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Article

Reasons for doing physical exercise mediating in the role of self-esteem in uncontrolled eating in nursing personnel

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Abstract: Background: Since the beginning of the 20th century, the importance of creating healthy work environments and promoting the health of workers in the healthcare sector to create Healthy and Resilient Organizations has been emphasized. In this context, self-esteem is an essential construct which influences health and healthy life styles, and therefore, the general wellbeing of nurses. The objective of this study was to analyze the mediating role of reasons for exercising in the effect that self-esteem has on uncontrolled eating by nursing professionals. Methods: The sample was made up of 1094 nurses who were administered the Rosenberg General Self-esteem Scale, the Goal Content for Exercise Questionnaire and the Three-Factor Eating Questionnaire-R18. Results: Bivariate correlation analysis and multiple mediation analysis showed that self-esteem has direct and indirect effects on uncontrolled eating. More so, self-esteem predicts doing physical exercise to improve one's image, recognition and social affiliation, although the effects on uncontrolled eating were only significant through image. Conclusions: The results have important practical implications in the framework of Positive Occupational Health Psychology (POHP) as it emphasizes self-esteem, physical exercise and eating as essential aspects of the health and wellbeing of employees in the healthcare sector, highlighting the importance of creating organizations committed to promoting the psychosocial health of their workers.

Keywords: eating; exercise; self-esteem; nursing

1. Introduction

From the beginning of the 20th century, with the rise of disciplines such as Occupational Health Psychology (OHP) and Positive Organizational Psychology (POP), the importance of creating healthy work environments and promoting organizations committed to the development and advancement of the psychosocial health of their workers has been emphasized (National Institute of Occupational Safety and Health, NIOSH) [1,2]

In this context, the HERO model is one of the most outstanding contributions of the Spanish WANT research team in Positive Occupational Health Psychology (POHP). The HERO model is a theoretical framework of risk evaluation directed at intervention in Healthy & Resilient Organizations, HERO) [3]. HERO refers to "Those organizations which make systematic, planned and proactive efforts to improve the health of their employees and the results of the organization" through healthy organizational practices [2]. From this perspective, a Healthy and Resilient Organization is characterized by developing practices for adequately managing work, promoting positive organizational results and being able to depend on having healthy employees [4]. Along this line, the

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model assumes that a healthy organization is not limited to understanding health in the workplace, but also takes into consideration the daily habits of workers' lives [5].

At the present time, study of self-esteem is one of the research areas having awakened the most academic and professional interest due to its close relationship with physical and psychological wellbeing [6], social adjustment [7] and quality of life [8]. High levels of self-esteem are also related to optimum academic performance [9], higher job performance and commitment [10,11], and it is an important protection factor against burnout in healthcare professionals [12]. On the contrary, low levels of self-esteem have been associated with depressive symptoms [13], anxiety [14], suicidal ideation [15], eating disorders [16] and violent behavior [17]. In brief, our overall self-assessment determines the way we are, the way we perceive the world and relate with others, and therefore, influences our success in important facets of life [18, 19]. According to the World Health Organization [20], nurses represent the largest group of healthcare professionals, but just because they know the importance of activities and behaviors that promote health, this does not mean they have healthier living habits [21]. So according to the HERO model, in the healthcare context, a healthy healthcare organization would be one that creates positive work climates contributing to greater productivity, and makes an effort to maintain and improve the physical and psychological health of its employees. Promoting a healthy life style among employees is important because of its positive effect on their wellbeing and its consequences for the organization such that the better the physical and mental health of the healthcare professionals, the higher-quality the treatment offered patients and their families will be [5,1]. Therefore, in recent years, there has been greater interest in studying eating and physical activity styles to prevent health-related problems (e.g., deficient clinical care, job absenteeism) [22,6].

