



# REVISTA BRASILEIRA DE ANESTESIOLOGIA

Official Publication of the Brazilian Society of Anesthesiology  
[www.sba.com.br](http://www.sba.com.br)



## REVIEW ARTICLE

# Work-related mental and behaviour disorders in anesthesiologists

Gabriela Oliveira Andrade<sup>a,\*</sup>, Rosa Amélia Andrade Dantas<sup>b,c</sup>

<sup>a</sup> Departamento de Medicina Preventiva e Social da Universidade Federal da Bahia (UFBA), Salvador, BA, Brazil

<sup>b</sup> Universidade Federal da Bahia (UFBA), Salvador, BA, Brazil

<sup>c</sup> Universidade Federal de Sergipe (UFS), São Cristóvão, Sergipe, Brazil

Received 14 November 2012; accepted 20 March 2013

Available online 28 September 2015

### KEYWORDS

Anaesthesiology;  
Financing organized;  
Psychological stress;  
Occupational diseases

### Abstract

**Background:** Anaesthesiology is a specialty whose specificity of the working process results in high levels of stress as an inevitable condition – a particularly worrying situation in the daily life of these professionals.

**Objectives:** This study, based on data from national and international literature, aims to discuss the basis of the occurrence of mental and behavioural disorders or of psychopathological injuries (psychological distress) related to working activity in anesthesiologists.

**Method:** A literature review was conducted, with papers selected from Medline and Lilacs databases, published between 2000 and 2012 in Portuguese, English and Spanish, and addressing the possible association between occupational hazards of the anaesthesiologist profession and mental health problems and psychic distress. Twenty-six publications were listed.

**Results:** Several aspects of the anesthesiologist's work are important points to better understand the relationship between mental health at work and working organization. Poor temporal structuring of work, conflictuous interpersonal relationships and poor control over the activity itself may be mentioned as illness enhancers.

**Conclusion:** The working organization, when not appropriate, is an important occupational risk factor for the life and mental health of workers, mainly of professionals focused on the care of people. This paper focuses on anesthesiologists, who are constantly exposed to stressful and anxiogenic factors.

© 2014 Sociedade Brasileira de Anestesiologia. Published by Elsevier Editora Ltda. All rights reserved.

\* Corresponding author.

E-mail: [euoandrade@yahoo.com.br](mailto:euoandrade@yahoo.com.br) (G.O. Andrade).

**PALAVRAS-CHAVE**

Anestesiologia;  
Organização;  
Estresse psicológico;  
Doenças profissionais

**Transtornos mentais e do comportamento relacionados ao trabalho em médicos anesthesiologistas****Resumo**

*Justificativa:* A anestesiologia é uma especialidade cuja especificidade do processo de trabalho torna elevados níveis de estresse uma condição inevitável, situação preocupante no cotidiano desses profissionais.

*Objetivos:* O presente estudo, fundamentado em dados da literatura nacional e internacional, tem o propósito de discutir as bases da ocorrência de transtornos mentais e de comportamento ou agravos psicopatológicos (sofrimento psíquico) relacionados à atividade laboral em médicos anesthesiologistas.

*Método:* Fez-se uma revisão de literatura em que foram selecionados artigos científicos nas bases de dados Medline e Lilacs, publicados entre 2000 e 2012, em português, inglês e espanhol, que abordam a possível associação entre riscos ocupacionais da profissão de médico anesthesiologista e problemas de saúde mental e sofrimento psíquico. Foram enumeradas 26 publicações.

*Resultados:* Vários aspectos do trabalho do médico anesthesiologista apresentam-se como pontos importantes para a compreensão das relações entre saúde mental no trabalho e organização do trabalho. Podem ser destacados como adoeecedores a má estruturação temporal do trabalho, as relações interpessoais conflituosas e o mau controle sobre a própria atividade.

*Conclusão:* A organização do trabalho, quando não adequada, é um importante fator de risco ocupacional para a vida e a saúde mental dos trabalhadores, principalmente, dos profissionais voltados para o cuidado de pessoas. O foco presente são os médicos anesthesiologistas, constantemente expostos a fatores estressantes e ansiogênicos.

© 2014 Sociedade Brasileira de Anestesiologia. Publicado por Elsevier Editora Ltda. Todos os direitos reservados.

