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Relationship between job satisfaction, burnout syndrome and depressive symptoms in physicians: a cross-sectional study based on the employment demand–control model using structural equation modelling

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ABSTRACT

Objective To evaluate the relationship between job satisfaction, burnout syndrome (BS) and depressive symptoms (DS) based on the job demand–control framework model on a nationally representative sample of physicians working in the Peruvian Health System.

Setting We carried out a secondary data analysis of the National Survey of Satisfaction of Users in Health 2016 in Peru.

Primary and secondary outcome measures Our study assessed the development of the predictive model and had two parts: (1) to evaluate the association among the variables based on the job demand–control framework, and (2) to assess the proposed model acceptability using the structural equation modelling approach to estimate goodness-of-fit indices (GOFIs).

Participants We excluded physicians older than 65 years, who did not report income levels or who had missing data related to the workplace. Thus, we analysed 2100 participants.

Results The prevalence of DS was 3.3%. Physicians' work-related illnesses had more probability to result in DS (prevalence ratio=2.23). DS was moderately related to BS dimensions (r>0.50); nevertheless, the relationships between DS and the three job satisfaction scales were weak (r<0.30). The first predictive model based on the variables, DS, BS and job satisfaction, had low GOFIs (comparative fit index (CFI)=0.883; root mean square error of approximation (RMSEA)=0.125). In a second evaluation, we used models with correlated errors obtaining optimal GOFIs (CFI=0.974; RMSEA=0.060).

Conclusions Our study identified a stable model to explain the relationship between job satisfaction, BS and DS among physicians. The results are consistent with the job demand–control framework. They could be applied to decision-making in occupational contexts in Latin American low/middle-income countries.

BACKGROUND

Evidence indicates that the risk of developing common mental disorders can be associated

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ We included a national representative sample of physicians working in all sectors of the Peruvian health system with relevant external validity.
⇒ We used valid and reliable scales for the population analysed, although they did not substitute the clinical evaluations in certain variables such as depression.
⇒ Our study used a cross-sectional approach, so causal effects could not be estimated.
⇒ Data were collected in 2016, so the results may have changed, especially during the COVID-19 pandemic.

with work-related factors, such as high job demands, low job control, high effort–reward imbalance, low relational justice, low procedural justice, role stress, bullying and low social support.[1] In the context of a particularly physical and mentally straining line of work, the mental health of healthcare workers has received increased attention in the last few decades. On the other hand, the evidence at the international level shows that health professionals are at a higher risk of developing common mental disorders, such as anxiety and depression, compared with the general population,[2] and have a high prevalence of mental health issues ranging from work-related fatigue, stress, and post-traumatic stress disorder[3] to suicide ideation and attempt.[4 5]

Literature from Europe and Latin America focused on burnout syndrome (BS) in physicians,[6–8] and several studies in Peru indicated a high prevalence of this syndrome[9–11] and its dimensions.[12] BS is characterised by emotional exhaustion, depersonalisation and

a lack of personal accomplishment,[13] and has been identified as one of the main work-related mental health issues affecting physicians.[13] However, there are limitations to its assessment since it is a self-reported outcome, and there are no standardised cut-off points globally, which could explain why the prevalence of BS is very heterogeneous among physicians (0%–85%).[14] Additionally, BS is moderately associated with other mental health disorders, such as depression and anxiety, and although they share similar characteristics (ie, loss of interest and anhedonia), they are different mental health conditions that need particular attention and approach.[15]

Regarding the factors influencing poor mental health outcomes among healthcare workers and physicians, existing evidence suggests that a number of them are directly work related.[16] These include working at emergency services, dealing with the patients' suffering and death, being faced with increased risk of infection,[17] or organisational factors, such as work overload, tensions between personal and institutional values,[18] inadequate quality of healthcare, and low professional autonomy.[19] More specifically, job satisfaction is a complex and multidimensional concept defined as 'the positive or negative attitude that an employee has towards working conditions, coworkers, the exercise of his or her profession in the workplace'.[20] Although job satisfaction is a construct based on the worker's perception, it depends directly on the actual conditions of the workplace. Also, job satisfaction is moderately related to mental health problems, such as anxiety, depression or BS,[21] and conversely, the absence of BS is a good predictor of job satisfaction.[22] The existing evidence points to low job satisfaction as an associated factor in physicians' poor mental health outcomes (including BS). Job satisfaction among healthcare workers is crucial to public health, as it has been shown to reduce absenteeism-related costs and improve patient treatment care and satisfaction.[23] Hence, promoting high levels of job satisfaction among physicians is an essential aspect of ensuring that healthcare services can deliver appropriate and safe care, thus improving the overall health system and public health.[24]

