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Pathologists' professional lifestyle: Excellence in practice, ethics, education, health promotion, and personal life

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Abstract:

For a successful treatment process, the medical team members must be in good physical and mental condition. Pathologists are one of the main modern medicine members that should be consulted in all stages of the treatment procedure. Sixty-six percent of clinical decisions are made based on *in vitro* diagnosis. Burnout is defined as chronic uncontrolled occupational stress. Burnout has a massive impact on patient safety, quality of treatment, and reduced patient satisfaction. Physician satisfaction with his job affects patient satisfaction and the quality of medical services provided. The most influential factors on quality of life were exercise and physical activity, having leisure time, and not smoking. In different aspects of lifestyle, physicians have scored lower on their physical activity index. One of the most critical pillars of human life is their religiosity. The presence of religious beliefs among physicians is strong. Workload and increased responsibilities are the most effective factors on pathologists' stress. Pathology creates a bridge between basic sciences and clinical sciences. Therefore, promoting pathology education leads to training better physicians. The purpose of compiling this Narrative review is to clarify the issues raised in various aspects of pathologists' lives and provide solutions to improve each of them. There are several solutions to the problems raised in this article: Increasing salaries, improving working conditions, creating a better view of pathologists by avoiding isolation and being more active and visible, and paying attention to medical education. We recommend that researchers review issues in other medical specialties to provide accurate and concise information to physicians and policymakers.

Keywords:

Education, job satisfaction, occupational stress, pathologists, professional burnout, work-life balance

Introduction

The medical team is made up of different members who all work together to restore patients' health. The mainstay of a good treatment team is its doctors. Thereby, for a successful treatment process, the medical team members must be in good physical and mental condition. Iris Schrijver defines physicians' health as a level of physical and mental health in which a physician is able to manage stress and

succeed in various aspects of his personal and professional life.^[1] The well-being of doctors significantly affects the quality of treatment.^[2] Consequently, it is of the utmost relevance to review different aspects of physicians' personal and professional life, how they affect patient care and seek how to improve them.

Pathologists are specialized physicians, members of the treatment team, who diagnose diseases based on tissue samples. Part of the pathologist's work is done under

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microscopic observation to analyze events at the tissular and cellular levels.^[3] The results affect patient care regarding management and treatment.^[4] Therefore, the pathologist is the connection needed between laboratory and clinical medicine.^[3]

A study of US pathologists found that an average of 52% of a pathologist's work time is spent in anatomical pathology and 14% in a clinical laboratory. The rest is spent on other activities such as teaching, research, and administration.^[3] Pathologists work in different sub-disciplines. These include anatomical pathology, clinical pathology, surgical pathology, hematopathology, and gastrointestinal (GI) pathology.^[4]

The presence of a pathologist in any quality medical team is essential.^[3] Medical laboratory staff, including pathologists, laboratory science experts, and pathology residents, play a vital role in diagnosing, treating, preventing, and managing all aspects of patient care.^[5] Their role in community health is becoming widely used.^[5] With the advancement of science, many changes have taken place in the field of clinical medicine, including the implementation of advanced specialized tests, which are often expensive. This doubles the importance of clinicians consulting with a pathologist to choose a cost-effective treatment.^[6]

Furthermore, 66% of clinical decisions are made based on *in vitro* diagnosis.^[7] Pathologists are key members of modern medicine teams; their involvement is crucial in all stages of the patient's management process, from diagnosis to discharge.^[6] Therefore, different aspects of pathologists' professional and personal life need to be reviewed to improve their current situation, eliminating possible shortcomings, and, at the same time, improving public health through a more accurate and early diagnosis of diseases and guidance for proper treatment.

In this study, we review various aspects of the life of pathologists, including excellence in practice, ethics, education, health promotion, personal life, stress, religiosity, lifestyle, job satisfaction, and the critical issue of Burnout. The purpose of compiling this Narrative review is to clarify the issues raised regarding various aspects of the life of pathologists and provide recommendations to improve them.

Materials and Methods

Various articles examining different parameters were used. It is a narrative review of various studies, each with its research parameters, and results for which there is not necessarily unanimous acceptance. The search was performed in PubMed, Web of Science, and Scopus databases for articles focusing on pathologists

published in English between the years 2010 and 2020. The keywords used were: Pathologist, laboratory professional, histopathologic consultant, lifestyle, Burnout, professional fulfillment, work-life balance, satisfaction, job satisfaction, well-being, wellness, academic, education, and religiosity.