**Introduction**

In this second decade of the XXI century, the occurrence of mental and behavioural disorders is increasing. Among the various causal factors, working activity appears to play an important role in the development and evolution of psychic disorders.<sup>1</sup>

Studies on psychological morbidity in health workers indicate that among the higher level professionals, physicians are those who exhibit high rates of alcoholism, stress and depression, and a large number of these professionals use psychotropic or other drugs. In this context, their work is seen as an important cause for such a situation.<sup>2</sup> Sleep disturbances, working permits and absenteeism caused by psychopathological problems, depressive and anxiety disorders and even suicidal ideation are also related.<sup>3</sup>

Therefore, it is appropriate an attempt to understand the possibility of association of mental and behavioural disorders related to physicians' work, particularly anesthesiologists', since inevitably this is a specialty in which the specificity of the work generates high levels of stress,<sup>4,5</sup> maybe resulting in important psychic distress, work dissatisfaction and even a burnout syndrome.<sup>6,7</sup> Possibly all these aspects make even more serious the situation of these professionals.

It is within this context that the present study aims to discuss, based on data from national and international literature, the foundations of the occurrence of mental and behavioural disorders or psychopathological diseases (psychic distress) related to working activity in anesthesiologists.

**Method**

A literature review of published articles about mental and behavioural disorders or psychopathological diseases (psychic distress) related to the work of anesthesiologists was conducted. To obtain the theoretical framework, only scientific articles were selected from the Virtual Health Library (VHL) with search of Lilacs (Latin American and Caribbean Literature on Health Sciences) and Medline (Online System search and Analysis of Medical Literature) databases. The following keywords and their possible combinations by descriptors were used: sofrimento psíquico/*psychological stress/estresse psicológico/estresse; saúde mental/mental health/salud mental; trabalho/work/trabajo; médico/physician; anestesia/anesthesia/anaesthesia; anestesiologia/anesthesiology; anesthesiologista/anaesthesiologist/anaesthetist/anestesiólogo/anestésista.*

The inclusion criteria were: articles published in English, Portuguese and Spanish from January 2000 to May 2012 and that addressed the possible association between the theme "anaesthesiologists' work" and aspects related to mental health problems and psychic distress, quality of life, working process, risks inherent to the profession and/or conceptions on these subjects. Papers that related mental disorder to specific professional classes not pertaining to the medical profession and to anesthesiologists were excluded.

An active search among references of the articles obtained was conducted, in order to identify relevant articles that had not been collected in the initial search and that met the above criteria.

Twenty-six publications were listed, and as ours is a theoretical review, an assessment of the scientific quality of the articles selected was not conducted.

## Results

### Brief description of anesthesiologist's work

Studies claim that the working activity of the anaesthesiologist is characterized by rapid and firm decision-making in critical situations, in order to promote the necessary actions.<sup>8,9</sup> In general, the anaesthesiologist works in emergency services, in intensive care medicine scenarios and in the treatment of acute and chronic pain.<sup>10</sup> It must be said that the activity of this professional is often permeated by stressful situations that require a full state of readiness and surveillance,<sup>8,9,11,12</sup> considering that, even if properly following the anaesthetic routine, the anaesthesiologist may have to deal with possible variability in his/her patient during an anaesthetic act.<sup>9</sup> Consequently, it is clear that the anaesthesiologist assumes great responsibility to anaesthetize a patient for a medical procedure, because many events (both adverse and unknown) can occur, requiring continuous monitoring.<sup>9</sup>

In describing the activity of anesthesiologists, we can mention the task of monitoring the vital functions of patients in major trauma, cardiac arrest, emergency surgical procedures and postoperative periods. The anaesthesiologist work in the management of conditions that threaten the lives of patients,<sup>12</sup> and also to ease the work of several other physicians in the management and care of critically ill patients.<sup>13</sup>

The anaesthesia is fraught with potentially stressful moments in which the anaesthesiologist must deal in order to continue his/her working activity without jeopardizing his/her physical and psychic well-being.<sup>5</sup> Consequently, some authors consider the anesthesiology as a specialty that promotes high levels of psychic distress, stress, work dissatisfaction and even burnout syndrome.<sup>6,7</sup>

