

## Resilience and work ability in nursing workers

*Resiliência e capacidade para o trabalho em trabalhadores de enfermagem*

*Resiliencia y capacidad laboral en trabajadores de enfermería*

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### ABSTRACT

**Objective:** to verify the association of resilience with work ability in nursing workers. **Method:** cross-sectional study carried out with 375 nursing workers from a university hospital in the city of São Paulo, Brazil, using three self-applicable instruments: one for sociodemographic and professional characterization, the Resilience Scale and the Work Ability Index. Data were analyzed using multiple linear regression analysis. The research project was approved by the Institution's Research Ethics Committee. **Results:** Among participants workers, 15.2% showed low resilience and 30.4% have some level of impaired work ability. The higher the Work Ability Index score, the higher the Resilience Scale score ( $\beta=0.722$ ;  $p<0.001$ ). **Conclusion:** resilience was positively associated with the work ability.

**Descriptors:** Resilience, psychological; work capacity evaluation; occupational health; nursing.

### RESUMO

**Objetivo:** verificar a associação da resiliência com a capacidade para o trabalho em trabalhadores de enfermagem. **Método:** estudo transversal realizado com 375 trabalhadores de enfermagem de um hospital universitário, na cidade de São Paulo, Brasil, por meio de três instrumentos autoaplicáveis: um para caracterização sociodemográfica e profissional, a Escala de Resiliência e o Índice de Capacidade para o Trabalho. Os dados foram analisados por meio de regressão linear múltipla. O projeto foi aprovado por Comitê de Ética em Pesquisa da instituição. **Resultados:** Entre os trabalhadores participantes, 15,2% apresentaram baixa resiliência e 30,4% mostraram capacidade para o trabalho comprometida. Quanto maior o escore do Índice de Capacidade para o Trabalho, maior a pontuação da Escala de Resiliência ( $\beta=0,722$ ;  $p<0,001$ ). **Conclusão:** a resiliência foi associada de forma positiva à capacidade para o trabalho.

**Descritores:** Resiliência psicológica; avaliação da capacidade de trabalho; saúde do trabalhador; enfermagem.

### RESUMEN

**Objetivo:** verificar la asociación de resiliencia con capacidad laboral en trabajadores de enfermería. **Método:** estudio transversal realizado con 375 trabajadores de enfermería de un hospital universitario en la ciudad de São Paulo, Brasil, utilizando tres instrumentos auto-aplicables: uno para caracterización sociodemográfica y profesional, la Escala de Resiliencia y el Índice de Capacidad Laboral. Los datos se analizaron mediante análisis de regresión lineal múltiple. El proyecto de investigación fue aprobado por el Comité de Ética de Investigación de la Institución. **Resultados:** Entre los trabajadores participantes, el 15.2% mostró baja capacidad de recuperación y el 30.4% tiene algún nivel de capacidad laboral deteriorada. Cuanto más alto sea el puntaje del Índice de Habilidad de Trabajo, más alto será el puntaje de la Escala de Resiliencia ( $\beta=0.722$ ;  $p<0.001$ ). **Conclusión:** la resiliencia se asoció positivamente con la capacidad de trabajo.

**Descriptores:** Resiliencia psicológica; evaluación de capacidad de trabajo; salud laboral; enfermería.

## INTRODUCTION

Nursing workers are exposed to work overload, long working hours, inadequate human and material resources, low pay, interpersonal conflicts, impaired communication<sup>1</sup>, intense work, poor working conditions<sup>2</sup>, deadlines, and productivity<sup>3</sup> that make nursing work a major stressor, which causes physical and mental weariness<sup>2</sup> and reduces their ability to work.

Musculoskeletal diseases have been the main cause of illness and absence from work, however, there has been increasing mental illness among nursing workers<sup>4</sup>, which requires protective measures to prevent illness and provide better working conditions<sup>4</sup>.

Resilience, in turn, contributes to coping with adversities in the work environment related to work organization and working conditions<sup>1</sup>. It has shown itself as a possibility of promoting health, through positive adaptation to adversities, outlined by cognitive, behavioral, and psychosocial aspects in intrapsychic processes<sup>5</sup>.

