Flow in Nurses

A Study of Its Relationship With Health and Burnout in a Hospital Work Context

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How does the experience of flow among nurses influences their health? This question is addressed on the basis of a model of flow, stress, burnout, and coping. The results indicate that promoting flow can be a way to enhance the health of ward nurses in a hospital work context. **KEY WORDS:** *burnout*, *coping*, *flow*, *health*, *occupational stress*, *ward nurses* *Holist Nurs Pract* 2017;31(5):303–314

INTRODUCTION

Nurses are a key and essential element in any health system. Patient welfare and the proper functioning of health care greatly depend on patients' physical and emotional state. The European Risk Observatory[1] states that nurses tend to report high levels of stress. Stress and burnout are prominent psychosocial occupational risks among health professionals.[2] Although the reported rates of burnout vary widely depending on the sample and the welfare function used,[3] approximately 20% of nurses show burnout, and this proportion rises to 70% in professionals with moderate symptoms of stress.[4,5] Stress and burnout negatively affect the performance of the health system as well as the physical and psychological well-being of health workers.[6,7] In a study by Malinauskiene and colleagues,[8] 60.4% of nurses rated their health negatively because of high job demands, low job control, low social support for life-threatening work events, low physical activity, overweight, obesity, mental distress, job dissatisfaction, and a weak sense of coherence. Nurses are at greater risk of musculoskeletal injuries and more prone to blood-borne pathogen infections than other health care workers (see the systematic review by Fronteira and Ferrinho[9]). Anxiety and depression are the psychological health problems most related to occupational stress and burnout in nurses.[10-12]

This scenario is quite pessimistic and it is a potential barrier to the development of the holistic aspect of nursing; because nurses' health, both mental and physical, is required to progress toward a deeper care of the whole person as its goal. In the context of the positive occupational health psychology framework,[13] some studies have identified personal resources to be important constructs for explaining how protective factors can moderate the effect of stress on health and thus have not only focused on vulnerability factors.[14] In this regard, to investigate these factors could, in turn, help improve the holistic view of care for people. Flow is a promising construct, introduced in 1975 by Csikszentmihalyi, that could provide more information about protective factors for nurses' health. Flow is described as an optimal psychological state that enables activities to be performed under ideal psychological conditions, therefore increasing satisfaction and performance.[15,16] The experience of flow, flow state, is distinguished from the dispositional tendency to experience flow, flow trait[16]; the current study is concerned with flow trait, and "flow" has been used to refer to this

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dispositional tendency. Some studies indicate that workers with higher levels of flow show more positive affect, higher job satisfaction, and a better sense of professional efficacy.[17,18] Flow is related to other positive psychological states such as happiness and relaxation.[19,20] Flow and engagement are correlated,[21] but it is not clear which serves as the antecedent and which serves as the consequent, with a reciprocal relationship between the 2 possible.[22] Whereas job engagement is considered a relatively stable experience that can increase the frequency of flow experiences, it could also be argued that prolonged or regular flow experiences may enhance the personal experience of being engaged in a job. In addition, flow appears to be positively related to health.[23] However, to our knowledge, no study has related flow to health in nurses, whenever there is interest in the concept.[24] Although flow and engagement are often understood to be inconsistent with burnout,[25] the mechanisms linking them have not been sufficiently studied (an exception is the work by Lavigne and colleagues).[26]

In applying the approach of Lazarus and Folkman[27] to the workplace, job stress occurs if a person considers job demands to exceed their resources to adapt to the job situation. Burnout involves an inadequate response to chronic emotional stress and includes the following main characteristics: physical and/or emotional exhaustion, cold and impersonal attitude in relationships with others, and sense of professional inadequacy for the tasks to be performed.[28] Burnout is a particular type of response to the stress generated by the professional-patient and professional-organization relationship, which appears if coping strategies fail.[29,30]

Coping resources and coping processes affect mental and physical health.[31] The coping strategies used by nurses are included among the personal variables related to burnout, which include those cognitive and behavioral efforts undertaken to control the demands that are assessed to surpass resources.[32] A popular classification of coping differentiates between approach and avoidance coping (see the meta-analysis by Littleton and colleagues).[33] Approach coping appears to have a positive effect on nurses' health,[14,34-36] and escape-avoidance coping appears to produce worse consequences for physical and mental health in nursing staff.[37-41]