### Problems of activity of the anaesthesiologist

#### Quality of life

A group of experts from different cultures, who composed the Quality of Life Group of Division of Mental Health of the World Health Organization (WHO), defines quality of life as "an individual's perception of its position in life in the context of his/her culture and system of values in which he/she lives and in relation to his/her goals, expectations, standards and concerns."<sup>14</sup> It was within this context that some authors assessed the quality of life of anesthesiologists from studies conducted in the cities of Recife and João Pessoa and in the State of Sergipe (Brasil), with the use of the instrument/questionnaire proposed by WHO to assess quality of life: World Health Organization Quality of Life, abbreviated version (WHOQOL-Bref). In these studies, we arrive at the conclusion that the excessive load of working hours constitutes a negative factor for the quality of life of these professionals, as they have little time for rest and an sparing participation in social and leisure activities with their families. Possibly this fact, coupled with the stress of the anaesthetic practice, induces the development of

physical and psychological problems that may lead to losses in working performance.<sup>15-17</sup>

#### Gender difference

Regarding the difference in perception of quality of life between genders (male-female), it is mentioned that women had an overall assessment of quality of life significantly lower than men, including in psychological and social relationships' domains.<sup>15</sup> Studies investigating grades and components of working stress and burnout syndrome in anesthesiologists reported that women had higher levels of stress and a more elevated frequency of symptoms related to stress compared to men.<sup>6,18</sup> This is very likely to happen due to the accumulation of tasks of the modern woman and her greater commitment to issues related to work and family, when they take a double or even triple workload (work, home and family).<sup>15</sup> Therefore, we must emphasize the decisive entry of women into the labour market and in specifically in the anesthesiology area since, culturally, the woman shows greater tendency to become more involved with issues related to family and work. This is another potentially stressful factor in the working life of female professionals.<sup>6</sup>

#### Causes of work dissatisfaction and of mental and behavioural derangement

According to some studies discussing the issue of work dissatisfaction, there are anesthesiologists clearly frustrated with several of its aspects. Some of them are the lack of recognition of their professional activity, the high number of working hours and lack of regularity of worked hours, the working pattern defined by other specialists considering the teamwork,<sup>6,19</sup> low wages, few prospects of professional ascension, and a difficult organization of worktime.<sup>10</sup>

The poor control over their work is mentioned as a robust cause of professional dissatisfaction by anesthesiologists. The variables related to the strengthening of this control have a positive effect on job satisfaction. Some examples of these variables are the influence and participation in the development of tasks, in control of time and in the decision-making process. Thus, the anaesthesiologist would have more influence over the preparation of his/her scales and workflow. These aspects are essential to the working organization, substantially influencing the level of job satisfaction.<sup>10</sup>

In this context, authors who address the demand-control interaction at work claim that a high level of working control is accompanied by positive health characteristics, while a difficulty in carrying out satisfactorily labour activities promotes disturbances.<sup>20</sup> Anesthesiologists considered as in good physical and emotional health reported significantly greater working satisfaction compared to their colleagues reporting complaints or physical and emotional problems.<sup>10</sup> Thus, it follows that the analysis of work-related stressogenic factors and their impact on health show that the decision-making power or autonomy (control power) are environmental moderators of stress.<sup>20</sup>

In relation to work-related mental disorders, it is mentioned that the main causes of occupational stress for the anaesthesiologist is the large amount of working hours and the heavy workload, time constraints, organizational

and workplace issues and responsibility and fear to harm the patient,<sup>7,18</sup> besides the frequent work in an 'anaesthesiologist on duty' system, associated with the concerns about family life.<sup>18</sup> All these problems have strong correlation with the development of stress-related symptoms, and these symptoms are associated with departures of work activities by the anaesthesiologist.<sup>18</sup>

Another example of a triggering factor of work-related stress is the noise pollution in the environment of operating rooms, even at levels not able to cause hearing loss. Noise emitted by monitors, anaesthesia machines, ventilators, air conditioners, surgical instruments, alarms, conversation and peculiarities of the surgical procedure are cited. The exposure to noise can cause changes in mood, interference in communication between professionals and attention and concentration deficits, and thus help to increase the likelihood of errors during working activities.<sup>21,22</sup>