It has been consistently demonstrated that physical exercise has considerable physical, psychological and social benefits [23-25]. However, the objectives that people pursue when they do some type of activity have different cognitive, affective and/or behavioral consequences, and these different goals act as regulatory processes on their behavior which are essential to explain their starting and adhering to such activity [26]. In this sense, the Self-Determination Theory [27] provides a theoretical framework for studying the effects of the diverse motivations (intrinsic vs extrinsic) for becoming involved in a given physical activity. Intrinsic goals are directed at the search for affiliation, improved health or personal growth [28]. These motivations are related to satisfying basic psychological needs (Autonomy, Competence and Relatedness) [27] and function as a protection factor against anxiety and depression, contribute to greater subjective wellbeing and body satisfaction and are associated with autonomous regulation of behavior [29]. On the contrary, extrinsic goals are directed rather at the desire to improve physical appearance or be popular and socially recognized. Unlike intrinsic goals, these respond to feelings of guilt, shame and external pressure from the environment more than personal benefit itself, leading to interpersonal comparisons which are a source of stress [28]. Therefore, extrinsic goals are not essential to wellbeing nor to persona development, since they are subject to social approval [30,29]. We might suggest that the level of self-esteem is determinant to goals attempted to be reached through physical exercise. Thus, individuals with a positive view of themselves will seek stronger psychosocial development through activity and less satisfaction of external demands (e.g., sociocultural) [31].

In another vein, regarding eating style, authors such as [32] have shown that the psychological mechanisms underlying unhealthy eating behavior must be known to develop prevention programs and promote health. Uncontrolled eating consists of excessive consumption of food in response to external signals from the environment, characterized by subjective increase in appetite and absence of self-control of eating behavior [33,34]. It negatively affects wellbeing and has been related with such health problems as obesity [35,36]. In this line, it has been demonstrated that ineffective emotional regulation strategies have a key role in starting and maintaining such eating behavior [37]. More so, people with an uncontrolled eating style show a tendency toward rumination and try to suppress undesirable moods [38]. Thus, uncontrolled eating is a mechanism by which the individual

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achieves a certain short-term emotional relief. This phenomenon may be interpreted more as the result of the individual's effort to deviate attention from adverse emotions more than the satisfaction of eating in itself [39,38]. It has been specifically emphasized that negative emotions (sadness, anxiety, depressive symptoms), due to low self-esteem or other stressful factors, are an antecedent of uncontrolled eating [39]. It has also been found that dissatisfaction with body image is linked to unhealthy eating habits and even predicts development of eating disorders [40,41]

Because of the important implications that self-esteem, motivation for physical exercise and eating behavior have for general wellbeing, our objective is to analyze the mediating role of the reasons for doing exercise in the effect that self-esteem has on uncontrolled eating in nursing professionals.

2. Materials and Methods

Participants

The original sample was 1125 nurses in Andalusia (Spain). After discarding all incomplete questionnaires or with random answers (n=31), the final study sample was 1094 nurses aged 22 to 57, with a mean age of 32.30 years (SD=6.70). Of the total sample, 14.9% (n=163) were men and 85.1% (n=931) were women, with mean ages of 32.47 years (SD=6.45) and 32.27 years (SD=6.74), respectively.

Instruments

Rosenberg Self-Esteem Scale [42]. Developed for the evaluation of self-esteem in adolescents, it is made up of 10 items with contents focused on feelings of self-respect and self-acceptance. Answers are given on a four-point Likert-type response scale (from 1=Strongly agree to 4=Strongly disagree). Other studies have shown its adequate psychometric characteristics [43,31]. In this study, internal consistency was α= .82.

Goal Content for Exercise Questionnaire (GCEQ) [28]. This scale is made up of 20 items grouped in five factors: Health management (e.g. "To improve my overall health"), Image (e.g., "To improve my appearance"), Social recognition (e.g., ("To be socially respected by others"), Social affiliation (e.g., "To develop close friendships"), and Skill development ("To learn and exercise new techniques"). Answers are rated on a seven-point Likert-type scale (from 1=not at all important to 7=extremely important), where the subjects must rate to what extent the goals presented in the items are important to them while exercising. Internal consistency of the factors on the scale were calculated with the Cronbach's alpha, finding .88 for Affiliation, .81 for Image, .87 for Health Management, .90 for Social recognition and .87 for Skill development. In previous studies, with a sample of adult women, the authors found the alpha for factors varied from .72 to .85 [30].

Three-Factor Eating Questionnaire-R18. This is a brief version of the original 51-item TFEQ [44], translated and adapted to Spanish (TFEQ-SP) by [45]. In this study, the adaptation to a nursing population by [46] was used. The question consists of 18 items rated on a four-point response scale (definitely true: 1, mostly true: 2, mostly false: 3, and definitely false: 4). It evaluates three dimensions of eating behavior: (a) Uncontrolled eating (tendency to eat more than usual due to loss of control on eating with a subjective feeling of hunger); (b) Emotional eating (inability to resist emotional signals, eating in response to negative emotions); and, (c) Cognitive restraint (Conscious restriction of eating directed at controlling body weight and/or promoting weight loss). The TFEQ-R18 has adequate reliability coefficients for the three subscales (varying from .75 to .87) [45], and also adequate in a nursing population (.85 to .90) [46]. In this study, reliability indices were .89 on Uncontrolled eating, .84 on Emotional eating and .74 on Cognitive restraint.

