

# Idiopathic intracranial hypertension in the Middle East A growing concern



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## Abstract

Idiopathic Intracranial Hypertension (IIH) is a disorder of increased intracranial pressure without any identifiable etiology. It is defined by elevated intracranial pressure (ICP) with normal neuroimaging and normal cerebrospinal fluid (CSF) contents. IIH typically affects young obese women and produces symptoms and signs related to high ICP. Headache and blurred vision are the most common symptoms, and papilledema is the major clinical sign. In this review we examine the epidemiology and demographic features of IIH in Middle Eastern countries and compare and contrast them with the published IIH literature from Western countries. The incidence of IIH in several Middle East countries has been estimated at 2.02–2.2/100,000 in the general population, which is higher than the Western rate. Obesity is a major risk factor globally and it is associated with an increased risk of severe vision loss due to IIH. There has been an increase in obesity prevalence in the Middle East countries mainly affecting the Gulf Council Countries (GCC), which parallels increased industrial development. This rise may be contributing to the increasing incidence of IIH in these countries. Other risk factors may also be contributing to IIH in Middle East countries and the differences and similarities to Western IIH merit further study.

**Keywords:** Idiopathic intracranial hypertension (IIH), Pseudotumor cerebri (PTC), Epidemiology, Obesity, Middle East, Gulf Council Countries (GCC)

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## Introduction

Idiopathic intracranial hypertension (IIH), also known as primary pseudotumor cerebri, is a disorder of increased intracranial pressure (ICP) with normal neuroimaging and CSF composition and no underlying etiology. IIH typically affects

obese women of childbearing age but it may be seen in patients of any age, in either gender, and without obesity.<sup>22</sup> Other risk factors for secondary IIH are the use of exogenous substances such as lithium, high doses of vitamin A, tetracyclines (especially minocycline), and corticosteroids (both with steroid intake or more likely following steroid withdrawal).<sup>35</sup>

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The diagnosis of IIH is one of exclusion and the modified Dandy criteria are generally used to make the diagnosis (Table 1).<sup>1,28</sup> While once called “benign intracranial hypertension”, the disorder is not necessarily a benign disorder as some may suffer significant vision loss related to papilledema and many may experience moderate to severe or intractable, disabling headaches. In this review, we consider the epidemiology and demographic features of IIH in the Middle East countries and compare and contrast with the published literature from Western countries.

## Epidemiology and obesity

### Incidence

Many epidemiological studies have documented the association of IIH with female gender and obesity. In the United States (US) the approximate annual incidence has been reported to be 0.9–1/100,000 in the general population. The incidence increases to 13–14.8/100,000 for women of ages 20–44 years who were 10% or more above ideal body weight (IBW) and the incidence increases to 19.3/100,000 for women in this age group when 20% or more above IBW.<sup>16</sup> The incidence varies from country to country probably related to the prevalence of the obesity in the respective region. In the Sheffield, UK study, the incidence was 1.56/100,000/year, 2.86/100,000 in women, and 11.9/100,000 in obese women.<sup>18</sup> The reported annual incidence of IIH in several Middle East countries has been estimated at 2.02–2.2/100,000 in the general population which is even higher than the Western statistics. A study conducted in Libya demonstrated an annual incidence of 2.2/100,000 in the general population, 4.3/100,000 in women, 12/100,000 in women aged 15–44 years and 21.4/100,000 in obese women.<sup>17</sup> Another study performed in Oman estimated an annual incidence of 2.18/100,000 in the general population, 3.25/100,000 women in all age groups, and 4.14/100,000 in the age group of 15–44 years.<sup>14</sup> The reported annual incidence of IIH in Israel was 2.02/100,000 in the general population, 3.17/100,000 in women and 5.49/100,000 in reproductive age group.<sup>20</sup>

The increased incidence of IIH in these countries could be related to the globally increasing rates of obesity (Table 2).

### Obesity prevalence

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. Body mass index (BMI), defined as a person’s weight in kilograms divided by the square of height in meters (kg/m<sup>2</sup>), is a commonly used index to classify overweight and obesity in adults. The World Health Organization (WHO) defines overweight as a BMI of 25 or more and obesity as a BMI of 30 or more.<sup>40</sup> In

its 2008 study of the global obesity epidemic, the WHO estimated that more than 1.4 billion adults who were overweight and more than half a billion were obese. The prevalence of obesity has nearly doubled between 1980 and 2008. Globally over 40 million preschool children were overweight in 2008.<sup>40</sup> The prevalence of obesity worldwide parallels the increased industrial development across the world, which in the GCC is related to the significant growth in incomes and the resulting rapid urbanization and improved living conditions.<sup>41</sup> Table 3 provides the 2010 WHO statistics for obesity in Western and Middle East countries. The rank order in Middle East countries for obesity in women is Kuwait 55.2%, Egypt 48%, and United Arab Emirates (UAE) 42%. These percentages are all higher rates than in any of the European countries and about the same as the US (48.3%) and Mexico (41%). Countries such as Bahrain (37.9%), Jordan (37.9%), Saudi Arabia (36.4%), Tunisia (32.6%), Qatar (31.6%), Iran (29.5%) and Lebanon (27.4%) also have higher obesity rates in females than in European countries and Israel (25.9%). The prevalence of overweight individuals is higher in men than women in Western and European countries, but in the Middle East countries, it is higher in women. Development, urbanization, and improved living conditions in the Middle East countries have led to greater consumption of higher calorie and potentially unhealthy food intake, decreased physical activity and more sedentary lifestyles, and an increase in the prevalence of obesity in people of all age groups, especially women.<sup>41</sup>

### Role of obesity on IIH

A recent case control study showed that higher levels of weight gain and BMI were associated with a greater risk of IIH.<sup>3</sup> Obese and non-obese patients with recent moderate weight gain (5–15% of their weight) also have a greater risk of IIH. Recent weight gain in newly diagnosed IIH is also common finding that has been reported by several other studies.<sup>8,9,11</sup> In one prospective study of 34 patients, 94% of patients were overweight and 70.5% were obese.<sup>9</sup>

Another study of 50 women with IIH showed that 26 had IIH recurrence.<sup>2</sup> These patients had a greater BMI at the time of recurrence compared to BMI at diagnosis. In contrast, patients without recurrence demonstrated stable weights, while patients with recurrence had a 6% weight gain, suggesting that even moderate weight gain might be a risk factor for recurrence.<sup>2</sup>

Similar to the Western literature, the publications on IIH from GCC also show that obesity was the major risk factor contributing to the cause of IIH. A retrospective study of 40 Omani patients diagnosed with IIH showed that 60% of female patients were obese.<sup>14</sup>

Another study in Saudi Arabia included 99 patients who were all Arab by ethnicity and ages between 12–48 years. This study showed that 80% of patients were obese.<sup>21</sup> Mezaal

**Table 1.** Modified Dandy criteria.

Modified Dandy criteria
1. Symptoms, if present, and signs representing increased ICP or papilledema
2. Documented elevated ICP measured in the lateral decubitus position
3. Normal CSF composition
4. Normal MRI or contrast-enhanced CT for typical patient and MRI and MRV for all others
5. No other cause of increased ICP

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