

Personal characteristics and behavioral factors that promote resilience among nurses: a cross-sectional study

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ABSTRACT

Resilience is defined as an individual's capability to bounce back from hardship. Nurses face adversity every day that is not a characteristic of other professions. Not only do nurses carry an emotional burden from dealing with patients and their families who are, in turn, going through difficult and traumatic events, but they also often suffer from workplace burnout, as many other professionals do. The aims of this study were to explore the resilience of nurses in this challenging profession and study the extent to which personal characteristics and factors contribute to nurses' resilience. This was a cross-sectional descriptive study that included 119 nurses. Data were collected from participants through a demographic and personal characteristics questionnaire, the Trait Resilience Checklist (TRC) and the State Resilience Checklist (SRC). Results showed that 40.3% of nurses demonstrated extreme levels of resilience determined by TRC scores between 65 and 75 and 40.3% of nurses demonstrated extreme levels of resilience determined by SRC scores between 87 and 90. Consequential difference in extreme resilience was described by the personal characteristics of nurses who have siblings, who own a house, who only work the day shift, whose spouse's education is university level, who have no problem with the work team and who have a work commute from outside the locality of their workplace. The explorative factor analysis performed with a varimax rotation on the items of the SRC recorded three factors that interpreted 56% of the total variance; results of the analysis of the TRC showed that five factors explained 62.7% of the total variance. The authors concluded that resilience appears to be influenced by some personal characteristics as well as other attributes and environmental factors. Certain resilience factors were identified in extremely resilient nurses and the level of nurse resilience stayed unchanged from trait resilience to state resilience for these nurses. These findings highlight the relevance of management-endorsed programs for resilience-based strategies to develop resilience among nurses.

KEYWORDS: Nurses, resilience, social support, coping, internal strength, personal strength.

INTRODUCTION

Resilience is usually associated with the ability to continue no matter what the conditions and the ability to adapt. However, it is often considered a personality trait [1]. Resilience is a versatile construction that varies with context, time, age and living conditions [2], and generally is considered to be developed in our childhood when we experience the disappointments and worries that life presents. Unfortunately, some people experience major setbacks in their childhoods. For many, despite these setbacks, they can develop into happy, working adults who are engaged with family, friends and employment. Much research has been devoted to identifying protective factors and processes that may

contribute to children's successful results in high-risk conditions [3, 4]. The factors that influence resilience are: using initiative, being creative, having humor, being moral, having insight, building strong relationships and being independent [3,4]. So, if resilience develops in childhood, why should we be as worried about the concept as it relates to adult nurses? Because nurses face adversity every day that people in many other professions do not. It is not just the emotional burden that nurses cope with in their interactions with patients and their families and the trauma these interactions can cause, but it is also workload, considering that burnout is a very widely compensated disease worldwide [5]. Nurses are no exception and make claims for stress-related diseases more often than work-

ers in other sectors [5]. Some authors address self-care as a mechanism for managing workplace stress [6, 7]. McAllister and Lowe, in their book, *The Resilient Nurse* [8], provided ample suggestions for self-development and self-care, including having good friendships and loving relationships; continually expressing emotion honestly; handling responses to negative experiences and a myriad of other healthy suggestions such as finding a mentor or role model. The effect of social support on resilience is widely accepted [9].

Resilience factors can be promoted and built up, which leads to improved cognitive and social functioning [10, 11, 12]. One assumption is that people who have gone through traumatic experiences, possibly in childhood, learn how to deal with such situations and are then empowered to deal effectively with the next adversity in life [13]. Grotberg proposed that resilience can be broken down into three headings: I HAVE, which is related to support systems available; I CAN, which is related to interpersonal and problem-solving skills; and I AM, which is related to internal strength [6, 10]. Present research focuses on resilience development in nurses based on previous literature [10, 14]. We have used the Trait Resilience Checklist (TRC) and the State Resilience Checklist (SRC) to measure the resilience of nurses to predict whether nurses are able to provide a resilient response to any difficult situation. There was a need to identify which resilience factors are already present because resilience can play a positive role in an organization; specifically, resilience can develop and provide significant individual and organizational benefits, including improved productivity, improved well-being, and reduced absence and turnover [15]. The literature suggests that resilient persons are better equipped to handle stressors resulting from a constantly changing work environment. They are more likely to make informed decisions in critical moments and less likely to be ill or choose to leave the organization due to organizational stress [16].