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Procedure

Before data were collected, participants were guaranteed compliance with the standards of information, confidentiality and ethics in data processing. The study was positively evaluated by the University of Almería Bioethics Committee. The questionnaires were implemented on a Web platform which enabled them to be filled out by participants online. To control random or incongruent answers, a series of control questions were included to detect them and any such cases were discarded from the study sample.

Data analysis

First, bivariate correlation tests were done to check the relationships between the variables to be included in the causal analysis. The descriptive statistics for these variables were also found.

The macro by [47] for SPSS was used to estimate the mediation model, in this case, for multiple mediation effects [48]. This resource enabled different regression models to be computed to find information on indirect effects, avoiding the limitations of the classical test by [49]. For this, bootstrapping (10000 bootstrap samples) was used, making it possible to estimate at 95% confidence intervals and determine the multiple mediating effect of the mediator variables. In this study, a multiple mediation analysis was carried out with three mediator variables forming a causal chain.

3. Results

3.1. Descriptive and correlation analyses

Table 1 shows the descriptive and correlation statistics for variables: Global self-esteem, reasons for doing physical exercise and uncontrolled eating.

Table 1. Descriptive and correlation statistics of self-esteem, physical exercise and uncontrolled eating variables (N=1384)

	M	*SD*	1	2	3	4	5	6
1. Self-esteem	32.43	4.52	–					
2. Social affiliation	13.92	5.64	-.01	–				
3. Image	17.83	4.90	-.06*	.46***	–			
4. Health management	21.74	4.45	.16***	.38***	.51***	–		
5. Social recognition	10.87	5.38	-.13***	.63***	.56***	.15***	–	
6. Skill development	17.88	5.30	.09***	.58***	.49***	.68***	.39***	–
7. Uncontrolled eating	17.37	5.80	-.20***	.05*	.18***	-.00	.13***	.03

*p<.05; ***p<.001

The data in table confirm the existence of a negative correlation (r=-.20, p<.001) between the predictor variable (self-esteem) and uncontrolled eating, as the dependent variable. Of the variables considered potential mediators (reasons for doing physical exercise), those with positive correlations with the dependent variable are image (r=.18, p<.001), social recognition (r=.13, p<.001) and social affiliation (r=.05, p<.05). These are the variables which were therefore included in the model as mediators.

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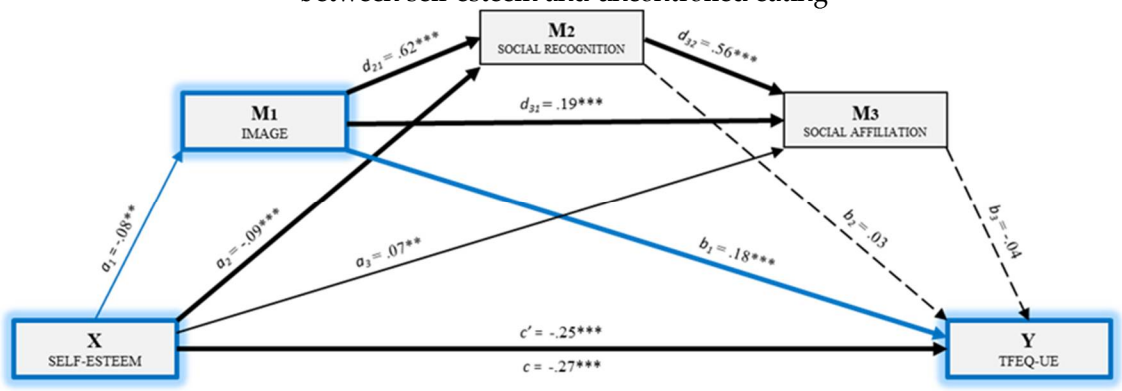
3.2. Multiple mediation model for estimating self-esteem as a predictor and mediation effect paths of reasons for physical exercise on uncontrolled eating

The mediation analysis was carried out based on the following mediation hypothesis: Self-esteem level has repercussions on performance of physical exercise motivated by image, and this in turn has a facilitating effect on uncontrolled eating. Social recognition and affiliation are reasons for exercising related to self-esteem, but they do not have any indirect effects on uncontrolled eating by this path. To compute Mediation 1, self-esteem was taken as the independent variable, and Image, Social recognition and Social affiliation as the mediator variables (M_1: IM, M_2: S-RE, and M_3: S-AF). Figure 1 shows the multiple mediation model of uncontrolled eating, including the direct, indirect and total effects.