In recent years, several theoretical models have been put forward to define and explain the relationship between BS, job satisfaction and depression. However, empirical evidence remains scarce in low/middle-income countries (LMICs), and the few available studies are cross-sectional without representative sampling. In addition, the lack of a unified measurement instrument across countries limits existing interpretations.[15] In these socioeconomic contexts, we were also able to investigate the association,[25] prevalence[26] and evaluation of predictive models that have used variables similar to our study.[27 28] Moreover, different theoretical frameworks have attempted to explain the relationship between working conditions and work-related variables in mental health. One of the most cardinal frameworks is the job demand–control model, which predicts that 'individuals with high-strain jobs characterised by high demands and limited control (decision

authority and skills discretion) and possibly poor social support in the workplace (isolated strain: iso-strain) are at high risk of developing physical illness and mental health problems'.[29]

Some studies provided initial evidence on the structure of the relationship between the three variables: BS, job satisfaction and depression, in physicians and its consequences. Systematic reviews have shown that the perception of psychosocial stressors in healthcare facilities is related to the development of depressive symptoms in healthcare professionals,[29 30] and cross-sectional studies suggest that job satisfaction is associated with occupational factors and physicians' mental health.[31–33] The theoretical framework is used to create predictive models in cross-sectional studies and elaborate structural equation models (SEMs) to explain the relationship between physicians' BS, job satisfaction and depressive symptoms. Using the SEM, a previous study on healthcare workers in Brazil indicated a causal relationship between these three variables, where depressive symptoms were a predictor of BS and the absence of BS predicted job satisfaction.[22]

Despite the existing evidence about the relationship between job satisfaction, BS and depression, there is no primary evidence of this relationship in Latin American LMICs, including Peru. Since the existing evidence on BS among physicians in Peru indicates a high prevalence,[10–12] studying its relationship with job satisfaction and depression is crucial. Additionally, in the Peruvian healthcare system and its socioeconomic context, inequities exist in health outcomes and access to healthcare[34 35] in more frequency than in high-income countries, where some of the evidence on the relationship between job satisfaction, BS and depression has been reported. The Peruvian healthcare system is fragmented and segmented between public and private healthcare coverage and provision, with three levels of governance: national, regional and municipal—where more than 75% of the population has public health insurance in subsidised and contributory regimes.[36 37] According to critics, despite being a pioneer at the regional level in the establishment of a national healthcare services system, the Peruvian healthcare system is characterised by structural inefficiencies, lack of continuity in care, lack of monitoring and evaluation,[37] insufficient public spending, and insufficient and geographically dispersed human resources and infrastructure.[34] Also, physicians often work in more than one healthcare centre, sharing their working time between the public and private subsectors.[38] Considering the systemic issues observed in the Peruvian healthcare system and the prevalence of BS and mental health issues among doctors, which hinders their capacity to provide adequate services, failing to address their mental health may negatively affect the population health in the long run while widening the existing gap in access to healthcare and adequate health insurance coverage.[36 37]

Within this context, our study aimed to evaluate the relationship between job satisfaction, BS and depressive symptoms among physicians working in the Peruvian

healthcare system based on the job demand–control framework model. Our analysis is the pioneer of its kind in Peru and has contributed to developing relevant information for LMICs in Latin America and other regions on the factors of common mental disorders among doctors. Our study could also contribute to identifying certain basis to propose solutions that would guarantee the mental health of medical doctors and consequently improve the population's health in these particular healthcare systems.

METHODS
Study design
We carried out a secondary data analysis of the National Survey of Satisfaction of Users in Health 2016 (ENSUSALUD from the Spanish acronym) (http://portal.susalud.gob.pe/blog/base-de-datos-2016/). The National Institute of Statistics (INEI, from the Spanish acronym) and the National Health Authority (SUSALUD from the Spanish acronym) performed this cross-sectional survey.

Patient and public involvement
No patient involved.

Participants and setting
ENSUSALUD 2016 had nationally representative sampling from the Peruvian healthcare system. Sampling was probabilistic, two staged, stratified and independent in each department. In the first stage, the health facilities of the Peruvian Ministry of Health, EsSalud (Peruvian Social Security), private health establishments and Armed and Police Forces health facilities were selected; and the INEI used a systematic selection with probability proportional to the number of care. In the second stage, doctors and nurses were selected randomly. The sample size calculation assumed a confidence level of 95%, accepted error in the estimation (2%–5%) and a level of satisfaction of 36.5%.[39]

ENSUSALUD included physicians and nurses who worked (at least 12 months) in 185 healthcare centres in all regions of Peru and fulfilled the ENSUSALUD questionnaire 2. Trained personnel executed the data collection between May and July 2016. In our analysis, we included only doctors. We excluded people older than 65 years, who did not report income levels or who had missing data referred to the workplace.

