RISK ELEMENTS FOR MENTAL HEALTH IN THE MEDICAL PROFESSION: A COMPARISON BETWEEN PSYCHIATRISTS, INTERNISTS, AND SURGEONS

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Abstract

Objectives: Recent studies have shown that job-related stressful factors can affect the physical and mental health of doctors in different ways, depending on their medical speciality. In our study, we investigated the differences in general and mental health between doctors (136) and the general population (46), comparing three groups of doctors from three different medical fields and one control group of non-medical population.

Materials and Methods: We used the Short Form Health Survey (*SF-36*), the COPE, the Professional Quality of Life (Pro-QOL-III), and the Mini International Neuropsychiatric Interview (*M.I.N.I.*).

Results: The doctors expressed higher levels of perceived physical health than the control group, but lower perceived mental health in comparison with the control group. Among doctors, Surgeons and Internists had an overall good level of work-related satisfaction and efficient coping strategies. Psychiatrists had five times odds of being classified in a cluster with low levels of job-related satisfaction and a high risk of psychopathology.

Conclusions: The presence of this high-risk cluster suggests that young doctors who wish to become Psychiatrists might find it useful to go through an orientation and evaluation stage before choosing their specialty. This at-risk subgroup could also benefit from support and training programs on the topics of work-related stress, psychopathology, and coping mechanisms.

Key words: Physicians mental health, Comparison between medical specialties, Psychopathology, Work-related stress, Coping

Introduction

Many studies report the difficulties that doctors encounter when managing their own health. Doctors tend to underestimate or deny their illnesses – their mental diseases in particular – and are reluctant to see themselves as patients [1 2]. Doctors are often unable to recognize their own psychopathology, or they ascribe it to fatigue or excessive workload [3]. Many studies show clearly that doctors are more prone to work-related and emotional stress than the average general population [4-7]. The prevalence of burnout in doctors seems to be quite high, ranging from 25-60% to 75% in some studies [8 9]. There are evidences that burnout is associated to a reduction in productivity, as seen by the number of sick leave days, the reduction in work ability, and the intent to change job [10]. Doctors affected by work-related stress are at risk of substance abuse, problems in their personal relationships, depression, and even death [11]. When dealing with burnout, doctors often recur to denial and avoidance as the main coping strategies, which do not seem to be very effective [12 13].

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Some studies indicate that work-related stressful factors can affect the physical and mental health of doctors in different ways, depending on their medical speciality [14] [15]. Psychiatrists, in particular, seem to be exposed to additional stressors because of the complex therapeutic relationship they have with their patients. A study [16] on 3000 Finnish doctors reported that Psychiatrists were the group with less work-related satisfaction, higher preoccupation about their patients and higher psychological distress, in comparison with other medical specialists. However, according to this study, the group of Psychiatrists had also more work resources, more opportunities to control their jobs, and a better team climate; the differences between work satisfaction and stress were not accounted for by personality or private factors. Another paper [17] reported that work conditions affect the wellbeing and the mental health of doctors in different ways depending on their speciality. According to this study, Internists reported a higher effect of work-related stressors (i.e. time pressure, uncertainty, difficult relationship with co-workers) on their mental health (measured by "irritation" and "emotional exhaustion") than other specialists. In another study [18] conducted on more than 2000 Dutch hospital doctors, mental health specialists reported the highest levels of emotional exhaustion, whereas Surgeons had the lowest levels of burnout; Surgeons also appeared to be the group of specialists with the highest level of engagement (a protective factor against burnout).

Purpose of the study

This paper aims at investigating the health problems of different medical profiles. We evaluated people working in different professional fields and of different ages, comparing doctors from three specialities (Internists, Surgeons, and Psychiatrists) with one control group of non-medical workers. For each group we considered a number of variables, measured by validated instruments, which identify a risk for physical or mental health. The aim of the study was to analyse the risk elements of the medical profession, and identify which medical category is the most exposed to stress and psychopathology and may need support; we focused on Psychiatrists in particular, because they are subject to peculiar stressors in comparison with other specialists [16] [18]. We expected Psychiatrists to have a level of mental health lower than that of Internists and Surgeons.

Methods

Study design and sample

The study is cross-sectional. The sample is composed of 182 voluntary people, including a group of hospital doctors (136 people, all working in hospitals of the Veneto region, Italy, at the time of sampling), and a control group (46 people) composed of adults working in Veneto (Italy), and employed in the service industry in a non-medical area (i.e. office workers, clerks). The group of doctors was split in three subgroups of similar size and divided according to speciality areas: Internists (n = 39), Surgeons (n = 44), and Psychiatrists (n = 53).

Materials

We asked the volunteers to fill out four anonymous self-administered questionnaires, and each of them was personally asked questions from a structured interview.

The questionnaires were:

a) a form with sociodemographic data and brief anamnestic information (see Appendix), used to assign each participant to the correct group and to detect any confounding factor;
b) Short Form-36 (*SF-36*), a questionnaire on quality of life and general health, validated in its Italian version by Apolone and Mosconi in 1998 [19]; reliability of the SF-36 in the sample, as measured by Cronbach's alpha, was 0.79 (95% CI = 0.75-0.84), which is good for group comparison;
c) Coping Orientation to Problems Experienced (*COPE*), developed by Carver, Scheier and Weintraub (1989) [20] and edited in its Italian version [21]. It is a questionnaire on coping mechanisms that evaluates the strategies and abilities to face stressful events, grouping them in three categories: problem-focused strategies, emotion-focused strategies, maladaptive strategies; reliability of the COPE in the sample, as measured by Cronbach's alpha, was 0.86 (95% CI = 0.83-0.88), which is good for group comparison;
d) Professional Quality Of Life Questionnaire-III (*ProQOLIII*), a questionnaire on professional quality of life specifically intended for the helping professions, which was administered only to the group of doctors; it was translated and adapted in Italian [22]. The questionnaire measures the positive aspect of the helping profession, or Compassion Satisfaction (CS, which is the pleasure deriving from being able to help through one's work); it also measures the negative aspect of helping others

who have experienced suffering, or Compassion Fatigue. Compassion fatigue encompasses both the aspects of Burnout (B, mental and emotional exhaustion that particularly affects people involved in emotionally demanding professions), and Secondary Traumatic Stress (STS, the negative feelings driven by fear and work-related trauma); reliability of the *ProQOLIII*, as measured by Cronbach's alpha, was 0.75 (0.68-0.80), which is acceptable for group comparison;

e) Mini International Neuropsychiatric Interview (*M.I.N.I.*), a structured interview screening major axis-I psychiatric disorders according to DSM-IV and ICD-10. The authors of *M.I.N.I.* are Sheehan and Lecrubier [23], Italian translation by Conti L., Rossi A., Donda P.

Statistical analysis

Descriptive and multivariable analysis were performed using SPSS software (version 20.0) (SPSS Inc., Chicago, IL, USA). Additional analysis were carried out in R (R Core Team, 2013) using dedicated packages. All tests were two-tailed, with alpha set at $p < 0.05$.

Descriptive and explorative analysis

For discrete (categorical) variables, counts and percentage were reported. For continuous variables, mean with standard deviation and median were reported.
Exploratory analyses were carried out to assess data distribution by a priori defined groups (three groups of physicians and a control group from the community).
Categorical analyses were carried out with Chi-square, with Yates correction whenever necessary. Pearson's or Spearman's rank correlation coefficient was used to test for associations between variables. Continuous variables were analyzed with both parametric (ANOVA) and non-parametric (Kruskal Wallis) univariate analyses. Since groups differed by genre, and continuous measures tested hypothetically related constructs, MANOVA was applied to the scales by taking genre into account. We used both parametric and non-parametric techniques. The non-parametric multivariate analyses were carried out with the method developed by Bathke and colleagues [25] by using "npmv" statistical package in R programming language.

