

# Pathologies of the pathologist in Mexico

## Patologías de los patólogos en México

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### Resumen

**OBJETIVOS:** averiguar de qué se enferman los patólogos en México y saber si existen enfermedades muy relacionadas con su profesión.

**MATERIALES Y MÉTODOS:** Se llevó a cabo una encuesta en una pequeña población de patólogos mexicanos que asistieron a los congresos de la Asociación Mexicana de Patólogos y la Federación Mexicana de Patólogos durante el año 2019.

**RESULTADOS:** La encuesta fue respondida por 88 patólogos mexicanos: 48 hombres y 40 mujeres, con límites de edad de 28 y 73 años y un promedio de 19.7 años de experiencia profesional. Se encontraron enfermedades infecciosas en 15.9%, traumatismos en 15.9%, enfermedades posturales en 46%, daños por exposición química en 49.4% y estrés en 71%.

**CONCLUSIONES:** Los patólogos, en su lugar de trabajo, se enfrentan regularmente a varios factores ocupacionales dañinos que incluyen productos químicos, riesgos de infección, peligros físicos y factores psicológicos y ergonómicos.

**PALABRAS CLAVE:** Estrés, exposición química, formaldehído, dolor lumbar, manos cortadas, hepatitis.

### Abstract

**OBJECTIVE:** The purpose of this work was to find out what pathologists in Mexico get sick of and to know if there are diseases closely linked to their profession.

**MATERIALS AND METHODS:** A survey was conducted in a small population of Mexican pathologists who attended the congresses of the Mexican Association of Pathologists and the Mexican Federation of Pathologists during the year 2019.

**RESULTS:** The survey was answered by 88 Mexican pathologists, 48 men and 40 women, with an age range between 28 and 73 years and an average of 19.7 years of professional experience. Infectious diseases were found in 15.9%, trauma in 15.9%, postural diseases in 46%, damage due to chemical exposure in 49.4% and stress in 71%.

**CONCLUSIONS:** Pathologists in their workplace are regularly confronted with several harmful occupational factors including chemicals, infection risks, physical hazards, and psychological and ergonomic factors.

**KEYWORDS:** Stress, chemical exposure, formaldehyde, low back pain, hand cuts, hepatitis

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## INTRODUCTION

A career as a pathologist can be challenging. Pathologists in their workplace regularly face a number of harmful occupational factors including chemicals (formaldehyde, xylol, naphthylamine, benzidine, and O-toluidine), infection risks (hepatitis and tuberculosis), physical hazards (cuts, sprains, and trauma), and psychological and ergonomic factors (stress, high mental workload and burnout).<sup>1</sup> Currently there is little information, much of it decades old, that analyzes what pathologists get sick of, so in this work we try to investigate possible pathologies related to this profession.

## MATERIALS AND METHODS

A survey was conducted on a population of pathologists who attended the congresses of the Mexican Association of Pathologists and the Mexican Federation of Pathologists during the year 2019. To avoid data duplication, each survey was verified by name and subsequently assigned a folio number. All the people surveyed signed an informed consent and their identity was kept anonymous at all times. Data is presented as percentages and ranges appear where necessary.

## RESULTS

A total of 88 surveys were compiled, representing 17.4% of all those attending the different congresses (507 pathologists), of these 48 were from men (54.5%) and 40 from women (45.5%). The average age of those surveyed was 47.2 years with a range of 28 years to 73 years. Meanwhile, the average time of professional practice was 19.7 years with a range of 2 to 48 years, the days worked per week were on average 5.6 fluctuating from 3 to 7, while the hours worked per day on average were 9.9 but varied from 5 to 16 hours.

Regarding the type of practice, 19.3% developed their practice in some institution, 12.5% did it in the private environment and 68.2% combined both types of practice. Most of those surveyed referred to presenting stress at work (71.6%), the causes mentioned were work overload (31.74%), an inadequate work environment (11.1%), having complicated diagnostic cases (7.9%), processing intraoperative biopsies (4.8%), high responsibility for diagnosis (3.1%), lack of resources and/or equipment (3.1%), high responsibility for being head of service (3.1%) and attending congresses or pathology sessions (3.1%) and certification (3.1%). Other diseases that occurred regularly were obesity (19.3%) and systemic arterial hypertension (14.8%). Postural diseases were present in 39.8% of the analyzed population, where low back pain represented 12.5%, cervicgia 12.5%, back pain 6.8%, compression of the nerve root 3.4%, tendinitis 3.4%, herniated disc 2.3%, carpal tunnel syndrome 1.1% and synovial cyst 1.1%. The main triggering factor was continuous poor posture in 97.1% and carrying objects in 2.9%. Then, illnesses due to chemical exposure represented 36.4% of illnesses in pathologists, describing rhinosinusitis in 19.3%, conjunctivitis in 8%, contact dermatitis in 5.7%, and pneumonitis, uveitis and macular degeneration 1.1% each. The main chemical considered harmful was formaldehyde at 79.5%, followed by xylol at 11.4%, decalcifier at 2.3% and ethanol at 2.3%. Among the traumatic diseases reported in 13.8% of the population are cut injuries in 11.3%, disc injuries in 2.3% and finger injuries in 1.1%. Regarding infectious diseases caused by the pathologist's practice, these were presented in 11.4%, where hepatitis, tuberculosis and arborvirus diseases each represented 3.3% and infectious pneumonia in 1.1%. Decreased visual acuity was found in 6.8%, neoplasms in 5.7% and diabetes in 3.4%. Other diseases to those mentioned here occurred in 6.8% of the population. **Table 1**

