

Research Article

Assessing Resilience in Healthcare Setups of Karachi using Connor Davidson Resilience Scale

Moinuddin¹, Hassan Raza^{*2}, Nadia Shah³, Nazia Nazir⁴, Noman Ali⁵

¹Department of Nursing, Dow University of Health Sciences, Karachi, Pakistan.

²Department of Business Management, Karachi University Business School, University of Karachi, Pakistan.

³Department of Public Health, School of Public Health, Dow University of Health Sciences, Karachi, Pakistan.

⁴Department of Nursing, Sindh Government Hospital, Karachi, Pakistan.

⁵Department of Nursing, Ziauddin University, Karachi, Pakistan.

Abstract: Background: Healthcare sector of Pakistan is complex and changing rapidly. This complex and transforming phase create more hurdles for employees especially for healthcare managers. During this transition phase, healthcare managers are burdened with more uncertainties and adversities. Managing under these circumstances is not an easy task as this requires frequent adaptations. One of the most important traits that can aid in these adaptations is resilience, which is ignored in healthcare management.

Objective: The first and main objective of the study is to assess the extent to which the healthcare managers are resilient. Secondly, to compare the resilience of public and private sector healthcare managers. At last, to assess the impact of gender, income and other demographic variables like age, socioeconomic status, marital status, education, designation, and work experience etc.

Materials and Methods: It was a cross sectional study conducted at 13 different leading healthcare institutes of Karachi. These hospitals and healthcare services were divided broadly according to public and private sector categories. Employees were asked to complete structured questionnaire, a 25 item Connor Davidson Resilience Scale (CD-RISC) and demographic characteristics. Data were collected from 438 healthcare managers working at tertiary care hospitals in Karachi.

Results: Health managers at both sectors were found resilient, with mean score of public sector and private sector were 52.55 (SD± 15.05), and 50.74 (SD± 14.15) respectively although the relationship was found insignificant relationship. Income, experience, designation, and worksite variables were significantly associated with resilience while age, gender, working hours, marital & socioeconomic status were insignificant.

Conclusion: In conclusion, the healthcare managers working in both public and private sector were found resilient. There was no significant difference found in resilience of male and female healthcare managers. In addition demographic variables like age, marital status, socioeconomic status, and working hours showed no significant relationship with resilience while designation, income, working experience, and worksite variables showed significant relationship with resilience.

Keywords: Resilience, Healthcare manager, Gender, Connor Davidson Resilience Scale, Demographic characteristics, Public sector.

INTRODUCTION

Pakistan's healthcare industry is very diverse we have Private healthcare setups who are treating patients with State of Art facility having modernized Artificial Intelligent Technology and ERP system to public sector organization, where Healthcare staff is still working through old and obsolete technologies. Most of Pakistan Healthcare institutes are evolving different pace of evolution. This complex and transforming phase create more hurdles for people working in Healthcare.

Healthcare managers are considered more vulnerable to crisis, due to the rapid increase in patient burden, quality and regulatory requirement of the country, unmet needs of stakeholders, bullwhip effect of supply chain and recent economic instability, which is creating scarcity issues in healthcare organization

*Address correspondence to this author at the Department of Nursing, Dow University of Health Sciences, Karachi, Pakistan.
Email: rph.hassan@hotmail.com

all over the globe. These factors requires comprehensive reforms in healthcare sector especially in Pakistan [1].

During this transition phase, healthcare managers are burdened with more uncertainties and adversities. Managing under these circumstances is not an easy task as this requires frequent adaptations, and proactive holistic approach. One of the most important traits that can aid in these adaptations is resilience which is ignored in healthcare management [2].

According to Harvard Business Review, resilience is defined as the capacity to respond quickly and constructively in a crisis [3]. Resilience depends on different factors: livelihood, innovation potential, contingency, integrity and social and institutional capability. Healthcare Managers are thought to be more resilient as they are taught about waste management, Crisis management and Project Management. The more resilient manager will make the organization more organic [4].