Gil-Monte and colleagues[42] consider burnout to be a response to perceived work stress, if approach or avoidance coping strategies (especially escape-avoidance coping) used by professionals are not effective to reduce such perceived stress. This circumstance leads to poorer health. Specifically, data obtained by the authors in a sample of nurses showed that the dimension of burnout most closely associated with health problems is emotional exhaustion.[43]

Although the negative health effects of stress and burnout are clearly known, as mentioned earlier, it is not clear how stress and burnout interact with the "positive" strategies of approach coping and flow. The role of flow in coping is not well-defined; it is not clear whether flow acts as an antecedent or as an outcome of health or whether it is a mediator between burnout and health. This study tests a slightly modified Gil-Monte model to examine the relationships between the approach and avoidance variables in the health outcome of nurses in work contexts from a holistic perspective of health that includes physical and psychological health.[29,30,44]

Research questions, aim, and hypotheses

The aim of this study is to test the role of flow in relation to the health of ward nursing staff by seeking to answer the following questions. Can flow be integrated into a model of stress and burnout? If so, does flow act as an antecedent, a consequence, or a mediating variable of stress or burnout? Therefore, it is hypothesized that (*a*) flow improves health,[23] and (*b*) flow increases approach coping, based on Fredrickson's broaden-and-build theory of positive emotions, stating that positive affective experiences (as flow) have the ability of building personal resources (as approach coping).[45,46]

Specifically, these 2 hypotheses can be operationalized in an integrated model stating that

1. Avoidance coping positively influences occupational stress.
2. Occupational stress positively influences burnout.
3. Burnout negatively influences health.
4. Approach coping negatively influences burnout.
5. Flow positively influences health and approach coping.

To test these hypotheses, 3 models that differ in only the role of flow have been studied: flow as an antecedent of health and approach coping, flow as a consequence of health and approach coping, and flow as a mediating variable between burnout and health. The considered variables are flow, occupational stress, coping strategies, and physical and mental health. In addition, 3 latent variables are

contemplated: burnout (measured by emotional exhaustion, depersonalization, and personal accomplishment), approach coping (measured by confrontation, search for social support, planning, and positive reappraisal), and health (measured by physical health, anxiety, and depression).

METHODS

Design

A descriptive correlational design with latent variables was used.[47]

Participants and procedure

A convenience sample of registered nurses from the 2 largest public hospitals in the Alicante province in Spain was recruited. The sample comprised 282 ward nurses (35.87% response rate), including 41 men (15%) and 241 women (85%). The mean age was 36.49 years (standard deviation [SD] = 8.95; range, 21-62). The 78.01% had a regular partner, and the mean number of children by nurse was 0.88 (SD = 1.08; range, 0-5).

The mean years in the health profession was 14.75 (SD = 9.22; range, 0-38 years). The mean years in the current job was 7.75 (SD = 6.50; range, 0 to 30 years). The average hours spent at work per week was 37.97 (SD = 5.84; range, 7-80 hours). The average number of patients during daily professional care was 15.99 (SD = 12.53; range, 1 to 130 patients). Regarding the work shifts, 28.80% of the participants worked fixed shifts (morning or afternoon) and 70.20% of the participants worked rotating shifts (2 mornings, 2 evenings, 1 night, and 2 days of rest). In total, 12.30% of the participants had another job outside the hospital (overtime). Finally, 39.30% of the participants had a permanent contract.

Questionnaires were sent to a population of 786 ward nurses. The inclusion criterion for the study was that the participants were nurses working at inpatient units (ward nurses) in hospital general care. Undergraduate and postgraduate nursing students were excluded. Individual, nonstructured interviews were performed after the assessment to determine the causes of the nonresponse rate. More than 70% of the nurses interviewed complained about an excessive number of questionnaires being administered by institutions (unions, human resources unit, and universities).

Some calculations were made to ensure the sample's representativeness. The descriptive data and response rate were compared with those obtained by Grau-Alberola and colleagues[48] in a study about burnout in nurses in the same region (Valencia), and similar results were found. In addition, according to the criteria for burnout detection in the studies by Maslach and Jackson[49] and Schaufeli and Van Derendonck,[50] the burnout indices found in this sample (0.7% and 0%, respectively) were similar to those obtained by Grau-Alberola and colleagues[48] (1.89% and 0.94%), indicating that the sample can be considered to comprise anonymous, randomly selected respondents despite being a convenience sample.