**Table 1.** Characteristics of the Mexican pathologists surveyed

Demographic	n (Rank)	%
Population	88	
Male	48	54.5
Female	40	45.5
Average age (years)	47.2 (28-73)	
Average time of professional practice (years)	19.7 (2-48)	
Practice type		
Institutional	17	19.3
Private	11	12.5
Combined	60	68.2
Number of working days (days per week)	5.6 (3-7)	
Work hours (hours per day)	9.9 (5-16)	
Traumatic diseases	13	14.8
Cutting wounds	10	11.3
Disc injuries	2	2.3
Finger trauma	1	1.1
Postural diseases	35	39.8
Low back pain	11	12.5
Cervicalgia	8	9.1
Back pain	6	6.8
Nerve root compression	3	3.4
Tendinitis	3	3.4
Disc herniation	2	2.3
Carpal tunnel syndrome	1	1.1
Synovial cyst	1	1.1
Infectious diseases	10	11.4
Hepatitis	3	3.4
Tuberculosis	3	3.4
Arbovirus disease	3	3.4
Infectious pneumonia	1	1.1
Disease from exposure to chemicals	32	36.4
Rhinosinusitis	17	19.3
Conjunctivitis	7	8.0
Contact dermatitis	5	5.7
Pneumonitis	1	1.1
Uveitis	1	1.1
Macular degeneration	1	1.1
Stress	63	71.6
General diseases	44	50.0

Obesity	17	19.3
Systemic arterial hypertension	13	14.8
Decreased visual acuity	6	6.8
Neoplasms	5	5.7
Diabetes	3	3.4
Other diseases	6	6.8

## DISCUSSION

Despite being considered a quiet specialty, in our survey the most mentioned problem affecting pathologists in Mexico is stress. Stress in professional practice can take a heavy toll, and personal carelessness can have tragic consequences, particularly increasing suicide rates.<sup>2</sup> It has previously been mentioned that one of the main causes of death among pathologists is suicide, commonly by poisoning with solid or liquid substances.<sup>3-5</sup> Work overload represents one of the main causes of stress in pathologists, not only in Mexico but in other parts of the world<sup>6</sup>, and what also directly influences the quality of the work they perform. Pathologists experience significant rates of burnout, too.<sup>7</sup> Obesity was present in 19.3% of the pathologists surveyed, which is slightly less than what was reported in American doctors (23%).<sup>8</sup> Work-related diseases of the musculoskeletal system are commonly observed among health professionals, where low back pain represents one of the most prevalent problems, mainly due to the adoption of risky positions. Previously, it was reported that the impossibility of a straight line of sight in the microscope causes the pathologist to lean forward, adopting an inappropriate sitting position and being the main cause of these problems.<sup>1</sup> Risk factors are advanced age and incorrect posture of the trunk and head, things that are common among our analyzed population.<sup>9</sup> The high frequency of postural lesions in Mexican pathologists (39.8%), although less than in Swiss pathologists<sup>1</sup>, makes it necessary to pay more attention and from the residence to sensitize

pathologists-in-training about the importance of ergonomics during dissection and microscopic observation. On the other hand, exposure to certain chemicals by pathologists can cause a variety of occupational complications, especially due to the formaldehyde used as a preservative in these types of laboratories. Common effects of exposure to formaldehyde are irritation of the eyes and mucous membranes and allergic skin sensitization. In addition, formaldehyde is a mutagenic and carcinogenic substance, being associated with cancer of the nasal sinuses, lung, pancreas, prostate, colon and lympho-haematopoietic neoplasms,, among others.<sup>10</sup> Deaths due to cancers of the lymphatic and hematopoietic systems as well as leukemia were reported as common in pathologists.<sup>4,5</sup> The high respiratory exposure of pathologists and other members of the laboratory to formaldehyde and the health problems developed in the upper respiratory tract and eyes, as well as the high risk of carcinogenic and non-carcinogenic respiratory exposure make it necessary to keep work areas spaced, ventilated and with vapor extraction systems and the use of protective masks is also recommended. Since pathologists have to section the different surgical specimens, they have to use several extremely sharp blades and scalpels, so it is not surprising that constant use of such instruments often leads to injury. In our population, this type of injury represented 13.8% and here the use of cut-resistant gloves stands out, which is a rare practice among Mexican pathologists. These injuries have been reported to mainly affect the non-dominant hand and mainly occurred when trying to install the blade on the handle, when

cutting a surgical piece, or when trying to clean the blade.<sup>11</sup> These cuts were also associated with the transmission of blood-borne diseases such as hepatitis and HIV. In our population there were three cases of hepatitis and three of arborvirus diseases transmitted in this way. Other infectious diseases that occurred were tuberculosis and infectious pneumonia. Previously, a higher incidence of tuberculosis was reported among pathologists than in other medical specialties.<sup>12,13</sup>

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