Resilience and Coping Self-Efficacy among Family Medicine Residents in times of COVID-19 pandemic: Interplay and contribution of sociodemographic, professional, lifestyle and health-related factors

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Received: March 2022 Accepted: April 2022; Published: May 1, 2022.
Citation: Najwa F. Aljehani et al. Resilience and Coping Self-Efficacy among Family Medicine Residents in times of COVID-19 pandemic: Interplay and contribution of sociodemographic, professional, lifestyle and health-related factors. World Family Medicine. 2022; 20(5): 39-53. DOI:10.5742/MEWFM.2022.9525036

Abstract

Background: Family Medicine Residents face stressors related to their professional responsibilities, ethics, and relationships with patients, supervisors, and society. These stressors were found to increase during the COVID-19 crisis and can lead to maladaptive coping and affect their resilience.

Objectives: to assess family medicine residents' level of resilience coping self-efficacy during COVID-19 crisis.

Method: A cross-sectional study was conducted among 208 family medicine residents in the Western region of Saudi Arabia. Resilience and coping self-efficacy were assessed using the Connor-Davidson Resilience Scale-25 items (CD-RISC-25) and coping self-efficacy scale (CSES), respectively. Professional stressors including work environment satisfaction (WES) were assessed.

Results: The mean (SD) CD-RISC-25 and CSEC score was 54.53 (19.69) out of 100 and 136.81 (63.67) out of 260, respectively. Suboptimal resilience was independently associated with shorter (<10 min.) consultation time (OR=3.83, p=0.023) and lower CSES score (OR=0.98, p<0.001), with 32.5% variance. CSES score was independently explained by WES score (B=16.06, p<0.001), spiritual fulfillment (B=11.71, p=0.011), and home-job travel time (B=9.12, p=0.032) in a positive relationship; whereas it was negatively associated with history of significant disease (B= -28.66, p=0.002).

Conclusion: Family medicine residents are at high-risk for psychological distress during the COVID-19 crisis, indicated by low resilience and coping self-efficacy levels. The model suggests high impact of WES and spiritual fulfillment in coping self-efficacy indicating relevance in resilience-promoting interventions.

Keywords: Resilience, CD-RISC-25, coping, medical residents, COVID-19, stressors

Introduction

There is a major interest in assessing resilience and coping during disastrous events, notably among frontline professionals. During the time of the COVID-19 pandemic, healthcare workers (HCWs) are facing continuous stress that challenges their sustainability and outstrips their coping abilities and sources of resilience, which may have long-term impact on their psychological and social well-being (1,2).

While resilience and coping are described to be distinct entities, they are strongly interrelated and their constructs may be confused with one another in the literature (3). Resilience is featured by a set of mental, emotional, and behavioral processes that help an individual ensure basic life tasks, such as work and social interactions, during significant crisis. It also helps to protect the individual from adverse impacts of stressors and to return to the pre-crisis state promptly (4,5.6.7). However, resilience changes over time and life experience, and is differentially defined across cultures, while being influenced by a number of internal and external factors (8,9,10,11,12). Coping stands for the person's conscious effort to overcome personal and social challenges, with the aptitude to control, reduce or tolerate stress and conflicts (13.14). Although, the term coping generally refers to adaptive or constructive coping strategies that result in effective stress reduction and control (15), the type of coping is defined based on its outcome. Thus, coping strategies that result in increased stress are considered maladaptive or non-coping (16). On the other hand, proactive coping is defined by a coping response that anticipates an upcoming stressor. Furthermore, as coping is specifically a conscious process, subconscious or unconscious stress-reducing strategies are not considered as coping strategies (17).

Glennie EJ (18) stated that "although coping and resilience are related constructs, they are distinct, in that coping refers to a wide set of skills and purposeful responses to stress, whereas resilience refers to positive adaptation in response to serious adversity". From this start point, resilience may be considered as the outcome level of adaptation to a hardship, while coping may be considered as the conscious tools to achieve such outcome. Several studies highlighted the relevance of resilience and coping abilities in predicting psychiatric disorders including burnout, depression, and post-traumatic stress syndrome. The relevance of such investigations among HCWs stands also in determining job-related factors that may influence resilience and coping, besides the supportive interventions that may be implemented at the individual or organizational levels (19,20,21,22,23,24).