The aims of this study were to measure the resilience of nurses and the extent to which personal characteristics and factors contribute to nurses' resilience. The results of

this study can be utilized by nursing managers to build strategies to foster resilience in nurses.

METHODS

This was a cross-sectional descriptive study which was conducted at a major teaching hospital (TH) situated in the northern West Bank, Palestine. A convenience sample was used consisting of 119 of the nursing staff at the TH (all nurses in the hospital at the time of the study); 78/119 (66%) of participants were male and 41/119 (34%) of participants were female. Participants were evaluated for eligibility to fill out the questionnaires, and if there were no exclusion criteria, the participant was included in the study. Inclusion criteria were nurses who were willing to participate in the study and exclusion criteria were people working at the hospital in a non-nursing position. Data was gathered using a demographic and personal characteristics data sheet (Appendix 3), the SRC (Appendix 1) and the TRC (Appendix 2). The researchers defined many demographic and personal characteristics in the current study based on previous studies in resilience literature [17, 18, 19].

Measurement of Resilience

Child resilience research in family, school and social environments confirms the theory of growth and development in the human organism [14, 20]. Children and adolescents have the ability to develop trait properties to maintain a healthy emotional, cognitive, social and competent school function in the midst of daily as well as unusual life stressors. In the presence of health-promoting environmental support, individuals can survive adversity and develop resilience despite several risk factors [14, 20]. Psychological instruments called the TRC and the SRC were developed to measure resilience properties [13, 20]. Permission to use these two instruments was obtained from the author.

The State-Resilience Checklist (SRC)

The State Resilience Checklist (SRC) which was developed by Hiew & Matchett includes 15 items with a 5-point Likert scale (from "strong disagreement" = 1 to "strong agreement" = 5) [20]; Respondents rated

themselves on statements describing them *at the present time*. The total score was achieved by summing all responses, resulting in a possible range of scores from 15 to 75, with higher scores indicating greater resilience. Details of the checklist can be found in [20].

Trait-Resilience Checklist (TRC)

The Trait-Resilience Checklist (TRC) is a subset of 18 items regarding childhood resilience which was developed by Hiew & Matchett [20], where subjects graded each item on a 5-point Likert scale (from "strong disagreement" = 1 to "strong agreement" = 5). Respondents rated themselves on each item *since childhood* rather than at the present time. The total score was computed by summing all responses; individual scores ranged from 18 to 90, with higher scores indicating greater resilience. Details of the checklist can be found in [20].

The authors use the TRC and the SRC because the TRC is used to measure childhood resilience of nurses and the SRC is used to measure resilience at the present time to be able to identify whether the nurse's resilience has developed over time since the childhood.

The two scales have good psychometric validity. Both checklists demonstrated good internal consistency in a trial conducted by Hiew & Matchett; Cronbach's alpha was 0.76 and 0.77, respectively. The outcomes showed that both the SRC and the TRC scales were correlated (0.46, $p < 0.001$) with very good test-re-test reliability (0.80 and 0.84, respectively). Internal consistency for each scale was high (Cronbach's alpha was 0.76 and 0.83 respectively) [21].

Independent variables

The demographic and personal characteristics data sheet contained questions on gender, age, marital status, nursing education, score on secondary school marks, nursing education grade point average (GPA), smoking, illness, addiction, living area (city, village, or refugee camp), number of siblings, number of children, spouse education, monthly salary, ownership of a house, ownership of a car, holding a second job, length of work-home commute, problems with team leaders, and problems with the work team. The researchers asked about many variables in the current study based on other previous studies in resilience literature [17, 22].

