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# Risk factor for psychopathology during residency

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**Introduction.** Stress in medical practice is highest during the residency due to the relationship with the patient is established for the first time and the stage of learning is faster, in addition of life events. The aim of this study is to assess the prevalence of psychic disorders throughout the entire period of training and risk factors that determine them.

**Methods.** Cross-sectional study was conducted on 145 residents of all specialties and years of training. They were evaluated at the beginning of each year, and also at the end of that year if they ended the residency. We assessed socio-demographics data, psychic antecedents, stress, psychopathology, personality traits and coping behaviour used.

**Results.** The prevalence of mental disorders was high (49%), but they were generally not very severe. They were associated with the wish to quit the profession and lack of time for social and familiar relationships. In the discriminant analysis, the psychopathology was mainly associated with traits "Neuroticism", "Self-reproach" and "Distancing" behaviors, personal psychic antecedents, and stress levels resulting mainly from aspects of the training itself.

**Conclusions.** The assumption of both, individual and contextual factors, are important for mental health and career development at this stage of medical training. The knowledge of these risk factors would facilitate the implementation of preventive programs to guide the appropriate management of stress in this period.

**Key words:**  
Residency Training. Stress. Psychopathology. Vulnerability factors.

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## Psicopatología y factores de riesgo durante la residencia

**Introducción.** El estrés en la práctica médica es mayor durante la residencia, pues se establece por primera vez la relación con el paciente y es la etapa de aprendizaje más rápido, a lo que se añaden cambios vitales. El objetivo de este estudio es evaluar la prevalencia de trastornos psíquicos a lo largo de todo el período de formación y los factores de riesgo que lo condicionan.

**Metodología.** Se realizó un estudio transversal en 145 residentes, de todas las especialidades y años de formación. Fueron valorados al principio de cada año, y a los que finalizaban ese año, también al final de su residencia. Se evaluaron datos sociodemográficos, antecedentes psíquicos, situaciones de estrés, psicopatología, rasgos de personalidad y conductas de adaptación utilizadas.

**Resultados.** La prevalencia de trastornos psíquicos fue alta (49%). En general eran trastornos poco severos y se asociaban a deseos de abandonar la profesión y falta de tiempo para la relación sociofamiliar. En el análisis discriminante, se asociaron a la psicopatología los rasgos de «neuroticismo», conductas de «autorreproche» y «distanciamiento», antecedentes psíquicos personales y nivel de estrés derivado principalmente de aspectos de la propia formación.

**Conclusiones.** La asunción de ambos factores, individuales y contextuales, es importante para la salud mental y desarrollo profesional en esta etapa de formación médica. Conocer estos factores de riesgo facilitaría la puesta en marcha de programas preventivos que orienten a un manejo adecuado de las situaciones de estrés en este período.

**Palabras clave:**  
Período de residencia. Estrés. Psicopatología. Factores de vulnerabilidad.

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## INTRODUCTION

The residency period is a stage having significant psychological stress in the medical practice even though initiatives have begun to improve the work setting in recent

years.<sup>1</sup> Knowing the risk factors is the basis for adequate treatment, individual prevention and being able to establish healthier work conditions.

A greater incidence of psychological alterations has been described among residents, attributed to a wide number of factors.<sup>2-4</sup> In regards to their training, residents have to learn to cope with the work burden, the volume of medical knowledge to acquire, the uncertainty of medicine and health, responsibilities and difficulties for interaction with the patients or family members.

Other stressful factors are life events that often occur during this period, such as changing the place where one lives to be able to perform the residency in another place, forming a partnership, having children, etc. with the consequent change in style of life on both the social and economic level, which may give rise to other stressful situations.

Due to the above, the stress level of the residents is greater than that of other professional groups,<sup>5,6</sup> the principal cause being "professionalization" and need for training, which may cause less dedication to family and social relationships and to personal development.<sup>7-10</sup>

The individual aspects - genetic/biological, sociodemographic, personality traits and adaptation mechanisms - may contribute to the development of psychic disorders when faced with stress situations. Among these situations are those of being a woman,<sup>11,12</sup> presence of personal or family psychic backgrounds,<sup>13,14</sup> having few social skills or little family support network and inadequate work skills.<sup>15</sup> Risk factors also include those made up by obsessive-compulsive personality traits,<sup>16</sup> feelings of inferiority,<sup>17</sup> having empathy with the patient and feeling guilty about the failures, all of which are frequent traits among physicians.<sup>5,18,19</sup> In our setting, the traits defined in the 16PF test were also significant, such as conservatism (persons with low tolerance to change), and emotional sensitivity (dependent, impressionable), among others.<sup>20</sup>