The questionnaires were distributed in a random order to avoid any effect on the order of presentation. The nurses completed the questionnaires during spare time during their shifts, and they had 1 week to deliver the completed questionnaires. In all cases, the anonymity of individual results was ensured, and the participants were informed that they could request a customized report. After the study was completed, each hospital nursing director was provided with a general report.

Measures

Occupational stress

Occupational Stress Inventory for Health Professionals.[51] The inventory provides an overall index of stress in the hospital setting. The internal consistency ranges from 0.81 to 0.91, and the test-retest reliability is 0.78.

Burnout

Maslach Burnout Inventory (MBI).[49] Spanish translation and adaptation by Salanova and colleagues,[52] the MBI measures the frequency and intensity of burnout in 3 subscales: emotional exhaustion, depersonalization, and personal accomplishment. An overall score for burnout can be obtained from these 3 scales. This inventory has shown high levels of reliability (from 0.75 to 0.90) for the evaluation of the construct.[49,53,54]

Coping strategies

Ways of Coping Questionnaire (WCQ).[55] Spanish translation and adaptation by Sánchez-Cánovas,[56] the WCQ evaluates 8 ways of addressing stressful situations: confrontation, distancing, self-control, seeking social support, accepting responsibility,

escape avoidance, careful problem solving, and positive reappraisal. Confrontational coping includes direct actions to alter the situation. Distancing and self-controlling allow distance from and control of the person's feelings and actions. Seeking social support entails problem-related efforts to seek support, assistance, or information. Accepting responsibility means recognizing one's own role in the problem. Escape avoidance focuses on avoiding emotions and involves wishful thinking. Careful problem solving involves the generation of ideas and alternative action plans. Finally, positive reappraisal describes efforts to create positive meaning. Internal consistency was demonstrated by the following α coefficients in this adaptation of each scale: confrontation $\alpha = 0.60$, distancing $\alpha = 0.61$, self-control $\alpha = 0.62$, seeking social support $\alpha = 0.74$, accepting responsibility $\alpha = 0.71$, escape avoidance $\alpha = 0.61$, careful problem solving $\alpha = 0.75$, and positive reappraisal $\alpha = 0.71$.

Anxiety and depression

Symptom Checklist-90 Revised Questionnaire (SCL-90-R).[57] Spanish translation and adaptation by González de Rivera and colleagues,[58] the SCL-90-R was developed to assess the current level of psychological distress experienced by a person in 9 dimensions: somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, phobic anxiety, hostility, paranoid ideation, and psychoticism. The questionnaire also provides 3 global indices of distress. The reliability of the 9 dimensions reaches values close to or above 0.70 in most studies of test-retest reliability, and the questionnaire's internal consistency is approximately 0.80.[59,60] For the purpose of this study, only the anxiety and depression scales were applied, as these are the mental symptoms most related to burnout according to the reviewed literature.

Physical health

36-*Item Short Form Health Survey version 2 (SF-36v2).*[61] The SF-36v2 offers 2 summary scores, physical health and mental health, providing a profile of the subject's health status. High scores indicate good health. The reliability of the physical and mental health factors exceeds values of 0.90.[62] Published studies on the Spanish version of the SF-36 provide sufficient evidence of its reliability, validity, and sensitivity.[63] In the present study, only the physical health scale was applied, as mental health (anxiety and depression) was assessed by the SCL-90-R (this questionnaire is more specific to the mental health dimensions).

Flow

Dispositional Flow Scale-2.[64] There are various concepts and measurements of flow[65]; this study used Jackson and Eklund's[16] componential model with a global score. This test evaluates flow trait and flow state, which are the theoretical basis of Csikszentmihalyi's theory of the optimal positive experience.[66] The test consists of 36 items and 9 dimensions and calculates a total score of flow. With the Spanish adaptation of the test, Cronbach α values of more than 0.70 for the test and more than 0.80 for the scales have been obtained.[67]

Ethical considerations

The ethics committees of the hospitals approved this study. A cover letter and an outline of the project were first sent to the hospital directors, and later an interview was arranged with these directors. The participants were volunteers, and each participant signed an informed consent form.