Pakistan, the sixth most populous country in the world, is facing Political and Economic Instability for last three decades. This instability, crisis and the war against terrorism has generated a stress and fear among the population of this country.

These fears and Stress has variety of impact at various levels from individual to Organization [5]. Resilience not only gives the strength to face adversity but also provides fuel to keep moving forward in challenges [6].

When it comes to individual it may have varying effect from Negative to Positive. These Stressors are responded by either Flight or Fight when a Person response to this stress through Flight the negative force overcome, and, it can make a person depress, or can socially isolate or provoke negative behavior like substance abuse [7].

However, on the other side if a person response to these stresses with fight it can positively direct individual capabilities and make the individual Resilient, Resilient on individual level is defined as a person capability to bounce back or even succeed in face of problems and adversity [8].

The same is true for the Organizations, if the Organization response to the hurdles or instabilities or adversities with positive forces then the Organization will be termed as Resilient. The Resilient Organizations are used to be visionary and transformational.

The Resilience in Organization is one of most desirable characteristics because this increase change acceptability and overall stability of the organization.

However, if the Organization responses to these stress Factors with Negative Response, the Organization is said to be Low-Resilient. Meryer *et al.* term Negative Response as dysfunctional and related it to Strategic Planning [9]. These Organizations have high turnover and impaired work performance [10].

The Resilience in Organization is depended upon Individual and Culture, these Individuals can be Managers or Employees or Stake Holders.

Mealer *et al.* found that Organizations having high resilience was associated with low prevalence of Burnout, Symptoms of Anxiety and Depression and Post Traumatic Stress Disorder [11]. Similarly McGarry *et al.* (2013) found that low resilience was associated with higher secondary Traumatic Stress [12].

When organizations displayed resilience during times of adversities and challenges then it can be better able to sail

over through all these circumstances. This can ultimately result in a resilient community as a whole [13].

Resilience can be a health & safety promoting factor in clinical settings as it can aid the transition phase in quality and patient safety through adaptive changes in complex patient care situations [14]. Resilience of employees involved in administration and management in clinical settings is found better than those involved in supporting roles such as ancillary staff etc. [15].

SIGNIFICANCE OF THE PROBLEM

The healthcare workers especially HCT managers in Pakistan are facing more real time challenges from short term assignments to long term projects.

In short term, they face more staffing and scheduling issues in daily routine which consumes their peak working hours and efforts for the sake of resolution. This made them stay a lag behind of their targets.

In Long term, due to the growing demand of healthcare quality by consumers and increased patient burden they are mostly not only short of time but also short of resources. All these things made them utilize much of their personal and individual resources to handle these daily issues.

Among other personal resources, the trait of resilience is considered vital in managing these daily hassles. Though this trait is widely accepted as one of the most important capability of an employee as it is directly linked with the job satisfaction especially at times of crisis and adversities but, it is ignored in the field of healthcare management. Similarly, resiliency level of our managers especially those working in healthcare sector has never been assessed [16].

OBJECTIVE OF THE STUDY

The first and main objective of the study is to assess the extent to which the healthcare managers are resilient to work life stressor and external challenges. Secondly, to compare the resilience of public and private sector healthcare managers. At last, to assess the impact of gender, income, and other demographic characteristics on resilience in healthcare managers.

LITERATURE REVIEW

Management and handling of these resistances or hard areas is not an easy task as this requires sound management skills and individual personal resources most of the time. Effective approaches like stress management resiliency trainings can be helpful in reducing these stressors in a meaningful and timely manner. That's why, personal resilience is considered as one

of the most influential and beneficial individual resource [4, 17].

Resilience is an innate trait but fortunately it can be enhanced or improved by modifications in the environment, education, trainings, and mental or intellectual levels [18]. Personal resilience is found to be associated with adaptive coping during times of crisis, stress, and adversities. Low personal resilience is found to be associated with avoidant behavior like ineffective coping [19].

