes in Algeria. The Cost of Illness (COI) methodology is used, which is a standardised framework for estimating the economic costs specifically attributable to a given disease.

Rather than an incidence-based approach, which estimates costs over the lifetime of patients newly diagnosed, a prevalence-based approach is employed to measure the annual costs of all existing (prevalent) diabetes cases in a given year.

Estimation of direct costs

To estimate direct costs, the study combines two complementary approaches:

1. Top-down approach: used to estimate total national spending on diabetes, based on aggregate health expenditure data from international sources, such as the International Diabetes Federation.
2. The bottom-up approach is used to conduct a detailed analysis of the costs of health services provided at the individual patient level, and then these estimates are extrapolated to the overall number of diabetes patients.

This dual approach provides a deeper understanding of cost components and supports cross-validation of results through consistent findings.

2.3 Data sources

To ensure the analysis was comprehensive and accurate, a variety of data sources were used.

- International Diabetes Federation (IDF) data: the study relied on the most recent edition of the International Diabetes Federation Diabetes Atlas to obtain reliable data on the prevalence of diabetes and associated costs in Algeria, at regional and global levels. This data is an invaluable reference for researchers and health policymakers worldwide.
- Local (Algerian) studies: The study also drew on academic and research work conducted in Algeria regarding healthcare costs for patients with diabetes and its complications. These studies provided valuable insights into the local reality of the disease and its economic impact.
- Global databases: Data from the World Health Organization (WHO) and the World Bank were consulted to obtain comparable health and economic indicators, enabling the Algerian situation to be placed within its regional and global context.

All data were analysed in an integrated manner, taking into account methodological differences across sources and ensuring the use of the most up-to-date information available to support the precision and relevance of the estimates to the current context.

3.3 Direct cost estimation

Direct costs were defined as the direct medical expenses incurred by the healthcare system and society in managing diabetes and its complications. These costs were classified and estimated using a bottom-up approach, following the formula below:

Total direct cost = sum (number of patients in the category × average annual direct cost for the category).

Patients were categorised based on disease severity and the presence of complications. The average cost for each category was estimated according to the following components:

1. Medication and medical supply costs, including the cost of glucose-lowering drugs (oral agents), different types of insulin, and devices and supplies for self-monitoring of blood glucose levels.
2. Medical care costs, including the cost of visits to general practitioners and specialists, medical consultations and health education sessions.
3. Testing and diagnostic costs, including the cost of routine laboratory tests (e.g. HbA1c and kidney function tests), as well as imaging and radiology examinations.

4. Hospitalisation and surgical procedure costs: covering the cost of hospital stays due to acute or chronic diabetic complications, as well as the cost of surgical interventions (e.g. cardiac surgery or amputation of a limb).
5. Complication treatment costs: estimating the additional costs associated with managing major diabetes complications such as retinopathy, nephropathy, cardiovascular diseases and diabetic foot.

3.4 Future projections

A model was developed to estimate the potential economic impact of diabetes in Algeria by the year 2050. This model was based on International Diabetes Federation (IDF) projections of diabetes prevalence rates, as well as demographic projections and economic forecasts for Algeria. In addition, certain assumed inflation rates were applied to healthcare costs.

Furthermore, a sensitivity analysis was conducted to assess the extent to which the final results were affected by changes in key variables, such as the diabetes prevalence rate and treatment costs, thereby ensuring the robustness and reliability of the estimates.

4. Results

4.1 Epidemiological situation of diabetes in Algeria

The available data indicate a concerning upward trend in the prevalence of diabetes in Algeria over the past two decades. Table 1 and Figure 1 illustrate this sharp increase in the number of affected individuals.