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Thus, due to the psychological and physiological demands that make up the nursing environment, and to the fact that these have generated distress and illness to nursing workers, and that resilience is a concept with the potential to contribute<sup>5</sup> to a healthier and health-promoting work environment, this study aimed to verify the association of resilience with the ability to work in nursing workers, in order to contribute with supporting data for guiding investments towards promoting resilience, throughout the working life, as a worker protective measure. Furthermore, there is a gap in the literature of studies addressing the association between the ability to work and resilience in nursing workers.

## LITERATURE REVIEW

Resilience is “the human ability to cope with, overcome, and become stronger or transformed after undergoing adverse experiences”<sup>6,15</sup>. Resilient people are able to, after adversity, regain their mental and emotional balance, as well as learning from such experience, becoming stronger and more prepared<sup>7</sup>. And by experiencing adverse situations, such as stress, resilience manifests itself.

Stress is an inevitable component of the process of living, and coping with stress is a crucial survival mechanism. However, due to chronic stress, there is weariness, together with brain alterations that cause mental health problems<sup>8</sup>, with effects on all systems of the human body, such as the musculoskeletal system.

The work conditions and organization in nursing are characterized by high physical and mental demands, resulting in stressors that can generate weariness and favor impairment of the ability to work<sup>9,10</sup>.

The ability to work is a result of the relationship between human resources and the characteristics of work, which is evidenced by physical, cognitive, and social capacity, as well as the result of work engagement, through attitudes, motivation to, and interest in performing the work. The ability to work is determined by assessing the demands of activities, working environment conditions, worker's adaptation, health conditions, sociodemographic factors, lifestyle, and chronological aging<sup>11</sup>.

The impairment of the ability to work among health workers has been a worldwide concern, especially among nurses, who make up the largest contingent among the health workforce<sup>10</sup>. And there is a high frequency of impaired ability to work among nursing workers<sup>9</sup>.

Faced with the dichotomy of work, which favors health and strengthening, but is also a driver of illness, and, since the work routines at institutions are difficult to change, it is necessary to look at the individual so that he/she may remain in the workplace, and learn to take action to control the stress generated in the workplace<sup>12</sup>.

Thus, promoting resilience in the workplace allows nursing workers to reduce or eliminate negative influences from stress by using skills to effectively cope with occupational stress<sup>6</sup>.

## METHODOLOGY

This is a cross-sectional study conducted at a university hospital in the city of São Paulo, Brazil, in 2015.

The sample consisted of 375 nursing workers (139 nurses, 201 nursing technicians, and 35 nursing aides), with a response rate of 72.7%, who met the following inclusion criteria: having been working at the institution for at least six months and providing direct care to patients. Workers who were taking time off work due to sick or maternity leave were excluded. Of the remaining eligible participants, 137 refused to participate in the study and four had incomplete data, determining a loss rate of 27.3%.

The collection was performed through a self-applicable form. The first part of the form contained questions for sociodemographic (sex, age) and professional (function, shift, working hours and length of service in the institution and the profession) data.

The second part was the version adapted for use in Brazil of the Resilience Scale (RS)<sup>13</sup>, through which the outcome variable was assessed. This scale measures individual resilience by considering positive psychosocial adaptation to the events of life<sup>14</sup>. It consists of 25 items with scores ranging from 1 (strongly disagree) to 7 (strongly agree) points, giving a score from 25 to 175 points, in which high scores indicate a high level of resilience<sup>14</sup>. The score was categorized into: moderately high to high resilience (> 145 points), moderately low to moderate resilience (125 to 145 points), and low resilience (<125 points)<sup>15</sup>. In this study, the RS showed a Cronbach's alpha coefficient of 0.89.

The last part of the tool was the adapted version for use in Brazil of the Work Ability Index (WAI)<sup>16</sup>. This tool assesses the ability to work based on seven dimensions (current work ability compared with the lifetime best, work ability in relation to the demands of the job, number of current diseases diagnosed by a physician, estimated work impairment due to diseases, sick leave, own prognosis of work ability, and mental resources), providing a score ranging from 7 to 49 points, and the higher the value, the better the ability to work. The score was categorized into great, good, moderate and low ability to work for workers aged from 35 years<sup>17</sup> and for those aged less than 35 years<sup>18</sup>. In this study, the WAI showed a Cronbach's alpha coefficient of 0.74.