Data analysis

Descriptive statistics were obtained using the R Statistical Package.[68] For the analysis of model fitting, a structural equation modeling (SEM) approach by the lavaan package in R was used.[69]

RESULTS

Preliminary analysis

Expecting the coping scales to be correlated, an exploratory promax-rotated factor analysis, maximum likelihood estimation method, was performed to search for a second-order structure in the WCQ using the stats and graphics packages in R.[68] Two factors were found (Bartlett's K-squared = 45.85(7), $P <$ .000) on the basis of the eigenvalues values greater than 1. Three scales were excluded from the first factor (self-control, distancing, and acceptance of responsibility). In this analysis, a new confirmatory factor analysis was conducted to test this first factor using the lavaan package in R.[69] The model fit well ($\chi^2 = 1.385(2)$, $P = .500$; comparative fit index (CFI) = 1.000, root mean square error of aproximation (RMSEA) = 0.000, 90% confidence interval: 0.000-0.106; standardized root mean square

residual (SRMR) = 0.011). The first factor included confrontation, search for social support, planning, and positive reappraisal coping strategies. The second factor included only 1 coping strategy: escape avoidance.

Structural equation model

The results were reported following the recommendations given in the classical study by Raykov and colleagues.[70] On the basis of the raw data, correlations (Table 1) were converted to a covariance matrix to be used with the mentioned software. Cases with missing values (14) and outliers (3), using Mahalanobis distance, were deleted for analysis, so there was a final sample of 282 subjects from the initial 299.

Assumptions: multivariate and univariate normality

SEM is based on the assumption of normality of scores. Mardia's multivariate normality (MVN) test and Kolmogorov-Smirnov's univariate normality tests were calculated using the MVN package in R and showed nonnormal data distribution.[7-73] Therefore, a Satorra-Bentler scale (mean adjusted) test statistic was used, and standard errors were computed using standard bootstrapping.

Initial models, model fit, and fit criteria

The fits of the following models were evaluated:

a. *Flow as an antecedent*. Escape-avoidance coping influences occupational stress, burnout (described by emotional exhaustion, depersonalization, and personal accomplishment), and health (composed of the SF-36 physical health scale and the anxiety and depression scales from the SCL-90-R questionnaire). Occupational stress influences burnout. Approach coping (described by confrontation, search for social support, planning, and positive reappraisal coping strategies) negatively influences burnout. Burnout negatively influences health. Flow influences health and approach coping.
b. *Flow as a consequence*. Same as model (a), but health and approach coping influence flow.
c. *Flow as a mediating variable*. Same model as before, but flow mediates the relationship between burnout and health and is not related to any other construct.

Models 1 and 2 differ in only the directionality of the arrows between flow and personal accomplishment, approach coping and health. The initial models, according to modification indexes and the theoretical framework, were respecified by adding paths from escape-avoidance coping to burnout and health and between flow and personal accomplishment. Unlike Gil-Monte's model, escape-avoidance coping was set at the beginning of the process of influence.[29,30] Table 2 shows fit information for the 3 fitted models, including indicators from latent variables. A fit-criteria assessment was conducted according to the Hu and Bentler study.[74] The goodness-of-fit statistical test assesses the magnitude of unexplained variance; a ratio of $\chi^2/gl<2$ suggests an acceptable fit. An RMSEA size below 0.06 suggests a well-fitting model. A CFI above 0.95 indicates a good fit. An SRMR of less than 0.09 also indicates a good fit. The χ^2 statistic provides a conventional measure of model fit. However, because of its sensitivity to sample size, 2 additional fit indices were used to supplement the χ^2 statistic. The choice of these 2 indices was based on Hu and Bentler's[75] recommendation of a 2-index presentation strategy, which was found to provide an optimal balance between type I and type II error rates. Considering all of the indicators of model fit, it can be concluded that the model provides a good representation of the data.

Figures 1, 2, and 3 represent the tested structural and measurement models, with exogenous and endogenous variables. The observed variables are presented inside a box, and the latent variables are presented within a circle. The arrows indicate the directionality of the relationships among the variables. The models include 3 latent variables and 13 observed variables. All variables were measured on an interval rating scale.

The first model (flow as antecedent) shows all parameter estimates to be significant and presents a good fit. The second model shows a slightly worse fit, as one indicator of the latent variable and the prediction of flow by health were not significant. The third model does not fit, and some relationships were not significant. On the basis of the data obtained, it can be concluded that the best-fitted model is the "flow as antecedent" model.