Resilience teaching can lead to improved self-esteem, high sense of control, and better relationships [20]. All these traits are deemed effective for adaptive coping and constructively handling of challenges, issues, and stressors in day-to-day operations.

Healthcare management in Pakistan is comparatively a stressful job face. Healthcare managers face different challenges on daily basis as discussed. They can cope effectively with these challenges if their resilience reserves are high or at least sufficient for the given challenge. When this resilience trait is used collectively as displayed by different workers, it not only resolve the problem but also made the organization more dynamic [4].

Organizations having resilient workers can achieve operational excellences because they are better able to adapt to the frequent adversities and issues. They never avoid challenges instead sail over in difficult situations. When organizations especially like healthcare facilities such as hospitals, Emergency Medical Services (EMS), and Rescue Services become resilient then it can be better able to aid the community during times of disasters like catastrophe's or mass disasters. This will in turn give rise to a resilient community as a whole [13].

MATERIALS AND METHODS

This study was done in September 2018 before COVID-19. This is a Cross Sectional Study in which a validated Questionnaire was distributed physically by Authors to 13 different Tertiary Healthcare setups of Karachi, Pakistan. These hospitals and healthcare services were divided broadly into public and private sector categories. Public sector comprises of six leading tertiary care hospitals of Karachi while private sector includes five leading tertiary care hospitals, one secondary care hospital, and a healthcare service such as Emergency Medical Services (EMS).

Participants were briefed about the Purpose of the study and assured of full confidentiality of their Personal Information.

The Questionnaire was adapted from the 25 item Connor Davidson Resilience Scale (CD-RISC) after formal approval from the Author of the Questionnaire.

The Participants were asked to choose the best option which describes their feelings. It took approx. 10 minutes to complete the whole questionnaire.

Inclusion Criteria

Anyone from public and private healthcare facility involved directly in planning, organizing, leading and controlling of either all or few activities, people, and departments in healthcare environment are included in the study such as:

1. In charge Nurses.
2. Coordinators.
3. Supervisors.
4. Lead Trainers.
5. Assistant Managers.
6. Managers.
7. Senior Manager.
8. General Manager Etc.

Exclusion Criteria

Those who did not consent to take part in the study were excluded.

Anyone involved indirectly in planning, organizing, leading and controlling of either all or few activities, people, and departments in healthcare environment are excluded from the study.

Sampling Technique

We have used a convenience sample method. This is the most popular type of non-probability sampling and is useful to establish plausibility of relationship among variables which is desirable to build theory [21].

Sample Size Estimation

Using Open epi calculator taking the resilience scores of healthcare workers, at 95% confidence level, the sample size calculated was 424 [15].

Ethical Considerations

Special permission has been obtained from Jonathan Davidson for Connor-Davidson Resilience Scale (CD-RISC) through an email after providing all necessary details regarding study title, scope, setting, purpose, sample size etc. Furthermore, it has also ensured that this questionnaire will not be shared, reproduced without the copyright terms and conditions stated on the document. Also, written consent from each individual respondent was taken before collection of data for the sake of ethical responsibilities.

Data Collection

To prevent attrition effect, 550 questionnaires were distributed among different healthcare personals working at different healthcare facilities at different point of time through personal contact.

Non-Response Bias

Non-response bias refers to the mistake one expects to make in estimating a population characteristic based on a sample of survey data in which, due to non-response, certain types of survey respondents are under-represented [22]. Since our study has the response rate of more than 50% (79.63%) thus it excludes the chances of Non-Response Bias.

We have also applied a t-test for equality means between early and late respondents to assess for non-response bias. These tests found no difference in the means and variation between the two groups, and as a result, there was no evidence of a statistically significant difference within the population.

STATISTICAL ANALYSIS

Statistical analysis was done for both descriptive and inferential statistics. At first, Mean, standard deviation, frequencies and percentages were calculated for descriptive stats. Finally, Chi Square Tesh was done for inferences. All data was analyzed through statistical package of social science (SPSS 19) software (Table 1).