In addition to stressors related to the healthcare profession, medical residents experience further uncertainties and inconsistences with regards to their roles and attitudes towards their professional responsibilities, ethics, and relationships with patients, supervisors, and society (25,26,27). These combined with the ongoing COVID-19 crisis, may result in an odd vulnerability to stress among residents, which may expose to high risk of maladaptive coping and affect their resilience.

This study aimed to assess the levels of resilience during the COVID-19 crisis among family medicine residents, and analyzed the interplay between resilience and coping self-efficacy, in addition to the professional and extra-professional factors.

Subjects amd Methods

Design and participants: A descriptive and analytical cross-sectional study was conducted between 1/6/2021 and 2/10/2021 in medical residents training at any of the Family Medicine residency programs of the Western Region of Saudi Arabia for at least 6 weeks. These included the Ministry of Health (MoH) Program, the MoH Joint Program, the National Guard Hospital Program, and King Abdulaziz University Program in Holy Mecca, Jeddah, Taif, and Al Madinah, as appropriate. The study was ethically approved by The Ministry of Higher Education, King Abdulaziz University, Faculty of Medicine, Research Ethics Committee.

Sampling: The sample size (N=179) was calculated to detect a mean (SD) resilience level of 66.35 (17.03) out of 100 using the Connor-Davidson Resilience Scale-25 items (CD-RISC-25) (28), with ±2.5 precision at 95% confidence interval (95% CI), 80% statistical power and 0.05 margin error. The target sample size (N=215) was increased by 20% to compensate for eventual incomplete participation. Since there was no comparative approach in the target population, a convenience sampling method was used to include all eligible and consenting residents until the targeted sample size was reached.

Study instrument: A structured questionnaire comprising the following dimensions was utilised :
1) Sociodemographic factors including gender, age, marital status, number of children and schooled children, income, etc.
2) Job-related factors including residency year, sector of affiliation (MoH, University, Guard, etc.), average daily patient flow and consultation time, home-job travel time, etc., in addition to work environment satisfaction (WES) using a 10-level satisfaction scale (0 = not satisfied at all, 10 = extremely satisfied) comprising nine relevant items such as physical work environment, relationships with colleagues, patients, and superiors, and levels of stress at work.
3) Lifestyle and health-related factors such as eating habits, exercise, smoking, sleep quality, religious and spiritual fulfillment, chronic diseases, COVID-19 status, etc.
4) Resilience level, using the CD-RISC-25, which consists of 25 positive statements related to resilience that are rated using a five-point Likert-type scale (0 = not true at all, 4 = true nearly all the time). The ratings are added up to compute a score with a range 0-100, where a higher score indicates higher resilience (29). The scale demonstrated good psychometric properties and constructs validity (30)

and has been plentifully used in the context of healthcare professionals and trainees (31).
5) Coping was indicated by measuring coping self-efficacy, defined as the individual's perception of own ability to deploy effective stress management strategies in various situations (32). Chesney et al. developed and validated the coping self-efficacy scale (CSES), which consists of a 26-item construct; each item rates, from 0 = "cannot do at all" to 10 = "certainly can do", regarding self-confidence in performing a specific coping strategy. In addition, the scale explores three coping styles represented by the following subscales: use problem-focused coping (6 items); stop unpleasant emotions and thoughts (4 items); and get support from friends and family (33). The principal author was contacted via email and provided her agreement to use the scale aswell as the scoring system. The CSES score consists of the sum of the item score, i.e. range = 0, 260, where higher scores indicate higher levels of coping self-efficacy.

Questionnaire validation and data collection procedure: The study questionnaire was reviewed by two family physicians and a methodologist. After reviewing, adjusting experts' comments and testing questionnaire clarity, applicability, and reliability, the final version of the questionnaire was edited online and disseminated via professional social media platforms. The online version included a brief presentation of the study objectives and importance, with statements regarding confidentiality and free choice for participation.