The "flow as antecedent" model advocates that (*a*) burnout comprises, as demonstrated in the original scale, emotional exhaustion, depersonalization, and personal accomplishment (−); (*b*) approach coping can be understood as a construct that comprises

TABLE 1. Pearson Correlation Coefficients and Descriptive Statistics for Measured Variables in the Studied Models

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Avoidance	–												
2. Occupational stress	0.22[a]	–											
3. Emotional exhaustion	0.14[b]	0.32[a]	–										
4. Depersonalization	0.22[a]	0.24[a]	0.48[a]	–									
5. Personal accomplishment	−0.09	−0.11	−0.21[a]	−0.30[a]	–								
6. Confrontation	0.29[a]	0.07	0.01	0.08	0.13[b]	–							
7. Search for social support	0.26[a]	0.07	0.00	−0.09	0.18[a]	0.44[a]	–						
8. Planning	0.10	0.01	−0.01	−0.08	0.16[a]	0.43[a]	0.47[a]	–					
9. Positive reappraisal	0.21[a]	0.07	−0.05	−0.11	0.14[b]	0.45[a]	0.56[a]	0.56[a]	–				
10. Physical health	−0.11	−0.09	−0.16[a]	−0.01	0.14[b]	−0.01	0.01	−0.01	−0.08	–			
11. Anxiety	0.39[a]	0.28[a]	0.44[a]	0.45[a]	−0.30[a]	0.09	0.03	−0.01	0.03	−0.15[b]	–		
12. Depression	0.37[a]	0.34[a]	0.47[a]	0.44[a]	−0.32[a]	0.00	0.02	−0.11	−0.07	−0.18[a]	0.77[a]	–	
13. Flow	−0.01	−0.04	−0.05	−0.08	0.32[a]	0.24[a]	0.20[a]	0.29[a]	0.27[a]	0.04	−0.21[a]	−0.25[a]	–
Mean	5.47	25.42	13.13	9.20	28.94	8.0	9.36	9.72	9.20	49.49	6.65	10.61	93.08
SD	3.04	6.81	6.71	6.16	6.62	2.61	2.89	2.78	3.24	7.26	5.77	8.38	12.30
Skewness	1.01	−0.80	0.41	0.98	−1.02	0.45	0.22	0.05	0.28	−1.11	1.97	1.40	−0.04
Kurtosis	1.45	1.05	−0.46	0.47	0.49	0.72	0.04	0.14	−0.07	1.59	5.56	2.16	2.21

Abbreviation: SD, standard deviation.
[a] $P < .01$; [b] $P < .05$.

TABLE 2. Fitted Models With Test Statistics and Path Coefficients in Structural and Measurement Models

Model and Fit	Latent Variables	Indicators	*z*	Predictor	Dependent Variable	*B*	SE	*z*	Effect Sizes
Flow as antecedent	BUR	EE	Fixed	AV	OS	0.49	0.13	3.90[a]	0.05
$\chi^2 = 82.90$ (58),		DP	7.12[a]	AV	BUR	0.33	0.11	3.03[a]	0.25
$P = .018$		PAC	−4.50[a]	AV	H	−0.12	0.04	−2.84[a]	0.68
CFI = 0.965	AC	SSS	Fixed	OS	BUR	0.26	0.05	4.96[a]	
RMSEA = 0.039		CON	7.23[a]	BUR	H	−0.20	0.06	−3.56[a]	
90% CI (0.019-0.056)		PL	9.57[a]	AC	BUR	−0.40	0.19	−2.18[b]	
SRMR = 0.067		PRA	11.65[a]	FL	PAC	0.16	0.03	4.73[a]	0.22
	H	PH	Fixed	FL	H	0.02	0.01	3.15[a]	
		ANX	−2.79[a]	FL	AC	0.06	0.01	4.67[a]	0.13
		DP	−2.87[a]						
Flow as outcome	BUR	EE	Fixed	AV	OS	0.49	0.13	3.72[a]	0.05
$\chi^2 = 92.546$ (59),		DP	7.62[a]	AV	BUR	0.34	0.11	3.19[a]	0.27
$P = .003$		PAC	−4.31[a]	AV	H	−0.11	0.04	−2.82[a]	0.67
CFI = 0.953	AC	SSS		OS	BUR	0.25	0.05	4.90[a]	
RMSEA = 0.045		CON	7.12[a]	BUR	H	−0.22	0.07	−3.37[a]	
90% CI (0.028-0.061)		PL	9.35[c]	AC	BUR	−0.50	0.21	−2.46[b]	
SRMR = 0.071		PRA	11.42[a]	PAC	FL	0.38	0.11	3.48[a]	0.21
	H	PH	Fixed	H	FL	1.43	0.90	1.58	
		ANX	−2.46[b]	AC	FL	1.86	0.50	3.74[a]	
		DP	−0.07						
Flow as mediator variable	BUR	EE	Fixed	AV	OS	0.49	0.13	3.83[a]	
$\chi^2 = 209.187$ (61),		DP	5.26[a]	AV	BUR	0.35	0.10	3.37[a]	
$P = .000$		PAC	−2.06[b]	AV	H	−0.19	0.06	−3.25[a]	
CFI = 0.792	AC	SSS		OS	BUR	0.22	0.06	3.36[a]	
RMSEA = 0.093		CON	7.24[a]	BUR	H	−0.61	0.66	−0.92	
90% CI (0.080-0.105)		PL	9.36[a]	FL	H	0.03	0.01	2.74[a]	
SRMR = 0.114		PRA	10.99[a]						
	H	PH	Fixed						
		ANX	−0.90						
		DP	−1.30						

