#### **ORIGINAL ARTICLE**

# EXPLORATION OF POSITIVE MENTAL HEALTH LEVELS AMONG PROFESSIONALS IN PAKISTAN: AN INDIGENOUS PERSPECTIVE

Nadia Batool<sup>™</sup>, Rubina Hanif<sup>™</sup>

#### ABSTRACT

**OBJECTIVE:** To investigate prevalence of mental health states (positive mental wellbeing levels) across professional groups working in diverse work settings in indigenous context.

**METHODS:** This cross-sectional study was conducted at public tertiary care hospitals (Jinnah Hospital Lahore, Combined Military Hospital), telecommunication companies (Warid, Telenor), Multinational firms, consultancy firms, Askari bank, Muslim Commercial Bank located at Islamabad and Lahore, Pakistan from February 2016 to December 2016. Data was collected from professionals (N=509) through purposive sampling technique. The present research employed Mental Health Continuum Short Form (MHC-SF) and Brief Symptom Inventory (BSI) for measuring positive mental wellbeing levels and psychological distress (complete mental health).

**RESULTS:** Descriptive statistics revealed satisfactory psychometrics of MHC-SF ( $\alpha$ =0.86) and BSI ( $\alpha$ =0.97) and its subscale results of ANOVA showed significant mean difference across professional groups in social wellbeing F (4,616=4.20; p<.001), somatization F (4,566=4.58 p<0.01),  $\eta^2$ = 0.03, interpersonal sensitivity F (4,599) =5.23; p<0.001 and paranoid ideation F (4,585=2.88; p<.02). Post-hoc analysis using Tukey followed by ANOVA further revealed mean differences between specific professional groups on social wellbeing dimension i.e., bankers and telecom officers (-1.89; p<0.03), doctors and telecom officers (-3.07; p<05).

**CONCLUSION:** Higher level of positive mental health buffers impact of negative stressors in personal and work domains. This also reflects a dire need to shift focus towards engaging mental health promotion strategies in order to develop flourishing, productive workforce, rather than solely focusing on assuaging mental illness and psychological distress.

**KEY WORDS:** Mental Health (MeSH); Positive mental health levels (Non-MeSH); Moderate mental health (Non-MeSH); Psychological distress (Non-MeSH); Flourishing (Non-MeSH); Languishing (Non-MeSH).

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# **INTRODUCTION**

Globally, exploration of positive dimensions of mental health has been invigorated. The current developments within the field of mental health lead to an all-inclusive definition of positive mental health encompassing wellbeing dimensions i.e. emotional, psychological and social well-being. Previously mental wellbeing term had been equated with absence of disease or infirmity. These current advances within conceptualization of positive wellbeing recognized it as measurable dimension distinct from psychological illness<sup>1,2</sup> grounded in a social determinants health model supporting

Ι.	National Institute of Psychology, Centre of excellence, Quaid-I-Azam University, Islamabad, Pakistan.
	Email⊠ :nadbatool@gmail.com
	Contact #: +92-323-5281115

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populace health promotion.<sup>3,4</sup> In recent times, World Health Organization (WHO) defined mental health as a "state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community".5 This led to an increased recognition of mental health as an integral part of the over health and wellbeing. The concept of well-being along with basic subcomponents of positive mental health has been illustrated comprehensively by hedonic and eudiamonic tradition.<sup>6</sup> The hedonic tradition relates to emotional and cognitive appraisal of life satisfaction and positive affectivity. However, eudiamonic perspective captures individual's potential that fuels fulfillment and peak functioning. Positive mental health is theorized as encompassing wellbeing dimensions i.e. emotional, psychological and social well-being<sup>7,8,</sup> while integrating both approaches. The dual-continua model advocates presence of two related yet distinct continua representing mental health and mental dysfunction.9,10 Consequently effective interventions aimed at enhancing wellbeing can alter positive mental health levels, even though there were no indications of psychological illness.