Results

Excellence in practice

It has always been debatable whether it is better for pathologists to work as a generalist or to work on a specific subspecialty.^[8] JC Watts editorial reflects on two of the advantages of generalist are the flexibility of scheduling and a better overall diagnostic quality.^[9] However, at the University of Vermont Medical Center in 2014, pathologists began subspecializing in GI and breast/cervix, and they set up subspecialty benches in both areas. In their 2017 study, they reported the results of this change regarding two aspects, education and practice. In education, creating this subspecialty improved student learning on those topics. Regarding GI and Breast/cervix physicians, they were more satisfied with the emitted diagnoses. In general, more specialized work improved the quality of diagnoses and provided better education for students.^[10]

SARS-Cov-2 or SARS Coronavirus 2 or Coronavirus Disease 2 (COVID-19) is an example of an emerging disease that appeared in late 2019 and spread to East Asia and later to other parts of the world.^[11] Clinical laboratories are always one of the first centers to deal with patients with emerging diseases. Serological tests contribute to identifying asymptomatic carriers of COVID-19 disease.^[12] The pathologists and their team play a significant role in this pandemic and will do so in similar future events. Pathologists are key elements in the diagnostic process. Their participation in research has also contributed to the development of new diagnostic methods for emerging diseases.^[13]

Job satisfaction

Job satisfaction means being interested in the job, having positive feelings about it, and meeting needs through that job. Of course, job satisfaction does not have a unit concept, and it is affected by various issues, such as tasks, relations within the workplace, and the financial income of that job.^[14]

Physicians' career satisfaction is associated with the quality of care and patients' satisfaction.^[4] Thus, it is crucial to pay attention to this issue. Job satisfaction can be determined by the indicators of job enjoyment, feeling involved in activities, and income satisfaction.^[5] A study of 7288 general physicians, demonstrated that satisfaction for their career selection directly correlated

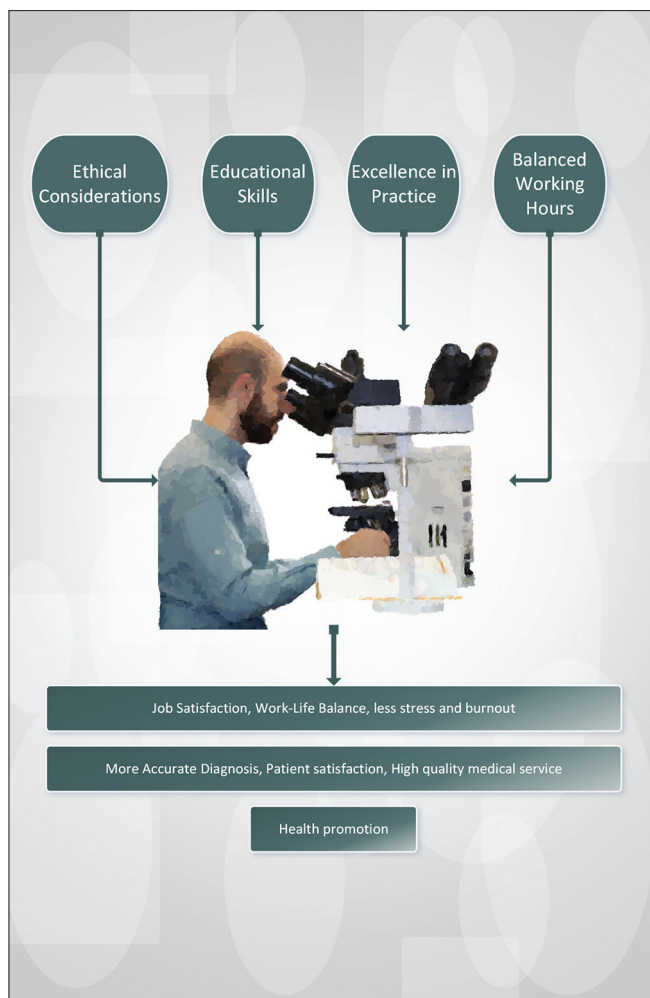


Figure 1: Improving the lifestyle of pathologists in basic areas such as working hours, practice excellence, education, and ethical issues, leads to increased job satisfaction and creating a balance between work and personal life, and ultimately less stress on pathologists. The result of these changes is reflected in more accurate diagnoses, patient satisfaction, and high-quality medical care. The end result of these reforms is health promotion for the whole society