Abbreviations: AC, approach coping; ANX, anxiety; AV, avoidance; BUR, burnout; CFI, comparative fit index; CI, confidence interval; CON, confrontation; DP, depersonalization; DP, depression; EE, emotional exhaustion; FL, flow; H, health; OS, occupational stress; PAC, personal accomplishment; PH, physical health; PL, planning; PRA, positive reappraisal; RMSEA, root mean square error of aproximation; SE, standard error; SRMR, standardized root mean square residual; SSS, search for social support.
[a] $P < .01$; [b] $P < .05$; [c] $P < .001$.

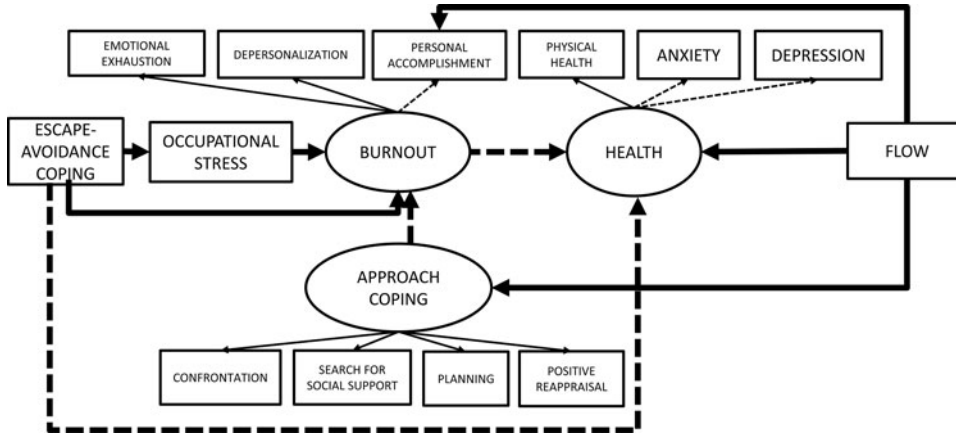

FIGURE 1. Structure and measurement of the "flow as antecedent" model. Dotted lines indicate negative values. Thinner lines indicate latent variable indicators. Error variables have been omitted for clarity. All parameters were significant.

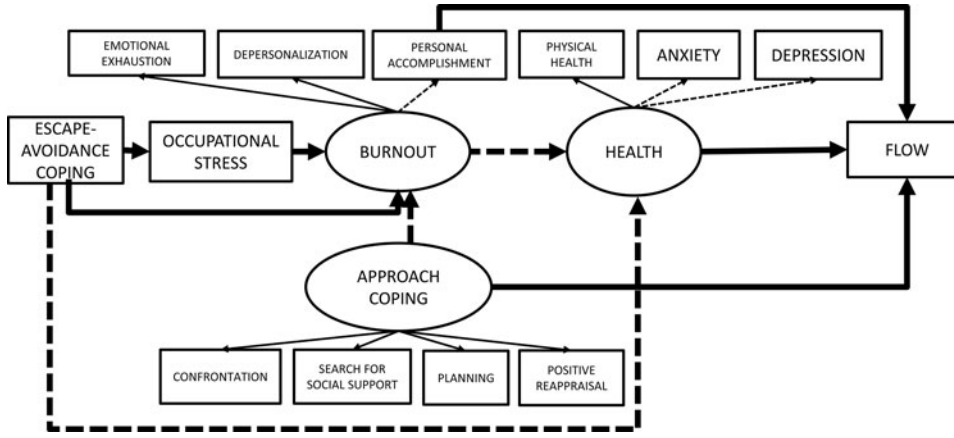

FIGURE 2. Structure and measurement of the "flow as consequence" model. Dotted lines indicate negative values. Thinner lines indicate latent variable indicators. Error variables have been omitted for clarity. All parameters were significant.