Moreover, the occurrence of unexpected critical events during anaesthesia is another source of stress at work.<sup>7,23</sup> Anesthesiologists report that the feeling of not anticipation of a problem, losing control of a critical situation, or not knowing what is happening are commonly described as particularly stressful situations. Incidentally, this stress tends to increase in situations where the anaesthesiologist is responsible to train other doctors in order to promote an adequate education to residents, besides normally carrying out their own activity.<sup>23</sup> However, it is shown that the most stressful aspects related to the anesthesiologist's work are the interference of his/her work with family life, especially for professional women,<sup>6,15</sup> as previously mentioned, and time restrictions.<sup>6,7,18,23</sup> This is characterized as a pressure to quickly 'get the ball rolling' at service, in order to reduce the waiting list and thus increase the service turnover,<sup>6,23</sup> in association with inevitable displacements between hospitals.<sup>6,19</sup> In addition, there is the fact that anesthesiologists are often urged to come to work early to evaluate patients who they have never seen before, and induce anaesthesia rapidly without adequate pre-anaesthetic information – situations that cause frustration and stress and also psychological distress arising from working activity.<sup>6</sup>

It was also reported that, for the anaesthesiologist, the long working hours' rhythm becomes incompatible with family and social life, and this is exacerbated by the long travelling hours inherent to urban life and by the virtually unlimited availability of time in favour of his/her work activity, which can cause marital conflict, with broken marriages or unstable marital relationships. Such statements are issued by professionals of both genders.<sup>19</sup>

#### **Diagnosed diseases (physical, psychic and behavioural problems)**

Various physical and psychic disorders related to anesthesiologists' working activity are cited in the literature. Studies in different countries show that the main physical and mental problems related to job stress in anesthesiologists are emotional instability, irritability, hypertensive crisis, myocardial infarction, nervousness, anxiety, depression, gastric and duodenal ulcers, headache, abdominal pain, intestinal pain, exhaustion, feelings of indifference, and memory and sleep disorders.<sup>7,18,19</sup> In addition, some

authors claim that the work on duty system is the main cause of sleep deprivation and related disorders, including suicidality.<sup>18</sup>

There are also reports of a high incidence of sleep disorders among residents of several areas when compared with other health graduates.<sup>3</sup> Data on assessment of sleep latency in anesthesiology residents at different periods after shifts, through continuous electroencephalogram (EEG) for recording of sleep signals, were published. A shorter sleep latency was demonstrated in physicians whose regular sleep periods were prevented by occupational activity. Thus, it appears that there is a high risk of reduced attention in anesthesiology residents who remain working after several hours on duty, especially in a scenario of stabilization of anaesthesia. At this time, the anaesthesiologist must remain in continuous surveillance and observation of the patient and monitor machines. Thus, the period of anaesthesia stabilization is a time of greater risk for the tired and sleepless professional, who gradually diminish his/her level of vigilance till falling asleep, breaking his/her assistance to the patient and contributing to the occurrence of accidents in anaesthesia.<sup>8</sup>

Fatigue and stress have a negative impact on the working performance of anesthesiologists, and these professionals are less effective when they are tired or stressed during their working hours.<sup>24</sup> Therefore, the importance of regulation of the period and of frequency of work on duty for these professionals must be emphasized, besides the number of hours of rest after duty, to ensure the safety and well-being of patients and of the physicians themselves.<sup>8,18,24</sup>

Burnout syndrome in anesthesiology was also studied by some authors, by applying the Maslach Burnout Inventory (MBI), an instrument consisting of 22 questions related to the three components of burnout: emotional exhaustion, depersonalization and reduced professional effectiveness. From a study in Austria, it is observed that anesthesiologists at risk of developing burnout syndrome have more physical complaints, greater job dissatisfaction and difficulty of solving problems compared with professionals without risk or symptoms of this syndrome.<sup>25</sup> It is also mentioned that the indicators of emotional exhaustion and of burnout become more prominent with increasing levels of stress and of professional responsibility for the anaesthesiologist.<sup>18</sup>

However, although anesthesiologists have great chances of suffering the syndrome or of exhibiting its indicators, it was found that there are other medical specialties in which the presence of burnout is more significant, for example, urologists and oncologists. That is, although it is believed that working in the field of anesthesiology is a stressful task and a risk factor for occurrence of burnout, this was not confirmed in an Australian study.<sup>6</sup>