with the time in working experience.^[4] Regarding the satisfaction of choosing a specialized profession, the situation is different.^[4] According to one of the few articles on pathologists' lifestyle, a large percentage (71%) of the pathologists surveyed were satisfied with their jobs, with anatomical and clinical pathologists being the most satisfied.^[5] Pehlivanoglu *et al.*'s (2020) study on Turkish pathologists, showed that the majority of the pathologists participating in this study are satisfied with their job choice due to the high importance of pathology in diagnosis.^[4,15] However, young nonacademic pathologists felt job insecure and dissatisfied, while young academic pathologists felt Burnout due to long working hours and multiple tasks. Interpersonal conflicts were also more common in these individuals. Nonacademic senior specialists had fewer conflicts and were satisfied with working hours, but their main dissatisfaction was their income. Finally, the highest level

of satisfaction was observed between senior academic specialists, and their only dissatisfaction was with the high workload. The study also showed that men were more confident and satisfied with their job than female pathologists.^[15]

Burn out

Burnout means feelings of collapse, frustration, extreme tiredness, disregard for work, and a sense of worthlessness.^[16] In the 11th edition of the International Classification of Diseases, Burnout is defined as chronic uncontrolled occupational stress. It is considered a syndrome with three dimensions: (1) Lack of energy and exhaustion, (2) Negative attitude toward one's job, and (3) Reduced professional efficacy.^[17]

Burnout symptoms are more common in physicians than in other occupations in the United States.^[18] In different studies, a significant number (44%,^[19] 34%,^[20] 45%^[15]) of physicians have shown signs of Burnout. Pathologists are no exception. A study among 408 pathologists conducted by Garcia *et al.* in the United States indicates that 71.4% of participants had Burnout. The study considered five factors for Burnout: (1) Heavy workload, as the most important factor, (2) Lack of adequate support from colleagues and staff, (3) Lack of respect and understanding from hospital managers, (4) Underestimation by clinical partners, and (5) additional responsibilities.^[5]

A survey published in Medscape Pathologist Lifestyle, Happiness and Burnout Report 2021, found that 40% suffered Burnout, 47% of which had a severe impact on their life. The main cause stated is the lack of respect from bosses, colleagues, and employees, followed by long working hours and, also, low salaries. Only 31% of burnout pathologists seek a specialist for help or have a history of receiving help.^[21] The numbers are higher compared to those of other specialists.^[22] Attending physicians' Burnout is imperative. A meta-analysis study published in 2018 stated that Burnout has a huge impact on patient safety, quality of treatment, and patient satisfaction.^[23]

Lifestyle

The WHO defines lifestyle as habits and traditions that affect health and quality of life and are created and changed under society's influence.^[24]

The FANTASTIC questionnaire is used to assess people's lifestyle and behavior in the last 30 days. It has nine subscales: (1) Family and friends, (2) physical activity, (3) nutrition, (4) cigarettes and drugs, (5) alcohol, (6) sleep, stress, and safe sex, (7) type of behavior, (8) insight, and (9) career.^[25]

In a 2011, Brazilian study performed among physicians, the most important and influential factors affecting their quality of life were physical activity, leisure time, and not smoking.^[26] Various studies have shown that an unhealthy lifestyle can increase the risk of multiple diseases such as cancer, autoimmune, and cardiovascular diseases in stressful situations.^[27] An unhealthy lifestyle is common among physicians, and strategies to improve it should be considered. Sens *et al.* found that physicians scored lower on their physical activity index compared to the other nine Fantastic sub-scales.^[28] Nonetheless, 60% of pathologists exercise at least twice a week.^[21]

Religiosity

One of the most critical and influential pillars of human life is their religiosity and spirituality. Sens *et al.*'s study of 30 physicians in Brazil found a strong link between religious beliefs and the FANTASTIC nine lifestyle subscales. For example, those who wanted to attend religious meetings or ceremonies or felt God's presence in their lives were more successful in their jobs and scored better on the "career." The study found that the presence of religion and religious beliefs among physicians is strong, but most physicians tend to internalize their beliefs.^[28]

Stress

In a study of US pathologists, about 96% of the respondents reported some degree of stress. Almost half experienced moderate to high levels. The leading cause was workload and increased responsibilities. Among the subspecialties (branches) of pathologists, surgical pathologists experience the most stress, as well as women when compared to men.^[5]

Exposure to emerging and dangerous diseases, such as COVID-19, in the laboratory, can cause a great deal of stress for all staff, including pathologists. This requires the pathologist's vigilance to manage himself and his colleagues' stress and take the necessary measures to control the infection.