Table 1. Characteristics of Population.

Characteristics of Population	Respondents	Frequency	Percent %
No. of Hospital	LNH	58.00	13.2
	THI	21.00	4.80
	JPMC	55.00	12.60
	DOW	24.00	5.50
	IND	23.00	5.30
	NICVD	45.00	10.30
	NICH	29.00	6.60
	BTK	15.00	3.40
	AMAN	66.00	15.10
	PATEL	59.00	13.50
	SGQH	16.00	3.70
	AKU	6.00	1.40
	CIVIL	21.00	4.80
	Total	438.00	100.00
Marital Status	M	251.00	57.30
	S	187.00	42.70
	Total	438.00	100.00
Gender	F	192.00	43.80
	M	246.00	56.20
	Total	438.00	100.00
Designation of Respondents	TL	55.00	12.60
	Incharge	52.00	11.90
	RMO	2.00	0.50
	MO	3.00	0.7
	head nurse	9.00	2.10
	RN	162.00	37.00
	W\C	1.00	0.20
	N.Manager	15.00	3.40
	Cordinator	42.00	9.60
	H/N	4.00	0.90
	AM	15.00	3.40
	AHN	7.00	1.60
	Manager SCM	1.00	0.20
	Manager	28.00	6.40
	Supervisor	15.00	3.40

Continued...

Characteristics of Population	Respondents	Frequency	Percent %
Social class of Respondents	WM	363.00	82.90
	UM	43.00	9.80
	Lower	8.00	1.80
	Upper	24.00	5.50
Organization type	Public	190.00	43.40
	Private	248.00	56.60
Experience (Years)	01-05 Years	234.00	53.40
	06-10 Years	141.00	32.20
	11-15 Years	32.00	7.30
	16-20 Years	20.00	4.60
	>20 Years	11.00	2.50
Working Hours	<8 Years	67.00	15.30
	>8 Years	371.00	84.70
Income (PKR)	<40000	97.00	22.10
	40000-55000	131.00	29.90
	55000-70000	113.00	25.80
	≥70000	97.00	22.10

Table 2. Descriptive Statistics of the Scale used in the Study.

Scale	Theoretical Range	Min	Max	Mean	SD
Connor - Davidson Resilience Score	0 - 100	0	79	51.53	14.56

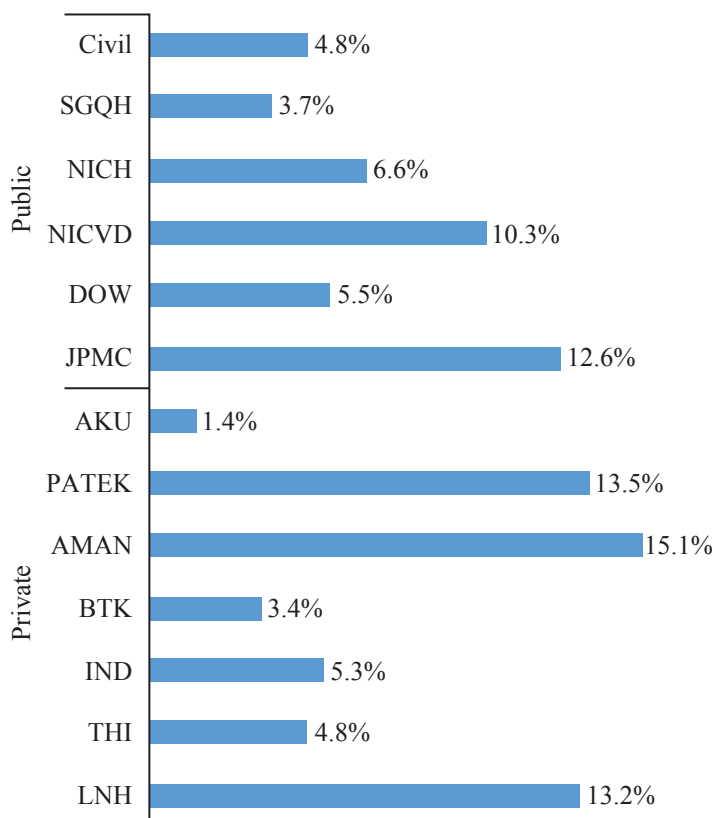


Fig. (1). Respondents from Different Working Sites.