Statistical analysis: Data was extracted from an online platform as Excel datasheet, which was coded and edited in the Statistical Package for Social Sciences version 21.0 for Windows (SPSS Inc., Chicago, IL, USA) for data analysis. Descriptive statistics were carried out to present the summary of the study variables and scales. Cronbach's alpha was calculated to indicate the reliability of different scales. The correlation between CD-RISC-25 and CSES scores was analyzed using linear regression. The CD-RISC-25 was tested for normality using Kolmogorov-Smirnov and Shapiro-Wilk tests, and the median value was used as cutoff to divide the resilience level into suboptimal and optimal. Independent t-test, chi-square or Fisher's exact tests were used to analyze the factors associated with resilience level, as appropriate. Multivariate logistic regression was used to analyze independent factors associated with resilience. A stepwise linear regression model was used to analyze independent factors associated with CSES score. The model of resilience as explained by coping self-efficacy and sociodemographic, professional, lifestyle and health-related factors was summarized in a flowchart, with the corresponding levels of significance. A p value of <0.05 was considered to reject the null hypothesis.

Results

Of the 210 participations, 208 were eligible while two others were not residents. Demographic features showed a relatively young population with a mean (SD) age of 27.60 (2.82) years, and the majority were females (55.3%), single marital status (54.3%), and without children (69.7%). Professional characteristics showed predominance of the MoH sector (53.8%), with consultation of <20 (41.8%) or 20-40 (56.3%) patients per day for an average 10-20 minutes per consultation (57.2%). The mean work environment satisfaction scores ranged between 4.82 out of 10 for physical work environment to 5.51 out of 10 for relationship with patients (Table 1).

Lifestyle and health-related data
Lifestyle indicators were poor in approximately one-third of the participants including poor eating habits (32.2%), absence of physical activity (36.1%), overweight or obesity (44.7%), and active smoking (26.9%). A suboptimal satisfaction with sleep quality and religious fulfillment was reported by 40.4% and 18.3% of the participants, respectively. Chronic diseases and chronic medication were reported by 16.8% and 15.9%, respectively. COVID-19 status was positive for 33.6%, and 14.9% reported other significant health issues during the past year. Of note, only 24.5% of the participants declared having received training in stress management and coping strategies (Table 2).
Internal consistency of the study scales

All three scores used in the study showed high levels of internal consistency with Cronbach's alpha of 0.972, 0.992, and 0.964 for CD-RISC-25, CSES, and WES, respectively. Statistics of the respective scales' scores are depicted in Table 3.

Levels of resilience
By focusing on the primary outcome, CD-RISC-25, the mean (SD) score was 54.53 (19.69) out of 100, with a median 55.50. The normality testing showed Kolmogorov-Smirnov (statistics 0.073, p=0.009) and Shapiro-Wilk (statistics=0.978, p=0.003), concluding to non-normal distribution. Thus, the outcome was analyzed as categorical variable using the median as a cutoff to define two levels of resilience, namely suboptimal (CD-RISC-25<55.5) and optimal (CD-RISC-25≥55.5).

Levels of coping self-efficacy
The mean (SD) CSEC score was 136.81 (63.67) out of 260. The mean scores within the three subscales were comparable (5.21 – 5.37) (Table 3) and strongly correlated with one another (R = 9.18 – 9.39; p<0.001) (results not presented in tables). Furthermore, CSES score and CD-RISC score were positively correlated as demonstrated in linear regression (B=0.23; 95%CI=0.20-0.25; p<0.001), with a correlation coefficient R squared = 0.531 (results not presented

Demographic and professional factors associated with resilience

There was no association of resilience level with any of the investigated demographic factors. However, suboptimal resilience (CD-RISC-25<55.5) was associated with high academic degree (88.9% vs. 48.2%, p=0.035) and shorter consultation time (62.7% for ≤10 min. versus 49.6% for 10-20 min. versus 26.7% for >20 min., p=0.006). Additionally, the mean (SD) WES score was significantly lower among participants with suboptimal resilience level (4.16 [2.36] out of 10) compared with optimal resilience level (6.05 [2.10]), p<0.001 (Table 4).

Lifestyle and health-related data factors associated with resilience

Among all lifestyle and health-related factors, suboptimal resilience was associated with poorer sleep quality (p=0.017), low spiritual fulfillment (p=0.049), and lower overall health satisfaction score (p<0.001) (Table 5).

