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Association of Resilience with Work Stress and Strains among Nurses in Oncology Center, Mansoura University, Egypt

[1]Hanan Elsaid Elsabahy, [2] Shaimaa Abdelbaset Hamed Awad, [3]Abdel-Hady El-Gilany

[1]Nursing Administration Department, Faculty of Nursing-Mansoura University, Egypt
[2]Psychiatric and Mental Health Nursing Department, Faculty of Nursing-Mansoura University, Egypt
[3]Professor of Public Health, faculty of Medicine, Mansoura University, Egypt

Abstract: **Estimate the prevalence of low resilience among nurses and its associated factors. Method: Design: This Nested case control study (cross sectional study to estimate prevalence of low resilience) followed by case-control study to find out factors with low resilience) Setting: Oncology Center of Mansoura University during the period from October 2019 to December 2019.Subjects: Target population is all the 355 staff nurses on duty at the time of data collection in the previously mentioned setting. The response rate was 79.4% Tools: four tools were used for data collection, self-administered Arabic questionnaire of the demographic characteristic, The Brief Resilience Scale (BRS), Stress in workplace Questionnaire, and Strain in workplace Questionnaire. Results: The study findings revealed that both normal and low resilient nurses are matched in their age, residence, job satisfaction and injuries. Low resilience nurses are more likely to be female, unmarried, and more educated. Low resilient nurses have significantly higher mean job stress score, low turnover score and low burnout score compared to normal nurses. Conclusion: resilience can be a helpful for coping with hard situation especially in oncology nurses and reduce stress, turnover intention and burn out.**

Keywords: **Resilience; work stress; strain; Oncology center.**

1. INTRODUCTION

Nursing as a profession is not only a crucial but also a fast-growing career that associates science and technology in the art of caring for the sick. Nursing Staff create up the biggest group of healthcare employees providing healthcare facilities to a broader number of sick individuals that need health care. Nursing staff organize and deliver persistent carefulness together with specialist physician; they also provide patients and family members with evidence, emotional support and advice so that each nurse should have good resilience. (Kuntz, Näswall & Malinen, 2017).

Resilience is the process of adjusting well in the aspect of danger, trauma, pressures or significant origins of stress such as family and difficulties in connecting to others, or workplace and financial stressors. It means "bouncing back" from difficult experiences. Resilience is not a feature that people either have or do not have. It includes behaviors thoughts and actions that can be educated and established in any person through helpful and understanding communications inside and outer the family. Relations that build love, trust, afford role models, suggestion reinforcement and encouragement of support toward one's resilience to overcome stress and strains (Black, Balanos, & Whittaker, 2017)

Resilience facilitates “positive adaptations in facing of hardship, reestablish equilibrium in lives, and thus escape the negative effects of work stress and strain (Lü, et al, 2014).

Work stressor is “any condition that elicits a negative emotional ó response” (Spector et al, 2009). Extreme stress can affect on your efficiency and performance, influence your corporeal and emotive health, and disturb your family and personal life. Normal consequence of job stress is strains but small parts of stress can be helpful to maintain your attention and concentration on your work and encounter, achieve many challenges in the work (Brennan, 2017).

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A strain is a response to a stressor (Spector, 2017). Work strains can be psychological, behavioral or physical in nature .Psychological strains include attitudinal responses to stress such as career satisfaction and exhaustion. Behavioral strains are behavioral reactions to stressors from the work such as turnover intentions. Physical strains include diseases such as heart disease (Hayes, Bonner, & Pryor, 2010). Work strains such as turnover intentions, job satisfaction, burnout and injuries are a significant consequence for organizations as it affect on nurses' safety, the patients wellbeing and organizational expenses (Alam, 2017).

There is a crucial necessity to examine issues that impact and alleviate the stressful labor atmosphere between nurses worldwide. According to (Lafer 2005), "the stress, threat, tiredness and defeats that have develop constructed into the standard everyday routine of nurses is the main issue that pushing nurses out of the productiveness" on the other hand, there is still a deficiency of studying investigative the role resilience shows in the stress development for nurses (Fletcher, & Sarkar, 2013; Hudgins, 2016).