confrontation, search for social support, planning, and positive reappraisal coping strategies; (*c*) health in nurses can be understood as a construct that comprises physical health, anxiety (−), and depression (−). Burnout is likely to be higher if an escape-avoidance coping style is present, which directly and indirectly influences burnout through perceived occupational stress; however, burnout is diminished by the influence of the approach coping; (*d*) burnout has a negative influence on nurses' health, and escape-avoidance coping also directly affects nurses' health; and (*e*) flow positively influences health, personal accomplishment, and approach coping. R-squared indices vary from 0.047 (low size) to 0.675 (high size).[76] All relationships were significant at $P < .01$, except one, which was significant at $P < .05$.

DISCUSSION

The results of this study emphasize the importance of investing in stress prevention and health promotion among health personnel. A nursing holistic approach that considers not only body care but also psychological, social, and spiritual healing needs self-confidence and engaged nurses. Therefore, stress management programs at work and training for approach coping strategies and problem solving would decisively contribute to improve nurses' health globally as well as their levels of optimal experience and job satisfaction.

Many studies in the past 20 years have discussed the risk factors of nurses' health, but it is not clear what aspects positively influence nurses' health, modifying and/or mediating the influence of the vulnerability aspects classically addressed. The aim of this study was to understand how flow is related to occupational stress and burnout and how these relationships affect health outcomes. The answers to the research questions are that flow can be integrated into a general model of occupational stress and burnout and plays a role as an antecedent variable. Specifically, the fifth operative hypothesis was confirmed, in which flow improves health and approach coping.

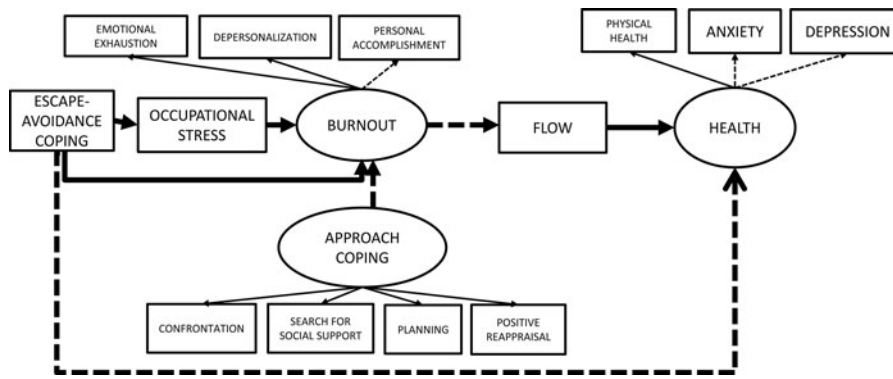

FIGURE 3. Structure and measurement of the "flow as mediator" model. Dotted lines indicate negative values. Thinner lines indicate latent variable indicators. Error variables have been omitted for clarity. All parameters were significant.

The measurement model assumes Maslach's components of burnout (emotional exhaustion, depersonalization, and personal accomplishment), capturing only what is already established in the burnout literature.[77] Approach coping is characterized by confrontation, search for social support, planning, and positive reappraisal coping strategies. This characterization is not new, but it is important to note that the common feature of these strategies is the active orientation toward the problem regardless of the emotions that are provoked. For example, confrontation and positive reappraisal have a different emotional background but coincide in their active orientation to the problem. Health is described by measures of physical health, anxiety, and depression. In the literature, it is common to find that occupational stress or emotional exhaustion affects mental health more than physical health. Mental health is the most important indicator of health according to other studies.[7,37,78] Avoidance coping is described by the WCQ's escape-avoidance coping strategy. In fact, escape avoidance strongly influences occupational stress and burnout. Avoidance usually appears as the main maladaptative coping strategy and appears to produce worse consequences for physical and mental health in nursing staff.[38,39,79] Distancing, self-control, and acceptance of responsibility are associated with escape avoidance and the refusal to seek active coping to demands. A possible explanation to why these passive strategies are not as bad as avoidance could be that all of these strategies might eventually facilitate an emotion-centered coping in the context of uncontrollable events, as is the case for work demands.[80]