Table 1 shows the evolution of the number of people with diabetes (in thousands) by age group (20–79) in Algeria from 2003 to 2050

Years	Number of people with diabetes in the 20–79 age group and percentage.	Percentage %
2003	727.80	4.1
2007	1 458.20	7.3
2010	1 632.10	7.4
2011	1 435.12	6.34
2013	1 639.55	6.63
2015	1 679.50	6.8
2017	1 782.30	6.9
2019	1 904.70	7.2
2021	2 013.00	8.4
2024	4 761.80	17.5
2050	7 900.00	

Source: Adapted and compiled from data from the International Diabetes Federation (IDF), including editions of the IDF Diabetes Atlas (2003, 2006, 2009, 2011, 2013, 2015, 2017, 2019, 2021 and 2025).

Epidemiological trend in Algeria

Over the past few decades, Algeria has experienced a significant rise in the number of people living with diabetes, driven by rapid lifestyle changes, health-related factors, and environmental influences. The presented data reveal a concerning evolution in diabetes incidence in Algeria between 2003 and 2025, with a sharp increase in reported figures. In 2003, 727.8 thousand people (4.1%) were living with diabetes. By 2019, this figure had risen to 1.9 million (7.2%), more than doubling in just 16 years. However, the most striking change occurred between 2019 and 2025, when the number rose from 1.9 million to 4.76 million (17.5%). This corresponds to an increase of around 150% within just six years, placing Algeria fifth in the Middle East and Africa region after Pakistan, Egypt, Iran and Saudi Arabia (International Diabetes Federation, 2025). This makes Algeria one of the countries with the fastest growing diabetes prevalence rates worldwide.

Regarding future projections, a diabetes prevalence of 7.9 million cases in 2050 signals a major health crisis. It is likely that prevalence will exceed 25% among the working-age population (20–79 years). This epidemiological rise clearly reflects the impact of rapid social and economic changes, including accelerated urbanisation, changes in dietary patterns, and increased physical inactivity. These trends necessitate a fundamental reassessment of public health policies, as well as diabetes awareness and prevention programmes. (Table 1, Figure 1).

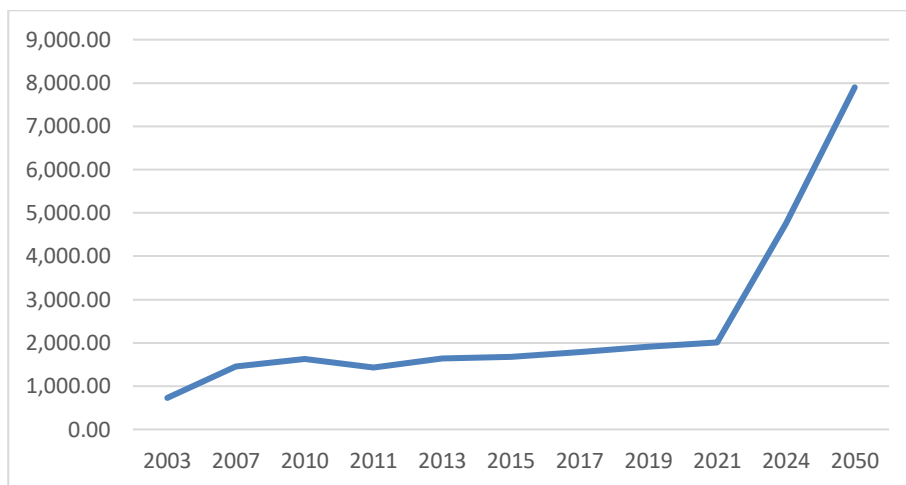


Figure 1 shows the number of people with diabetes (in thousands) in Algeria by age group (20–79).
Source: Adapted and compiled from International Diabetes Federation (IDF) data, including editions of the IDF Diabetes Atlas (2003, 2006, 2009, 2011, 2013, 2015, 2017, 2019, 2021 and 2025).

The situation is further exacerbated by the increase in the proportion of undiagnosed cases. The IDF (International Diabetes Federation) estimates that approximately 31.7% of people with diabetes in the country are unaware of their condition. Although this figure is lower than the regional average of 37.2%, it nonetheless remains very high. Delayed diagnosis inevitably leads to delayed access to appropriate care and increases the risk of developing severe — and often costly — complications in the long term.