Inferential analyses

After proving that there were differences across groups in the variables of interest, we focused on the hospital doctor samples to test the hypothesis that Psychiatrists had lower levels of mental health than Internists and Surgeons.
The inferential analyses followed a multistep approach. Principal component analysis (PCA) was applied to all subscales defining the physical and mental wellbeing in the hospital doctors group to extract major latent components defining the responses of the participants on the measures of interest. The "FactoMineR" statistical package (Husson et al., 2013) running in R (R Core Team, 2013) was used to carry out the PCA.
These principal components were then entered into a cluster analysis to identify homogeneous subgroups of cases (participants) based on the scoring on these principal components. The PAM (Partitioning Around Medoids) method was used since it is more robust than k-means in the presence of noise and outliers (Medoids are less influenced by outliers), and it works efficiently for small data sets. The "cluster" statistical package (Maechler et al., 2013) running in R (R Core Team, 2013) was used to carry out the PAM.
Finally, a logistic regression was applied to the extracted clusters, using the clusters as a dependent variable and the profession of the hospital doctors as predictors to identify in which clusters the Psychiatrists were more represented, the a priori hypothesis being that they would be in the clusters with the lowest levels of mental health. The logistic regression was carried out in the R statistical environment (R Core Team, 2013).

Results

General characteristics of the sample

The sample included 89 (48.9%) females and 93 (51.1%) males; males were predominant among Surgeons, whereas females were predominant in the control group (Table I). The mean age of the sample was 47 years (standard deviation [SD]: 8, 7); Internists tended to be 3 years younger than the sample mean. We did not observe any difference among groups about the frequency of life events, whether they be perceived as negative or not (Table I).
There was a trend for age's being negatively related to scores on the questionnaires. In particular, age was negatively related to physical activity (Spearman's rho = -0.342, $p < 0.0001$) and to social activities (rho = -0.204, $p = 0.006$).
Subscales of the SF-36 were closely related to each other at Pearson's $r \geq 0.30$ with very few exceptions ("mental health" and "role limitations due to emotional

Table I. General characteristics of the sample.

	Psychiatrists	Internists	Surgeons	General population	
N	**53**	**39**	**44**	**46**	
Sex *Males* *Females*	 28 (53%) 25 (47%)	 18 (46%) 21 (54%)	 34 (77%) 10 (23%)	 13 (28%) 33 (72%)	$\chi^2 = 22.11$, df = 3, $p < 0.0001$
Age	48.1 (9.9)	44.3 (6.7)	47.4 (8.2)	47.9 (9.2)	$F(3;178) = 1.70$, $p = 0.167$
Marital status *Married/cohabitant*	 34 (64%)	 29 (74%)	 34 (77%)	 32 (69%)	$\chi^2 = 2.71$, df = 6, $p = 0.844$
Educational qualification *University degree/master*	 53 (100%)	 39 (100%)	 44 (100%)	 22 (48%)	$\chi^2 = 182.0$, df = 9, $p < 0.0001$
Type of contract *Long term*	 53 (100%)	 39 (100%)	 44 (100%)	 42 (91.3%)	$\chi^2 = 12.09$, df = 3, $p = 0.007$
Duration of employment *More than 10 years*	 33 (62%)	 26 (67%)	 32 (73%)	 37 (80%)	$\chi^2 = 4.27$, df = 3, $p = 0.223$
Life events *Yes, one* *Yes, more than one*	 14 (26%) 24 (45%)	 13 (33%) 13 (33%)	 9 (20%) 17 (38%)	 10 (22%) 25 (54%)	$\chi^2 = 6.41$, df = 6, $p = 0.378$
Recent negative events *Yes, one* *Yes, more than one*	 12 (22%) 3 (6%)	 4 (10%) 1 (3%)	 8 (18%) 3 (7%)	 5 (11%) 3 (6%)	$\chi^2 = 4.86$, df = 6, $p = 0.562$

problems" were poorly related to subscales measuring physical functioning: see Figure A1 in appendix).
In the COPE the two adaptive strategies were related to each other, while the maladaptive strategies were unrelated to them (see Figure A2 in appendix).
In the *PROQoL* of the hospital doctors subsample, the two components of the *Compassion fatigue* were related to each other, and negatively correlated with the *Compassion Satisfaction* subscale (see Figure A3 in appendix).

Comparison between groups on quality of life scales

Univariate analysis shows the following differences in the sample concerning quality of life as measured by *SF-36*: less tolerance to physical pain in the general population, more involvement in social activities in the Internists group, more emotional limitations and worse quality of life in relation to mental health among Psychiatrists (see Table II). Psychiatrists also had lower scores on the *Compassion Satisfaction Scale* (CSS) of *PROQoL*, whereas Internists scored marginally lower on the *Secondary Traumatic Stress* (STS) scale of *PROQoL*. On the other hand, Psychiatrists make use of emotion-focused coping strategies more often, and Surgeons resort to maladaptive coping strategies less often than their colleagues. The non-parametric analysis (Kruskal-Wallis test) largely confirmed the results of the ANOVA.

In order to further compare the groups, we adopted a multivariate analysis of variance using the profession group as a predictive factor and the subscales of *SF-36* and *PROQoL* as dependent variables. MANOVA analysis indicated that *SF-36* subscales differentiate the groups of participants: F (3, 178) = 2.02, Wilks's lambda = 0.76, p = 0.003 (Figure B1 in appendix). The differences in the sample were greatly reduced when taking into account the differences of the predictor in relation to genre (F [3, 174] = 1.62, Wilks's lambda = 0.79, p = 0.03).
Regarding the *COPE* subscales, MANOVA analysis showed an important difference in relation to the profession: F (3, 178) = 3.10, Wilks's lambda = 0.85, p = 0.001 (Figure B2 in appendix). Again, this difference was smaller but did not disappear when taking the genre into account (F [3, 174] = 2.17, Wilks's lambda = 0.89, p = 0.02).
For the *PROQoL*, MANOVA indicated an important difference in the subscales in relation to profession among hospital doctors: F (2, 133) = 6.28, Wilks's lambda = 0.76, p < 0.0001 (Figure B3 in appendix). However, when considering the genre, the differences between the professional groups lost their statistical significance (F [2, 130] = 1.08, Wilks's lambda = 0.95, p = 0.37)
We repeated the multivariate analysis with the non-parametric method developed by Bathke and colleagues

Table II. Distribution of scores in relation to the professional activity.