Assessment of demographic and personal characteristics data sheet

The validity of the demographic and personal characteristics data sheet was assessed by a group of experts, including the dean of the nursing college at An-Najah National University, the chief nursing officer of the TH, the head of the continuing education board, two researchers, two professors, two general nurses and one statistician, who were all requested to figure if the questions were relevant and conceivable. After some modifications, the questionnaire was accepted. Reliability was determined with a test-re-test of 10 nurses. Correlation coefficients were between (0.56) and (0.90) with significant levels less than 0.05. The questionnaire was declared relevant and able to provide a genuine picture of the experience of nurses.

Data collection

To evaluate resilient behaviour and personal characteristics, all nurses answered the TRC and the SRC, which had credible psychometric attributes. TRC scores were prorated into six categories in the current study (Table 1).

Table (1): Categories of the Trait-Resilience Checklist (TRC) scores.

Trait Resilience Checklist (TRC)					
Very low	Low	Moderate	High	Very high	Extreme
24-15	25-34	35-44	45-54	55-64	65-75

The SRC scores were likewise prorated into six categories (Table 2). In this study, nurses with extreme resilience based on the

sub-categories developed for the SRC and the TRC have been contemplated.

Table (2): Categories of the State-Resilience Checklist (SRC) scores.

State Resilience Check List (SRC)					
Very low	Low	Moderate	High	Very high	Extreme
29-18	41-30	53-42	65-54	77-66	90-78

Data analysis

Analysis was conducted using Statistical Package for the Social Sciences (SPSS), Version 20. The self-administered questionnaires were analyzed using descriptive statistics (frequencies and percentages), chi-square tests and factor analysis. Significance was set at a level of 0.05. Factor analysis is a statistical data reduction and analysis technique that strives to explain the relationship between several results as a result of one or more underlying explanations or factors. The technique includes data reduction, as it attempts to represent a set of variables with a smaller number. In all of the analyses, the primary exposure variables of interest were extremely resilient nurses versus not extremely resilient nurses.

Ethical approval

The study was endorsed by the Institutional Review Board (IRB) of An-Najah National University. The study adheres to the World Health Organization Declaration of Helsinki on the Ethical Principles in Helsinki for Medical Research on People [23]. The TH's nursing manager was contacted for permission for the nurses to participate in the study. Resilience questionnaires and the data sheet of the demographic and personal characteristics of the subjects were distributed by head nurses to the subjects. Nurses' participation was completely voluntary; nurses who agreed to participate in the study were in-

cluded. Informed consent was obtained from each subject. To ensure anonymity, the questionnaires were coded and there was not any type of identification of the participants.

Researchers provided participating nurses with an overview of the study aims and careful clarifications of the procedures for participation. The subjects were also informed that no identifiable data would be gathered and the collected data would be kept anonymous. The surveys took approximately 40 minutes to complete. The questionnaires were distributed to the nurses by the head nurse in each department. The questionnaires for each participant were placed in an envelope and each participant was asked to close the envelope after completion before placing it in the closed box; the boxes were handed over by the department head to the researchers.

RESULTS

One hundred and nineteen nurses participated in the study: 78/119 (66%) of participants were male and 41/119 (34%) of participants were female. Mean (SD) age of participants was 26.3 (± 4.25). The mean (SD) of TRC scores was 73.64 (± 8.6) and for the SRC was 61.67 (± 8.44). The results exhibited that 48/119 (40.3%) nurses had extreme trait resilience (scores in the 65-75 range) (Table 3), and 48/119 (40.3%) nurses had extreme state resilience (scores in the 87-90 range) (Table 4).