Figure 1. Multiple mediation model of reasons for doing physical exercise in the relationship between self-esteem and uncontrolled eating



First, a statistically significant effect [B= -.08, p<.01] of Self-esteem (X) on image (M_1) is observed. The second regression analysis, took Mediator 2 as the result variable and included self-esteem (X) and image (M1) in the equation. There was a significant effect of image [B=.62, p<.001] on social recognition (M_2) and self-esteem [B=-.09, p<.001]. With the third regression analysis, taking the result of social affiliation (M_3) as the variable, the effect of the independent variable and of the other two mediators was estimated. Significant effects were observed in all cases: self-esteem [B=.07, p<.01], image [B=.19, p<.001], and social recognition [B=.56, p<.001]. Moreover, of the three mediators, only image [B=.18, p<.001], showed significant effects on uncontrolled eating (Y). The direct effect of self-esteem on uncontrolled eating (Y) was significant [B= -.25, p<.001], and the total effect of model B= -.27, p<.001.

Table 2. Direct, total and indirect effects

Self-esteem and Uncontrolled Eating	B	SE	t	95% CI
Direct Effect Self-esteem → TFEQ-UE	-.251***	.038	-6.598	(-.326, -.177)
Total Effect Self-esteem → TFEQ-UE	-.271***	.038	-7.119	(-.346, -.196)
Ind 1: Self-esteem → IM → TFEQ-UE	-.015	.007		(-.032, -.004)
Ind 2: Self-esteem → IM → S-RE → TFEQ-UE	-.001	.002		(-.009, .002)
Ind 3: Self-esteem → IM → S-AF → TFEQ-UE	.000	.000		(-.000, .003)
Ind 4: Self-esteem → IM → S-RE → S-AF → TFEQ-UE	.001	.001		(-.000, .005)
Ind 5: Self-esteem → S-RE → TFEQ-UE	-.003	.005		(-.015, .005)
Ind 6: Self-esteem → S-RE → S-AF → TFEQ-UE	.002	.002		(-.001, .009)
Ind 7: Self-esteem → S-AF → TFEQ-UE	-.003	.003		(-.014, .001)

Note: Ind: indirect effect, SE = Standard Error, CI = Confidence interval, B = non-standardized regression coefficient; **p < .01; ***p < .001. TFEQ-UE (Y) = Uncontrolled Eating; IM (M_1) = Image; S-RE (M_2) = Social Recognition; S-AF (M_3) = Social Affiliation.

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Finally, the analysis of the indirect effects was carried out with bootstrapping, which found data supporting a significant level for Path 1 [ind1: X→M1→Y; B= -.01, SE=.007, 95% CI (-.032, -.004)]. (See Table 2).

4. Discussion

Self-esteem is one of the personal constructs most studied in the scope of organization, because of its close relationship to wellbeing and quality of life. Empirical research has been particularly interested in its study in nursing professionals, as a group especially vulnerable to burnout due to the characteristics of the work setting where they perform their functions [12,8,6]. Self-esteem is also involved in adopting healthy living habits, such as an adequate eating style and doing physical exercise, which prevent the appearance of health-related problems that can negatively affect the service quality offered and increase worker absenteeism [5,22]. Our results have shown that self-esteem has a direct effect on uncontrolled eating [B= -.25, p<.001], suggesting that the negative affect characteristic of individuals with low levels of self-esteem facilitates an eating style which functions as an ineffective emotional regulation mechanism [39,38].