The descriptive analysis was performed through the means, standard deviations, medians, minimum and maximum score values of the quantitative variables, and ratios for the qualitative variables. The univariate analyses of associations between independent variables and the Resilience Scale score were made by using Spearman's correlation coefficient, ANOVA and Kruskal-Wallis tests. The homogeneity of the variances was assessed through Levene's test. Finally, a forward stepwise multiple linear regression analysis was performed starting with the WAI, followed by the inclusion of the variables that showed  $p < 0.20$  in the univariate analysis. In all the analyses, the associations were considered significant when  $p < 0.05$ .

The study was submitted to and approved by the Research Ethics Committee of the University of São Paulo Nursing School (normative act no. 912,483) and the Informed Consent Form was given to the participants, in two counterparts, in accordance with Resolution no. 466/2012 of the National Health Council.

## RESULTS

The study population was composed mostly of women (87.2%), with a mean age of 41.5 years ( $SD=9.2$  years), and the highest proportion (54.4%) aged from 40 years and 24.6% were 50 years or older.

The highest proportion of workers consisted of nursing technicians/aides (62.9%), followed by nurses (37.1%), distributed in similar proportions across the three work shifts (morning, afternoon, and night), with a working time of 36 hours (92%). The workers had an average of 14 years ( $SD=8.6$ ) of length of service in the institution, with an average time in the nursing profession of 16.2 years ( $SD=8$ ).

The outcome variable, resilience, showed a mean score of 138.7 points ( $SD=18.3$ ). When the score was categorized, the highest proportion of workers reported moderate/low level (45.3%), followed by a moderate/high level (39.5%), and 15.2% showed low resilience.

The WAI showed a mean score of 39.2 points ( $SD=5.9$ ). When the score was categorized, it was found that 37.9% of the workers showed impaired ability to work (27.5% moderate or 10.4% low), 38.4% showed good ability to work and 23.7% showed great ability to work.

In the univariate analyses, it was observed that the WAI showed a statistically significant association with the RS ( $r=0.284$ ,  $p<0.001$ ). It was also observed that the other continuous variables were also associated with the RS: age ( $r=0.149$ ,  $p=0.004$ ), years of work in the institution ( $r=0.131$ ,  $p=0.011$ ) and years of work in the profession ( $r=0.144$ ;  $p=0.005$ ), as shown in Table 1. None of the quantitative variables showed a statistically significant association with the RS.

**TABLE 1:** Analysis of the correlations between quantitative variables and overall Resilience score of nursing workers

Variáveis	f	r <sup>(S)</sup>	p
Work Ability Index			
Age (in years)	375	0.149	0.004
Length of service in the institution (years)	375	0.131	0.011
Length of service in the profession (years)	375	0.144	0.005

(S) = Spearman's correlation coefficient

In the final results of the multiple linear regression modeling, the ability to work remained associated with the RS after adjustment by age, and the higher the value of WAI, the higher the resilience value ( $\beta=0.722$ ,  $p<0.001$ ). Age also showed a statistically significant association with the RS, and the higher the age, the higher the RS score ( $\beta=0.339$ ,  $p=0.001$ ), as shown in Table 2.

**TABLE 2:** Associated factors of the Resilience Scale score identified through the linear regression analysis of nursing workers

Variables	$\beta$	IC <sub>95%</sub> ( $\beta$ )	P	r <sup>2</sup> <sub>a</sub>
Work Ability Index	0.722	[0.414; 1.031]	<0.001	0.069
Age (years)	0.339	[0.141; 0.536]	0.001	

## DISCUSSION

The nursing workers showed medium to high resilience level and high occurrence of impaired ability to work. Among these, it was observed that the higher the level of the ability to work, the higher the level of resilience.

A study conducted with 333 nurses found that, although the ability to work decreases throughout the working life, there is a positive effect of resilience on the ability to work<sup>19</sup>.

Stress can also affect the ability to work, as it has an inversely proportional association with the WAI<sup>20</sup>, that is, the greater the stress, the less the ability to work. This corroborates the need for promoting resilience for coping with occupational stress.

In line with these findings, a longitudinal study found that stress-generating factors affect work ability of nursing workers. In addition, it identified an association between worsening exposure to work stressors and impaired work ability over the two-year follow-up study<sup>21</sup>.

However, the effects of stress on work ability can be modified according to the age group. A study revealed that the work ability of the youngest group, aged up to 45 years, suffered from the intensification of various stressors, such as worsening social support, increased effort-reward imbalance, increased excess commitment, and increased number of situations that can generate pain/injury. The work ability of older people was affected only by the imbalance between efforts and rewards at work<sup>21</sup>.