	Psychiatrist	Internist	Surgeon	Gen. pop.	ANOVA	Kruskal Wallis
SF36 (n = 182)						
Physical functioning	93.5 (11.2)	98.8 (3.7)	96.1 (10.9)	94.6 (8.5)	F(3;178) = 2.68, p = 0.048	χ^2 = 16.1, p = 0.001
Role limitations due to physical health	87.2 (26.7)	98.1 (12.0)	92.0 (23.3)	94.0 (16.8)	F(3;178) = 2.09, p = 0.102	χ^2 = 7.5, p = 0.056
Pain	80.5 (22.9)	89.2 (15.8)	86.3 (18.7)	75.2 (21.6)	F(3;178) = 4.09, p = 0.008	χ^2 = 10.9, p = 0.012
General health	70.8 (14.9)	72.7 (11.6)	72.3 (10.8)	68.9 (12.4)	F(3;178) = 0.78, p = 0.507	χ^2 = 2.4, p = 0.479
Energy	55.0 (14.5)	62.8 (17.3)	58.5 (12.7)	55.7 (16.5)	F(3;178) = 2.30, p = 0.079	χ^2 = 7.8, p = 0.049
Social functioning	71.2 (21.9)	87.1 (17.6)	77.1 (19.5)	75.6 (17.2)	F(3;178) = 5.16, p = 0.002	χ^2 = 14.9, p = 0.002
Role limitations due to emotional problems	71.5 (33.7)	87.8 (21.1)	86.9 (22.0)	87.5 (19.3)	F(3;178) = 4.98, p = 0.002	χ^2 = 9.2, p = 0.027
Mental health	67.2 (14.2)	77.1 (14.2)	70.3 (13.1)	71.6 (12.7)	F(3;178) = 4.04, p = 0.008	χ^2 = 11.4, p = 0.010
PROQoL (n = 136)						
CSS	32.0 (6.6)	36.1 (5.8)	37.5 (5.3)	--	F(2;133) = 10.9, p < 0.0001	χ^2 = 19.2, p < 0.0001
BS	18.9 (5.6)	17.4 (4.9)	17.8 (5.8)	--	F(2;133) = 0.96, p = 0.385	χ^2 = 1.4, p = 0.483
STSS	10.6 (6.1)	8.9 (4.5)	12.3 (7.6)	--	F(2;133) = 3.19, p = 0.044	χ^2 = 3.8, p = 0.146
COPE						
Problem-focused strategies	77.1 (10.7)	73.8 (10.5)	74.9 (11.9)	74.9 (7.1)	F(3;178) = 0.88, p = 0.449	χ^2 = 5.9, p = 0.001
Emotion-focused strategies	72.1 (12.7)	66.7 (13.1)	62.8 (10.3)	64.0 (11.7)	F(3;178) = 5.77, p = 0.001	χ^2 = 16.4, p = 0.001
Maladaptive strategies	32.8 (5.3)	31.0 (5.6)	29.6 (4.4)	32.4 (4.5)	F(3;178) = 4.02, p = 0.008	χ^2 = 13.3, p = 0.004

(Bathke et al., 2008; Liu et al, 2011). The non-parametric analysis confirmed that the differences among the groups were statistically significant on the *SF-36* (F-approximation = 3.693, p < 0.0001; with genre, F-approximation = 5.465, p < 0.0001), and the *COPE* (F-approximation = 3.858, p < 0.0001; with genre, F-approximation = 6.739, p < 0.0001). On the *PROQoL*, again, when taking the genre into account, the differences between the professional groups were no longer statistically significant (F-approximation = 4.055, p = 0.004; with genre, F-approximation = 2.566, p < 0.059).

Psychiatric diagnoses with M.I.N.I.

The results of *M.I.N.I.* confirmed the low prevalence of mental health diseases in the Italian population, with estimated rates between 2% and 10% depending on the diagnosis. The main differences between the general population and the doctors were the absence of Panic Disorder among Surgeons (0%), whereas its prevalence was 15% in the general population, 17% among Psychiatrists, and 8% among Internists. We also observed that Psychiatrist admitted to use anxiolytic and hypnotic drugs more (15.1%) than Internists (5.1%), Surgeons (who denied using them, 0%), and the general population (0%). These prevalence rates should be taken as approximate, because each sample consisted of less than 100 units.

Principal component analysis of the SF-36, COPE and PROQoL in the hospital doctors subsample

In order to better understand the relationship between the professional groups and the variables measuring

quality of life and general health, coping strategies and professional satisfaction, we applied PCA to the subscales of the *SF-36*, the *COPE* and the *PROQoL*. The algorithm extracted three principal components with eigenvalues above 1. Overall cumulative explained variance was 58%.

The first dimension summarizes the degree of life satisfaction, with greater loading of the SF-36 subscales measuring items related to mental health. The second dimension summarizes dissatisfaction with the helping profession, with positive loading of the two subscales of the Compassion fatigue section of the *PROQoL* and negative loading of the *Compassion Satisfaction* subscale. The third dimension measures the involvement of participants in coping strategies.

The first two dimensions group participants into four quadrants (Figure 1).

Increasing scores on the first dimension, left to right, are related to better quality of life. Increasing scores on the second dimension (along the vertical axis, bottom to top) are related to greater dissatisfaction with the helping profession, hence higher scores on the Burnout and the Secondary traumatic stress subscales.

Higher scores on the Compassion satisfaction subscale occur in the lower right quadrant, corresponding to higher scores on the first dimension and lower scores on the second dimension. On the other hand, higher scores on the subscale of problem-focused strategies of the COPE occur in the lower left quadrant, corresponding to lower scores on both the first and the second dimensions. Apparently, problem-focused strategies are active in the presence of poor quality of life, but they do buffer the impact of stress, limiting dissatisfaction with the helping profession. The other two strategies, those focused on emotions and maladaptive strategies, seem less effective in buffering the impact of stress on professional satisfaction.

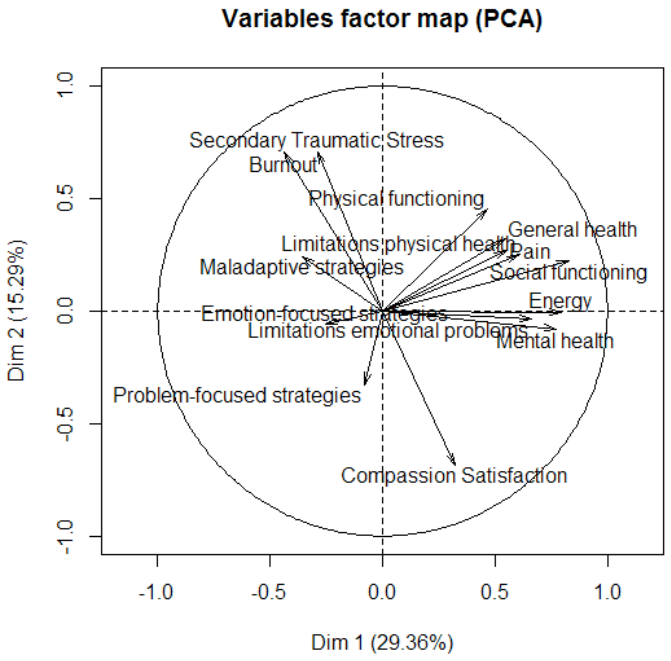

FIGURE 1.
Variables factor map (PCA).

Psychiatrists scored higher than Internists on the first PCA dimension, the two groups of hospital doctors did not differ on the second PCA dimension, Psychiatrists scored higher than Surgeons on the third PCA dimension (Kruskal-Wallis test with Dunn post-hoc test; Figure 2).

Across the three PCA dimensions Psychiatrists tended to be placed towards the less positive side of the components extracted by the PCA, while Internists tended to be placed towards the more positive side of the same components, with Surgeons somehow in between (Figure C1 in appendix).

Partitioning Around Medoids cluster analysis of the three dimensions extracted by principal component analysis in the hospital doctors subsample

The three dimensions extracted by the PCA were entered into a PAM cluster analysis.