Another important vulnerability factor is adaptation style, defined by the cognitive and behavioral strategies used when faced with stressful situations. Its protective function is performed through the control of the stressful agent or emotional response to it. In previous studies in residents, the adaptive behaviors used were the most important aspects when defining the psychopathology, the mainly effective behaviors being related with seeking of social support, and the ineffective ones being avoidance and behaviors of unfounded apprehension.<sup>20</sup>

Prevalence of psychopathology during residency is a controversial subject and while many studies find that it is similar to that of the general population, others find it to be higher.<sup>20-22</sup> When the disorders occur, they are generally

not very severe and more frequently occur in the first year of training.<sup>23-26</sup> Anxiety disorders,<sup>8,27</sup> sleep disorder,<sup>28</sup> drug and alcohol consumption disorders,<sup>29-31</sup> depressive disorders mainly in the first two years of residency,<sup>19,32,33</sup> and also suicides<sup>34-37</sup> have been described. In this sense, a greater incidence of suicide in those who suffer emotional disorders,<sup>34</sup> in those who have a greater number of stressful events and somatic diseases,<sup>35</sup> and in those who have greater social isolation due to professional burden and higher level of self-criticism<sup>37</sup> has been observed.

The purpose of this study is to evaluate the prevalence of psychic disorders and which variables are associated with psychopathology, considering the different years of training. A previous study evaluated what happened at the beginning of the residency<sup>20</sup> and although a questionnaire was sent by mail after its completion that took into consideration the entire training period, the results were limited by the possible difficulties to faithfully remember what had happened and due to the reduced number of the sample who participated.<sup>38</sup>

Thus, we observed the need to obtain more exhaustive information on the evolution in the different periods of the residency.

## METHODOLOGY

### Sample and measurement instruments

A cross-sectional study was performed in 145 residents of the Hospital of Toledo, for all of the specialties and years of training. Evaluation was done at the beginning of each year of training, classifying the residents in first year, intermediate years and last year. The questionnaire was repeated for the latter group a second time the month prior to completing their residency.

The questionnaire, which was self-applied, was anonymous except for the first year in which the subjects were asked for a code to be able to make a follow-up. A total of 98% of the residents (143/145) participated in the first evaluation and 56% of those who finish their training (16/34) participated in the final evaluation.

The protocol included the following aspects:

- Sociodemographic factors and psychic backgrounds.
- Questionnaire on stressful situations of the residency, based on a review of the literature and previously used in residents who had completed their training.<sup>38</sup> It was made up of 18 items, 6 related with patient contact and 12 with their professional training.
- Life events scale, developed from that of Holmes and Rahe<sup>39</sup> and validated for the Spanish population by

González de Rivera and Morera.<sup>40</sup> This scale reflected 61 events that adapted very well to the sample evaluated, as they were related with aspects of the partner, family, work, studies, economic changes and style of life, that were going to be present in many or most of the residents. Each event has a numerical value based on the impact and readaptation involved, the sum of each one of them providing the stress level.

- Personality traits were evaluated with the Cattell 16PF form A test,<sup>41</sup> this being the form adapted for adults with high cultural level. This test is designed to measure "normal" dimensions of the personality, on the contrary to other instruments that classify them into clinical categories. It evaluates 16 aspects of the personality that are independent from one another (A-Q4), thus providing different and psychologically significant information. Four more factors were defined (QI-QIV) from the combination of the 16 dimensions. These, according to their author, define dimensions that are more in agreement with reality, since it is not common to find aspects that are completely independent among themselves in real life.
- Adaptive strategies versus stress of the residency were evaluated using the questionnaire of Lazarus and Folkman<sup>42</sup> with the addition of two groups of behaviors (distraction and self-satisfaction), belonging to the questionnaire of Parker et al.<sup>43</sup> that was used in previous studies with residents.<sup>20,38</sup>
- To detect psychopathology, the General Health Questionnaire (GHQ) of Goldberg<sup>44</sup> was used in its 50-item version, validated for the Spanish population by Muñoz et al.<sup>45</sup> The bimodal score was considered for its calculation, establishing the cut off at 10/11, this being considered the best in community studies according to the Spanish validation. The sensitivity and specificity of this validation were used to find the likely prevalence according to the Goldberg formula. The GHQ cannot be used for the specific diagnosis of psychiatric diseases, but it does identify potential psychiatric morbidity.