Independent factors associated with coping self-efficacy

A stepwise linear model showed that CSES score was independently explained by WES score (B=16.06, p<0.001), spiritual fulfillment (B=11.71, p=0.011), and home-job travel time (B=9.12, p=0.032) in a positive relationship; whereas it was negatively associated with history of significant disease in the past year past (B=-28.66, p=0.002). The latter model explained 50.0% of the variance of CSES score. It is to note that WES score alone explained 44% of the variance of resilience level (Table 6).

Independent factors associated with suboptimal resilience and the overall study model

Suboptimal resilience was independently associated with shorter (<10 min.) consultation time (OR=3.83, p=0.023) and lower CSES score (OR=0.98, p<0.001), and the multivariate model explained 32.5% of the outcome variance (Table 7). The final model of resilience as a function of coping self-efficacy and demographic, professional, lifestyle and health-related factors is depicted in Figure 1.

Table 1. Participants' demographic and professional characteristics (N=208)

Parameter	Category	Frequency	Percentage
Gender	Male	93	44.7
	Female	115	55.3
Age	Mean, SD (range =19-50)	27.60	2.82
Marital status	Single	113	54.3
	Married	89	42.8
	Divorced	6	2.9
Spouse profession	Not Applicable	106	51.0
	Student	9	4.3
	Housewife	28	13.5
	Self-employed	4	1.9
	Employed	61	29.3
Have children	None	145	69.7
	Yes	63	30.3
Schooled children	None	182	87.5
	Yes	26	12.5
Household income	<15k	15	7.2
	15-20k	145	69.7
	20-30k	34	16.3
	>30k	14	6.7
Residence mode	Alone	28	13.5
	With spouse	86	41.3
	With parents	83	39.9
	Other	11	5.3
Residency year	R1	46	22.1
	R2	56	26.9
	R3	77	37.0
	R4	29	13.9
Sector	MoH	112	53.8
	University	50	24.0
	Military	39	18.8
	Private	4	1.9
	Other	3	1.4
Academic degree	Bachelor	199	95.7
	Master	5	2.4
	PhD	4	1.9
Average daily patient flow	<20	87	41.8
	20-40	117	56.3
	>40	4	1.9
Average consultation time	<=10 min	59	28.4
	10-20 min	119	57.2
	>20 min	30	14.4
Home-job travel time	<=15 min	38	18.3
	15-30 min	119	57.2
	30-60 min.	39	18.8
	> 1 hour	12	5.8
Transport mean	I drive	132	63.5
	I have a driver	68	32.7
	Taxi/cab	8	3.8

(continued)

Table 1. Participants' demographic and professional characteristics (N=208) (continued)

Satisfaction			
Physical work environment	Mean, SD (range = 0-10)	4.82	2.63
Relationship with colleagues	Mean, SD (range = 0-10)	5.31	2.90
Relationship with superiors	Mean, SD (range = 0-10)	5.16	2.74
Relationship with patients	Mean, SD (range = 0-10)	5.51	2.85
Competency in managing life threatening cases	Mean, SD (range = 0-10)	4.91	2.36
Overall clinical skills	Mean, SD (range = 0-10)	5.17	2.61
Level of stress at work	Mean, SD (range = 0-10)	4.86	2.58

Values are frequency and percentage, except if otherwise specified.

Table 2. Lifestyle and health-related data (N=208)

Parameter	Category	n	%
Eating Habits	Not watchful	67	32.2
	Somewhat watchful	115	55.3
	Very watchful	26	12.5
Exercise	None or rarely	75	36.1
	Irregular	86	41.3
	Regular	47	22.6
BMI	Underweight	9	4.3
	Normal	106	51.0
	Overweight	68	32.7
	Obese	25	12.0
Smoking status	Nonsmoker	139	66.8
	Past smoker	13	6.3
	Current smoker	56	26.9
No. of chronic diseases	None	173	83.2
	One disease	30	14.4
	2+	5	2.4
No. of chronic medication	None	175	84.1
	One	18	8.7
	2+	15	7.2
Infection with COVID-19	No	138	66.3
	Yes, moderately	66	31.7
	Yes, severely	4	1.9
Other significant health issues during past year	No	177	85.1
	Yes, moderately	25	12.0
	Yes, severely	6	2.9
Hospitalization during the past year	No	194	93.3
	Yes	14	6.7
Surgery during the past year	No	199	95.7
	Yes	9	4.3
Sleep quality	Poor	23	11.1
	Unsatisfactory	61	29.3
	Acceptable	99	47.6
	Good	25	12.0
Spiritual and religious life	Poor	7	3.4
	Unsatisfactory	31	14.9
	Acceptable	124	59.6
	Good	46	22.1
Overall health satisfaction	Mean, SD (range =1-10)	6.99	1.71
Previous education or training in stress management and coping strategies	No	157	75.5
	Yes	51	24.5