RESULTS

Sample

Data were collected from 550 employees but only 438 had given the complete details through CD-RISC scale (25-item). CD-RISC (25-item) scale is used widely and found satisfactory internal consistency reliability of 0.89, and coefficient alpha was 0.91 [23]. The mean resilience score of the sample is 51.53 (SD=14.56) (Table 2).

Diversity of Respondents

This study has a diverse population comprising of Public and Private healthcare institutes of Karachi. A total of 13 Institutes are part of this study. 6 (43.4%) of which belongs to Public Sector and 7 (56.6%) belongs to Private Sector (Fig. 1).

Demographics

The 56% of the respondent were male while 43% were females. Mean age of the respondents was 31.7 years. Most of the respondents belonged to the working middle class (82.9%). Mean working experience was 6.53 yrs. while mean working hours were 7.94hrs/day. Most of the managers belonged to the nursing department i.e. RN (37%). Mean income of the respondents were 56139.95PKR/month.

Table 3. Resilience Score and Socio-demographic Variables.

Resilience Score		Mean \pm SD	p-value	Remarks
Gender	Male	51.24 \pm 14.95	0.84	
	Female	51.74 \pm 14.27		
Age (years)	<25	54.6 \pm 11.71	0.342	Mean \pm SD of Age: 31.70 \pm 7.10
	25-29	51.57 \pm 14.73		
	30-34	49.27 \pm 15.94		
	35-39	53.61 \pm 13.26		
	\geq 40	51.17 \pm 14.28		
Marital Status	Single	50.99 \pm 15.34	0.567	
	Married	52.24 \pm 13.44		
Social Class	Lower	46.50 \pm 14.88	0.626	
	Upper medium	52.11 \pm 15.31		
	WM	51.74 \pm 14.33		
	Upper	48.83 \pm 16.77		
Income (Pkr.Rs)	<40000	53.88 \pm 13.10	0.033**	Mean \pm SD of Income: 56139.95 \pm 22356.48
	40000-55000	52.84 \pm 13.88		
	55000-70000	50.94 \pm 15.15		
	\geq 70000	48.06 \pm 15.56		
Level of management	Junior	53.09 \pm 13.68	0.015**	
	Senior	49.85 \pm 14.47		
	In charge	51.72 \pm 17.18		
	Managers	48.96 \pm 14.57		
working Hours in a Day	less than 8 WH	52.02 \pm 11.63	0.537	
	More than or equal to 8 WH	51.43 \pm 15.04		
Private Sector Organizations	LNH	51.72 \pm 13.72	<0.001	
	THI	50.66 \pm 14.22		
	IND	48.91 \pm 15.59		
	BTK	35.80 \pm 12.85		
	AMAN	52.01 \pm 12.66		
	PATEL	51.88 \pm 14.29		
	AKU	60.66 \pm 9.99		
Public Sector Organizations	JPMC	58.42 \pm 10.79		
	DOW	54.42 \pm 14.32		
	NICVD	42.91 \pm 16.61		
	NICH	58.17 \pm 15.43		
	SGQH	49.06 \pm 9.78		
	Civil	50.61 \pm 14.55		
Years of work experience	01 to 05 Years of Professional Experience	53.18 \pm 13.92	0.010**	
	06 to 10 Years of Professional Experience	51.03 \pm 14.60		
	11 to 15 Years of Professional Experience	45.15 \pm 18.70		
	16 to 20 Years of Professional Experience	50.35 \pm 11.16		
	More than 20 Years of Professional Experience	43.27 \pm 12.90		

Socio-Demographic Variables

Socio-Demography of a Person has a significant effect on Resilience so we have also calculated the Resilience with respect to different Socio-demographic Variable (Table 3).