Empirical literature has considered positive mental health as a protective factor<sup>11</sup>, as gains in positive indicators of wellbeing i.e. positive mental health anticipated deterioration in occurrence and prevalence of mental illness. Conversely deterioration in positive mental health levels envisages upsurge in occurrence and prevalence of mental illness.<sup>12</sup> Some aspects of positive mental health are found to be linked with positive affectivity yielding higher

	Professional Categories						
Positive Mental Health Categories	Healthcare Professionals (n =95)	Bankers (n =129)	Telecom Officers (n =29)	Consultants (n= 256)			
Moderate mental health	46 (48.4%)	62 (48.1%)	8 (27.6%)	49 (19.1%)			
Flourishing	36 (37.9%)	55 (42.6%)	15 (51.7%)	52 (20.3%)			
Languishing mental health	13 (13.7%)	12 (9.3%)	6 (20.7%)	155 (60.6%)			

#### TABLE I: POSITIVE MENTAL HEALTH THREE CATEGORIES DIAGNOSIS OF POSITIVE MENTAL HEALTH ON DESIGNATIONS (n=509)

level of life satisfaction and global functioning.<sup>13</sup> In addition, lower levels of positive mental health increase propensity towards developing severe psychological dysfunction symptom manifestations e.g. depression, anxiety and stress across various cultures. Workplace environment has been recognized as key feature that determine employees mental health and overall wellbeing. Work environment has been increasingly recognized for buffering mental health and mental illness experienced by workforce through both promoting or hindering mental wellness and mental dysfunction. Recently, health care professional, bankers, financial consultants own mental health has been a focus of research worldwide. It has been recognized that high occupational stress, high work demands, low work control, high emotional demands, personal and organizational factors had a detrimental impact on mental health states of professionals working in health

#### care and other fields.<sup>15</sup>

Across the globe, empirical studies reported higher prevalence of burnout among mental health professionals<sup>16</sup>, due to work environment while emphasizing role of sociodemographic variables such as age, gender, marital status and staff position along with job satisfaction to significantly impact mental health. Likewise, results of recent study<sup>17</sup> showed high level of stress and burnout experienced by staff members to be linked with low level of job satisfaction, high turnover rate, and reduced work efficiency.<sup>18-21</sup> Health care professionals, financial consultants, bankers due to highly demanding nature of their work, long working hours are more vulnerable towards experiencing mental strain causing anxiety and depression.

Within indigenous context, studies<sup>17</sup> confirmed factors such as job insecurity, work schedules, pay package, job

description to be significantly related to higher level of psychological distress, job dissatisfaction among doctors and health care providers. Another study<sup>22</sup> conducted at tertiary care hospitals located at Lahore explored the existence of hidden stress among health care professionals, found significant impact of gender, education, service years, working hours and socioeconomic status. These factors were revealed to have an impact on psychological distress experienced by one-third of the doctors. Earlier studies conducted in Karachi reported that 25% to 30% of population was suffering from mental dysfunction of some sort such as anxiety and depression.<sup>23</sup> While specifically higher vulnerability about two folds was reported among family practitioners and physicians for developing anxiety, depression even suicidal ideation.<sup>2</sup> However, effective screening of doctors, other professionals is not possible with these scant evidences.

Given, mental health from positive perspective has emerged as an understudied area of investigation specifically with regard to diverse workforce. In this regard, exploration of positive mental health would yield insight in the light of new developments within mental health field i.e. dual continua model of positive mental health which considers mental health

Variables		Healt profest (n =			kers 129)	Tele offic (n =	cers	Consu (n=				
	а	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F	Þ	η²
Emotional wellbeing	0.84	12.40	3.99	12.76	3.24	12.96	3.15	12.85	3.46	1.46	211	-
Psychological wellbeing	0.82	25.56	5.76	26.34	5.79	25.89	6.77	26.89	5.09	1.33	0.257	-
Social wellbeing	0.76	19.03	5.02	17.42	4.95	15.96	3.22	18.03	5.19	4.20	0.002	0.02
Somatization	0.88	16.25	7.38	16.81	8.28	22.92	8.88	16.12	7.86	4.58	0.001	0.03
Obsessive compulsive	0.82	15.86	5.96	15.65	6.64	16.66	3.30	15.47	6.05	.496	0.739	-
Interpersonal sensitivity	0.79	13.12	2.67	13.88	1.86	14.96	1.88	13.61	2.09	5.23	0.000	0.01
Depression	0.84	18.42	2.45	18.60	2.54	19.62	2.00	18.58	2.62	1.33	0.254	-
Anxiety	0.84	18.54	2.77	18.76	2.52	18.11	2.18	18.40	2.61	1.60	0.173	-
Phobic anxiety	0.95	12.08	5.78	11.21	5.51	12.58	4.89	11.34	5.96	.60	0.658	-
Paranoid ideation	0.77	16.15	2.40	16.14	2.14	17.35	1.90	16.64	1.88	2.88	0.022	0.01
Hostility	0.89	16.00	2.63	16.00	2.21	16.62	2.61	16.40	2.40	0.968	0.424	-
Psychoticism	0.77	14.94	2.30	15.07	2.26	15.78	2.11	14.94	2.30	0.964	0.427	-