#### **Job satisfaction and coping strategies**

Despite the several negative aspects of anesthesiology mentioned, studies show that there is personal satisfaction from the practice of this activity. There are anesthesiologists showing high level of satisfaction, autonomy and commitment to work.<sup>7</sup> Authors consider that, among some positive aspects, job satisfaction is a protective factor against mental illness, development of stress and burnout.<sup>6,7</sup> Job satisfaction is associated with better physical and mental health.<sup>10</sup>

A Swedish study based in interviews revealed the existence of anesthesiologists who were very fond of the activity they performed, without devising external obstacles to a good job performance. These professionals had reached a state of adjustment and adaptation to the mode and conditions of work of anesthesiologists and to their difficulties and problems.<sup>26</sup> One must bear in mind the extreme importance of developing coping strategies to the problems and situations perceived as difficult in the daily practice of this professional – for example, how to deal with adverse events that threaten the patient's life. In another study, the group of anesthesiologists who had no psychic symptoms, for example, those related to burnout, showed greater autonomy and the possibility of regulation of their working activity and increased contact and communication with coworkers.<sup>25</sup>

The communication among members of the surgical team is considered an important form of strategy in order to endure stressful situations occurring in the activity of the anaesthesiologist and also to avoid crises and problems in the workplace.<sup>7,24,25,27</sup> In the assessment of a teamwork, we can conclude that the working relationship between anesthesiologists and surgeons are not so good, when compared with other members of the surgical team, and this is considered as one more factor of psychic distress and stress at work.<sup>7,24</sup>

However, despite a possible lack of professional recognition among surgeons regarding the anesthesiologists, all major problems could be easily solved with a good communication among members of the operating room team.<sup>26</sup>

The development of the cognitive ability to understand certain situations as contributors to a continuous daily education, instead of something threatening to the profession, it's another coping strategy reported in studies.<sup>11,26</sup> This is a way to reduce stress overload of anesthesiologists,<sup>26</sup> to the extent that critical or adverse events during anaesthesia are perceived as moments of extreme importance to the acquisition of professional experience.<sup>11</sup>

### Age group and coping strategies

Some studies affirm that more experienced anesthesiologists get the ability to better handle potentially stressful situations and work overload. This ability is not observed in young doctors working in the area.<sup>9,25</sup> It was also noted that younger anesthesiologists have more stress-related symptoms than older ones, more experienced in the area.<sup>18</sup> Therefore, it is mentioned that the lack of total appropriation of knowledge, associated with a possible failure of supervision in residency programmes, for example, may explain the greater evidence of emotional exhaustion and of burnout found among residents in anesthesiology, as these do not have the necessary ability to deal with stressful situations.<sup>7</sup> It is also observed that anesthesiologists mainly belonging to the age group of 31–40 years are at higher risk of developing burnout syndrome<sup>18</sup> and of exhibiting a greater sense of job dissatisfaction.<sup>10</sup>

It is important to emphasize the educational value of the discussion of significant cases and major events in the professional field, as it encourages the acquisition of knowledge by trainees and the maintenance of a collective care and prudence in the realm of anesthesiology.<sup>11</sup> A study conducted at Federal University of São Paulo (UNIFESP)

advocates the thesis that reducing stress during the residency programme should be a major focus of the training process.<sup>3</sup> Thus, the objective is to facilitate the learning of successful coping strategies arising from experienced anesthesiologists, to foster the personal and professional growth of trainees, to prevent professional dysfunctions and emotional disorders<sup>3,9</sup> and to prevent the future development of mental and behavioural disorders, such as occupational stress and burnout.<sup>9</sup>

The accumulation of acquired experience, improvements in work organization, social support among colleagues<sup>6,7</sup> and sharing work with experienced professionals<sup>6,24</sup> are considered other strategies for reducing the occurrence of conflicts and problems in the workplace and consequently of psychic disorders, mental and behavioural disturbances resulting from the anesthesiologist's activity.