VARIABLES
Job satisfaction
Three scales were used to measure different elements of job satisfaction. These were *General Professional Activity, Health Services Management* and *Working Conditions of the Healthcare Centre*. These scales presented adequate psychometric properties and were validated in an earlier study that used physicians' data from ENSUSALUD 2016.[40] Job satisfaction was measured on a 5-point Likert scale ranging

from 1 to 5 (5=very satisfied; 4=satisfied; 3=neither satisfied nor dissatisfied; 2=dissatisfied; 1=very dissatisfied).

1. *Satisfaction Scale on General Professional Activity:* this scale evaluated the level of satisfaction according to the general aspects of professional work, including the relationship between the patient and healthcare professional, professional achievements, job availability and occupational hazard perception. The instrument had six items with one dimension (comparative fit index (CFI)=0.946; root mean square error of approximation (RMSEA)=0.071; standardised root mean square residual (SRMR)=0.035). Furthermore, the test had a high level of reliability (α=0.70; ω=0.70). The invariance of measurement was achieved for civil status, having a chronic disease and people who had a work-related disease.[40]

2. *Health Services Management Satisfaction Scale:* this scale assessed the level of satisfaction with management in the healthcare centre. The scale considered the following components: satisfaction with managing human and economic resources, availability and use of medication and alignment of tasks according to skills. The scale consists of eight items with one dimension (CFI=0.972; RMSEA=0.081; SRMR=0.028). The test had a high level of reliability (α=0.90; ω=0.90), and the invariance of measurement was identified for sex, age, civil status, medical specialty, working in more than one institution, work-related illness, self-reporting of having a chronic illness and the scheduling of health personnel shifts.[40]

3. *Satisfaction Scale on the Working Conditions of the Healthcare Centre:* this scale focused on measuring the level of satisfaction regarding working conditions. The indicators evaluated satisfaction regarding the promotion of optimal conditions, administrative regulation of the health centre, workload, working schedule, income, improvement potential, infrastructure and equipment, employee–boss relationship and healthcare centre cleaning services. The instrument consists of 11 items with two dimensions (CFI=0.914; RMSEA=0.080; SRMR=0.055). The first dimension was about individual working conditions (α=0.81; ω=0.81; eight items), and the second dimension was about structural working conditions (α=0.81; ω=0.82; three items). The invariance of measurement was achieved regarding sex, age, marital status, medical specialty, working in more than one institution, working time and work-related chronic illness.[40]

Burnout syndrome
We used the *Maslach Burnout Inventory: Human Service Survey (MBI-HSS)*.[41] This questionnaire had Likert-type response scales with 22 items divided into three dimensions (CFI=0.974; RMSEA (90% CI)=0.052 (0.048 to 0.055); SRMR=0.059). However, in our exploratory factorial analysis, we found that seven items presented factorial loads lower than 0.40; hence, we removed them from a second analysis, and we obtained a better fit in the

model with a total of 15 items (CFI=0.972; RMSEA (90% CI)=0.049 (0.044 to 0.054); SRMR=0.047). The scale had seven answer options (0=never; 1=a few times a year or less; 2=once a month or less; 3=a few times a month; 4=once a week; 5=several times a week; 6=every day). The first dimension, emotional exhaustion, had five items (α=0.72; ω=0.79); the second dimension, depersonalisation, had five items (α=0.68; ω=0.83); and the last dimension, personal accomplishment, also had five items (α=0.67; ω=0.81).[42]

Depressive symptoms
The *Patient Health Questionnaire (PHQ-2)* was used to evaluate depressive symptoms in the last 2 weeks. This questionnaire had only two items, measured on a 4-point Likert scale (0=not at all; 1=several days; 2=more than half of the time; 3=nearly every day), and the scores ranged from 0 to 6. Using three or more points as a threshold, the PHQ-2 defined depressive symptoms with good sensitivity (82%) and specificity (90%).[43]

Sociodemographic variables
Data were collected on age; sex (male and female); whether the physicians had a specialty (no, in progress and yes); whether they worked at another teaching institution; seeing patients or performing administrative tasks (yes or no); whether they had a chronic illness (yes or no); whether they had a work-related illness (yes or no); whether they had been victims of physical, psychological or sexual violence in the workplace (yes or no); the type of organisation in which they worked (Ministry of Health, EsSalud, Armed Forces and Police, or private clinics); and time spent working. Additionally, self-reported monthly income was evaluated and categorised according to the minimum wage (less than 4 times, 4–10 times and more than 10 times the minimum wage). The minimum wage was 750 Peruvian soles, equivalent to US$222.5 in May 2016.

Bias
Our study seeks to control for participant selection bias by performing probability sampling, which assures us of being able to control for this source of bias. Recall bias is controlled for because within our primary outcome (depressive symptoms), it is assessed within 2 weeks, so it is plausible that it is easier for participants to recall events related to their mood during that time.