Overall Resilience of Healthcare Staff

Our study shows that the mean Resilience score of HCPs is 51.3 which is above 50 and it indicates that the HCPs of Pakistan are resilient. Thereby we accept our hypothesis No. 1.

Gender

The mean value of Resilience shown insignificant difference when it comes to gender therefore, we reject our Hypothesis No. 1. Thereby we reject Hypothesis No.2

Age

Our Results shows there is no direct trend in age $r = -0.11$ but younger population are little more resilient and in 30's People are least resilient.

Marital Status

Our Study shows no significant relationship between marital status and resilience of healthcare managers, but scores reflect that married couple are little more resilient than the unmarried.

Social Class

Our Study shows no significant relationship of resilience with social class but middle class are more resilient than the upper and lower class

Income

Our study shows significant relationship between income and resilience which reflected that who earn less are more resilient as compared to those earn more

Impact of Organization on Resilience

Our Study shows insignificant relationship between resilience of both public & private sector employees.

Impact of Designation on Resilience

Our Study shows a significant relationship between designation of an employee and resilience scores, though Managers are least resilient than Junior Employees

Impact of Working Experience on Resilience

Our Study also shows a significant relationship between working experience and Resilience. Employees working from 5yrs or less scored a little high than those having work experience of more than 5 yrs.

Impact of Working Late on Resilience

Our Study shows no significant relationship between Work-

ing Hours and Resilience, but those who worked less than 8 Hours are little more resilient than those worked more than 8 Hours in a day.

Impact of Worksite Variables and Resilience

Our study found significant relationship between resilience and different worksites variables. The Mean resilience score of public sectors was 52.55 (SD± 15.05), and for private sector was 50.74 (SD± 14.15).

DISCUSSION

This study aimed to gather the data regarding resilience of healthcare managers working in both public and private healthcare facilities of Karachi. A sample of 438 respondents from 13 different healthcare facilities including both public and private sector was evaluated. The healthcare managers' resilience score ranged from 0 to 75, and a mean score is found to be 51.53 (SD=14.56), which is consistent with the UK employees working in National Health Services, whose resilience scores were found to be moderate [15]. This may be due to the diverse nature of data they had collected in NHS from both clinical and ancillary staff in addition to the employees involved in administrative roles.

Our study population showed diversity when it comes to income, education, work experience and designation. Findings from this study showed significant relationship of income, designation and work experience with resilience which is in contrast to the findings of previous studies [24, 25].

When it comes to income, our study showed a significant relation between income and resilience score of managers working in healthcare sector of both public and private. This is consistent with the findings of previous study conducted on lower income families that reported decreased resilience among people especially females belonged to lower income class [26]. This is also a unique finding and adds to the current literature as there is currently no any evidence which suggest any significant relationship between resilience and income of healthcare managers.

Similarly, when it comes to designation, another novice aspect was observed that was a significant relationship between designation and resilience scores. We found juniors or novice more resilient than senior managers. It can be due to the fact that senior managers faced more adversities from long time which drained their resilience reserves as compare to juniors who were facing it from short time but this needs further exploration as there were no any relationship was reported in this context.

Interestingly, we have found significant relationship between working experience and resilience of healthcare managers. This reflects that managers having less than five years of working experience scored greater resilience than those having more experience which is consistent with the previous study that showed similar results among other variables like age, education, and work experience etc. [25]. So, it could be inferred that being junior with less working experience have greater resilience as compare to senior managers with more working experience. It could be because younger workers are more energetic, and are more active and look more for promotion opportunities so that may lead them to work harder and may be for better appraisals.

Moreover, our study showed significant relationship between resilience scores and worksite variables of both public and private sector which includes leading tertiary care hospitals, a secondary care setup, and an Emergency Medical Service (EMS). It could be due to the similar nature of job roles and to some extent working environments in both public and private sector. This also adds to the current literature as there were no such relationship was evident in existing literature.