### Use of psychoactive substances

Positive coping strategies to reduce tensions arising from the work of anesthesiologists are not the only ones mentioned in the studies. The use of substances such as caffeine, tobacco, alcohol and drugs is considered a common habit among these professionals, with the aim of minimizing the tensions and frustration elements of their everyday working life.<sup>19</sup> Other authors report that the large consumption of alcohol and drugs is also mentioned as a strategy to withstand periods of stress. And the interesting thing is that this perception is more reported in relation to peer anesthesiologists instead of the very person interviewed. Thus, there is disagreement among data.<sup>6</sup>

A study conducted in São Paulo city revealed that the use of lawful drugs among anesthesiologists is part of their job routine and there is a conjecture, in the medical community, that anesthesiologists are drug users, considering the fact the need of use of these substances in their professional activity, in the management of patients. Additionally, these professionals have easy access to psychoactive substances, a facilitating factor of drug abuse. Hence, anesthesiologists have in their everyday lives the possibility of using them; it follows that drug abuse becomes an easy way of evasion for their problems and pressures. The anaesthesiologist seeks relief to psychological distress, especially if there is a predisposition to personal use, which adds a condition of depression, stress and job dissatisfaction.<sup>28</sup>

However, the drug use itself is not seen as something reprehensible, wrong or criminal in the medical field, as long as it does not interfere in the user's health and working performance. But, despite being a tolerated behaviour, drug use is seen as a deviant practice – something abnormal. Because of this, the drug user does not assume publicly the habit; and there is also the possibility of promoting detrimental effects on both professional and personal level. All this can lead to stigmata and prejudices against the user, whether on the side of lawlessness, on in the conception of this practice as a disease or also by the implicit risks at the workplace and for the patients' lives.<sup>28</sup>

For being such a touchy matter, which can generate large losses in the professional field, there is immense difficulty in addressing the issue. It is assumed that, among anesthesiologists, there are no sufficient and necessary subsidies to address the issue with a fellow user and convey this

knowledge to the chief. Furthermore, there is great concern about limiting the return to work of anesthesiologists who already had problems with drugs. Because of the ease of access, there is a huge risk for relapse.<sup>28</sup>

A further point related to the constant handling of drugs in the anesthesiologist's professional activity is mentioned in a qualitative study conducted in Mexico. It has been shown that the continuous and recurrent exposure to volatile substances during the anaesthetic act is harmful to health and may cause changes in behaviour and social life of the anaesthesiologist. Because of exposure to toxic substances, some authors related the risk of consumption of these drugs and the development of chronic depression, suicide attempts, sudden changes of humour, irritability, insomnia, fatigue, increased susceptibility to the use of antidepressants or stimulants and increased risk of drug dependence. Physical consequences of prolonged exposure to toxic substances, for instance, immunosuppression, miscarriage, teratogenicity, leukaemia, lymphomas and libido disorders, are also mentioned.<sup>19</sup>

## Conclusion

By studying mental health in the workplace, it is observed that problems related to the organization (valuation of function, workload, rhythm, interpersonal relationships, rest periods, management pressure, task content, worked hours) are the predominant cause of psychological problems arising from working activity.<sup>1</sup> From the information obtained in this review, various aspects of the work of the anaesthesiologist seem to be important points for understanding the relationship between mental health at work and work organization. In general terms, the organizational aspects of the work of the anaesthesiologist, which can be highlighted as illness enhancers (from what is explained in this study) are the temporal structuring of the work, interpersonal relationships and control over his/her own activity. Moreover, there are numerous quotations related to anesthesiologists' job stress and development of burnout syndrome.

In the literature, there is available information on the increasingly common occurrence of burnout among physicians – a professional fatigue syndrome with an overreaction to job-related stress.<sup>29</sup> In burnout, the individual shows emotional exhaustion, depersonalization, and ineffectiveness. In addition, factors such as inattention, neglect, cynicism, lack of empathy and hostility are characteristics of this syndrome, causing difficulty of the professional satisfactorily performing the activities for which he/she is responsible.

In France, the prevalence of burnout and associated factors were investigated in 978 adult intensive care medical units in public hospitals. A high level of burnout was identified in 46.5% of them and the work-related organizational factors were strongly associated with the development of this syndrome. A close relationship between development of burnout and several points, including the poor quality of life of intensivists, work overload, hampered relationships and conflicts with other colleagues intensivists, was perceived.<sup>30</sup> These findings are similar to those reported in studies on anesthesiologists.

Furthermore, it is evident that the work-related stress is a very common reality and that causes many afflictions.