Table 3. Internal consistency and score statistics for resilience and coping self-efficacy scales

Scale	No. items	Cronbach's alpha	Score				
			Mean	SD	Median	Q1, Q3	Range
Resilience (CD-RISC-25)	25	0.972	54.53	19.69	55.50	25, 69	0-100
Coping self-efficacy score (CSES)	26	0.992	136.81	63.67	139.5	44.9, 194.5	0-260
Use problem-focused coping	6	0.974	5.37	2.46	5.50	3.54, 7.5	0-10
Stop unpleasant emotions and thoughts	4	0.964	5.21	2.54	5.50	3.25, 7.25	0-10
Get support from friends and family	3	0.932	5.25	2.54	5.33	3.33, 7.33	0-10
WES	9	0.964	5.11	2.43	5.14	1.4, 7.0	0-9.71

WES: Work environment satisfaction

Table 4. Demographic and professional factors associated with resilience (CD-RISC-25 score <median)

Parameter	Category	Resilience level				p-value
		Optimal (>55.5)		Suboptimal (≤55.5)		
		N	%	N	%	
Gender	Male	43	46.2	50	53.8	
	Female	61	53.2	54	47.0	0.329
Age	Mean, SD					
Marital status	Single	52	46.0	61	54.0	
	Married	51	57.3	38	42.7	
	Divorced	1	16.7	5	83.3	0.071
Spouse profession	Not Applicable	50	47.2	56	52.8	
	Student	6	66.7	3	33.3	
	Housewife	13	46.4	15	53.6	
	Self-employed	3	75.0	1	25.0	
	Employed	32	52.5	29	47.5	0.622
Have children	None	71	49.0	74	51.0	
	Yes	33	52.4	30	47.6	0.651
Schooled children	None	88	48.4	94	51.6	
	Yes	16	61.5	10	38.5	0.208
Household income	<15k	8	53.3	7	46.7	
	15-20k	66	45.5	79	54.5	
	20-30k	20	58.8	14	41.2	
	>30k	10	71.4	4	28.6	0.182
Residence mode	Alone	11	39.3	17	60.7	
	With spouse	48	55.8	38	44.2	
	With parents	39	47.0	44	53.0	
	Other	6	54.5	5	45.5	0.417
Residency year	R1	23	50.0	23	50.0	
	R2	22	39.3	34	60.7	
	R3	42	54.5	35	45.5	
	R4	17	58.6	12	41.4	0.254
Sector	MoH	56	50.0	56	50.0	
	University	28	56.0	22	44.0	
	Military	17	53.6	22	56.4	
	Private	1	25.0	3	75.0	
	Other	2	66.7	1	33.3	0.610
Academic degree	Bachelor	103	51.8	96	48.2	
	Master or PhD	1	11.1	8	88.9	0.035*F
Average daily patient flow	<20	50	57.5	37	42.5	
	20+	54	44.6	67	55.4	0.068
Average consultation time	≤10 min	22	37.3	37	62.7	
	10-20 min	60	50.4	59	49.6	
	>20 min	22	73.3	8	26.7	0.006*
Home-job travel time	<=15 min	13	34.2	25	65.8	
	15-30 min	64	53.8	55	46.2	
	30-60 min.	21	53.8	18	46.2	
	> 1 hour	6	50.0	6	50.0	0.195
Transport mean	I drive	66	50.0	66	50.0	
	I have a driver	36	52.9	32	47.1	
	Taxi/cab	2	25.0	6	75.0	0.327
Overall WES score	**Mean, SD (range = 0-10)**	**6.05**	**2.10**	**4.16**	**2.36**	**<0.001***

Values are frequency and percentage, except if otherwise specified.