Our study didn't reflect any significant relationship between resilience score and age. This has both parallel and contrasting aspects with the previous studies. Our finding is consistent with previous study that showed no any relationship of age with resilience across the life span of older individuals [27]. In contrast, a recent literature showed a weak but significant relations between age and resilience as well [25, 25]. These inconsistencies needs further explorations with more vigorous approaches like longitudinal research method etc.

The data reflected no any significant difference in resilience score of public and private sector healthcare manager which is a unique finding in itself because to be best of our knowledge, resilience scores of healthcare managers in the context of public and private healthcare sector not yet reported or studied.

This study showed that resilience score of female and male healthcare managers is almost same which is in contrast to the findings reported in UK healthcare workers by Sull et al. [15]. There are also studies which shows similar results like no any significant relationship between resilience and gender of healthcare managers. This may be due to the differences in cultural context.

LIMITATIONS

The study subject to few limitations such as; a convenient sampling technique was used instead of randomization which can be a potential bias in sample selection. Similarly, a cross sectional survey design was implemented which measured the

resilience of healthcare managers at only single point of time instead of longitudinal method that can gauge the resilience at different time intervals. Furthermore, the data was collected from managers while they were working this may yield a subjective bias as they were too busy under different circumstances which limited their availability for our survey to only few minutes instead of required 10-15minutes.

STRENGTH OF STUDY

To the best of our knowledge Resilience of healthcare managers has never been assessed in our local context. So, it's the first study being conducted to assess the resilience of healthcare managers working in different healthcare facilities of Karachi, Pakistan. Secondly, A valid 25 items Connor-Davidson Resilience Scale (CD-RISC-25) in both English and Urdu version has been used to collect the data. Last but not least, it was a multicenter study in which 11 out of 13 selected healthcare facilities were tertiary level setups.

WEAKNESS OF STUDY

Study conducted mostly in tertiary level healthcare setups and not compared with primary level facilities as there were more primary level facilities than tertiary level. Secondly, Modification of research instrument wasn't possible after the actual start of the study as this was the copyright product. At last, non-randomized sampling technique was used which may leads to the selection bias.

CONCLUSION

In conclusion, the healthcare managers working in both public and private sector are found resilient. There is no significant difference found in resilience of male and female healthcare managers. Moreover, Demographic variables like age, gender, marital status, socioeconomic status, and working hours showed no significant relationship with resilience while designation, income, working experience, and worksite variables showed significant relationship with resilience.

RECOMMENDATIONS

Resilience of healthcare managers has never been assessed before so, it is strongly recommended to conduct more studies with more focused approaches like different study designs such as longitudinal study and multiple resilience gauging instruments.

AUTHORS' CONTRIBUTION

Moinuddin and Hassan Raza: Data collection, Study writing and Literature review.

Nadia Shah: Statistical analysis and overall supervision.

Nazia Nazir and Noman Ali: Data collection.

CONFLICT OF INTEREST

Declared none.

ACKNOWLEDGEMENTS

We are very thankful to Ms. Nadia Shah for her overall supervision and contribution.