ANALYSIS
Descriptive analysis
A separate analysis was performed for physicians with depressive symptoms (PHQ-2 scores ≥3 points) and physicians without depressive symptoms (PHQ-2 scores ≤2 points). The analysis was adjusted by the weighting factor of the complex sampling.

Relationship between variables
A Pearson correlation was performed using a sample size weighting between the following variables: depressive symptoms (PHQ-2), burnout (MBI-HSS) and job satisfaction (three scales). These three variables were evaluated because they correspond to the theoretical framework proposed by Gray *et al*[44] and Rothenberger.[45] Pearson correlation coefficient was considered as effect size, considering weak (r=0.10), moderate (r=0.30) and high (r=0.50) values.[46]
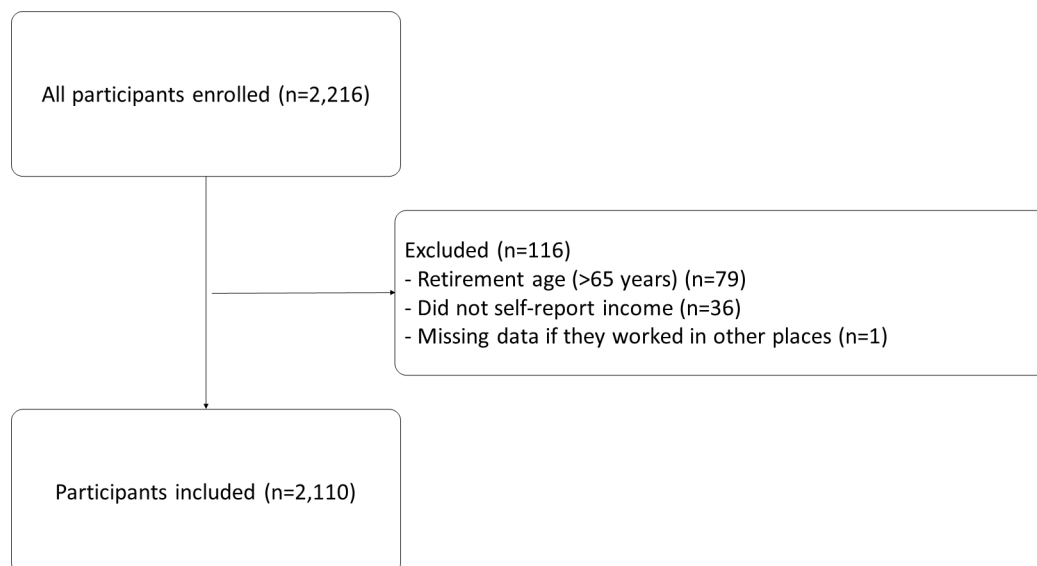
We used the X^2 tests to evaluate associations between sociodemographic characteristics and the variables of interest. We estimated prevalence ratios (PRs) using generalised linear model's Poisson family log link functions with robust variance.[47] We included control variables in the adjusted model: sex, age, living with a partner, medical specialty, working in more than one institution, monthly income, work-related illness, self-reported chronic illness, working institution (Ministry of Health, Social Security, Armed Forces and Police, or private clinics), working years, and experience of physical, psychological or sexual violence. We applied the complex sampling weighting for all calculations.

Structural regression model
We used the maximum likelihood estimation with robust SEs[48] and Pearson matrices.[49] We adjusted the analysis by the weighting factor of the complex sampling. Two models were evaluated based on the hypothesis that job satisfaction influences BS, which influences depressive symptoms.[44 45 50] The first model (model 1) evaluated the relationship between job satisfaction, BS and depressive symptoms. The second model (model 2) was based on model 1 but considered correlated errors between the dimensions. Because the variable had four dimensions, it was very likely that these dimensions were strongly associated, and correlated errors were found between them.[51] We used SEM because this approach allowed testing several relationships among all the variables in a single overall analysis.

Evidence has been found that job satisfaction and BS affect the mental health of healthcare professionals, and a model was proposed to explain the dynamics between these three variables,[52] with labour dissatisfaction as the main predictor.[22] However, our study presents a model that explains how depressive symptoms occur in Peruvian doctors due to work dissatisfaction, explaining a problem that persists in the healthcare systems of several countries. Therefore, understanding this problem may help to reach a more efficient and effective decision-making process.[22 30] Our study proposes a logic of explanatory relationships based on a framework, a valid and widely used approach in social and mental health research for assessing potentially explanatory causal relationships.[53] In our case, the framework provides solidity to the causal assertions, so it has a decisive role in the design and the data modelling.