Studies conducted in nine countries by Isma (International Stress Management Association) point to Brazilians as among the most stressed people in the world in the burnout category, the most advanced stage of stress.<sup>31</sup> It is also mentioned that stress is the main cause of behavioural disorders affecting residents, emphasizing the importance of the knowledge of data on this subject for the planning, organization and evaluation of residency programmes.<sup>32</sup>

Symptoms of anxiety and depression are common among physicians, and if they do not deal adequately with such manifestations, somatic diseases become frequent and may encourage the abuse of drugs and alcohol and even may result in suicide. Unfortunately, proposals for programmes on medical control in occupational health directed to physicians and, particularly, to anesthesiologists were not found in the literature. The Regulatory Norm no. 32, which legally establishes the Safety and Health in the Workplace in Health Services, has no specific determinations relating to occupational risks of the physician. Some authors suggest the implementation of a continuous and active psychological support within healthcare institutions, to improve the health prospects in the working routine of physicians and, particularly, of anesthesiologists.<sup>19</sup> It is worth to mention that such a measure should not occur in isolation. A whole range of preventive and occupational medical controls, notably regarding the ergonomic risks, especially those organizational ones, is needed.

Based on this literature review, it can be concluded that the working organization, if not appropriate, constitutes an important occupational risk factor for the life and mental health of workers, especially professionals focused on the care of people, who are constantly exposed to stressful and anxiogenic factors. Given the information obtained in this study, we can say that the job and health conditions point to the need for changes in the anesthesiologist's working organization.

Thus, it is expected that health institutions and the competent organs, especially the physicians themselves and their class organizations, pay special attention to maintaining the health of their affiliates/employees in general and, in particular, of anesthesiologists – the focus of this study, with an effort to control or eliminate the risk factors of occupational disease, in order to promote mental and physical well-being of these professionals. Thus, the anaesthesiologist will be entitled to provide health services of quality for patients in need.

But many questions remain: the working organization of the anaesthesiologist participating in a cooperative modifies the conditions described as stressful? Are there significant differences in the development of mental and behaviour disorders related to elective work or that of urgency and emergency? What would be the ideal workload for this professional? What are the effects of occupational exposure to anaesthetics? Does religiosity interfere in any way in the development of work-related mental or behaviour disorder or in the stress level of the anaesthesiologist? To what extent the satisfaction of the anaesthesiologist acts as a protective factor against falling ill by mental or behavioural disorders? What are the other factors and coping strategies to maintain a good quality of life and for the prevention of mental and behavioural disorders in those that work in this area? These

may be points to be investigated and analyzed in future studies.

## Conflicts of interest

The authors declare no conflicts of interest.