Significance of study

Resilience is an appreciated proficiency necessary for staff nurses to keep as they are affected by a number of workplace stressors that have an influence on their emotional and physical well-being. Staff nurses particularly those dealing with oncology patients are visible to dangerous life and death scenarios every day, so they should be able to adapt to stressors like emotional labor, workload and interpersonal conflict. This study aims to estimate the prevalence of low resilience among nurses and its associated factors.

2. POPULATION AND METHODS

This Nested case control study (cross sectional study to estimate prevalence of low resilience) followed by case-control study to find out factors with low resilience) was done at Oncology Center of Mansoura University during the period from October 2019 to December 2019. This is a tertiary care center with 500 beds.

Target population is all the 355 staff nurses on duty at the time of data collection in the previously mentioned setting. The response rate was 79.4%

The following data were collected using a self-administered Arabic questionnaire:

1-Demographic characteristic of study subjects as age, gender, educational level, social status and residence.

2-The Brief Resilience Scale (BRS) (Smith, Dalen, Wiggins, & Bernard, 2008) contains six items scored 1-5 as (strongly disagree to strongly agree respectively).

Items 1, 3, and 5 are positive & items 2, 4, and 6 are negative.

Recording: Add the answers changing from 1-5 for all six items mean a range from 6-30. Divide The total sum by the number of questions responded (Windle et al., 2011). Scores <3, 3-4.30 and >4.30 were considered as low, normal and high resilience; respectively (Smith et al., 2013).

3-Stress in workplace Questionnaire: - established by International Stress Management Association UK (2013) was used to measure stress level. It includes 25 items. This scale was translated into Arabic and validated by (Sleem, Altroush, Elsabahy, 2017). Responses was be measured on 2-points as (1 for yes and 0 for no)

4-Strain in workplace Questionnaire: - consist of four domains as follow:-

a) Job Satisfaction.

b) Turnover Intentions.

c) Burnout

d) Injuries

Job Satisfaction and Turnover Intentions: consists of three-item subscale of the Michigan, Organizational Assessment Questionnaire (MOAQ; Cammann, Fichman, Jenkins Klesh, 1983). These two domains were coded as 1- 5 from "strongly disagree" to "strongly agree." The responses ranges from (3- 15) High scores indicated high levels of job satisfaction and turnover intentions.

c) Burnout. The 22-item Maslach Burnout Inventory – Human Services Survey \MBI) (Maslach, Jackson, &Leiter, 1997). The scoring varied from 0-6 from "never" to "every day". The responses ranges from (0- 132) High scores indicated high levels of burnout.

d) Injuries. Physical injuries were measured using the 9-item Standardized Nordic Questionnaire (Kuorinka et al., 1987). (Positive response as 1 and negative response as 0) High scores indicated a high number of physical injuries.

The scales has been translated into Arabic language by two researchers independently; then back translated to English by other two researchers. Inconsistencies were solved by consensus of all of them.

The different tools were distributed to a jury of 10 experts in psychology, psychiatry and psychiatric nursing and content validity index of different items in the scales varied from 0.82 to 1.0 for both clarity and relevance.

A pilot study was carried out on 25 nurses from another department and not included in the full-scale study, to test and ascertain the clarity, feasibility, reliability, and time of the tool and necessary modifications was done. The test-retest of different items of scales varied from 0.67 to 1.0 and Cronbach's alpha different tools varied from 0.7 to 0.91.

Ethical consideration

An authorized consent was delivered from the Faculty of Nursing, Mansoura University to convey out the study. An authorized message was delivered with approval from the Director of Oncology Center after explanation of the purpose of the study and the schedule of data collection.