In a stressful work environment, due to excessive secretion of cortisol or overactivity of the autonomic system, the telomere length of cells, especially immune cells, decreases, and the rate of cell destruction increases, which in turn causes dysfunction of the body systems.^[29] In situations where pathologists must make vital and key decisions, the job-related stress increases as well as the health risk. Therefore, it is necessary to provide conditions that will contribute to reducing stress as much as possible. Different studies have shown that adequate sleep, nonsmoking, not consuming alcohol, adherence to a low-calorie diet, and reduced consumption of processed foods play an important role in the reduction of stress.^[30]

Ethics

The Belmont Ethical Declaration, published in 1979, has three basic principles: (1) Respect for persons; preserving patient autonomy and treating patients with ultimate respect (care) and dignity, (2) beneficence and nonmaleficence; protecting the patient's interests and providing them with the maximum benefit. (3) Justice; maintaining justice and equal distribution of burdens and benefits among patients.^[31] Everyone in the laboratory (Pathologists and Staff) must observe all the provisions of this statement.

The ethical issues for the field of pathology are not well articulated.^[32] The relationship between a pathologist and the patient is often limited to an admission number or a specimen.^[33] However, Stempy recommends that pathologists constantly practice the three principles of honesty, integrity, and reliability.^[34] Gronowski *et al.*, in a review entitled Ethics for Laboratory Medicine, studies pathologists and laboratory medicine ethical issues.^[35] According to this study, the most critical issues regarding ethical principles that need to be observed are informed consent and confidentiality, leftover specimens, biobanking, and error disclosure. Some commonly encountered are:

- It may be mandatory to have a sample of some of the people participating during research, but they may avoid sampling
- Using samples in stored banks is controversial. There is much disagreement on this issue^[36-38]
- Pathologists should maintain confidentiality and a nondisclosure policy of all encounters and guarantee that incidental and confidential data from tests, especially genetic tests, be kept.

An important ethical issue in pathology is the dilemma between safeguarding the employees' health or providing health care services to patients with highly contagious and deadly infections.^[35]

Education

Pathology creates a bridge between basic sciences and clinical sciences.^[39] Due to this issue, the pathologist as an academic lecturer can create a multi-omic mentality in students. This means that various metabolic, protein-related, translational, and epidemiological factors are involved in developing a disease. A good pathology teacher may be the difference in aiding the student to learn and integrate these concepts. Saxena proposes to teach students about the nature of molecular pathology in lifestyle, seeking to develop and implement practical preventive and therapeutic approaches in the age of precision medicine.^[40]

Pathology is also one of the courses that have a significant share in general medicine students' curriculum. This course creates a link between basic and clinical sciences and plays an essential role in preparing students to understand clinical content and enter the clinical environment. A study in Iran suggests that the teacher uses self-correction quizzes and asks students to create multiple-choice questions. Using these techniques has benefits such as strengthening critical thinking, better learning, creating transformative thinkers, and promoting the community's health.^[41]

Health promotion

One of the routine tasks of pathologists is to consult with colleagues when viewing various slides. This makes pathologists highly skilled in teamwork. Therefore, in team research, pathologists can perform better than many other specialists. The availability of abundant laboratory data and diverse samples of patients is another factor that increases the possibility for pathologists of conducting researches.