Table (3): Distribution of Nurses' Trait Resilience Scale Scores.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	1	0.8	0.8	0.8
	Medium	2	1.7	1.7	2.5
	High	16	13.4	13.4	16.0
	Very High	52	43.7	43.7	59.7
	Extreme	48	40.3	40.3	100.0
Total		119	100.0	100.0	

Table (4): Distribution of Nurses' State Resilience Scale Scores.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	1	0.8	0.8	0.8
	Low	1	0.8	0.8	1.7
	Medium	1	0.8	0.8	2.5
	High	18	15.1	15.1	17.6
	Very High	50	42.0	42.0	59.7
	Extreme	48	40.3	40.3	100.0
	Total	119	100.0	100.0	

Personal characteristics of nurses who have extreme trait resilience (TRC)

Nurses who have 1-2 siblings ($p=0.022$), who own a house ($p=0.048$), who work the day shift only ($p=.016$), whose spouse's education is at university level ($p=0.020$), and who have no problem with the work team ($p=0.041$) had significantly higher extreme trait resilience compared to other nurses. There was no relationship between the other variables and extreme trait resilience. There were no significant differences between nurses' age ($p=0.597$), gender ($p=0.681$), level of education ($p=0.478$), total income ($p=0.826$), working hours per week ($p=0.265$) and extreme resilience ($p=0.681$). These variables are the most common variables that have been discussed in resilience literature.

Personal characteristics of nurses who have extreme state resilience (SRC)

Nurses who have 1-2 siblings ($p=0.000$), who own a house ($p=0.024$), who have a daily commute to work ($p=0.038$), whose spouse's education is at university level ($p=0.008$), and those who have no problem with the work team ($p=0.023$) had significantly higher extreme state resilience compared to other nurses who did not have ex-

treme resilience. There was no relationship between the other variables and extreme state resilience. There were no significant differences between nurses' age ($p=0.510$), gender ($p=0.263$), level of education ($p=0.647$), total income ($p=0.637$), working hours per week ($p=0.229$) and extreme resilience. These variables are the most common variables that have discussed in resilience literature.

Factor analyses of SRC & TRC

The factor analysis of the results of the TRC resulted in five resilience factors, while that of the SRC had three factors. For the TRC, the total variance explained by the five factors was 63% while the total variance explained by the three factors of the SRC was 56%. Based on analysis of the TRC, the five factors that were retained were the following (Table 5): Factor I consisting of 9 items with factor loadings ranging from 0.436 to 0.790, Factor II consisting of 6 items with factor loadings ranging from 0.412 to 0.736, Factor III consisting of 3 items with factor loadings ranging from 0.459 to 0.835, Factor IV consisting of one item with factor loading 0.441, and Factor V consisting of two items with factor loadings ranging from 0.584 to 0.854.

Table (5): Factor Analysis of TRC- Rotated Component Matrix (a).

	Component				
	1	2	3	4	5
TRCQ1 I am expected to be a helpful person	0.641				
TRCQ2 I am calm even in times of difficulties.		0.736			
TRCQ3 Others see me as alert and physically active.	0.437				0.584
TRCQ4 I believe in myself.		0.459		0.441	
TRCQ5	0.506		0.459		

	Component				
	1	2	3	4	5
My parents give me much attention.					
TRCQ6 My family has high expectations of me.		0.491			
TRCQ7 When I am upset or in trouble, there is usually someone that I can turn to.	0.436				
TRCQ8 I am successful in school.	0.790				
TRCQ9 I actively do things to help others.	0.748				
TRCQ10 I feel that I understand myself.	0.519	0.412			
TRCQ11 I am exposed to stressful difficulties that I learned to handle.			0.835		
TRCQ12 I feel that things will turn out well even in difficult situations.			0.727		
TRCQ13 I know how to plan for the future.	0.565	0.501			
TRCQ14 Others usually seem happy to see me.					0.854
TRCQ15 My parents tell me that I am good-natured and easy-going.		0.606			
TRCQ16 I have warm positive relationships with adults.	0.481			0.405	0.468
TRCQ17 I am persistent in my actions till I succeed.				0.775	
TRCQ18 I am able to figure out effective ways of dealing with problems.				0.732	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 9 iterations.

Based on analyses of the results of the SRC, the three factors that were retained were the following (Table 6): Factor I consisting of 10 items with factor loadings ranging from 0.404 to 0.716, Factor II consisting

of 6 items with factor loadings ranging from 0.407 to 0.772, and Factor III consisting of 3 items with factor loadings ranging from 0.446 to 0.790.

Table (6): Factor Analysis (SRC) - Rotated Component Matrix (a).