The first hypothesis was that escape-avoidance coping positively influences occupational stress and is consistent with Gil-Monte's model; this hypothesis was confirmed. Moreover, escape avoidance also directly influences burnout. Escape-avoidance coping is often described as a main component of "negative coping" (see the meta-analysis by Littleton and colleagues).[33] The second hypothesis stated that occupational stress positively influences burnout; this hypothesis was confirmed. The third hypothesis stated that burnout negatively influences health, which has been confirmed by previous studies.[81-83] Olmedo and colleagues,[84] using the same instruments to assess psychopathology (SCL-90-R) and burnout (MBI) as those used in the current study, observed a positive relationship between burnout and the presence of psychopathological symptoms in nursing staff. The fourth hypothesis was that approach coping negatively influences burnout, which is supported by the findings of Shinbara.[36] This relationship allows the design of specific burnout prevention programs that promote approach coping. Finally, the fifth hypothesis was that flow positively influences health and approach coping. This hypothesis was confirmed; moreover, flow also indirectly influences burnout because personal accomplishment is enhanced, which is a positive component of burnout. This relationship, to our knowledge, is the main and most novel contribution of this study because it betters our understanding of the process of burnout not only as a chain of negative reactions but as the result of the imbalance between resources and demands.[25]

Therefore, what can we do to promote nurses' health in hospital settings? Coping interventions can be directed toward coping resources and coping processes or toward changing the environment. In addition, approach-oriented coping strategies have been related to positive psychological and physical health outcomes in stressful circumstances.[31] Promoting approach coping instead of avoidance coping is also a good policy. In this regard, we propose to provide nursing personnel training strategies that enable active coping in response to the problem, leading to stressful situation outcomes or attempts to change the situation and prevent further personal suffering, especially emotional harm. The restructuring of dysfunctional cognitions achieved through various means will be part of these strategies, which in turn would enable other behavioral strategies, such as searching for information or assistance and reporting. The search and retrieval of information would favor a healthier adaptation and an increase in the perception of control and the expectation of self-efficacy.[85,86] However, other programs that facilitate active coping skills, such as mental disconnection, professional defensive practice, or spirituality development, should be considered.

Moreover, in considering flow to be an antecedent of health, flow also has its own antecedents. Acting on these antecedents would be a means to producing flow and therefore improving health and increasing approach coping strategies. Some authors claim that the antecedents of flow are internal states and perceptions that precede flow states; these antecedents (eg, clarity of goals, unambiguous feedback, and perceptions of challenge and skill in performing an activity) are often included within the components of flow.[65] Promoting these antecedents of flow could

increase nurses' flow and therefore their health. To promote flow among hospital workers, the work environment has to present a balanced mix of challenges and opportunities to use skills at high levels; constructing such an environment is primarily a task of the human resources and management department. Furthermore, staff must properly perceive the efficacy of their own abilities and must be confident that they have the necessary skills to successfully overcome the demands of a task on the basis of their choice and desire.[87] The development of training programs that encourage the promotion of general positive affect, weekly positive affect, psychological well-being, self-efficacy, and intrinsic interest also contributes to the development of flow. The specificity in organizational policies and promoting aspects in training programs for workers described earlier are fundamental to the possible development of flow among workers. Adequate leadership is a strong predictor of nurses' work engagement, so nursing administrators may be key players in the promotion of work flow in nurses.[88,89]

The results of this study emphasize the importance of investing in stress prevention and health promotion for health personnel. A holistic approach that considers not only working conditions but also personal factors is essential. Regarding the latter, stress management programs at work and training for approach coping strategies and problem solving would decisively contribute to improve nurses' health globally as well as their levels of optimal experience and job satisfaction.

Limitations of the study and future research directions

SEM with cross-sectional designs does not allow for the determination of causation, so a longitudinal study is required to test causation. Ecological momentary assessment could help us provide a more precise measurement of some of the variables studied here, and such an assessment is currently being conducted. Another factor that can influence these results is the differences found in the management of various types of wards.

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