The best solution had two, partially overlapping clusters explaining 68% of total variance in the variables (the three PCA dimensions). The first cluster included 75 participants (55%), while the second cluster included 61 participants (45%) and was better defined than the first cluster (Figure 3, right side concerning the silhouettes).

Cluster 1 scored lower than cluster 2 on the first PCA dimension that measures quality of life, and scored higher than cluster 2 on the second PCA dimension, the one measuring dissatisfaction with the helping profession. No differences were found on the third PCA dimension, i.e. coping strategies (Mann–Whitney U test, Figure 4).

Logistic regression of hospital doctors by profession on the clusters extracted by the PAM analysis

We tested the hypothesis that Psychiatrists would more likely fall in cluster 1, the one with poorer quality of life and greater dissatisfaction with the helping profession, than in cluster 2. Genre and age were taken into account because of their inequality across professions.

Compared to Internists, Surgeons had four times odds of being classified in cluster 1, and Psychiatrists had five times odds of being classified in cluster 1 (Table IV).

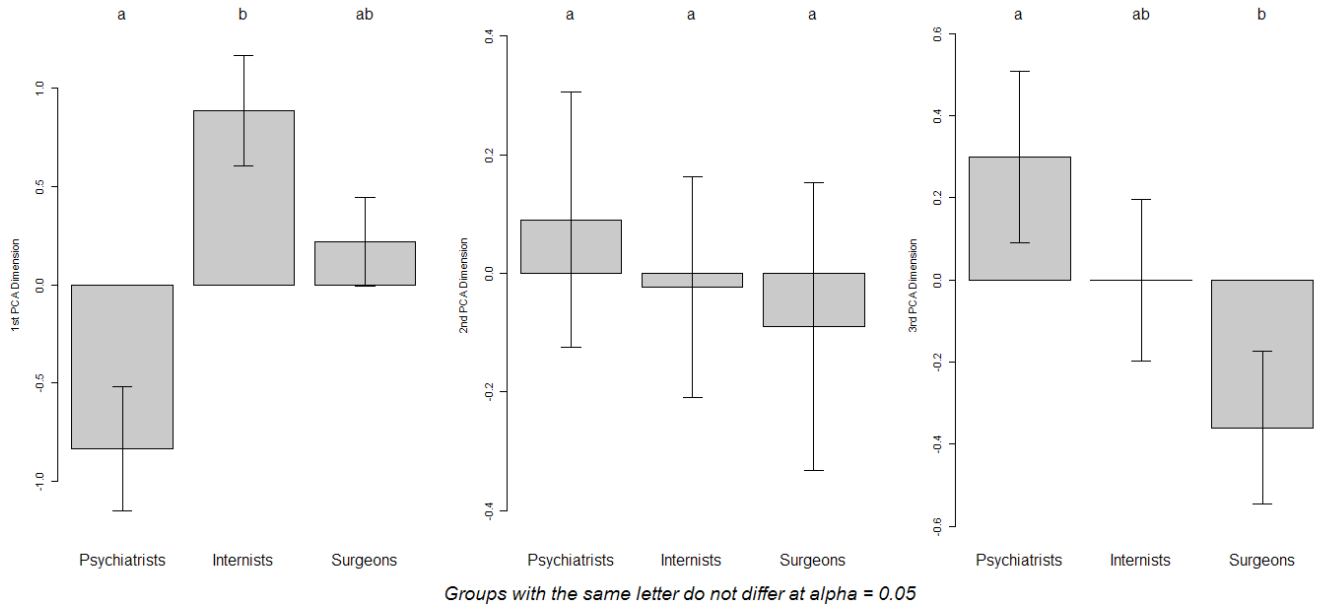

FIGURE 2.

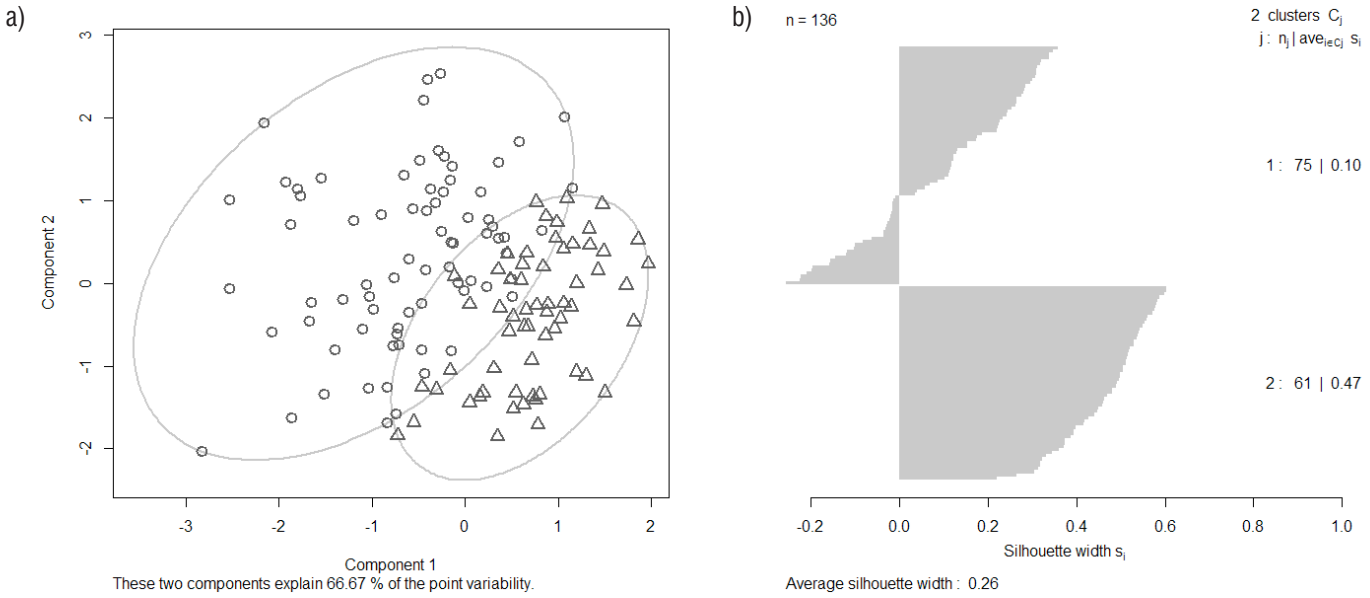

FIGURE 3.

a) Bivariate plot (Clusplot) of the data after PAM clustering. b) Silhoutte plot of PAM cluster of PCA dimesions.

The model had a reasonable fit (Likelihood ration test = 20.38, df = 4, p = 0.0021) and accuracy, as measured by the area under the ROC curve (AUC), was acceptable (70.1%; 95% CI: 61.4%, 78.8%), albeit modest. Explained variance was between 11% and 18% depending on the method used to calculate it.

Discussion

The results of this study are consistent with other works in the literature concerning the differences between specialists in terms of professional quality of life. In agreement with the literature [4-7] we found that doctors generally have a better physical health than the general population (which on the contrary has a higher level of physical pain and a lower level of physical functioning). As far as mental health is concerned, the control group seemed to have a better perceived mental health and less role limitations due to emotional problems than Surgeons, and Psychiatrists in particular.

Concerning the professional quality of life of the help-

Table III. Principal component analysis of the variables extracted as discriminant.