	Component		
	1	2	3
SRCQ1 I have someone who loves me.	0.574		
SRCQ2 I have a person outside my home who I can tell about my problems or feelings.			
SRCQ3 I am praised for doing things on my own.	0.707		

SRCQ4 I can count on my family being there when needed.	0.506		
SRCQ5 I have someone who I want to be like (role model).			- 0.790
SRCQ6 I believe things will turn out alright.	0.595		
SRCQ7 I do endearing things that make people like me.	0.716		
SRCQ8 I have faith in a higher being.	0.527	0.407	0.467
SRCQ9 I am willing to try new things.	0.592		
SRCQ10 I like to achieve in what I do.	0.461	0.490	0.446
SRCQ11 I feel that what I do makes a difference in how things come out.	0.731		
SRCQ12 I like myself.		0.764	
SRCQ13 I can focus on a task and stay with it.	0.404	0.678	
SRCQ14 I have a sense of humor.		0.769	
SRCQ15 I make plans to do things.		0.772	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 7 iterations.

Table (7): Rotated Factor Pattern for the SRC Scale for Nurses.

Scale	Eigenvalue	Item	Cronbach Alpha	Items	Interpretation
SRC					
Factor 1	5.978	1, 2, 3, 4, 6, 7, 8, 9, 11	0.83	SRCQ.1 I have someone who loves me. SRCQ.2 I have a person outside my home who I can tell about my problems or feelings. SRCQ 3. I am praised for doing things on my own. SRCQ 4. I can count on my family being there when needed. SRCQ 6. I believe things will turn out alright. SRCQ 7. I do endearing things that make people like me. SRCQ 8. I have faith in a higher being. SRCQ 9. I am willing to try new things. SRCQ. 11 I feel that what I do makes a difference in how things come out.	Social support

Scale	Eigenvalue	Item	Cronbach Alpha	Items	Interpretation
SRC					
Factor 2	1.284	10, 12, 13, 14, 15	0.82	SRCQ 10. I like to achieve in what I do. SRCQ 12. I like myself. SRCQ 13. I can focus on a task and stay with it. SRCQ 14. I have a sense of humor. SRCQ 15. I make plans to do things.	Coping skills and competencies
Factor 3	1.127	5	----	SRCQ 5. I have someone who I want to be like (role model).	True <i>role model</i>
			Total (0.78)		

The explorative factor analysis was performed with a varimax rotation on the 18 items of the TRC (Table 8). For the TRC scale, the factor analysis showed that five factors explained 62.7% of the total variance, which is higher than that for the SRC (Table 8). These factors also had eigenvalues greater than 1.0. Factor one explained 34.4% (eigenvalue: 6.186) of the variation in the scores of the TRC. Factors two and three accounted for 8.4% (eigenvalue, 1.517) and 7.5% (eigenvalue, 1.352) of the variance, respectively. Factors four and five accounted for 6.7% (eigenvalue, 1.203) and 5.7% (eigenvalue, 1.03) of the variance, respectively.

Table (8) exhibits the categorization of the five factors related to the TRC scale, including the related eigenvalue, the item numbers, the Chronbach Alpha value, and a description of the factors. Factor I was labeled as: "A person who has internal strength/Strong psychosocial support". Factor II was: "A person that has internal strength/goal-directed solution-seeking." Factor III was: "A person that has personal strength/ a perception that problems are not stop signs, they are guidelines". Factor IV was: "Internal strength/ calm mind that brings inner strength and self-confidence." and Factor V was: "Social skills/keeping body and mind fit/ filling others' hearts with happiness."

Table (8): Rotated Factor Pattern for the TRC Scale for nurses.