Furthermore, the data show that the level of self-esteem is determinant to the goals which individuals attempt to reach through physical exercise, that is, individuals with a positive view of themselves tend to seek greater psychosocial development through social affiliation [B=.07, p<.01]. According to the Self-Determination Theory (SDT) [27], social affiliation is an intrinsic goal associated with satisfying basic psychological needs. It positively affects the subjective wellbeing of individuals and acts as a protection factor against anxiety and depression [29]. Therefore, nursing professionals intrinsically motivated to do physical exercise show more adherence to this activity and have healthier life styles. It was also found that nursing professionals with high levels of self-esteem are usually less motivated by extrinsic goals directed at physical appearance [B= -.08, p<.01] and achieving more social recognition [B=-.09, p<.001] by doing physical exercise. These results support the idea that a positive overall self-evaluation leads to more personal accomplishment and less exercising in response to demands from outside [29]. Previous studies have also found significant differences in motivation by sex, showing that men give higher priority to social aspects related to physical exercise, while women show more concern for their image, suggesting that social pressure exerted by communication media through its continual diffusion of stereotyped beauty may cause women to feel the need for being valued by society [40,30].

Results of the mediation models confirmed our hypotheses. In the first place, the level of self-esteem influenced doing exercise to improve image, and this positively affected uncontrolled eating. Although low levels of self-esteem predicted exercising motivated by care of personal image, this type of motivation, far from improving body satisfaction and subjective wellbeing of individuals, is a source of stress and anxiety, since it refers to goals that are subject to social acceptance or approval [29]. As a consequence, individuals respond to that emotional distress by adopting an uncontrolled eating style to suppress the adverse emotions experienced. However, uncontrolled eating is an inadequate emotional regulation mechanism. That is, although individuals may feel a certain short-term emotional relief, in the long term it leads to increasing negative thoughts and health-related problems such as obesity [39,38,35]. In the second place, even though self-esteem predicted motivation for doing physical exercise based on social affiliation [B=.07, p<.01] and social recognition [B=-.09, p<.001], these had no significant effect on uncontrolled eating. These results confirm that social affiliation promotes positive feelings and healthy life styles [24]. Although previous studies have interpreted social recognition as an extrinsic goal, this study only found a significant effect of dissatisfaction with body image on developing eating disorders and unhealthy eating styles [16,40].

The results of this study have important practical implications. On one hand self-esteem should be emphasized as a fundamental personal construct for the health and general wellbeing of nursing

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professionals [12,19]. On the other, the relevance of healthy living habits, such as physical exercise directed at intrinsic goals and good eating behavior should be underlined, because of their effects on physical and emotional health of workers and the work environment [5,4]. Therefore, organizations, following the recommendations of the HERO model, should design programs designed to promote the health of their employees, focused on making workers aware of the importance of physical exercise and a balanced diet [21,36]. They should also give workshops on psychological strategies for effective emotional regulation [39,37].

Nevertheless, this study does have some limitations. First, as a cross-sectional study, causal relationships between the variables studied cannot be established, so a longitudinal design would be of interest in future studies. Second, in this study, no gender differences in the reasons for nurses doing physical exercise were sought, and so this question would have to be studied further to design more specialized preventive programs. Finally, the data may be skewed due to the method used to collect them, which could lead to certain sources of error, such as simulation [50] and or negation [51], and there is no doubt that it is related to the honesty of the responses of the workers in the sample. Perhaps it would be advisable to include other qualitative methodologies, such as semi-structured interviews, in the future.

Future lines of research should include variables related to the frequency of exercising in addition to variables related to the organization (e.g., engagement). Similarly, multilevel prevention studies would be of interest to analyze whether the level of self-esteem is determined by a healthy life style in different types of work (employees, supervisors, managers).

5. Conclusions

The main objective of this study was to analyze the mediating role of the reasons for doing exercise in the effect self-esteem has on uncontrolled eating by nursing professionals. This study highlights the importance of self-esteem in adopting healthy life styles promoting physical and emotional wellbeing, and the importance of having healthy employees in organizations [5,22]. Organizations must understand health in the workplace as well as outside of it, since the better the physical and psychological condition of nursing professionals, the better the healthcare attention of their patients and their families will be, preventing absenteeism due to health [1].

The most important finding of this study is that the level of self-esteem is determinant to the reasons for doing physical exercise, specifically, those related to image, social recognition and social affiliation. However, in the mediation model, only one significant effect of self-esteem on uncontrolled eating was found and this was partially mediated by body image. The second most important finding is that low levels of self-esteem directly affect uncontrolled eating in nursing professionals.

Summarizing, the results have important practical implications in the framework of Positive Occupational Health Psychology (POHP) by emphasizing self-esteem physical exercise and eating style as essential aspects for the health and wellbeing of workers in the field of healthcare.

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