# TABLE II: COMPARISON OF POSITIVE MENTAL HEALTH LEVELS AND PSYCHOPATHOLOGY ACROSS PROFESSIONAL CATEGORIES (n=509)

Dependent Variable	(I) Professional category	(J) Professional category	Mean Difference (I-J)	S. E	ш	UL
	Bankers	Telecom	1.474	1.04	-1.38	4.33
		Doctors	-1.603	0.699	-3.51	0.310
		Consultants	.651	0.555	-2.17	0.868
		Bankers	-1.474	1.04	-4.33	1.38
	Telecom	Doctors	-3.078*	1.08	-6.04	-0.116
Social well being		Consultants	-2.126	0.995	-4.85	0.598
Social Weil Beilig		Bankers	1.60	0.699	-0.310	3.51
	Doctors	Telecom	3.078*	1.08	0.116	6.04
		Consultants	0.952	0.621	-0.747	2.65
		Bankers	0.651	0.555	-0.868	2.17
	Consultants	Telecom	2.126	0.995	-0.598	4.85
		Doctors	952	0.621	-2.65	0.747
		Telecom	-6.11**	1.68	-10.7	-1.51
	Bankers	Doctors	0.558	1.10	-2.477	3.59
		Consultants	0.684	0.881	-1.72	3.09
		Bankers	6.11**	1.68	1.51	10.7
Somatization	Telecom	Doctors	6.67**	1.74	1.90	11.4
		Consultants	6.79**	1.60	2.40	11.1
		Bankers	-0.558	1.10	-3.59	2.47
	Consultants	Telecom	-6.67**	1.74	-11.44	-1.90
		Consultants	.126	0.991	-2.58	2.83
		Telecom	-1.07	0.441	-2.28	0.133
	Bankers	Doctors	0.760	0.293	-0.041	I.56
		Consultants	0.274	0.233	-0.364	0.914
		Bankers	1.07	0.44193	-0.133	2.28
	Telecom	Doctors	1.83**	0.45670	0.586	3.08
Interpersonal sensitivity		Consultants	1.35*	0.42106	0.198	2.50
interpersonal sensitivity		Managers	-0.760	0.29306	-1.56	0.041
	Doctors	Telecom	-1.83**	0.45670	-3.08	-0.586
		Consultants	-0.486	0.26053	-1.1989	0.226
		Bankers	-0.274	0.23367	-0.9140	0.364
	Consultants	Telecom	-1.35**	0.42106	-2.5025	-0.198
		Doctors	0.486	0.26053	-0.2268	1.19
		Telecom	-10.21	0.44454	-2.4284	0.004
	Bankers	Doctors	-0.007	0.29235	-0.8070	0.792
		Consultants	-0.50214	0.23480	-1.1446	0.1404
		Bankers	1.21198	0.44454	-0.0044	2.4284
	Telecom	Doctors	I.20497	0.45856	-0.0498	2.4597
Paranoid ideation		Consultants	0.70984	0.42420	-0.4509	1.8706
		Mangers	0.00701	0.29235	-0.7929	0.8070
	Doctors	Telecom	-1.20497	0.45856	-2.4597	0.0498
		Consultants	-0.49513	0.26037	-1.2076	0.2173
		Managers	0.50214	0.23480	-0.1404	1.1446
	Consultants	Telecom	-0.70984	0.42420	-1.8706	0.4509
		Doctors	0.49513	0.26037	-0.2173	1.2076

# TABLE III: POST-HOC ANALYSIS OF PROFESSIONAL CATEGORIES ON POSITIVE MENTAL HEALTH AND PSYCHOPATHOLOGY (n=509)

\*p <0.05, \*\* p <0.01

and mental illness along two continua which are moderately negatively correlated with each other. This also allows for combined assessment of both positive and negative indicators of mental wellbeing (complete mental health) along with categorical diagnosis of mental health levels (flourishing, moderate mental health & languishing mental health). Since mental health levels directly relate to optimal or less than optimal functioning states, scant empirical evidence stresses the need to bridge existing gap in indigenous literature by exploring positive mental health dimensions i.e. emotional, psychological and social well-being comprehensively in general public as well as across professional groups. This study was conducted to investigate prevalence of mental health states (positive mental wellbeing levels) across professional groups working in diverse work settings in indigenous context.