TRC Scale	Eigenvalue	Item	Cronbach Alpha	Items	Interpretation
Factor 1	6.186	1, 5, 7, 8, 9, 10, 13, 16	0.84	TRCQ1. I am expected to be a helpful person. TRCQ 5. My parents give me much attention. TRCQ 7. When I am upset or in trouble, there is usually someone that I can turn to. TRCQ 8. I am successful in school. TRCQ 9. I actively do things to help others. TRCQ 10. I feel that I understand myself. TRCQ 13. I know how to plan for the future.	Internal strength/Strong psychosocial support

TRC Scale	Eigenvalue	Item	Cronbach Alpha	Items	Interpretation
				TRCQ 16. I have warm positive relationships with adults.	
Factor 2	1.517	2, 4, 6, 15	0.62	TRCQ 2. I am calm even in times of difficulties. TRCQ 4. I believe in myself. TRCQ 6. My family has high expectations of me. TRCQ 15. My parents used to tell me that I am good-natured and easy-going.	Internal strength/ goal-directed solution-seeking
Factor 3	1.352	11, 12	0.67	TRCQ 11. I was exposed to stressful situations that I learned to handle. TRCQ 12. I feel that things will turn out well even in difficult situations.	Personal Strength/ perception that problems are not stop signs, they are guidelines.
Factor 4	1.203	17, 18	0.71	TRCQ 17. I am persistent in my actions until I succeed. TRCQ 18. I am able to figure out effective ways of dealing with problems.	Internal strength/ calm mind that brings inner strength and self-confidence.
Factor 5	1.030	3, 14	0.65	TRCQ 3. Others see me as alert and physically active. TRCQ 14. Others usually seem happy to see me.	Social skills/keeping body and mind fit/fills others' hearts with happiness.
			Total 0.88		

Similarly, the explorative factor analysis was performed with a varimax rotation on the 15 items of the SRC (Table 7). Results showed three factors that explained 56% of the total variance. These factors had eigenvalues greater than 1.0. Factor one explained 39.9% (eigenvalue: 5.978) of the variation in the scores of the SRC. Factors two and three accounted for 8.6% (eigenvalue, 1.284) and 7.5% (eigenvalue, 1.127) of the variance, respectively (Table 7). Factor I was labeled as: "A person who has social support". Factor II was: "A person that has coping skills and competencies"; and

Factor III was: "A person who has a true role model".

DISCUSSION

Data demography and the personal characteristics of nurses:

This study was conducted to evaluate the resilience of nurses and the extent to which demographic variables and personal characteristics contribute to nurses' resilience. We identified that extreme resilience is present in 40.3% of nurses in the TH. Extreme resilience was affected by 7 individual personality traits out of 40 variables. Nurses who have 1-2 siblings, who own a house, who work the day shift only, whose spouse's education is at

university level, those who have no problem with the work team, and who have a daily commute to work were nurses with extreme resilience. As such, resilience appears to be dependent on external characteristics and life circumstances and does not necessarily depend solely on a nurse's personal attributes. Our findings align with a study that claims that those who have the human attributes or the characteristics of resilience can more easily weather and survive stress in the workplace and even thrive in spite of stress [24]. This assertion can be influential in getting organizations and hospital management on board with developing strategies to help improve resilience for all nurses and the profession as a whole.

Age, gender and education

The current study exhibits that resilience is not an influence of age, gender or level of education of the participant nurses. These results are congruent with a study by Wagnild [25] that showed that resilience is not essentially dependent on the age and education of the nurse. Instead, resilience may be affected and promoted based on circumstantial factors that were not evaluated in their study. Our results are likewise congruent with the results of Gillespie et al. [26], which concluded that age and education did not affect the resilience of nurses. Although little is known about age and education in relation to predicting resilience, these characteristics have been identified as influencing coping and stress management behaviors in various nursing contexts [27, 28, 29]. Our findings regarding age are also incompatible with the Gillespie et al. study [30], whose results showed a small correlation between age and resilience, demonstrating that nurses developed resilience as they aged. Also, the current study results disagree with the results of a study performed by Mealer et al. [18], which demonstrated that there was a small, but significant, variation in age between resilient intensive care unit (ICU) nurses compared to not resilient ICU nurses. A study on acute surgical nurses found there was a positive correlation between age and susceptibility to the effects of workplace stress. Older nurses (>51 years) had the lowest levels of stress [28]. The researchers implied that older nurses coped better with workplace stress

than their younger counterparts, and perhaps adapted more effectively to the constant changes in the environment. The results in this area differ because there is likewise research that declares that older age is not linked with greater levels of resilience [31]. The current study showed that resilience is not influenced by the gender of the subjects. The result is not in line with Wagnild, who found that female employees scored higher on resilience scales than males [25].