This questionnaire was filled-out with descriptive symptoms in other studies of residents and also evaluated the repercussion of the symptoms and their time of presentation.

### Statistical analysis

A descriptive analysis, comparison between groups using the chi-square test and Fisher's exact test, Mann-Whitney U and Kruskal-Wallis test, according to type of variables analyzed, were conducted. Discriminant analysis was used to define which variables were associated to psychopathology (positive GHQ versus negative GHQ). The statistical program used was the Statistical Package for the Social Sciences (SPSS, version 12.0).

Table 1	Description of sociodemographic variables
Year of residency	
First year	25.9%
Intermediate years	41.4%
Final year (beginning)	21.0%
Last year (end)	11.7%
Type of specialty	
Medical	57.1%
Surgical	25.0%
Basic	17.9%
Gender	
Men	42.9%
Women	57.1%
Civil status	
Single	60.5%
Married or partner	39.5%
Type of living arrangement	
Alone	16.3%
Family of origin	11.3%
Partner	38.1%
Friends	27.0%
Others	6.9%
Personal psychic backgrounds	8.3%
Type of disorder:	
Anxiety disorder	14.3%
Adaptation disorder	50.0%
Depressive disorder	21.4%
Others	14.3%
Family psychic backgrounds	16.7%

## RESULTS

### Descriptive study

The sociodemographic data are shown in table 1. They show personal psychiatric backgrounds in 8.3% of the residents, adaptation disorder being the most frequent diagnosis (50%).

The most outstanding personality traits (fig. 1) were high values in neuroticism (Q1+), guilt proneness (O+), and tensions (Q4+). The remaining factors were in the average range (4.5-6.5), although scores on intelligence (B) and self-sufficiency (Q2+) were high and autistic imagination (M-) and conservative mood (Q1-) were low. A motivational distortion attempt (desire to provide a good social image) was only clear in 5% of the sample and the attitude of answering at random was not detected in any case.

Table 2		Psychopathological characteristics
Subscale		Mean percentage
Severity		20.4
Irritability		38.6
Personal abandonment		19.3
Nighttime anxiety		19.3
Apathy		18.4
Somatic depression		18.3
Agitation		16.3
Psychic depression		14.0
Daytime anxiety		11.0

Table 3		Repercussion of the symptoms
No deterioration		47%
Deterioration in social activity		34%
Deterioration in occupational activity		26%
Deterioration in family relations		20%
Absence from work some days		2%
Periods of sick leave		0%
Self-prescription of drugs		7%
Need for medical care		2%

Regarding the prevalence of psychic disorders, 49% of the sample had probable psychiatric cases (GHQ>10), although in general, these disorders had scant severity, which coincides with previous studies that also found high prevalence of psychiatric morbidity during the residency.<sup>5,20,26</sup>

Following the division that was made by Golberg<sup>44</sup> in subscales (table 2), the most frequent symptoms were: irritability (38.6%), personal abandonment (26.6%), sleep disorder (19.3%), apathy and somatic symptoms of depression (18.3%). In the complementary evaluation of symptoms, 45% stated they felt impotent and frustrated, with feelings of hostility, rage and anger in 44%, and lack of time for sociofamilial relationships in 49% of the residents. Furthermore, 21% of the cases had desires to quit the profession, 4% had alcohol or other toxic abuse. The desire to quit the profession was greater in the first year and at the end of the last year ( $p<0.03$ ), in those who had psychopathology ( $p<0.000$ ), and had personal ( $p<0.001$ ) or familial backgrounds ( $p<0.01$ ).

The symptoms were generally present on workdays (73%), although 23% continued to have them on weekends and 4% during the vacations.

These symptoms had repercussions in 53% of the sample, causing deterioration in the social (34%) and occupational (26%) activity and familial relationship (20%). In 25% of the cases, more than one of these areas was affected (table 3).

The description of the stress situations and adaptation mechanisms used are described on commenting these aspects in the following sections.

### Comparative study

A comparative analysis was made between groups defined by variables that could be considered as risk factors, but due to their extension, only specific results related with variables that were significant in the multivariate analyses are commented on in the text. Included among these are year of residency, psychiatric backgrounds and type of living arrangements.