#### **METHODS**

This cross sectional study was conducted at public tertiary care hospitals (linnah Hospital Lahore, Combined Military Hospital), telecommunication companies (Warid telecom, Telenor), Multinational firms, consultancy firms, Askari, bank, Muslim Commercial Bank located at Islamabad and Lahore, Pakistan from February 2016 to December 2016. Participants were included by utilizing purposive convenient sampling technique. A sample comprised of (N =509) employed men (n = 301) 59.14%, women (n = 208) 40.86% with age range 24-64. Their work experience ranged from I to 40 years. Their average age was (M = 30.72 years, SD = 7.03). The inclusion criteria entailed minimum six months of experience in respective organization. The current study seeked ethical approval from the advanced board of research studies of Ouaid-I-Azam University. Informed consent was taken from study participants.

Metal health continuum short form (MHC-SF) comprised of 14 theoretically derived items, representing three dimensions of well-being i.e. emotional (hedonic), psychological and social wellbeing. Emotional wellbeing dimension was measured by items reflecting individual's level of positive affectivity and cognitive evaluations of life satisfaction. While psychological wellbeing dimensions was measured by six items based on Ryff (1989) theorization revealing individual's peak functioning levels ensuring selfactualization. Furthermore, social wellbeing was measured by five items encompassing individual's social functioning domains. MHC-SF (six-point) Likert scale had response options ranged from ('never', 'once or twice', 'about once a week', '2 or 3 times a week', 'almost every day', or 'every day').13

Besides measuring global mental wellbeing, MHC-SF also allows for categorical diagnosis of mental health levels i.e., flourishing, moderate and languishing mental health. Individuals who endorsed "everyday" and "almost every day" on three of the emotional wellbeing items and minimum six of the eleven items of positive functioning were characterized as having flourishing mental health. On the other hand, individuals who endorsed (never or once or twice) at least one of emotional wellbeing item along with low scoring on six dimensions of positive functioning were characterized to have languishing mental health. Those individuals who did not meet criteria for flourishing and moderate mental health category were designated to have moderate mental health level.

Brief symptom inventory (BSI) had been used for screening psychopathology.<sup>25</sup> It consisted of 53 items, having nine subscales (depression, anxiety, phobic anxiety, interpersonal sensitivity, obsessive-compulsive disorder, hostility, paranoid ideation, psychoticism, & somatization). All nine subscales measured different dimensions of mental illness. Each item of individual psychological distress was responded on 6 point response options ranging from not at all = I, a little bit = 2, moderately = 3, quite a bit = 4, extremely = 5, Refuse to answer = 6. The study participants were approached in their prospective work organizations. The purpose of study was explained and informed consent was taken from the participants. After seeking informed consent, questionnaire booklet were handed over to them. Both validated instruments i.e., MHC-SF and BSI were used for measuring study variables. Permission was sought for use in our culture from the original authors of these measures. These instruments MHC-SF and BSI had been administered primarily for tryout on professionals for checking their suitability and item relevance with regard to indigenous organizational context. The results of tryout assured that these measures were suitable for use in our culture.

The data was entered on SPSS version 20 and cross validated by random checking. Frequency and percentages of mental health levels across professionals groups were computed. A p-value of <0.05 was considered significant for interpreting mean differences on positive mental health and psychological distress across professional categories.

## RESULTS

Out of 550 distributed questionnaire booklets, 509 professionals responded. Amongst these 509 respondents, there were (n=95) health care professionals, (n=129) bankers, (n=29) telecom officers and (n=256) consultants. The study participants were working in their specialized filed in numerous organizations i.e., Jinnah Hospital Lahore, Combined Military hospital, Telenor, Mobilink, Askari Bank, Muslim Commercial Bank (Lahore), located at Islamabad and Lahore, Pakistan, The descriptive of the study variables revealed satisfactory psychometrics for MHC-SF ( $\alpha$ =0.86) total and its subscales i.e., emotional wellbeing ( $\alpha = 0.84$ ), psychological wellbeing ( $\alpha$ =0.82) and social wellbeing ( $\alpha$ =0.76) and brief symptom inventory total ( $\alpha = 0.97$ ) and subscales. Both measures MHC-SF and BSI had shown good reliability and validity for assessment of positive mental wellbeing and psychological dysfunction. The present data met the assumptions of normality, values of skewness and kurtosis were found within acceptable range.