	Dimension 1	Dimension 2	Dimension 3
Physical functioning – SF36	-0.17	-0.07	0.86
Mental health – SF36	-0.48	0.34	0.47
CSS – PROQoL	-0.29	0.70	0.01
STSS – PROQoL	0.34	-0.66	0.31
Problem-focused strategies – COPE	0.48	0.67	0.05
Emotion-focused strategies – COPE	0.80	0.40	0.17
Maladaptive strategies – COPE	0.74	-0.08	0.14
Eigenvalues	1.90	1.69	1.13
% variance explained	27.2%	24.2%	16.2%
% cumulative variance	27.2%	51.3%	67.5%

The values in column represent the loading of each variable on the factors (called "dimensions"). Factorial loading higher than 0.50 are in bold, and they indicate a bigger loading of the corresponding variables.

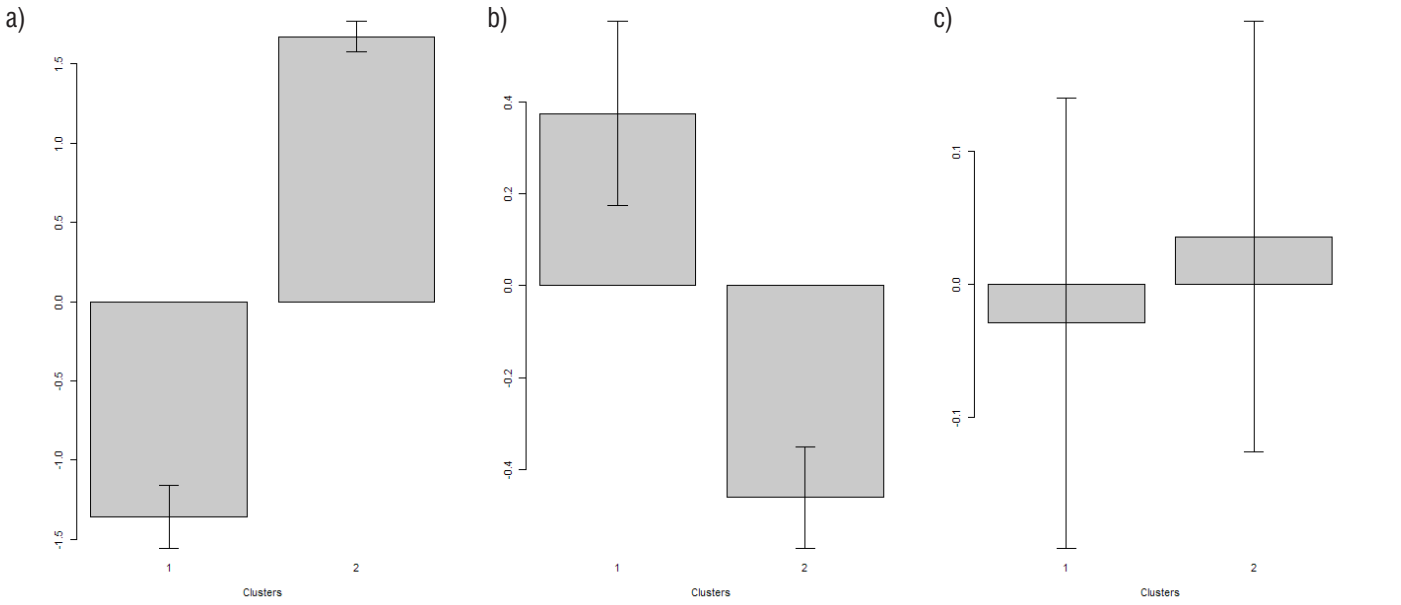

FIGURE 4.

a) PCA Dimension 1 (Explained variance: 29.3%). b) PCA Dimension 2 (Explained variance: 15.3%). c) PCA Dimension 3 (Explained variance: 13.3%).

ing professions as measured by ProQOL scale, we found that Psychiatrists reported the lowest professional satisfaction compared to Surgeons and Internists. Surgeons reported the highest level of professional satisfaction but also the highest level of traumatic stress, whereas Internists were less at risk, with a good professional satisfaction and a low level of traumatic stress.

Coping strategies were different depending on the medical specialty. Psychiatrists were the group who used coping strategies the most, especially those based on emotions, but also maladaptive ones (i.e. denial, mental disengagement, behavioural disengagement). The group of Surgeons showed a good level of problem-focused strategies, a low use of emotion-focused strategies, and used maladaptive strategies less than their colleagues.

As far as M.I.N.I. is concerned, we found that the main difference among groups was the prevalence of panic disorder, which was totally denied by Surgeons (0%), admitted by 15% of the general population, 17% of Psychiatrists, and 8% of Internists. We also noted that the use of anxiolytic and hypnotic drugs was higher among Psychiatrists (15.1%),

Table IV. Distribution of the variables object of study in three clusters extracted by PAM.

	Cluster 1	Cluster 2	Cluster 3	
Profession *Psichiatrist* *Internist* *Surgeon*	 30 (47%) 16 (25%) 18 (28%)	 17 (50.0%) 8 (23%) 9 (27%)	 6 (16%) 15 (39%) 17 (45%)	χ^2 = 12.0, p = 0.017
Sex *Males* *Females*	 35 (55%) 29 (45%)	 15 (44%) 19 (56%)	 30 (79%) 8 (21%)	χ^2 = 9.84, p = 0.007
Age	47.1 (8.6)	46.1 (8.3)	46.9 (9.1)	F(2;133) = 0.15, p = 0.859
Negative events *One* *More than one*	 14 (22%) 4 (6%)	 7 (20%) 2 (6%)	 3 (8%) 1 (2%)	χ^2 = 4.55, p = 0.336
SF36				
Physical functioning	93.9 (12.1)	96.9 (9.0)	98.3 (3.1)	F(2;133) = 2.72, p = 0.069
Physical limitations	87.5 (27.1)	93.4 (22.4)	98.0 (8.8)	F(2;133) = 2.76, p = 0.067
Pain	83.3 (22.8)	81.8 (19.8)	90.3 (13.1)	F(2;133) = 2.02, p = 0.136
General health	69.8 (13.7)	73.1 (12.6)	73.9 (10.7)	F(2;133) = 1.48, p = 0.230
Energy	57.0 (15.0)	53.5 (15.1)	65.0 (13.0)	F(2;133) = 6.11, p = 0.003
Social functioning	74.3 (21.5)	72.6 (21.9)	87.9 (14.8)	F(2;133) = 7.04, p = 0.001
Emotional limitations 78.4 (28.2) 72.3 (33.4) 93.7 (15.4)				F(2;133) = 6.36, p = 0.002
Mental health	70.5 (13.7)	63.9 (15.3)	78.4 (10.9)	F(2;133) = 10.6, p < 0.0001
PROQoL				
CSS	37.0 (5.0)	28.5 (5.4)	37.3 (5.4)	F(2;133) = 34.7, p < 0.0001
BS	16.6 (4.5)	23.7 (4.3)	15.7 (4.6)	F(2;133) = 35.5, p < 0.0001
STSS	8.6 (3.9)	17.2 (7.4)	8.3 (4.2)	F(2;133) = 37.3, p < 0.0001
COPE				
Problem-focused	82.6 (8.6)	69.6 (9.4)	68.8 (8.9)	F(2;133) = 38.3, p < 0.0001
Emotion-focused	76.1 (8.8)	66.7 (10.4)	54.7 (7.7)	F(2;133) = 68.7, p < 0.0001
Maladaptive	32.9 (4.2)	33.4 (5.7)	26.4 (2.6)	F(2;133) = 32.8, p < 0.0001

much lower among Internists (5%) and totally denied by Surgeons and the control group (0%). This result is probably underrated. However, although Psychiatrists admitted to use this category of drugs, none of them was diagnosed with abuse or addiction. Most likely, Psychiatrists make use of anxiolytic and hypnotic drugs more than their colleagues probably because they have a better knowledge of the pharmacodynamics of these substances, are more familiar with them, and have easier access to them than other specialists.