## References

1. Seligmann-Silva E. Psicopatologia e saúde mental no trabalho. In: Mendes R, editor. *Patologia do trabalho*. São Paulo: Atheneu; 2007. p. 1141–79.
2. Nogueira-Martins LAN. Saúde mental dos profissionais de saúde. *Revista Brasileira de Medicina do Trabalho*. 2003;1:56–8.
3. Neto RF, Obara CS, Macedo PCM, et al. Clinical and demographic profile of users of a mental health system for medical residents and other health professionals undergoing training at the Universidade Federal de São Paulo. *São Paulo Med J*. 2004;122:152–7.
4. Duval Neto GF. Dependência química e os anesthesiologistas. In: Cavalcanti IL, Cantinho FAF, Assad AR, editors. *Medicina perioperatória*. Rio de Janeiro: Saerj; 2006. p. 981–9.
5. Aragão PW, Prazeres JO, Aragão VMF, et al. Pressão arterial do anesthesiologista durante o ato anestésico-cirúrgico no período matutino. *Rev Bras Anesthesiol*. 2002;52:591–600.
6. Kluger MT, Townend K, Laidlaw T. Job satisfaction, stress and burnout in Australian specialist anaesthetists. *Anaesthesia*. 2003;58:339–45.
7. Nyssen AS, Hansez I, Baele P, et al. Occupational stress and burnout in anaesthesia. *Br J Anaesth*. 2003;90:333–7.
8. Mathias LAST, Coelho CMF, Vilela EP, et al. O plantão noturno em anestesia reduz a latência ao sono. *Rev Bras Anesthesiol*. 2004;54:694–9.
9. Larsson J, Sanner M. Doing a good job and getting something good out of it: on stress and well-being in anaesthesia. *Br J Anaesth*. 2010;105:34–7.
10. Kinzl JF, Knotzer H, Traweger C, et al. Influence of working conditions on job satisfaction in anaesthetists. *Br J Anaesth*. 2005;94:211–5.
11. Smith AF, Goodwin D, Mort M, et al. Adverse events in anaesthetic practice: qualitative study of definition, discussion and reporting. *Br J Anaesth*. 2006;96:715–21.
12. Malmberg B, Persson R, Jönsson BAG, et al. Physiological restitution after night-call duty in anaesthesiologists: impact on metabolic factors. *Acta Anaesthesiol Scand*. 2007;51:823–30.
13. Larsson J, Holmstrom I, Rosenqvist U. Professional artist, good Samaritan, servant, and co-ordinator: four ways of understanding the anaesthetist's work. *Acta Anaesthesiol Scand*. 2003;47:787–93.
14. The WHOQOL Group. The World Health Organization Quality of Life assessment (WHOQOL): position paper from the World Health Organization. *Soc Sci Med*. 1995;41:1403–9.
15. Calumbi RA, Amorim JA, Maciel CMC, et al. Avaliação da qualidade de vida dos anesthesiologistas da cidade do Recife. *Rev Bras Anesthesiol*. 2010;60:42–51.
16. Santos MFO, Oliveira HJ. Influência de variáveis laborais na qualidade de vida dos anesthesiologistas da cidade de João Pessoa. *Rev Bras Anesthesiol*. 2011;61:338–43.
17. Andrade ANM, Albuquerque MAC, Andrade ANM. Avaliação do nível de estresse do anesthesiologista da cooperativa de anesthesiologia de Sergipe. *Rev Bras Anesthesiol*. 2011;61:490–4.
18. Lindfors PM, Nurmi KE, Meretoja OA, et al. On-call stress among Finnish anaesthetists. *Anaesthesia*. 2006;61:856–66.
19. Barragán-Solís A, Roche OFR, Barragán-Solís NA. La salud y el ambiente laboral entre los anesthesiologistas: contexto social y laboral. *Rev Med Hosp Gen Mex*. 2000;63:247–53.
20. Karasek RA, Theörell T. *Healthy work-stress, productivity, and the reconstruction of working life*. Nova York: Basic Books; 1990.
21. Kuzmich GA, Phillips M, Rojas L. Noise levels in the operating room. *Curr Opin Anaesthesiol*. 2002;15:449–54.
22. Oliveira CRD, Arenas GWN. Occupational exposure to noise pollution in anesthesiology. *Rev Bras Anesthesiol*. 2012;62:253–61.
23. Anne Wong MD. From the front lines: a qualitative study of anesthesiologists' work and professional values. *Can J Anesth*. 2011;58:108–17.
24. Flin R, Fletcher G, McGeorge P, et al. Anaesthetists' attitudes to teamwork and safety. *Anaesthesia*. 2003;58:233–42.
25. Lederer W, Kinzl JF, Trefalt E, et al. Significance of working conditions on burnout in anaesthetists. *Acta Anaesthesiol Scand*. 2006;50:58–63.
26. Larsson J, Rosenqvist U, Holmstrom I. Enjoying work or burdened by it? How anaesthetists experience and handle difficulties at work: a qualitative study. *Br J Anaesth*. 2007;99:493–9.
27. Elks KN, Riley RH. A survey of anaesthetists' perspectives of communication in the operating suite. *Anaesth Intensive Care*. 2009;37:108–11.
28. Niel M, Julião AM, Martin D, et al. Uso de drogas entre anesthesiologistas no contexto das relações de trabalho. *RBPS*. 2008;21:194–200.
29. Barros DS, Tironi MOS, Nascimento S, et al. Médicos plantonistas de unidade de terapia intensiva: perfil sociodemográfico, condições de trabalho e fatores associados à síndrome de *burnout*. *Rev Bras Ter Intensiva*. 2008;20:235–40.
30. Embriaco N, Azoulay E, Barrau K, et al. High level of burnout in intensivists: prevalence and associated factors. *Am J Respir Crit Care Med*. 2007;175:686–92.
31. Santini J. Síndrome do esgotamento profissional: revisão bibliográfica. *Movimento*. 2004;10:183–209.
32. Lentine EC, Sonoda TK, Biazin DT. Estresse de profissionais de saúde das unidades básicas do município de Londrina. *Revista Terra e Cultura*. 2003;19:103–23.