A study of two medical schools in Austria reviewed the articles of 393 physicians and found that academic physicians did the most research. In these individuals, doing research added an average of 15 h per week to their weekly working hours, forcing them to work overtime.^[42]

Recent medical graduates in the United States stated that the ability to control their lifestyle is one of the essential factors for choosing a specialty and continuing their career path.^[43] The increase in working hours needed for academic medicine, maintaining the control of their lifestyle is harder, their personal life is disrupted. Therefore, some will do academic work out of passion because of compulsion and devotedness, leading to new medical graduates avoiding academic medicine. This group shrinking carries significant risks; first, there will be fewer people to educate a large population of students. Second, a reduced number of academic physicians will jeopardize their research work and scientific advancement.^[42]

Discussion

Albores-Saavedra as an experienced and successful pathologist offers five tips to become a successful academic surgical pathologist: (1) To have a good mentor or motivator, (2) to take advantage of opportunities and be lucky, (3) to have the ability to formulate new questions, (4) to show scientific independence and the courage to disagree with the majority in scientific content, and 5-To work a lot.^[44]

Due to the crucial role of pathologists in the early diagnosis of fatal diseases such as malignancies,

increasing their job satisfaction should be on the agenda of future planning. Based on reviewed studies, it was observed that job dissatisfaction causes varied according to pathologists' age and work experience. Therefore, it is necessary to plan separately for each group. We suggest that in the group of academic pathologists, workload and working hours be reduced. To achieve this goal, the burden of job responsibilities should be divided among more people, which can be done by increasing the employment capacity for pathologists in academic centers.

Burnout is a multifactorial issue and has various occupational, social, and personal aspects.^[45] Therefore, there is a need for multilateral planning to reduce it. Pathologists' Burnout can be prevented by increasing their wages and strengthening their position and relationship within the medical team. Preventing pathologist's Burnout can be achieved by having a more active occupational style in patient care, academia and research. Stronger networks could be constructed by holding training workshops or by inviting others to participate in research projects. In hospital laboratories, the pathologist could go outside the laboratory and into the hospital ward for extra information from a patient; they could also check the patient's condition instead of making a phone call or requesting it from the electronic system. This can reduce the isolation and improve the view of other specialists and heads of medical centers towards pathologists.

Among personal lifestyle factors, it seems that more attention should be paid to physical activity. However, due to each region's different socio-cultural conditions, more studies are needed on pathologists' physical activity. The importance of aerobic exercise on health and reducing cell aging has been reported.^[27] If necessary, exercise programs should be implemented in the workplace to improve the health of pathologists.

Researchers in the study on Brazilian physicians, which was reported earlier, recommend religiosity and spirituality education in the curriculum to promote better mental health and a healthier lifestyle.^[28]

Pathologists need to be aware of specific ethical issues regarding work in the laboratory. The patient's consent is implicitly required for testing, except for HIV, which requires written permission.^[46] Pathologists' awareness and observance of these issues will prevent the occurrence of legal problems. They should also have knowledge regarding other legal issues related to their practice. For example, certain data can only be disclosed in court, and a child report should only be provided to his parents. In addition, sensitive issues such as substance use, genetic

disorders, and HIV should not be shared with other staff members or in different hospital settings.^[32]

A study by Harrold *et al.* states that the reason for the decline in interest of medical graduates in pathology is the low visibility of pathologists. Suppose all medical students go through a pathology clerkship before choosing their career path. In that case, they will become more familiar with the field's true nature and dispel some misconceptions about occupational limitations or considering pathology as basic science. The more visible pathologists are to students, the community, and patients, the better the field's overall vision and future.^[47]

Every pathologist should be a good teacher. Not only academic pathologists in the universities, but also every pathologist in his laboratory as an authorized supervisor must be able to train his colleagues in various working fields. The better a pathologist's teaching skills, the better his team.

To deal with the problem of lack of interest in academic work and reduction of the academic pathologists, a formal strategy can be developed so that interested people have protected time, a predetermined program, and, if possible, being exempted from clinical work, with more focus on their educational and research work.^[42] Increasing the time and opportunities for continuous professional development and research may play an influential role in promoting pathologists' health. As shown in Figure 1, the items previously discussed ultimately promote health in several ways.

Conclusion

Given the valuable and vital role of pathologists in the treatment team and the importance they have in promoting community health, it is necessary to do more research on various aspects of their lifestyle in different parts of the world to increase the quality of services provided in the health system with proper planning in each region.

Different studies have shown that Burnout is the most critical issue that physicians, including pathologists, encounter. As the most important solution, the pathologists should make more communications with others, and their managers should give more value to their job. Among nine subscales of personal lifestyle, lack of physical activity is obviously significant in physicians. Providing exercise programs in their workplace and work program can help to improve their lifestyle.

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Conflicts of interest

There are no conflicts of interest.

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