Psychiatrists generally reported a low quality of life in terms of mental health. This fact can be explained by a specific professional inclination, which makes Psychiatrists more sensitive to mental health in general and makes them more open about admitting problems in this area. However, this hypothesis explains the differences of the professional quality of life only partially. It is reasonable to think that there could be a risk element, strictly related to the kind of profession, that has an influence on the psychiatrists group only and not on the others. We also observed that, on the contrary, Surgeons and Internists had generally a more concrete and proactive attitude (as seen from the distribution of coping strategies), with a lower level of mentalization. This could explain the tendency, among Surgeons, to feel high professional satisfaction together with high traumatic stress, as if there was a sudden transition from a good work functioning to a problematic and highly stressful situation. PCA obtained three principal dimensions that explain most of the sample variance. PCA results showed

that Psychiatrists were the ones who differed significantly from the other professions, with fewer differences between Internists and Surgeons.
Cluster analysis with PAM method allowed us to identify two clusters of subjects. The more problematic cluster - in terms of low professional quality of life and greater dissatisfaction with the helping profession - was made up of Psychiatrists mainly, whereas the cluster with the lowest risk of psychopathology and the best psychological functioning was made up of Internists mainly.
The greater presence of Psychiatrists in the worst cluster psychologically probably reflects the complexity of feelings about personal satisfaction and the difficulty in expressing their own emotional well-being. Improved coping abilities might benefit the subgroups of doctors with the worst professional functioning, because they would improve their quality of life and reduce the risk of chronic psychopathology in the long run.
The presence of a group of Psychiatrists at risk of psychopathology, as emerged from this study, suggests that the need to test and evaluate the professional quality of life is probably underestimated. A good number of doctors might benefit from specific support and motivation programs, especially among the mental health profession. In view of a continuation of this study, it might be useful to verify the effectiveness of these support programs with a case-control study.
Some of the doctors reported to barely use efficient coping strategies: this might imply that they have a certain difficulty in dealing with problems and stressful situations on the workplace, which may lead to a reduced work functioning and even possible damage to the patient. For this reason, it might be useful to elaborate training programs based on these aspects, which should be considered as well when selecting young doctors to become Psychiatrists.
One major limitation of the study is the small sample size. This precluded the evaluation of potential moderators or mediators in the differences by group. Small sample size studies are also more prone to false-positive results, or may over-estimate the magnitude of the observed effect size [26]. However, small sample size studies have also some strength. A small number of participants can be enrolled in a short space of time, and with a small number of participants a few centers can be involved, thus limiting the variance between units [26]. An additional strength of the study is the use of state-of-the-art statistics, in both the exploratory and inferential part of the investigation. We feel the results of the study open the space to a large, inter-collaborative study aimed at replicating and extending the findings described in this article.

Conclusions

The comparison of different specialties allowed us to identify a group of doctors with a good professional satisfaction and efficient coping strategies, made up of Surgeons and Internists especially. Psychiatrists appear to be divided into two subgroups, one with good work functioning and the other with the lowest levels of satisfaction, the highest traumatic stress, and maladaptive coping strategies. The second subgroup could be at risk of developing psychopathology, which may be related to a specific professional inclination or may be the result of work exposure itself. The subgroup of doctors at risk might benefit from professional motivation and coping support programs. Moreover, these results suggest the expediency of improving the existing training and selection programs of young doctors who wish to become Psychiatrists.

Take home messages for psychiatric care

- Doctors have better perceived physical health but worse perceived mental health, compared to the general population
- Among doctors, Psychiatrists have five times odds of being classified in a cluster with low levels of job-related satisfaction and a high risk of psychopathology
- Some of the doctors reported to barely use efficient coping strategies when dealing with problems and stressful situations at the workplace. This may lead to reduced work functioning and even possible damage to the patient
- A good number of doctors might benefit from specific support and motivation programs, especially among the mental health profession, to reduce the risk of burnout

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Appendix

Sociodemographic questionnaire.

Age
Sex
Marital status (specify if divorced or separated)
Number of children
Educational qualification
Employment
Duration of employment
Type of employment contract (long term/part time)

How many times in your life did you change your job or work place?

NEVER ❍
ONCE ❍
MORE THAN ONCE ❍

Did you experience any particularly negative life events in the last 12 months?
For example: divorce, diseases, serious work problems, …

NEVER ❍
ONCE ❍
MORE THAN ONCE ❍

Have you ever been exposed to life events that you would describe as extremely traumatic?
For example: assault, bereavements, …

NEVER ❍
ONCE ❍
MORE THAN ONCE ❍

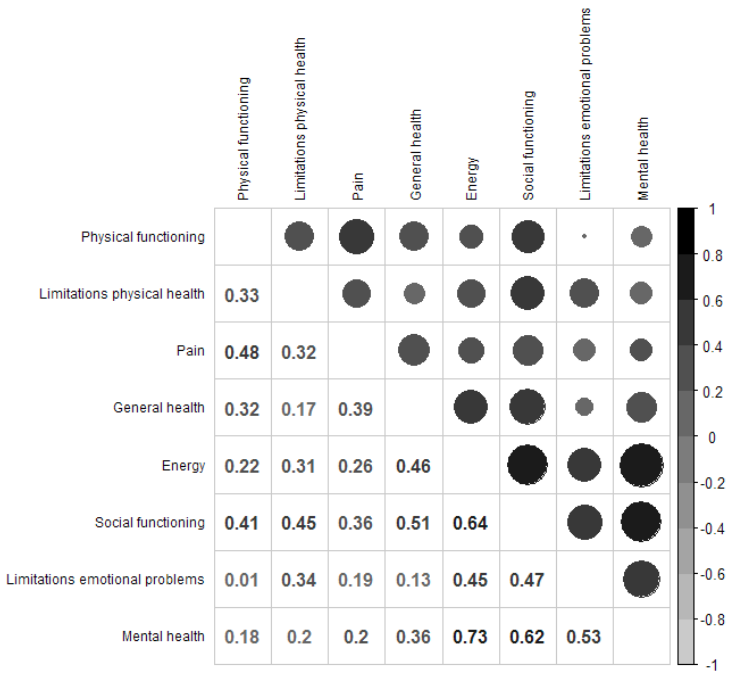

FIGURE A1.
All correlations with r > ±0.15 had p < 0.05.

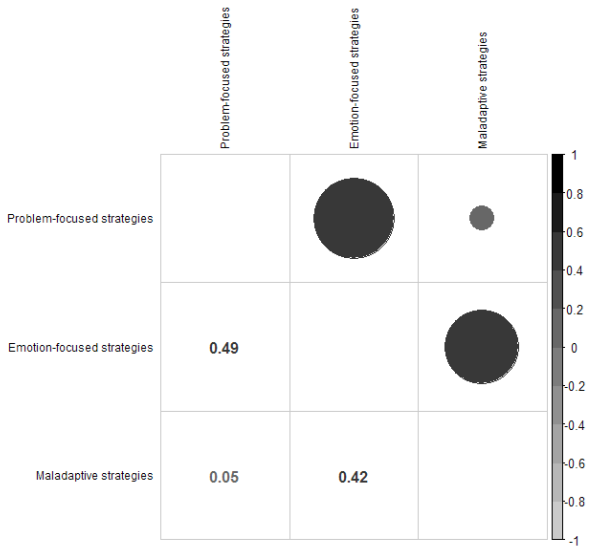

FIGURE A2.
All correlations with r > ±0.15 had p < 0.05.