Frequencies and percentages of mental health level were computed for exploring prevalence of flourishing, moderate and languishing mental health levels across professional groups. The findings of present study indicated bankers to have highest proportion of flourishing mental health level followed by consultants, doctors, telecom officers (Table I). Moreover, Analysis of Variance (ANOVA) was carried out for analyzing mean differences in positive mental health (MHC-SF, measure of positive mental health) and psychopathology (BSI, measure of psychopathology) across professional categories. Results of ANOVA (Table II) showed significant mean difference across professional groups in social wellbeing F(4,616=4.20;p<.001), somatization F (4,566=4.58; p < 0.01),  $\eta^2 = 0.03$ , interpersonal sensitivity F (4,599=5.23; p<0.001) and paranoid ideation F (4,585=2.88; p<.02)

(Table II). Post-hoc analysis using Tukey (Table III) followed by ANOVA further revealed mean differences between specific professional groups on social wellbeing dimension i.e., bankers and telecom officers (-1.89; p<0.03), doctors and telecom officers (-3.07; p < 05). Similarly, significant mean difference were also found between Bankers and telecom officers (6.11; p < 0.05), doctors and telecom officers (6.67; p<0.001), telecom officers and consultants (6.79; p < 0.001) on somatization subscale of BSI. For interpersonal sensitivity, mean differences were found significant between telecom officers and doctors (1.83; p<0.01), telecom officers and consultants (1.35; p<0.01). However, mean difference were found significant between mangers and telecom officers on paranoid ideation (1.21; p < 0.05).

#### DISCUSSION

In recent decades, the term mental health is conceptualized as presence of certain positive indicators that ascertain high level of social, emotional and psychological wellbeing (optimal functioning of the individual). These developments within the conceptualization of mental health allows for comprehensive evaluation of individual functioning levels in personal and social realms. Keyes' polythetic approach for classifying flourishing mental health entails presence of high levels of emotional, psychological and social wellbeing that leads towards high level of efficiency and productivity. Mental health states diagnosis was modeled after the DSM-III-R approach to detecting MDE.<sup>13</sup> According to Keyes, positive mental health signifies presence of clusters of positive indicators related to both affectivity and functioning (Syndrome of positive affectivity) in similar way, DSM-R (cluster of symptoms) proposed presence of specific set of symptoms for diagnosing Major Depression. Cross culturally Keyes model of mental health has generated support across varied nationalities e.g. US MIDUS data<sup>2</sup>, U.S. adolescent, Dutch adults<sup>12</sup> and Setswana-speaking South-African adults.<sup>26</sup>

Globally, industrialized countries have experienced substantial shifts with regard to competitiveness, mergers,

downsizing, and turbulence of organizational demands along with fast paced technological evolution that all has led to increased vulnerability towards psychological strain affecting the mental health of diverse workforce. Evidence highlight progressive deterioration of working conditions and subjective wellbeing among European countries.<sup>27</sup> Over the last decade, the steady rise in mental ill health issues among health care personnel and professionals working in diverse organizations seems challenging despite presence of a strong social security system in developed countries. Moreover, shift towards excessive work load, imbalance between demand and resources, service jobs, lack of personal autonomy in making decisions, and increasing computerized tasks have significantly augmented susceptibility towards sharp rise in psychological and mental health problems.<sup>28,29</sup> Empirical literature in developed countries (e.g. United States, United Kingdom, Canada, New Zealand & Switzerland) has also shown high incidence of depression (74% South African workforce) bipolar disorder, burn out, anxiety disorders, high suicide rates three times more prevalent in general practitioners and surgeons as compared to general population.<sup>30</sup> At workplace mental health problems like depression, anxiety, high stress levels leads to serious consequences for both individual's wellbeing and organizational outcomes.