### Factors associated to psychopathology

As this study was conducted as a cross-sectional one, it was only possible to establish an association and not a causal relationship between the different factors and the probable psychopathology. Thus, it is not possible to accurately speak about the risk or vulnerability factors, although it is sometimes used in this way and in the text, in order to not always mention the results in terms of association. However, the homogeneity of the sample both on the stress level as well as in other sociocultural factors that may condition psychic disorders, reduces the distortion in the results and reinforces their significance.

In the discriminate analyses, the likelihood of being a case (positive GHQ versus negative GHQ) was chosen as dependent variable, and the social demographic variables level of stress, personality and adaptive behaviors as independent variables. The factors that are shown in table 4 and that will be commented on in the following were associated to the psychopathology (likelihood of being the case).

Therefore, the probable cases presented higher level of stress due to their own training, the situations of "insufficient preparation and need for training, responsibility, work burden, tension during the duties, etc. standing out as the most stressful and also as having greater level of stress due to their relationship with the patient, above all in those who are hostile and demanding, or very serious patients. These results are similar to the findings of other studies, confirming that work stress is related to psychiatric morbidity in spite of the initiatives taken to improve the work setting in recent years.<sup>1,4,46-48</sup>

Table 4		Variables associated to psychopathology
The probable cases presented		Magnitude of the association
Greater level of stress from work		26
Greater level of life events		19
Greater level of stress due to relation with patient		1
More desires to leave profession		40
Greater toxic and alcohol consumption		18
More lack of time for sociofamilial relationships		17
More personal psychic backgrounds		25
They were finishing the residency		11
They lived alone		3
Personality traits		
Greater neuroticism (QI)		39
Greater conservatism (Q1-)		8
Greater adherence to the group (G)		7
Frequency of adaptative behaviors		
Greater self-reproach		31
Greater distancing		29
In all the cases $p \leq 0.0000$		

Equally, the level of stress due to life events was significant, the most frequent being changes in lifestyle. Although these have less influence than the stress itself of the training, other studies have also confirmed their relationship with psychopathology, above all when the life events are negative, both in the student period as well as during the residency.<sup>49</sup> On the contrary, in our previous study<sup>20</sup> and in that of other authors,<sup>50</sup> the life events have scant influence on the mental health of the residents.

Also associated to psychopathology were the "desire to quit the profession, and greater toxic or alcohol consumption." However, these may be a reflection more than a cause of it. In addition, an association was found with "lack of time for sociofamilial relationships," an aspect that has been indicated as one of the most unsatisfactory ones of the residency,<sup>9</sup> the psychic disorders appearing with the greatest frequency in the Services in which the most time is dedicated to work.<sup>51</sup>

The presence of personal psychic backgrounds is one of the factors having the greatest force related with the psychopathology. The vulnerability supposed by the presence of these backgrounds has been justified by the existence of underlying factors, among them those personality factors such as low-level of self-esteem,<sup>20,52</sup> enhanced neurotic traits,<sup>20,53</sup> or higher level of self-criticism.<sup>2</sup> This also coincides with the results of the comparative analyses performed in this study. Furthermore, in this group, greater level of stress

due to work ( $p < 0.001$ ) and greater level of desire to quit the profession ( $p < 0.001$ ), both associated in turn to the psychopathology, have been observed.

Although the magnitude of the relationship was low, the fact of "living alone" was associated to the psychopathology, as in the studies of Tyssen et al.<sup>49</sup> In the comparative analysis, this population had a greater level of stress due to work ( $p < 0.02$ ) and life events ( $p < 0.03$ ). In them, other risk factors such as traits of neuroticism ( $p < 0.005$ ) of self-reproach behaviors ( $p < 0.001$ ) that were ineffective in this study stood out. On the other hand, the fact of living alone can also be associated to less social and familial support, which represents a risk factor in the face of stress situations.