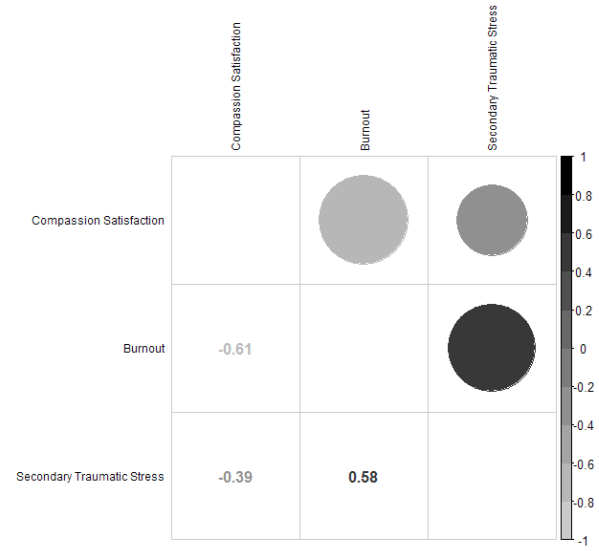

FIGURE A3.
All correlations with r > ±0.15 had p < 0.05.

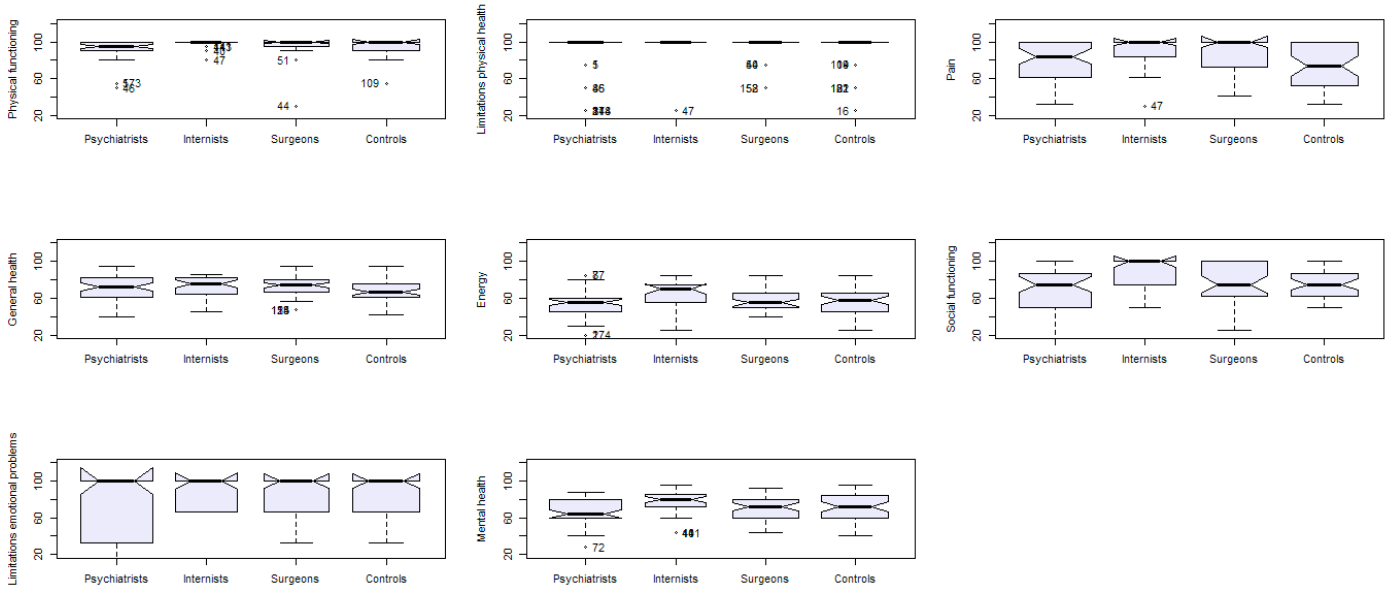

FIGURE B1.
SF36 - Distribution of scores by professional group.

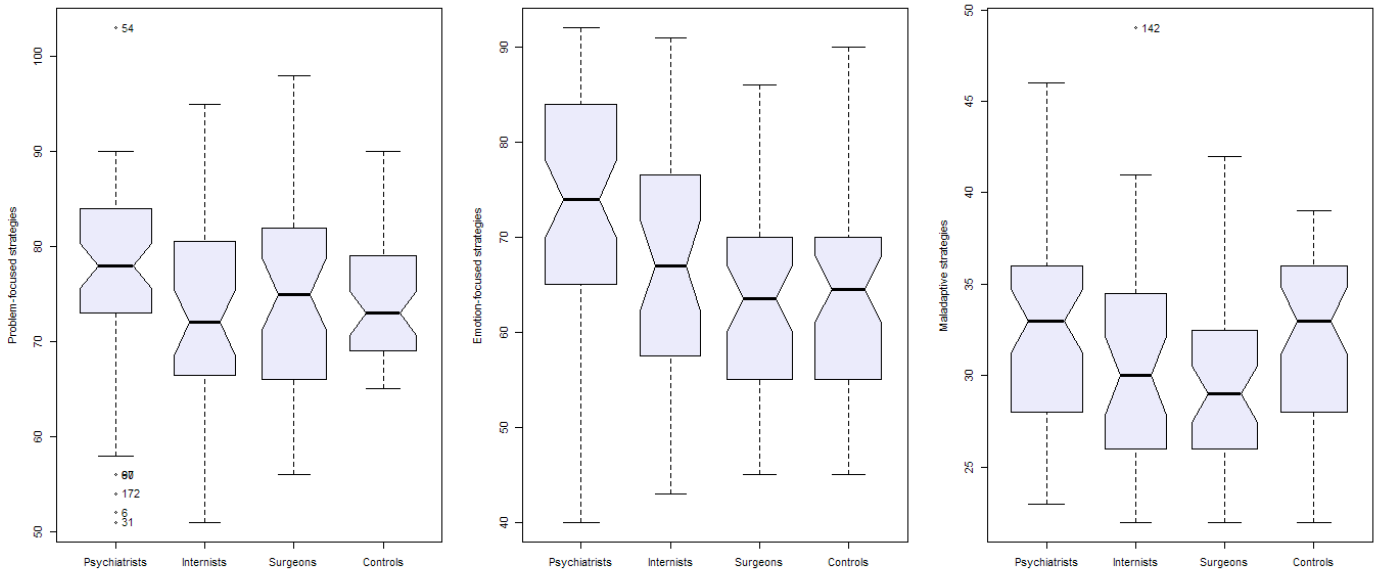

FIGURE B2.
COPE - Distribution of scores by professional group.