The models were evaluated based on different goodness-of-fit indices. We used the CFI and Tucker-Lewis Index (TLI) and defined optimal values higher than 0.95,

All participants enrolled (n=2,216)

Excluded (n=116)
- Retirement age (>65 years) (n=79)
- Did not self-report income (n=36)
- Missing data if they worked in other places (n=1)

Participants included (n=2,110)

Figure 1 Flow chart of the participants included in the study.

as well as the SRMR and RMSEA with a CI of 90%, both with values adequate if <0.08.[51 54]

Software
We performed the analysis according to the complex sampling in R Studio (PBC, Boston, Massachusetts, USA), specifically with the packages 'lavaan',[37] 'lavaan.survey',[38] 'semTools'[39] and 'semPlot'.[55]

RESULTS
Participants
Initially, ENSUSALUD included 2216 medical doctors. We excluded 116 based on the selection criteria (figure 1); then, we analysed 2100 participants.

General characteristics
Most doctors were male (66.8%), worked in the Ministry of Health (43.0%) or Social Security (34.4%), earned between 4 and 10 times the minimum wage per month (66.0%) and lived with a partner (64.5%). Around half (51.8%) were specialists, 34.5% were over 50 years, 58% reported working in more than one institution, 23% reported a work-related illness, 30.3% had a chronic illness and 34.7% suffered workplace violence (table 1). The proportion of physicians with depressive symptoms was 3.3%.

Association and correlation between variables
We found that physicians who had had a work-related illness were more than twice as likely to present with depressive symptoms than those who did not (PR: 2.23, 90% CI: 1.38 to 3.60). We did not find a statistical association between other variables with depressive symptoms (table 1).

The subdimensions of BS were strongly correlated (|r|>0.50), as well as the elements of depressive symptoms (r>0.50). The job satisfaction scales were moderately correlated (r>0.30). The General Professional Activity Satisfaction Scale and the dimensions of BS were moderately correlated. Furthermore, anhedonia and the individual working conditions subdimensions were moderately related to the dimensions of BS (|r|>0.30). There was a weak correlation between depressive symptoms and the three job satisfaction scales, consistent with the job demand–control framework (table 2).

Structural equation model
The first model for depressive symptoms, BS and job satisfaction variables presented a low goodness-of-fit index, assessing the possible models with correlated errors. We found that individual condition errors and health services management were highly correlated. Hence, we decided to apply a second model including these correlated errors and found optimum goodness-of-fit indices (CFI=0.974; TLI=0.961; SRMR=0.045; RMSEA=0.060) (table 3 and figure 2).

DISCUSSION
Main findings and significance
Our findings support the hypothesis that job satisfaction influences BS, and BS influences depressive symptoms among physicians working in the Peruvian healthcare system. Also, it shows that the three job satisfaction scales' work environment demands and working conditions influenced the physician's capacity for control and individual autoregulation (assessed by the BS Scale). These results are consistent with the job demand–control framework, suggesting that high levels of tension in the workplace and demanding working conditions for workers who may or may not have tools to control this demand put them at a high risk of work-related illness. These results mean that physicians who had low satisfaction with working conditions, healthcare services management or

Table 1 General characteristics of the participants included in the study (n=2100)

	Overall n=2100	Without depressive symptoms n=2020	With depressive symptoms n=80	PR*
Sex				
Men	1568 (68.8%)	1514 (68.8%)	54 (70.2%)	–
Women	532 (31.2%)	506 (31.2%)	26 (29.8%)	1.19 (0.72 to 1.95)
Age				
23–29	145 (7.8%)	137 (7.7%)	8 (11.1%)	–
30–39	656 (31.8%)	629 (31.9%)	27 (28.9%)	0.80 (0.34 to 1.86)
40–49	586 (25.9%)	564 (25.8%)	22 (28.0%)	0.74 (0.27 to 2.01)
50–65	713 (34.5%)	690 (34.6%)	23 (32.0%)	0.55 (0.18 to 1.68)
Live with a partner				
No	646 (35.5%)	618 (35.4%)	28 (39.0%)	–
Yes	1454 (64.5%)	1402 (64.6%)	52 (61.0%)	0.96 (0.58 to 1.59)
With specialty				
No	565 (36.3%)	540 (36.4%)	25 (33.2%)	–
In progress	345 (11.9%)	328 (11.7%)	17 (19.0%)	1.09 (0.36 to 1.04)
Yes	1306 (51.8%)	1265 (51.9%)	41 (47.8%)	0.72 (0.55 to 2.15)
Work in other institutions				
No	922 (41.6%)	878 (40.7%)	44 (67.1%)	–
Yes	1178 (58.4%)	1142 (59.3%)	36 (32.9%)	0.61 (0.36 to 1.03)
Monthly income				
Less than 4 times the minimum wage	70 (4.3%)	67 (4.3%)	3 (3.5%)	–
4-10 times the minimum wage	1420 (66.0%)	1365 (66.1%)	55 (63.1%)	1.17 (0.35 to 3.90)
More than 10 times the minimum wage	610 (29.7%)	588 (29.6%)	22 (33.4%)	1.83 (0.49 to 6.78)
Work-related illness				
No	1620 (76.8%)	1574 (77.3%)	46 (61.3%)	–
Yes	480 (23.2%)	446 (22.7%)	34 (38.7%)	**2.23 (1.38 to 3.60)**
Self-reporting having a chronic illness				
No	1548 (69.7%)	1496 (70.3%)	52 (51.2%)	–
Yes	552 (30.3%)	524 (29.7%)	28 (48.8%)	1.24 (0.76 to 2.04)
Organisation				
Ministry of Health	962 (43.0%)	915 (42.6%)	47 (55.1%)	–
EsSalud	980 (34.4%)	951 (34.3%)	29 (36.1%)	0.67 (0.42 to 1.07)
Armed Forces and National Police	33 (8.4%)	32 (8.7%)	1 (1.1%)	0.72 (0.10 to 5.39)
Private clinics	125 (14.2%)	122 (14.4%)	3 (7.7%)	0.57 (0.17 to 1.90)
Years working at the institution				
2 or less	685 (36.8%)	659 (37.0%)	26 (31.6%)	–
3–5	396 (19.4%)	377 (19.3%)	19 (22.3%)	1.35 (0.72 to 2.55)
6–10	293 (12.6%)	284 (12.4%)	9 (20.0%)	1.13 (0.47 to 2.72)
11 or more	726 (31.2%)	700 (31.3%)	26 (26.1%)	1.47 (0.64 to 3.36)
Physical, psychological or sexual violence				
No	1393 (65.3%)	1353 (65.6%)	40 (54.7%)	–
Yes	707 (34.7%)	667 (34.4%)	40 (45.3%)	1.17 (1.12 to 2.72)