Furthermore, diabetes is one of the top ten leading causes of death worldwide. It is associated with increased mortality rates (by two to three times) due to infections, cardiovascular diseases, chronic kidney diseases, chronic liver diseases and cancer (Bragg et al., 2017). While the provided contexts do not specifically refer to Algeria, relevant insights regarding diabetes-related mortality can be derived from regional data that may apply to the country.

Algeria is part of the Middle East and North Africa (MENA) region, which bears a substantial diabetes-related burden. The MENA region records the second-highest percentage of deaths associated with diabetes, accounting for 16.7% of all deaths, indicating a serious health concern that may also reflect the situation in Algeria (International Diabetes Federation, 2025).

Impact on life expectancy

Access to high-quality diabetes care can have a significant impact on life expectancy. In regions with limited healthcare resources, such as certain areas in Algeria, individuals with diabetes may be at an increased risk of complications and premature death (International Diabetes Federation, 2025).

Premature mortality

In 2024, it was estimated that approximately 168,000 premature deaths were attributable to type 1 diabetes (T1D) across different regions. While no specific figures are available for Algeria, general trends observed in the Middle East and North Africa indicate that the country could be similarly affected, with a significant proportion of premature deaths potentially linked to diabetes (International Diabetes Federation, 2025).

Investment in healthcare

Despite the increasing prevalence of diabetes in the Middle East and North Africa, spending on healthcare for its management remains relatively low. Algeria may face comparable challenges, which could hinder efforts aimed at reducing diabetes-related mortality (International Diabetes Federation, 2025).

Although there is no country-specific data on diabetes-related deaths in Algeria, regional trends suggest that this is a significant health challenge. Improving access to healthcare services and health education is therefore essential to reducing mortality rates in Algeria and comparable countries.

Direct costs of diabetes

The growing epidemiological burden translates into substantial direct medical costs for the Algerian healthcare system. Based on recent national data studies, these costs can be estimated and classified as follows:

Total direct costs

Total spending related to diabetes is estimated at approximately USD 193 billion, representing 19% of total global health expenditure. This figure highlights the significant financial burden that diabetes imposes on health systems worldwide. The International Diabetes Federation (IDF) predicts that total health expenditure related to diabetes will reach USD 1.043 trillion by 2050 (International Diabetes Federation, 2025).

While global figures indicate alarming trends, there are considerable disparities in diabetes-related spending across regions. For instance, the Middle East and North Africa (MENA) region, where diabetes prevalence is high, spent USD 35 billion on diabetes care, accounting for just 3.4% of total global spending. This suggests that many regions may not be investing adequately in diabetes management, which can lead to higher long-term costs due to complications.

In summary, the total global cost of diabetes is substantial. Current spending is estimated at USD 193 billion, and this figure is expected to exceed one trillion USD by 2050. This highlights the urgent need to strengthen health strategies and ensure adequate funding to enable effective diabetes management worldwide.

In Algeria, diabetes is becoming an increasingly significant health and economic burden with the potential to evolve into a national crisis if effective measures are not implemented. According to the International Diabetes Federation, the number of people living with diabetes reached 8.4 million in 2025, imposing an estimated annual cost of approximately USD 3.11 billion on the state budget.

Average direct costs per patient

Direct costs for diabetes in Algeria are notably high and vary according to patients' conditions, the type of therapy and the presence of complications. Based on a study by Yala et al. (2024), the average annual costs can be summarised as follows:

- Well-controlled diabetes without complications (on oral medications): approximately 500,000 Algerian dinars per year.
- Diabetes treated with multiple daily insulin injections: the cost may reach up to 2.7 million Algerian dinars per year.