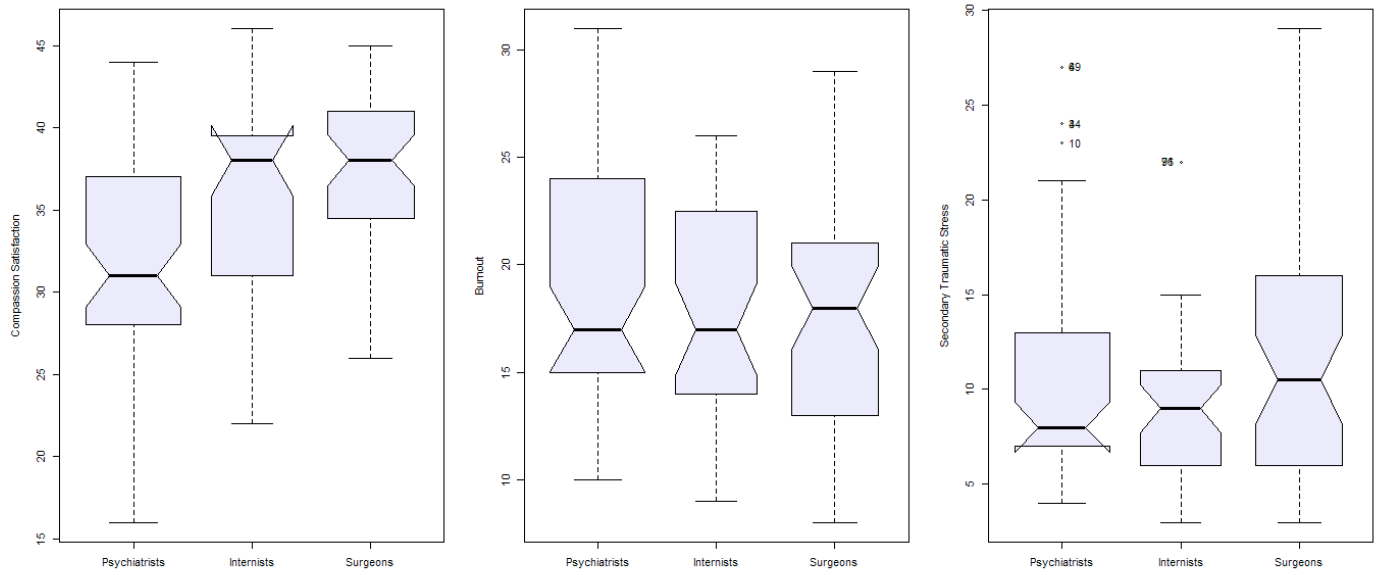

FIGURE B3.
PROQoL - Distribution of scores by professional group.

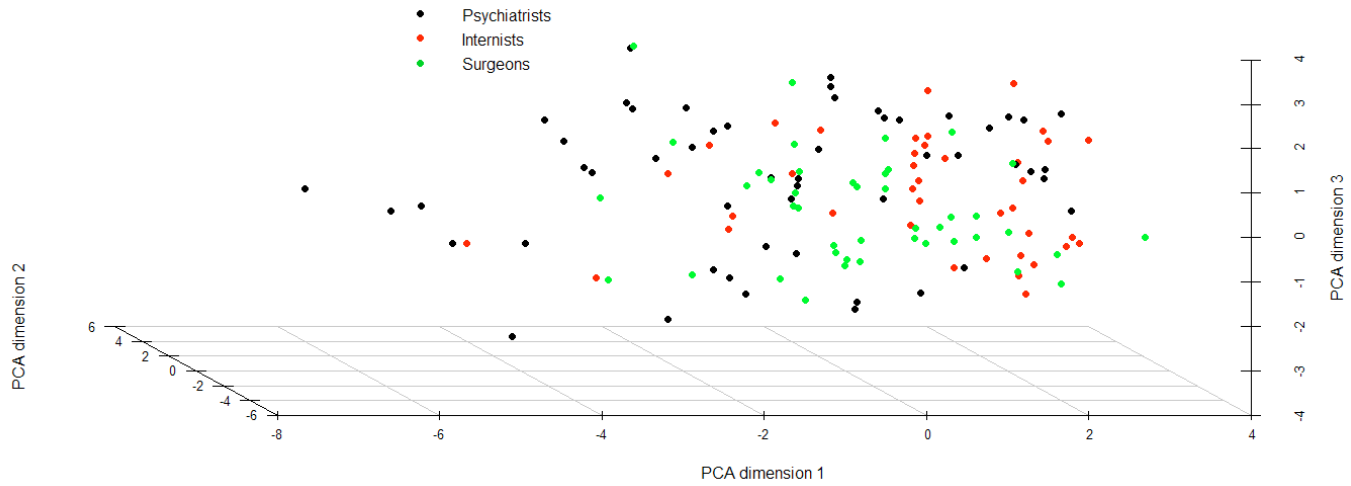

FIGURE C1.

Tridimensional distribution of scores along the three man PCA in the sample.

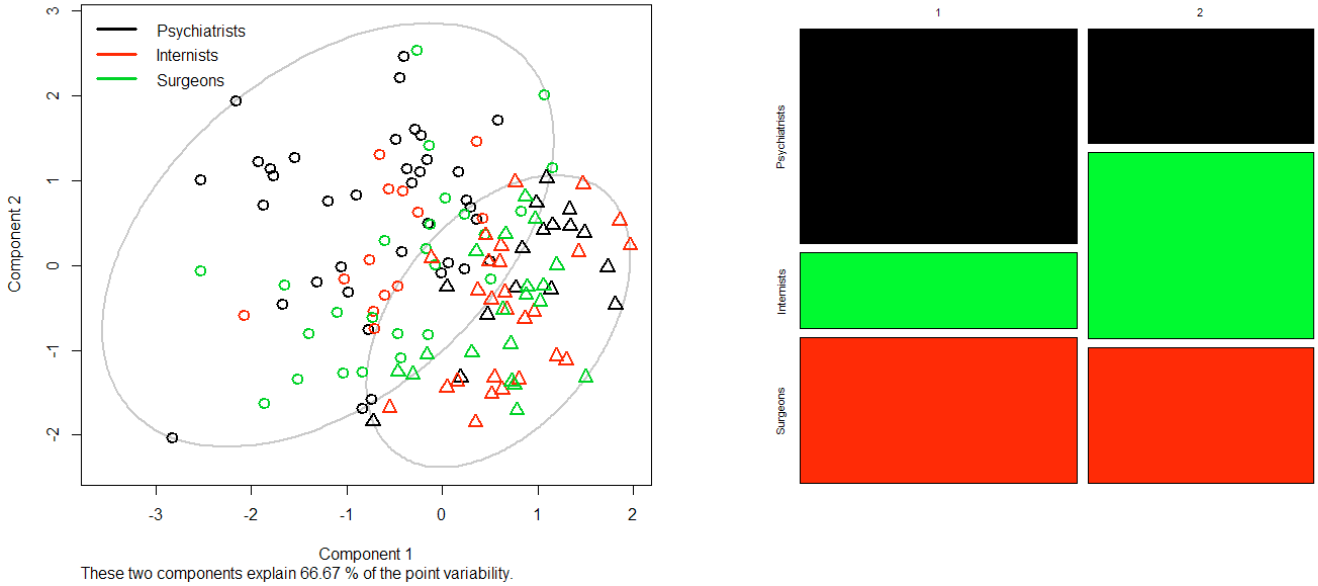

FIGURE D1.

a) Bivariate plot (Clusplot) of the data after PAM clustering. b). Distribution of hospital doctors in the three clusters.