Monthly income=less than 4 times the minimum wage (≤$890), 4–10 times the minimum wage ($890–$2225) or more than 10 times the minimum wage (≥$2225). The complex sampling weighting factor adjusted the percentages.
*Model adjusted by the factors sex, age, live with a partner, specialty, work in other institutions, monthly income, work-related illness, self-reporting having a chronic illness, type of organisation, years working in the institution, and physical, psychological or sexual violence. Values in bold are significant (p<0.05).
.PR, prevalence ratio.

general professional activity were more likely to develop BS. This explicative model explained the relation between emotional issues, such as depressive symptoms, and organisational variables based on the job demand–control framework. Doctors would display higher levels of depersonalisation and emotional exhaustion and lower levels of personal accomplishment—both are elements of BS that influence the presence of depressive symptoms. Also, accidents may happen when demands exceed control capacities, and illnesses may be the result.[42 56] This

Table 2 Pearson correlation coefficient between scales and dimensions (n=2100)

Scales	Dimensions	(1.1)	(1.2)	(2)	(3)	(4.1)	(4.2)	(5.1)	(5.2)	(5.3)
(1) Depressive symptoms	(1.1) Anhedonia	1.000								
	(1.2) Depressed mood	0.556	1.000							
(2) Job Satisfaction with General Professional Activity	–	−0.282	−0.220	1.000						
(3) Job Satisfaction with Healthcare Services Management	–	−0.192	−0.141	0.419	1.000					
(4) Job Satisfaction with Working Conditions of the Healthcare Centre	(4.1) Individual	−0.261	−0.241	0.538	0.560	1.000				
	(4.2) Structural	−0.136	−0.122	0.340	0.638	0.417	1.000			
(5) Burnout	(5.1) Depersonalisation	0.348	0.227	−0.382	−0.261	−0.348	−0.187	1.000		
	(5.2) Emotional exhaustion	0.429	0.336	−0.443	−0.300	−0.460	−0.199	0.669	1.000	
	(5.3) Personal accomplishment	−0.320	−0.221	0.399	0.285	0.394	0.235	−0.531	−0.570	1.000

(1) Depressive symptoms; (2) Job Satisfaction of General Professional Activity; (3) Job Satisfaction of Health Services Management; (4.1) dimension of individual conditions of the Job Satisfaction of Working Conditions of the Healthcare Centre; (4.2) dimension of structural conditions of the Job Satisfaction of Working Conditions of the Healthcare Centre; (5.1) dimension of depersonalisation of the Burnout Scale; (5.2) dimension of emotional exhaustion.

provides evidence of a relationship between the three variables and the relevance of this model for mental health disorders, such as depressive symptoms.