Hours worked per week and income

The current study showed that extreme resilience was not affected either by the number of hours that nurses work per week or income. This result is discordant with the results of a study by Sull et al. [32], which proposed that employees working part-time (under 18.75 hours per week) have less resilience in comparison with employees working over 18.75 hours per week. Additionally, employees who work over 18.75 hours, but not full time (up to 37.5 hours) experience larger resilience than those who work full time. The authors speculated that individuals who work fewer hours may have lower income and also lower education levels, but the results from a study conducted by Gillespie et al. determined that there were no significant relationships between income and resilience [30]. The Gillespie et al. results converge with the results of the current study, which showed that there were no significant differences between nurses' income and extreme resilience [30].

No problem with the work team

Nurses who had an extreme degree of resilience were nurses who had no problems with the work manager or with the working group. This result fits in with the survey implemented by Mealer et al. [18], which explained that highly resilient nurses were less likely to face problems related to work [18]. Findings by another study [33] also suggested that a supportive team is related to resilience. Another study supports the idea that a supportive superior as well as relationships with colleagues seem to be important factors for wellbeing at different career levels [34].

Factors of extreme resilience

The current study exhibits the factors of extreme resilience found among participant nurses in regards to state resilience, which are: (1) social support (2) coping skills and competence and, (3) having a true role model. Factors affecting trait resilience are: (1) internal strength and strong psychosocial support, (2) internal strength and goal-directed solution-seeking, (3) personal strength and perception that problems are not stop signs, they are guidelines, (4) Internal strength/ calm mind that brings inner strength and self-confidence, and (5) Social skills/keeping body and mind fit/ fills others' hearts with happiness. These results are consistent with the results of Mealer et al. [18], which have shown that highly resilient nurses were less likely to report problems regarding their work, were more likely to sustain communication with friends, do fun and leisure activities, and preserve communication with the family. In the same vein, Hiew's study presented a new paradigm for comprehensive healing, which promotes a combination of consciousness and harmony in mind, body, emotions and spirit or energy zone [14]. The Gillespie study included an elective sample of Australian operation room nurses, and posited that there are five variables that describe resilient nurses, which are: hope, self-esteem, management, control, and competence [26]. These results are congruent with the current study's results.

The results of the current study are also aligned with the study results of Southwick et al. [35], which identified a cohort of critical care nurses who had been exposed to extreme forms of stress while working in the ICU, but had not developed anxiety, depression, or post-traumatic stress disorder. There are both biologic and psychological factors that enabled these nurses to be resilient when confronted by severe stress [35]. The current study results are also in accordance with the results of a Milne [36] study which showed that ten characteristics that can be adopted to help increase resilience, including: optimism, developing cognitive flexibility, developing a personal moral compass or set of beliefs, altruism, finding a resilient role-model or mentor, learning to be adept at facing fear, developing active coping skills, having a

supportive social network, exercising, and having a sense of humor [36].

Social support

An important factor in the participants' sense of resilience in the current study was social support presented by supportive relationships with family and friends. These results are consistent with the study results conducted by Jackson et al. [6], which showed that participants strongly believed that the support network increased their ability to feel emotionally secure and maintain a positive self-view in dealing with the adverse events and conditions of their working life. Similarly, in a study by Mcdonal et al. [37], participants who believed they were flourishing had established mutual relationships that resulted in useful information being conveyed when needed, reducing stress on individuals and allowing for softer and more effective patient care processes [37].