These costs increase significantly when complications occur. For example:

- Cardiovascular complications: treatment costs may add an additional 400,000 to 1,200,000 Algerian dinars annually, depending on the clinical condition (e.g. hypertension, heart failure or stroke).
- Diabetic foot: treatment costs range from 300,000 Algerian dinars for mild cases to over 1.5 million Algerian dinars for cases requiring amputation.

Table 2: Relative distribution of direct medical costs of diabetes in Algeria:

Category	Percentage
Drugs	53%
physicians	31%
examinations and diagnosis	14%
nursing	2%
total	100%

Source: Compiled and adapted from data provided by Tebaibia et al. (2023).

The table clearly shows the dominance of spending on medications (53%) and medical services (31%), reflecting the predominantly treatment- and drug-centred nature of healthcare systems. The low share allocated to nursing (2%) indicates serious neglect of nursing care and health education, both of which are essential for the effective management of chronic diseases such as diabetes.

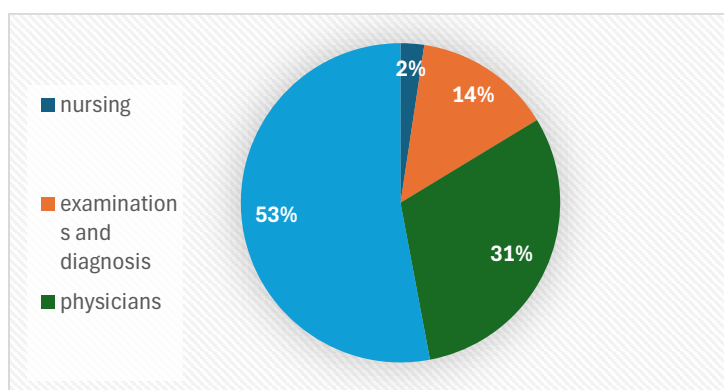


Figure 2 shows the distribution of the direct costs of diabetes by type of service.

Source: Compiled and adapted from data provided by Tebaibia et al. (2023).

3.4 Total direct economic burden

Based on data from the International Diabetes Federation (IDF, 2025), it is estimated that there were approximately 4.76 million people with diabetes in Algeria (aged 20–79 years) in 2024. According to the same source, the average annual direct expenditure per patient is USD 653.4. Therefore, the total direct economic burden of diabetes on the Algerian economy is estimated to be approximately USD 3.11 billion (equivalent to around 418 billion Algerian dinars, based on the Central Bank of Algeria's reference exchange rate in 2024).

4.4 Estimation of Future Direct Costs: Projected diabetes-related health expenditure for 2050

4.4.1 Key data and modelling assumptions

Based on the most recent data included in the International Diabetes Federation Diabetes Atlas (International Diabetes Federation, 2025), the following baseline inputs were adopted to estimate future costs:

- Number of people with diabetes in the base year (2024): 4.76 million in the 20–79 age group.

- Average annual direct health expenditure per patient (2024): USD 653.4.
- Total direct economic burden (2024): USD 3.11 billion (approximately 418 billion Algerian dinars).
- Projected number of people with diabetes in 2050: 7.9 million, according to IDF projections.

4.4.2 Methodologies for estimating future costs and their results

The direct cost for 2050 was estimated using three different calculation methodologies. The underlying assumptions and limitations of each method are stated explicitly.