Explanation of results and contrasting within the literature

Several studies have found causal mechanisms to explain the relationship between the variables of job satisfaction, BS and depressive symptoms.[29 45] Among the principal mechanisms are the factors linked to work conditions. First, the variables related to work conditions are tightly inter-related and linked to job satisfaction.[57] This explains why job satisfaction regarding healthcare services management and the individual working conditions of the healthcare centre are highly correlated in our study. Second, there is evidence that work conditions like work overload, mismanagement and inadequate work environment[29 45] are critical factors in BS prevalence. Third, plenty of evidence supports the relationship between BS and depressive symptoms, as the former predisposes one to negative affective feelings, such as sadness and anhedonia,[15] potentially initiating clinical depression. Fourth, failure to treat problems in the work environment promptly would lead to BS and, subsequently, the appearance of depressive symptoms.[29 45] Finally, evidence shows that the demand–control framework explains the

Table 3 Designs of structural equation models (n=2100)

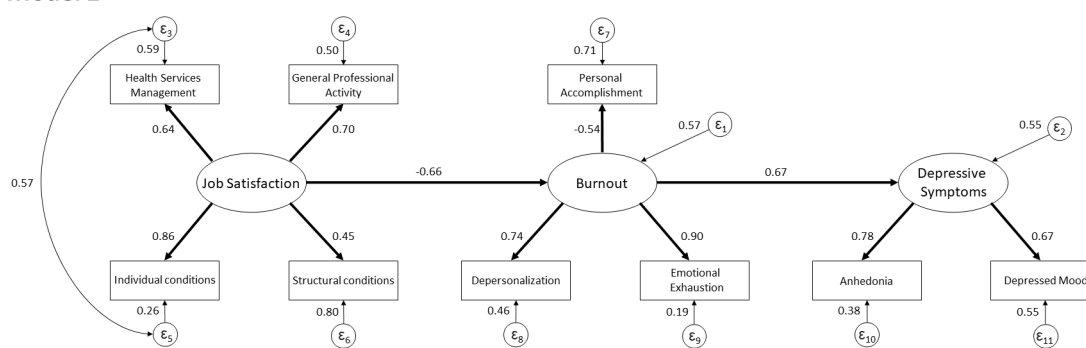|	X² (df)	CFI	TLI	RMSEA (90% CI)	SRMR
Model 1	138.2 (25)	0.883	0.832	0.125 (0.105 to 0.146)	0.070
Model 2	52.2 (24)	0.974	0.961	0.060 (0.038 to 0.083)	0.045

The model values considered the weighting factor of the complex sample.
CFI, comparative fit index; RMSEA, root mean square error of approximation; SRMR, standardised root mean square residual; TLI, Tucker-Lewis Index.

Model 1
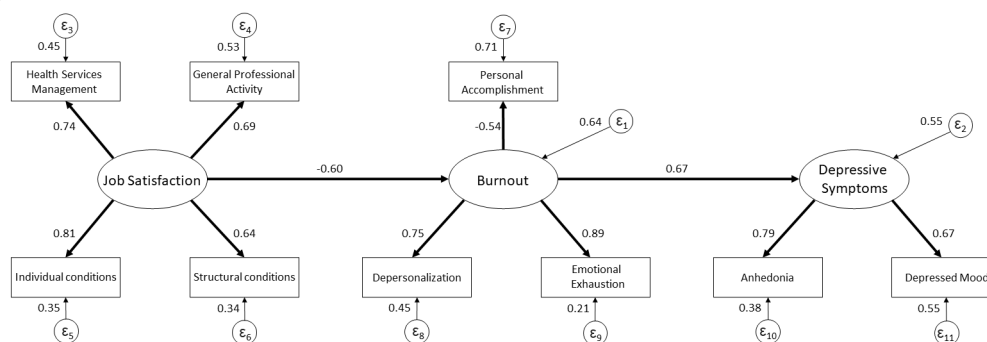
Model 2

Figure 2 Model of structural regressions for job satisfaction, burnout and depressive symptoms in Peruvian physicians.

relationship between job satisfaction, BS and depressive symptoms.[29] Therefore, it is a valuable framework that could be used within the Peruvian context to explain depressive symptoms among physicians.[29 37]

Ensuring that healthcare professionals feel satisfied with their work environment and the work itself is crucial as it contributes to ensuring the best possible quality of care for their patients. However, hostile work conditions, inadequate management, the perception of having limited opportunities for professional and personal growth, and difficulties in coping with tasks, among others, can lead to BS. Healthcare providers must pay attention to BS since it affects both the healthcare workers and users of healthcare services and leads to economic loss.[22] In addition, physicians are one of the healthcare professionals with the highest prevalence of BS, ahead of nurses and other healthcare professionals.[10–12] Thus, constant work-related stress and the inability of employers to satisfy the needs and fulfil the rights of their workers can lead to depressive symptoms and other mental disorders. Also, treating depression may span several months, resulting in financial loss.[58 59] For this reason, it is vital to address the root causes of depression and its symptomatology, that is, the work-related conditions in the proposed predictive model. In this way, a range of negative consequences could be prevented at the national level, paving the way to improve public policies, laws and regulations.