Having a true role model

In the current study, it was shown that having a true role model is a factor that can improve state resilience. This result is consistent with the studies that explain that this factor is crucial for progressive team work [22, 38],

Coping skills and competencies

According to Tusaie & Dyer, the most-used scale in social research related to nursing is the "Ability to Manage Stress" scale [24]. The concept of resilience is adjacent to the concept of adaptation. Adapting means that one can customize his/her own behavior in stressful situations in order to flourish. Nurses experience the need to modify their behavior to fit patients' needs every day, and further, to modify to fit organizational demands [24]. Innovative coping skills were a benchmark of the extreme resilience exhibited in subjects of the current study, which is in line with the results of the study performed by Lambert et al. [39], which considered work stressors, ways of managing, and demographic qualities as predictors of physical and mental health among 1,554 nurses. Self-control, searching for social support, problem solving and positive valuation were the four most used methods to manage stress [39].

By testing the coping approach and experiences that afford joy and happiness to the personal and professional lives of 23 nurses, Lim et al. found that professional improvement was related to acknowledgment, having a decisive working environment and health promotion of patient care. Personal uplift was related to leisure activities, disposable income, laughing with friends, and spending time with friends and family [40]. In a study of 772 Australian theatre nurses [26], highly significant associations between hope and resilience, self-efficacy and resilience, and control and resilience were found. Moderately significant relationships were found between coping and resilience, and competence and resilience. While these results depict resilience as being found within the individual, the authors suggest that hopefulness may only be possible in a supportive work environment and the development of self-efficacy may be influenced by the work culture. A systematic literature review [41] investigated coping and its relationship with resilience in assisting pediatric oncology nurses. The three themes identified were, (1) coping factors (social, team and organizational support, personal views, attitudes, and circumstances, experience and types of stressors); (2) coping processes (the contribution to effective adaptation); and (3) overcoming negative circumstances (how effective adaptation and coping are combined when professionals are dealing with workplace stressors).

Goal-directed solution-seeking

In the current study, goal-directed solution-seeking is a factor that was found to contribute to extreme resilience, which is consistent with the study of Snyer et al. [42], which stated that a targeted solution-seeking factor brings together the demand for goals and a perception that oversees innovative processes in seeking quick fixes to problems. The resilient person has improvisational solutions and addresses difficult problems. When working in a team, resilience needs trust in team decisions. This is the idea of successful and focused thinking and planning in order to achieve goals. Likewise, a belief in the capability to accomplish, even in difficult conditions, is allied to resilience [42]. It is important to assist nurses to develop skills that will aid them in being more resilient and

better able to cope with and protect themselves from the effects of workplace adversity [42]. A growing body of evidence suggests that the personality trait of hardiness helps to buffer or neutralize stressful events or extreme adversity [43, 44].

Nurses in this study have reasonably extreme levels of resilience. Further studies with qualitative methods would be useful for looking more deeply into the levels of resilience of nurses in different departments and specialties to note any significant differences.

A recommendation that stemmed from this study is that resilience advancement should be incorporated into health education and that professional support should be provided to help young nurses understand the perception of resilience.

LIMITATIONS

The sample was taken from only one hospital; hence, the results cannot be representative throughout Palestine, as different organizations have different cultures that can influence resilience ratings. The results may have been affected by other events that occurred while the investigation was completed; for example, there is a possibility that some respondents recently had either very positive or very negative experiences in the ward during the investigation period. Therefore, the effects of 'history' may have contributed to how the participants responded to the survey [45].

CONCLUSIONS

Measurement of resilience is a necessary step to evaluate the application of the resilience paradigm. Consequential difference in extreme resilience is described by the personal characteristics of nurses. Resilience appears to be forecasted by other attributes as well, and does not necessarily depend solely on a person's personal characteristics.

Factors promoting extreme state resilience among nurses are: social support; coping skills and competence; and having a true role model. Factors contributing to trait resilience are: strong psychosocial support; goal-directed solution-seeking; perception that problems are not stop signs, they are guidelines; peace of mind that brings inner

strength, self-confidence and social skills; and keeping the body and mind fit, and filling others' hearts with happiness.

The level of nurse resilience remained unchanged from trait resilience to state resilience. These findings point out the relevance of management-endorsed programs for resilience-based strategies to develop resilience among nurses.

CONFLICT OF INTEREST

There are no conflicts of interest.

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