Table 3: Comparison of methodologies and projections of the direct cost for 2050

Methodology and assumptions	Average cost per patient (2050)	Total direct cost (2050):	Methodologic al limitations	Mathematical equation used
1. Growth in volume only: an assumption of constant average per-patient cost at the 2024 level.	653.4 USD	\$5.16 billion	It inevitably ignores the effect of inflation and the increase in the cost of care as the disease develops.	$C_{(2050)} = P_{(2050)} \times C_{(2024)}$ Where: Where: - C = Cost - P = Patients
2. Consideration of health-sector inflation: application of an average global health inflation rate of 4.5% annually for 26 years.	2,054 USD	16.22 billion USD	It may overestimate results because it assumes that the cost structure and the system's effectiveness remain unchanged.	$C_{(ind\ 2050)} = C_{(ind\ 2024)} \times (1 + r)^{(n)}$ $C_{(total\ 2050)} = P_{(2050)} \times C_{(ind\ 2050)}$ Where: - $r = 0.045$ (inflation rate)
3. A realistic rate model combining the effect of inflation (4.5%) with balancing factors such as improved efficiency (25%) and changes in disease structure (a 15% increase in complications).	1,532 USD	12.10 billion USD	It provides a more balanced estimate that reflects multiple trends, which we recommend adopting in the analysis.	$C_{(ind\ 2050)} = [C_{(ind\ 2024)} \times (1 + r)^{(n)}] \times (1 - \epsilon) \times (1 + \delta)$ Where: - $\epsilon = 0.25$ (efficiency improvement) - $\delta = 0.15$ (change in disease structure).

Source: prepared by the researchers.

The third model (Methodology 3) is considered more realistic and comprehensive for the following reasons:

- Accounting for inevitable inflation: It recognises the increase in the costs of health inputs (medications, wages, and technologies) over time.
- Adjusting for efficiency gains and technological progress: It considers the potential cost savings from the increased use of generic drugs, improved protocols and early diagnosis, which reduce the cost of complications in the long term.

- Simulating changes in the epidemiology of the disease: It adjusts for the expected increase in advanced, high-cost cases (such as kidney disease and diabetic foot) resulting from population ageing and delayed diagnosis.

Based on this model, the results indicate a rise in the direct economic burden from \$3.11 billion in 2024 to \$12.10 billion in 2050.

The compound annual growth rate (CAGR) of direct spending is estimated at approximately 5.2%. This increase corresponds to overall growth of +289% over a 26-year period, i.e. more than fourfold.

From the above, two main conclusions can be drawn:

1. Accelerated depletion of resources: even with efficiency adjustments, direct health spending on diabetes is expected to increase more than fourfold, potentially accounting for nearly half of the projected national health expenditure by the middle of the century if current trends continue.
2. The urgency of shifting towards prevention: these quantitative projections highlight the undeniable economic case for significant investment in primary and secondary prevention policies. For every dollar spent on preventing onset or delaying complications, future reductions in direct treatment costs could exceed \$12 billion.

5. Discussion

The results of this study reveal the extent of the direct economic burden that diabetes imposes on Algeria's healthcare system. The sharp increase in disease prevalence rates — from 6.3% in 2011 to approximately 17.5% in 2024 — appears to be the primary driver of this growing burden. While these figures are consistent with global and regional trends, the pace of increase is faster than average, placing Algeria among the countries facing a particularly critical health and economic challenge. (Bommer et al., 2018).

The steep rise in diabetes prevalence in Algeria (from 7.0% in 2011 to 17.5% in 2024) can be explained by several factors. The most important of these are rapid changes in lifestyle, such as reduced physical activity and unhealthy dietary patterns, as well as rapid urbanisation, population ageing and rising obesity rates. These developments align with the epidemiological transition theory, which posits that the burden of disease shifts from communicable/infectious diseases to non-communicable, chronic diseases as a society becomes more economically and socially developed.

When analysing the components of direct costs, it appears that spending on medicines and medical supplies accounts for the largest proportion (53%). This is to be expected, reflecting the nature of chronic disease management, which relies heavily on continuous pharmacological treatment. Nevertheless, the substantial costs allocated to treating complications, as highlighted in the study by Yala et al. (2024), underscore a strategic gap in the health system. Costs reaching 1.5 million Algerian dinars for the treatment of diabetic foot or 1.2 million dinars for stroke treatment represent more than a financial burden; they also indicate shortcomings in primary and secondary prevention strategies. Investing in the prevention of complications through effective glycemic control, routine screening and patient health education could generate significant long-term cost savings and substantially improve patients' quality of life.