Regarding sociodemographic factors associated with depressive symptoms among physicians, our study showed that the physicians who reported work-related illness were

twice as likely to have depressive symptoms. Other studies found that work-related illnesses, such as workplace accidents or back pain,[60] increased patients' risk of developing depressive symptoms. In contrast, age, gender and monthly income did not show significant results. Previous studies in Peru showed that women over 75 years old and those in the lowest wealth quintile are more likely to have depressive symptoms.[61 62] If wealth is to be considered alone as a factor in depressive symptoms, it could be said that health professionals would be at a lower risk of developing depressive symptoms. Physicians receive a higher income than the national average, four times the minimum monthly wage on average, and thus have better access to mental healthcare and higher educational levels, all of which are protective factors for depressive symptoms.[61] However, other studies among health professionals in Brazil, China, and Finland reported that sex, educational level, age, and the specific profession (physician, nurse or other health professionals) are not related to developing depressive symptoms,[22 33 63] which is consistent with our results.

Our results support the job demand–control framework, which shows that workers with high levels of tension (BS) and unfavourable organisational conditions (low job satisfaction) have a higher probability of developing mental health issues, such as depressive symptoms.[29] Investigations carried out in Brazil and Spain—using other models focused on job satisfaction, burnout and depressive symptoms—reported that the direct relationship between depressive symptoms and job satisfaction

was minimal.[22 64] Hence, these reports support our model, where BS mediated the depression effects on job satisfaction. Specifically, the Brazilian study on healthcare professionals suggested that depressive symptoms predict BS (n=271),[22] and the Spanish research found that depressive symptoms negatively influenced personal accomplishment, a dimension of BS (n=170).[64] However, both studies had two critical limitations. First, neither of them used a framework that can explain their models, meaning that the directionality of the variables studied is not clear. Second, their respective sample size is minimal and not representative, and consequently, there may have been a selection bias. Therefore, the model applied in our study represents a relevant contribution to the existing scientific literature. The job demand–control framework explains this representative national sample's results; subsequently, we can extrapolate these to physicians working in the Peruvian health system. In addition, our study would justify evaluating this and other framework hypotheses within the context of LMICs.

Limitations, strengths and generalisability

Our analysis had some limitations. First, we analysed cross-sectional data, so we could not estimate causal effects directly, although using a framework is a widely, valid approach in social sciences and mental health arenas.[53] Second, we included only physicians in the analysis, excluding other healthcare professionals, but it permits a more homogeneous analysis. Third, beyond using validated scales to avoid information bias, this does not replace a clinical assessment of depression; however, the PHQ-2 is an instrument that has good diagnostic properties to use in epidemiological and population studies.[43] Fourth, the data are from 2016, indicating that these values may have changed recently, especially during the COVID-19 pandemic. However, we consider that situation is very unlikely due to the Peruvian healthcare system's characteristics.[37] National representative surveys in healthcare from LMICs are limited; particularly in Peru, the last version of ENSUSALUD was acted on in 2016. Fifth, we performed secondary data analysis; ENSUSALUD was not primarily designed to answer the research question tested in our study. Then, we did not include other variables that could contribute to enhancing the analysis, such as other mental health problems (ie, anxiety symptoms, acute stress) or occupational variables. Despite the weaknesses, our analysis has representativeness and an adequate sample size including doctors working in ambulatory care from all subsectors of the Peruvian healthcare system, which implies excellent external validity. Likewise, our study constitutes one of the first articles that use SEM and a theoretical framework as methodological approaches to investigate the relationship tested in LMICs.

Implications in public health and recommendations

Peru is a Latin American middle-income country, and its healthcare system is overburdened and fragmented, institutions are divided among different founding entities and providers with considerable disparities in the resources available.[35 37] Therefore, our results are helpful for the Peruvian context but may also be relevant for other LMICs with similar healthcare systems. Our results showed that mismanagement, poor social support, and recognition of the needs and rights of healthcare professionals (low job satisfaction), and difficulties controlling high job demand might lead to BS among healthcare professionals. If these issues remain unresolved, there may be adverse effects on the health of Peruvian physicians, such as a higher prevalence of depressive symptoms, and this may lead to years lost to disability as well as considerable costs for the state due to the limited human resources for health, absenteeism from work, work saturation and overload.[37 44] Thus, we recommend that policies and regulations be designed to improve the work conditions of healthcare workers, such as increase of mental health resources, the promotion of self-care support programmes and the reduction of barriers to access mental health treatment.[65]

CONCLUSIONS

Our study identified a stable model to explain the relationship between job satisfaction, BS and depressive symptoms among physicians working in the Peruvian healthcare system. Policymakers could use this model to assess areas for improvement, such as working conditions. Enhancing management may prevent BS and depressive symptoms among healthcare professionals.

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