Principled agreement was gotten from the study ethics committee of the Faculty of Nursing –Mansoura University. Nurses' consent to participate in the study was obtained after explanation of the aim and the nature of the study. All nurses were informed that their contribution is intended and they can remove from the study at any time. Nurses were assured that their identities and responses to the questionnaire were confidential**.**

Data analysis: Data record and examination was complete using SPSS (Statistical Package for Social Sciences) version 24. Quantitative variables were exam for normality distribution using Kolomogrov-Smironov test and were obtainable as despicable and SD. Unpaired t-test or Mann-Whitney was charity for the comparison between the two groups; as appropriate. Non-parametric variables were Qualitative variables were summarized by number and percent. Pearson Chi-square test or Fisher's exact test was used to compare the qualitative variables between groups, as appropriate. Crude Odds ratio (COR) as their 95% CI was calculated. Significant factors in bivariate association were arrived into binary stepwise logistic regression model using a forward Wald method to determine independent predictors of BA, adjusted ORs and their 95% CI were calculated. P value was considered as statistically significant when ≤ 0.05.

3. RESULTS

Table 1: shows that overall prevalence of low resilience is 11.3% among nurses. Both normal and low resilient nurses are matched in their age, residence, job satisfaction and injuries. Low resilience nurses are more likely to be female (COR=4.8, 95%Ci=1.1-20.6); unmarried (COR=3.0, 95% CI=1.5-6.0) and more educated (COR=2.4, 95% CI=1.2-4.6). Low resilient nurses have significantly higher mean job stress score (13.6 vs. 11.1), low turnover score (7.1 vs. 10.1) and low burnout score (70.4 vs. 85.8) compared to normal nurses).

Table 2: shows that the independent significant predictors of low resilience are being a female (AOR=7.1, 95% CI=1.1-50.1), job stress score (AOR=1.3, 95% CI=1.1-1.5), job turnover score (AOR=0.6, 95%CI=0.5-0.8) and burnout score (AOR=0.94, 95%CI=0.9-0.98).

Table 1: Comparison between normal & low resilience among nurses

	Normal resilience N(%)	Low resilience N(%)	Significance	COR (95%CI)
Total[#]	315(88.7)	40(11.3)		
Age: <30 30 & more Mean±SD	181(57.5) 134(42.5) 28.4±4.6	18(45.0) 22(55.0) 29.4±5.3	χ^2=2.2, P≤1.4 t=1.2, P=0.2	1(r) 1.7(0.9-3.2)

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Sex: Male Female	64(20.3) 251(79.7)	2(5.0) 38(95.0)	χ^2=5.5, P=0.03	1(r) 4.8(1.1-20.6)
Residence: Urban Rural	150(47.6) 165(52.4)	18(45.0) 22(55.0)	χ^2=0.1, P=0.8	1(r) 1.1(0.6-2.2)
Marital status: Married Unmarried	211(67.0) 104(33.0)	16(40.0) 24(60.0)	χ^2=11.2, P≤0.001	1(r) 3.0(1.5-6.0)
Education: 2ry >2ry	87(27.6) 228(72.4)	19(47.5) 21(52.5)	χ^2=6.7, P=0.01	1(r) 2.4(1.2-4.6)
	Mean±SD	Mean±SD		
Job stress	11.1±2.3	13.6±3.0	t=6.2, P≤0.001	NA
Job satisfaction	7.3±1.9	7.0±2.8	t=0.9, P=0.4	NA
Turnover	10.1±2.2	7.1±2.1	t=8.3, P≤0.001	NA
Burnout	85.8±10.9	70.4±15.0	t=8.0, P≤0.001	NA
Injuries	8.5±5.6	10.2±8.8	Z=0.6,P=0.5	NA

#Row percent, otherwise column % Z of Mann-Whitney test

COR=Crude odds ratio, CI=confidence interval, r=reference group

Table 2: Multivariate logistic regression analysis of independent predictors of low resilience among nurses

	β	P	AOR (95%CI)
Sex: Male Female	- 1.96	 0.05	1(r) 7.1(1.1-50.1)
Job stress (Continuous)	0.2	0.006	1.3(1.1-1.5)
Job turnover (Continuous)	-0.45	≤0.001	0.6(0.5-0.8)
Burnout (Continuous)	-0.06	0.001	0.94(0.9-0.98)
Constant Model χ^2 % correctly predicted	2.35 94.6,P≤0.001 91.0		