Methodological considerations and limitations

The methodology used in this study, which combines a top-down approach with a bottom-up approach based on the most recent national and international data, represents an important step towards more accurate estimation of the economic burden. While data from the International Diabetes Federation (IDF) provides an overall perspective, local studies such as Yala et al. (2024) and Tebaibia et al. (2023) offer more detailed information on the cost structure within the Algerian context. This allows the most effective intervention points to be identified.

However, the following limitations of this study should be acknowledged:

Firstly, the estimation of total costs relies on averages that may not fully capture the significant variation in healthcare costs between urban and rural areas or between the public and private sectors.

Secondly, there is still a lack of data on costs directly paid by patients, which may pose a significant financial burden to households.

Thirdly, this study focuses exclusively on direct costs. It is fully recognised, however, that indirect costs (such as lost productivity) also represent a significant economic burden on society, and these were excluded in accordance with the scope defined for this study.

6. Conclusion and recommendations

This analysis confirms that diabetes in Algeria is no longer merely a health problem; it has become a significant direct economic burden on the national healthcare system. Direct costs alone exceed USD 3.11 billion per year, consuming a substantial portion of the health budget, and this figure is projected to grow to USD 12.10 billion by 2050. Failure to contain this burden will not only result in a deterioration in the quality of healthcare delivered, but will also threaten the long-term financial sustainability of the healthcare system. Based on the findings of this study, we recommend that policymakers in the health sector consider the following strategies:

1. Reorient investment towards primary prevention: investment should shift away from treatment, which currently accounts for over 80% of total costs, towards prevention. This requires launching large-scale national awareness campaigns about the risks of obesity, physical inactivity and unhealthy dietary patterns. It also requires the implementation of taxation policies on harmful products, such as sugar-sweetened beverages, to support the financing of prevention programmes.
2. Strengthen early detection and effective management programmes. The existence of approximately 30% of undiagnosed cases represents a 'time bomb'. Early screening programmes should be developed and expanded, particularly among high-risk groups. In addition, treatment and follow-up protocols should be standardised to ensure all patients receive high-quality care aimed at optimising disease control and delaying the onset of complications.
3. Invest in structured patient health education: Patients should be empowered by equipping them with the knowledge and tools necessary to manage their condition effectively. Organised health education programmes can reduce the need for repeated medical consultations and hospitalisations, thereby significantly lowering direct costs.

Human Resources and Strategic Governance

In order to achieve objectives efficiently and effectively, it is essential to prioritise the development and investment in the medical human element, while establishing strategic plans based on excellence and quality. (Zaïdi & Sari, 2024)

Improving resource allocation mechanisms

Health authorities and the relevant ministry should use economic burden studies, such as this one, to make more efficient decisions about allocating resources. Priority should be given to cost-effective interventions, such as regular eye and foot screening for patients with diabetes, to prevent costly complications.

Supporting scientific research and strengthening data systems

It is necessary to establish a national diabetes registry and encourage further health economics research to assess the effectiveness of different interventions, updating cost estimates periodically. Accurate, up-to-date data and information are the foundation of successful strategic planning. In addition, policymakers should draw on the most recent data available from reliable international sources, such as the 11th edition of the Diabetes Atlas (2025), to ensure that health policies are grounded in robust, up-to-date scientific evidence.

In conclusion, addressing the increasing economic burden of diabetes in Algeria requires a comprehensive, integrated strategic vision that goes beyond short-term, situation-based treatment-focused approaches. Instead, it should promote sustainable health policies based on prevention, early detection and effective disease management, as these are key to ensuring the long-term sustainability of the health system and improving citizens' health.