Although this study does not allow one to establish causal relationships, based on assumptions in the literature, it can be understood that those workers who have developed better resilience strategies have more resources to meet the demands of work throughout their working life, thus favoring work ability protection.

Mental resources were the main statistically significant factors that directly impacted work ability, as mental illness can compromise one's ability to work. These findings reveal the need for care to nursing workers' mental health, such as places for rest and recovery from psychological and physiological demands.<sup>22</sup>.

In seeking to understand the nurses' perceptions of the experience of resilience and adversity in the workplace, it was identified that high levels of resilience and the physical well-being of nurses contribute to personal fulfillment and, consequently, reduced suffering and occupational stress<sup>23</sup>, and that positive adaptation to the labor context is influenced by the presence of support networks, personal characteristics, and autonomy over work organization<sup>24</sup>.

Social support, one of the constructs of resilience, is directly and inversely proportional to the ability to work and the level of stress, respectively<sup>20</sup>. In this regard, resilience plays a preventive role, by reducing the negative effects of work stress as well as a stimulating role, by improving the worker's mental health condition<sup>25</sup>.

This study also identified increased resilience as age increases. Similar results were observed in the study among Italian nursing workers<sup>19</sup>. Older nurses showed greater resilience to adverse work situations.

Faced with adversity, older people show resilient behavior, such as self-confidence, self-care, self-efficacy, flexibility in face of everyday problems, and believe in their ability to contribute to the profession despite the physical and cognitive challenges that come with aging<sup>26</sup>. On the other hand, early-career nurses show higher stress levels compared to other nurses<sup>27</sup>.

Also, older workers have more strategies than younger ones, which result in better performance in the face of adversity, which, on the other hand, can reduce the presence of associations between stressors and the ability to work<sup>21</sup>.

These findings are relevant when we consider the aging of the working population, including in Brazil, pointing to the need to promote resilience and safeguard work ability as strategies to keep workers employed, through appropriate strategies that take into consideration the different age groups in the working life.

Resilience is directly related to the perception of physical and mental health by workers<sup>28</sup>. In addition, resilience is closely related to performance at work<sup>29</sup>, serving as a mediator between workloads and physical and mental weariness and performance at work<sup>28</sup>. Lost productivity and work limitations associated with workloads have a negative impact on workers' health, with effects on the quality of patient care<sup>30</sup> and safety of the work environment<sup>31</sup>. Thus, it is imperative to promote resilience among nursing workers, and the enhancing strategies span the individual, group, and institutional dimensions.

Individual strategies include: mindfulness, meditation, yoga, stress reduction techniques, training, counseling, guidance, and better work-life balance<sup>32</sup>. Group/Institutional: small group discussions, workshops, building a support network, positive psychology<sup>32</sup>. Group strategies (teamwork) favor resilience from the relationship with the other, reflecting their own weaknesses and potential<sup>33</sup>.

Other strategies are the resilience programs, which aim at dealing with the impacts of stressors in the workplace. In addition, organizational barriers and risks to the team's well-being also need to be addressed to create a resilient workforce<sup>34</sup>, particularly due to the understanding that better work ability reduces the chance that nursing workers will leave the profession, as demonstrated in a previous study: for each point in the WAI, there is a 5% reduction in the intention to leave the profession<sup>35</sup>.

Finally, the "healthy worker effect" phenomenon must be considered. This phenomenon refers to the process in which workers likely to be healthier remain in the institutions, and it is pointed as a bias factor and, although it is difficult to measure it, it should be considered when interpreting the results<sup>36</sup>. If this effect might have occurred in this study, it is possible that the occurrences of workers with impaired ability to work and/or with low resilience are underestimated. On the other hand, this is an innovative study addressing a theme with a vast literature gap. Thus, further studies are recommended.

## CONCLUSION

Nursing workers showed medium-to-high resilience and high frequency of impaired ability to work, and resilience is positively associated with the ability to work. Actions to strengthen resilience that are appropriate to the age groups of workers are recommended as a strategy to promote and safeguard their ability to work.

As limitations of this study, one can consider its cross-sectional design that does not allow one to establish any causal inferences. Another aspect is the absence of assessments of the work conditions and organization experienced by the study participants, which may contribute to the results obtained.

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