AOR=Crude odds ratio, CI=confidence interval, r=reference group

4. DISCUSSION

Resilience plays an important role in improving job satisfaction and modifying the turnover intention of staff nurses and mediates the connection among burnout and work stress between nurses (Wahab, et al, 2017). The present study revealed that low resilience represents 11.3% comparing to normal resilience represents 88.7% this is consistent to the point of view of (Koen, Van Eeden, & Wissing, 2011) who found in his study that 10% of participants manifested low resilience, 90% moderate and high resilience this may be due to individual who provide nursing care and live a difficult situation are more generally resilient to function effectively and they learned to cope with difficult situation

The present study revealed low resilient staff nurses have significantly higher mean job stress score, this is agreed to the opinion of **(Khamisa** et al, **2017)** who mentioned the nursing profession is characterized by a significant types of stressors, which in turn lead to increased strains, such as turnover, decreased job satisfaction, injuries and suffer from low resilience this may be due to resilient individuals are able to adjust in the face of difficulty, reestablish balance in their lives, and avoid the consequences of stress.

The current study also shows that the independent significant predictors of low resilience are being a female, this may be due to males and females have dissimilar behavior attribute that effect the technique they manage with adversity and this is agreed to the opinion of **(Sun et al, 2017 & Sambu & Mhongo, 2019)** that mentioned woman manages with everyday

stressors by seeking social maintenance and developing social properties. In compare, male use physical recreation such as sport to manage with difficulty. In spite of being under stress, female have been create to use resilience more than male

Nurses' turnover intention is not just a result of an individual's disturbance to the arena, but is an organizational concern. In the present study recorded that low resilient nurses have significantly relation with low turnover and low burnout compared to normal nurses this may be due to being non-standard employees, a failure to labor in the predictable sections after employment , and not working in their favorite clinic this result consistent to the point of view to (Yu & Kang, 2016) Who mentioned that hazardous and destructive working situations, including a deficiency of nursing workers , deficiency of support, 12 h shift system, and insufficient friendly nurse–physician relationships, have been revealed to proliferation burnout among nurses and turnover intention.

The present study revealed that low resilience have significant relation with low job satisfaction this is due to low job involvement that affect ability to maintain in job this is consistent to (Alshammari, et al, 2016) who mentioned that work participation decreases work stress and improves job satisfaction and drops turnover intention. Besides, work participation is presumed to be the positive antipode of burnout and is predisposed by the employed atmosphere, such as organizational attraction, salary satisfaction, and organizational support. Also this is consistent to, (Shatté, et al, 2017) that mentioned the Resilience has a protecting influence on all consequences. For work stress, burnout, and job strain. in addition to employed atmosphere is one of the greatest significant options of work-related health and well-being meanwhile it has been found to be linked not only with loss of efficiency and loss of working hours but with the stimulation of diseases and work-related accidents.

The present study revealed that marital status, residence and education didn't have significant relation with resilience this isn't consistent to the findings of (Bradley, Hojjat, 2016) which indicated that resilience has a direct effect on marital satisfaction, that indirectly impact satisfaction through resilience. Also resilience is affected by residence in urban and rural areas according to (Lyons, Hosking , Rozbroj , 2014) who mentioned that living in rural areas were found to have poorer overall mental health lower resilience than those in urban areas, in relation to education (**Novotny**, **Křeménková**, 2016) mentioned that individual resilience factors and Sense of mastery were associated with academic performance and high education.

5. RECOMMENDATION

There is need to establish program to enhance resilience among females, stressful nurses, nursing staff who have turnover intention and burn out.

Establish effective program for Regulating thoughts, feelings, and relating positively to others and the world through courage, aspiration, and generosity.

Study limitations:

A single center-study on small sample size and its results cannot be generalized to all nurses working in other departments and hospitals. The recall and social desirability biases are possible which can under-or over-estimated the prevalence of low resilience.

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