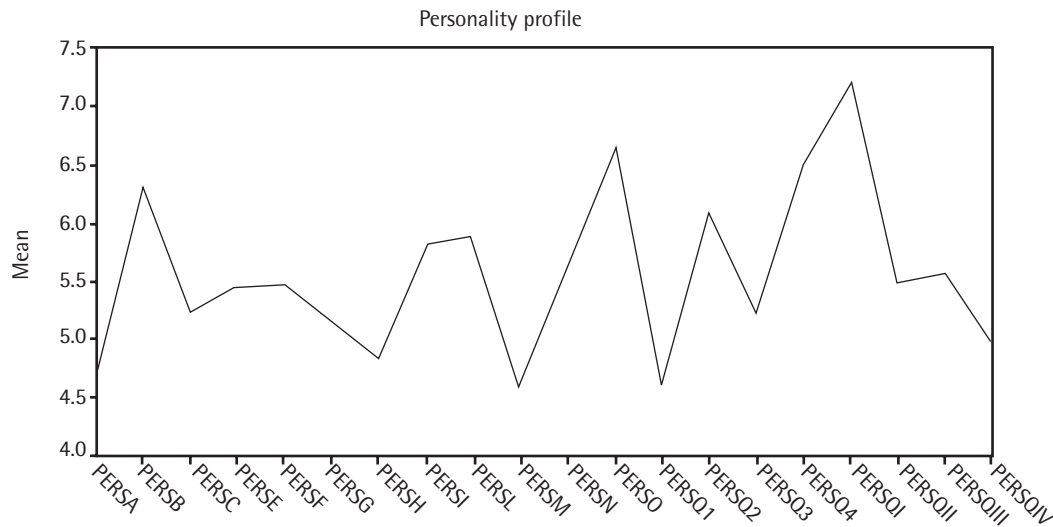
Another variable associated to the psychopathology was that of finishing up the residency, and although many opinions seem to consider that there are more difficulties in the first year, other studies find high levels of stress and increase of symptoms after this initial phase.<sup>54,55</sup> In our case, the relationship is established in the residents who are already in the last year of training, so that they may be influenced by the uncertainty of their immediate future after completing residency.

This association is not explained by differences in the risk factors, since none of them was significant in the comparative analysis between the different years of residency. Changes in factor A (effectively) were only found in personality, that decreased as the time in training increased ( $p < 0.03$ ), that is, they were becoming more reserved during it, but this factor also was not a predictor of psychopathology in this study.

Among the main risk factors were personality traits, those standing out in our study being neuroticism (QI), conservatism (Q1-) and greater adherence to the group (G).

Other studies also indicate the neurotic spectrum as a predictive factor of psychic problems,<sup>12,56</sup> mainly depressive disorders.<sup>57</sup> Conservative mood, which in the 16PF defines persons who only accept what is known even if the new could be better, are cautious about the new ideas intended to oppose change, was a risk factor both in our sample as in the previous study.<sup>20</sup> However, it is one of the factors that make up the neurotic profile in this personality questionnaire.<sup>58</sup> The group adherence trait, which was also associated with probable cases, includes those demanding, perseverant, responsible and organized persons.

Adaptation strategies used against stress of the residency were also factors with important influence in psychopathology. They were associated to it, so that self-reproach strategies (self-criticism, self-guilt, etc.) and distancing (not taking the situation seriously, continuing ahead as if nothing had happened, trying to forget everything, etc.) could



**Figure 1** Personality profile of the sample.

be considered, to a some degree, as ineffective. Although the same questionnaire was not used in the previous study,<sup>20</sup> the ineffective behaviors in it were those of unfounded apprehension and avoidance, which to a certain degree have similar mechanisms as the ineffective ones in this study.

Both ineffective behaviors were those used with the least frequency while those that were used most frequently were those aimed at problem solving, those seeking social support, self-control and positive reevaluation of the stressful events. Although these are not significantly associated to a lower psychopathology, their greater frequency of use may be because they were evaluated as effective, at least objectively, since some of them have been a protection factor in other studies.<sup>20,55</sup>

## CONCLUSIONS

Although the residency is a positive experience both on the training as well as personal level, it also means coping with challenges and difficulties that occur in moments of important changes. If these factors are not managed adequately, they may have a negative influence, increasing the risk of suffering psychic disorders that may affect the personal and professional evolution of the resident.

The results of this study manifest the high prevalence of psychic disorders during this period, although in general they are not very severe disorders. Symptoms of anxiety such as tension and irritability and sleep disorders predominate, and deterioration is mainly produced in the social activity more than in the work and family setting.

Given the repercussions of the stressful symptoms, it is proposed on the one hand to modify the organization of work and on the other to establish support programs during the residency in order to improve the well-being in this period and orient towards the practice of effective adaptation strategies, thus increasing the capacity to resolve the conflicts.

In this sense, this study makes it possible to draw conclusions of interest to design these preventive programs, since it analyzes which are the risk factors with the most influence in the psychopathology, stressing the individual factors (personality traits, adaptation behaviors and presence of personal psychic backgrounds), above all aspects most related with the training itself.

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