REFERENCES

- [1] Islam A. Health sector reform in Pakistan: Why is it needed? *J Pak Med Assoc* 2002; 52(3): 95-100.
- [2] Heath C, Sommerfield A, von Ungern-Sternberg BS. Resilience strategies to manage psychological distress among healthcare workers during the COVID-19 pandemic: A narrative review. *Anaesthesia* 2020; 75(10): 1364-710
- [3] Margolis JD, Stoltz PG. How to bounce back from adversity. *Harvard Business Rev* 2010; 88(1-2): 86-92.
- [4] Cooper C, Flint-Taylor J, Pearn M. Building resilience for success: A resource for managers and organizations. Germany: Springer 2013.
- [5] Starr R, Newfrock J, Delurey M. Enterprise resilience: Managing risk in the networked economy. *Strategy Business* 2003; 30: 70-9.
- [6] Smyth I, Sweetman C. Introduction: Gender and resilience. *Gender Devel* 2015; 23(3): 405-14.
- [7] Kakiashvili T, Leszek J, Rutkowski K. The medical perspective on burnout. *Int J Occup Med Environ Health* 2013; 26(3): 401-12.
- [8] Luthans F, Avey JB, Avolio BJ, Peterson SJ. The development and resulting performance impact of positive psychological capital. *Hum Res Devel Quart* 2010; 21(1): 41-67.
- [9] Meyer A. Adapting to environmental jolts. *Administrative and organizational effectiveness*. *Admin Sci Quart* 1982; 19(2): 31-46.
- [10] Bridger RS, Day AJ, Morton K. Occupational stress and employee turnover. *Ergonomics* 2013; 56(11): 1629-39.
- [11] Mealer M, Jones J, Newman J, McFann KK, Rothbaum B, Moss M. The presence of resilience is associated with a healthier psychological profile in intensive care unit (ICU) nurses: Results of a national survey. *Int J Nurs Stud* 2012; 49(3): 292-9.
- [12] McGarry S, Girdler S, McDonald A, et al. Paediatric health-care professionals: Relationships between psychological distress, resilience and coping skills. *J Paed Child Health* 2013; 49(9): 725-32.
- [13] Stewart GT, Kolluru R, Smith M. Leveraging public-private partnerships to improve community resilience in times of disaster. *Int J Phys Distribut Logistics Manag* 2009; 39(5): 343-64.
- [14] Jeffcott S, Ibrahim J, Cameron P. Resilience in healthcare and clinical handover. *BMJ Qual Safe* 2009; 18(4): 256-60.
- [15] Sull A, Harland N, Moore A. Resilience of health-care workers in the UK; A cross-sectional survey. *J Occup Med Toxicol* 2015; 10(1): 20.
- [16] Paramanandam P. Stress resilience and job satisfaction among the employees of a shipyard. *Indian J Res Manag Bus Soc Sci* 2014; 21(1): 94-8.
- [17] Rosenberg AR, Yi-Frazier JP, Eaton L, et al. Promoting resilience in stress management: A pilot study of a novel resilience-promoting intervention for adolescents and young adults with serious illness. *J Pediatr Psychol* 2015; 40(9): 992-9.
- [18] Grafton E, Gillespie B, Henderson S, Eds. Resilience: the power within. *Oncol Nurs Forum* 2010; 37: 698-705
- [19] Tait L, Birchwood M. Adapting to the challenge of psychosis: Personal resilience and the use of sealing-over (avoidant) coping strategies. *Br J Psychiatr* 2004; 185(5): 410-5.
- [20] Waite PJ, Richardson GE. Determining the efficacy of resiliency training in the work site. *J Allied Health* 2004; 33(3): 178-83.
- [21] Clark R. Convenience sample. *Blackwell Encycloped Sociol* 2007; 1-2. Available at: <https://onlinelibrary.wiley.com/doi/abs/10.1002/9781405165518.wbeosc131.pub2>.
- [22] Berg N. Non-response bias. *Encycloped Soc Meas* 2005; 2: 865-73.
- [23] Connor KM, Davidson JR. Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depres Anxiety* 2003; 18(2): 76-82.
- [24] Wagnild G. Resilience and successful aging: Comparison among low and high income older adults. *J Gerontolog Nurs* 2003; 29(12): 42-9.
- [25] Gillespie BM, Chaboyer W, Wallis M. The influence of personal characteristics on the resilience of operating room nurses: A predictor study. *Int J Nurs Stud* 2009; 46(7): 968-76.
- [26] Orthner DK, Jones-Sanpei H, Williamson S. The resilience and strengths of low-income families. *Fam Relat* 2004; 53(2): 159-67.
- [27] Hardy SE, Concato J, Gill TM. Resilience of community-dwelling older persons. *J Am Geriatr Soc* 2004; 52(2): 257-62.