In accord with these findings, numerous studies that explored variables of psychological distress, anxiety depression among organizational employees, doctors reported similar trends within indigenous context.  $^{\rm 17,20-22}$ The lack of the sound infrastructure of hospitals, excessive work load, long hours of duty, exposure to physical attacks and poor work conditions make it difficult for health care professionals to pursue their responsibilities in a fully efficient way as a flourishing workforce. The present study found that 36% of the health care professionals were having flourishing mental health level, while 46% came within moderate mental health category. However, Pakistan has dominant collectivistic culture where people enjoy high level of social connectivity and networking, keeping joint ventures superior to their individualistic goals." This might reflect

highest frequency of flourishing mental health levels among mangers followed by consultants in present study though they were also exposed to stressors like long working hours, job insecurity, competitiveness, weak infrastructure causing instability and distress among employees. High level of emotional and psychological wellbeing while pronounced low level of social wellbeing among western nationalities has been found experience due to prevalent individualistic norms." On subscales of Brief Symptom Inventory somatization, interpersonal sensitivity and paranoid ideation telecom employees reported higher means reflecting high level of psychological distress experienced by employees working in telecom sector as compared to other professional categories.

Findings of the current study revealed lower percentage of health care professionals falling in flourishing mental health category in contrast to other professional groups. The mental wellbeing and optimal functioning of health care professionals gets affected due to the multiple occupational roles and sensitive nature of their work. Professional pursuits take a substantial toll on the mental capacities of health care professionals making them more vulnerable towards psychological distress instilling anxiety and depression compared to organizational workforce. Few studies conducted in indigenous context supports improved work environment lead to higher level of psychological wellbeing and motivation experienced by older medical professionals as compared to younger professionals.

Cross cultural studies using MHC-SF have reported wide variation in prevalence rates of flourishing from 8% among South Korean adults<sup>31</sup> to 49% among US college students,<sup>28</sup> 20% flourishing among adult South Africans,<sup>30</sup> and 44% flourishing among Chinese adults. Moderate mental health entails functioning at level less than optimal leading to reduce an individual capacity to fully utilize their capability. Moreover, a considerable body of evidence exists to support the reliability of MHC-SF for predicting future risk of mental illness among adults<sup>5</sup> and work-related productivity and health care use.<sup>29</sup> Within indigenous context no published study

has yet been affirmed to measure mental health levels across professional categories.

The limitation of the present study includes small sample size across professional groups. Some specific public and private organizations were included in the study which limits its scope for generalizability. The present study utilized original English version of the instruments, since Urdu translated versions were not used, this might have impacted findings, although sample comprised of literate professional populace. Future study should incorporate a more representative sample to build a strong nomothetic base for exploring mental health construct indigenously for gaining a more comprehensive and richer understanding.

In nutshell, the emergent epidemic of mental health issues has plagued the workforce leading to an upsurge in debilitating economic burden of disease and disabilities worldwide.32 There is strong need to improve the organizational structure and psychological environment for promoting optimal mental health to reduce the high prevalence of anxiety, depression, suicidal ideation among healthcare professionals and physicians. However, high level of psychological distress was also reported by telecom employees indicating a dire need for focusing on mental wellness of their employees. Given, there is strong need for adopting positive mental health promotion and protection approach rather than previous focus towards minimizing mental dysfunction and distress .Ample empirical evidence calls for utilizing ethno-specific approaches to mental health by mental health practionniers and institutions as these approaches allow for and adapt to dissimilarities across cultures.<sup>33</sup> The current advancement in positive organizational behavior domain addresses mental health issues of employees by building strong psychological resources e.g. psychological capital to improve employee psychological health that reduces low productivity and high turnover problems faced by organizations. Thus, building mentally healthy work groups facilitate personnel wellbeing along with accomplishment of

positive organizational outcomes.

# CONCLUSION

Higher level of positive mental health buffers impact of negative stressors in personal and work domains. Prevention within the mental health field needs to shift focus towards enhancing positive qualities of daily functioning. Mental health promotion strategies need to be employed for rising flourishing, productive workforce. As prior focus solely on eliminating diseases and disability has not brought any positive change in elevating mental resilience and also fostering positive organizational outcomes.

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### **AUTHORS' CONTRIBUTIONS**

Following authors have made substantial contributions to the manuscript as under:

NB: Acquisition, analysis & interpretation of data, drafting the manuscript, final approval of the version to be published

RH: Concept and study design, critical review, final approval of the version to be published

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

#### **CONFLICT OF INTEREST**

Authors declared no conflict of interest GRANT SUPPORT AND FINANCIAL DISCLOSURE NIL



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