List of References

- Bommer, C., Sagalova, V., Heesemann, E., Manne-Goehler, J., Atun, R., Bärnighausen, T., Davies, J., & Vollmer, S. (2018). Global Economic Burden of Diabetes in Adults: Projections From 2015 to 2030. *Diabetes Care*, 41(5), 963–970. <https://doi.org/10.2337/DC17-1962>
- Bragg, F., Holmes, M. V., Iona, A., Guo, Y., Du, H., Chen, Y., Bian, Z., Yang, L., Herrington, W., Bennett, D., Turnbull, I., Liu, Y., Feng, S., Chen, J., Clarke, R., Collins, R., Peto, R., Li, L., & Chen, Z. (2017). Association Between Diabetes and Cause-Specific Mortality in Rural and Urban Areas of China. *JAMA*, 317(3), 280–289. <https://doi.org/10.1001/JAMA.2016.19720>
- Clarke, T., Jamieson, J. D., Malone, P., Rayhan, R. U., Washington, S., VanMeter, J. W., & Baraniuk, J. N. (2019). Connectivity differences between Gulf War Illness (GWI) phenotypes during a test of attention. *PLOS ONE*, 14(12), e0226481. <https://doi.org/10.1371/JOURNAL.PONE.0226481>
- International Diabetes Federation. (2011). *IDF DIABETES ATLAS Fifth edition*.
- International Diabetes Federation. (2025). *IDF Diabetes Atlas (11th ed.)*. <https://diabetesatlas.org/resources/idf-diabetes-atlas-2025/>
- Lamri, L., Gripiotis, E., & Ferrario, A. (2014). Diabetes in Algeria and challenges for health policy: a literature review of prevalence, cost, management and outcomes of diabetes and its complications. *Globalization and Health*, 10(1). <https://doi.org/10.1186/1744-8603-10-11>
- NCD Risk Factor Collaboration. Zhou, B., Lu, Y., Hajifathalian, K., Bentham, J., Di Cesare, M., Danaei, G., Bixby, H., Cowan, M. J., Ali, M. K., Taddei, C., Lo, W. C., Reis-Santos, B., Stevens, G. A., Riley, L. M., Miranda, J. J., Bjerregaard, P., Rivera, J. A., Fouad, H. M., Ma, G., ... Cisneros, J. Z. (2016). Worldwide trends in diabetes since 1980: A pooled analysis of 751 population-based studies with 4.4 million participants. *The Lancet*, 387(10027), 1513–1530. [https://doi.org/10.1016/S0140-6736\(16\)00618-8/ATTACHMENT/6460CA03-DC05-4788-A8E5-D1FE6BF26FD2/MMC1.PDF](https://doi.org/10.1016/S0140-6736(16)00618-8/ATTACHMENT/6460CA03-DC05-4788-A8E5-D1FE6BF26FD2/MMC1.PDF)
- Tebaibia, A., Mammeri, A., Hamrour, F., Hocine, O., Ammi, M., Slimani, N., Zekri, S., Aissaoui, A., & Hachelaf, Z. (2023). EE475 Economic Burden on Diabetes and Cardiovascular Disease: Real World Data and Empirical Analysis in Algeria. *Value in Health*, 26(12), S142. <https://doi.org/10.1016/j.jval.2023.09.741>
- Yala, K. Z., Yahia Cherif, B. N., & Yousfi, A. (2024). Estimation des coûts des complications macrovasculaires du diabète. *JOURNAL ALGÉRIEN DE PHARMACIE*, 5(3), 1–8. <https://asjp.cerist.dz/en/article/239329>
- Boudokha, M. (2019). Aging and Chronic Diseases in Algeria: An analytical foresight study'. *Journal of the Researcher in Human and Social Sciences*, 11(4), pp. 149–162. (URL: <https://asjp.cerist.dz/en/article/103157>)
- Zaidi, A. E. and Sari, N. E. (2024). 'The role of investment in human capital in achieving quality health services'. *Journal of Studies in Economics and Business Administration*, 7(2), pp. 175–190. (URL: <https://asjp.cerist.dz/en/article/256683>)
- Nachida, M. (2017). 'The role of primary healthcare in reducing healthcare expenditure in Algeria'. *Journal of Economics and Human Development*, 8(1), pp. 397–408. (URL: <https://asjp.cerist.dz/en/article/21714>).