Table 5. Lifestyle and health-related data factors associated with resilience

Parameter	Category	Resilience level				p-value
		High (>55.5)		Low (≤55.5)		
		N	%	N	%	
Eating Habits	Not watchful	36	53.7	31	46.3	
	Somewhat watchful	54	47.0	61	53.0	
	Very watchful	14	53.8	12	46.2	0.621
Exercise	None or rarely	42	56.0	33	44.0	
	Irregular	38	44.2	48	55.8	
	Regular	24	51.1	23	48.9	0.322
BMI	Underweight	3	33.3	6	66.7	
	Normal	57	53.8	49	46.2	
	Overweight	31	45.6	37	54.4	
	Obese	13	52.0	12	48.0	0.537
Smoking status	Nonsmoker	76	54.7	63	45.3	
	Past smoker	5	38.5	8	61.5	
	Current smoker	23	41.1	33	58.9	0.158
Chronic diseases	None	90	52.0	83	48.0	
	One or more	14	40.0	21	60.0	0.194
Chronic medication	None	89	50.9	86	49.1	
	One or more	15	45.5	18	54.5	0.569
Infection with COVID-19	No	72	52.2	66	47.8	
	Yes	32	45.7	38	54.3	0.379
Other health issues during past year	No	89	50.3	88	49.7	
	Yes	15	48.4	16	51.6	0.846
Hospitalization during the past year	No	99	51.0	95	49.0	
	Yes	5	35.7	9	64.3	0.407F
Surgery during the past year	No	100	50.3	99	49.7	
	Yes	4	44.4	5	55.6	1.000F
Sleep quality	Poor	6	26.1	17	73.9	
	Unsatisfactory	26	42.6	35	57.4	
	Acceptable	56	56.6	43	43.4	
	Good	16	64.0	9	36.0	0.017*
Spiritual and religious life	Poor	0	0.0	7	100.0	
	Unsatisfactory	15	48.4	16	51.6	
	Acceptable	63	50.8	61	49.2	
	Good	26	56.5	20	43.5	0.049*
Overall health satisfaction	Mean, SD (range =1-10)	7.44	1.75	6.54	1.54	<0.001*
Previous education in stress management and coping strategies	No	76	48.4	81	51.6	
	Yes	28	54.9	23	45.1	0.420

Table 6. Independent factors associated with coping self-efficacy (stepwise linear regression)

Model	Predictor	B	p-value	95% CI for B		R^2
1	(Constant)	47.57	<0.001	32.35	62.78	
	WES score	17.48	<0.001	14.78	20.17	0.44
2	(Constant)	53.70	<0.001	38.45	68.95	
	WES score	17.18	<0.001	14.55	19.81	
	Disease past year*	-31.00	0.001	-48.87	-13.13	0.47
3	(Constant)	32.29	0.005	9.97	54.62	
	WES score	16.67	<0.001	14.05	19.30	
	Disease past year*	-27.61	0.003	-45.43	-9.78	
	Spiritual and religious life	11.72	0.011	2.69	20.74	0.49
4	(Constant)	16.25	0.228	-10.27	42.77	
	WES score	16.06	<0.001	13.40	18.72	
	Disease past year*	-28.66	0.002	-46.35	-10.97	
	Spiritual and religious life	11.71	0.011	2.76	20.66	
	Home-job travel time	9.12	0.032	0.82	17.42	0.50

Stepwise linear regression
WES: Work environment satisfaction
* Other than COVID-19

Table 7. Independent factors associated with suboptimal resilience (binary logistic regression)

Predictor	Level	OR	95% CI		p-value
Academic degree	Bachelor	Ref			
	Master or PhD	7.24	0.66	79.71	0.106
Average consultation time	<10 min	3.83	1.20	12.18	0.023*
	10-20 min	1.44	0.47	4.43	0.521
	>20 min	Ref	-	-	0.018*
WES score	(score)	0.94	0.76	1.16	0.545
Sleep quality	Poor	2.00	0.44	9.19	0.373
	Unsatisfactory	0.84	0.24	2.87	0.778
	Acceptable	0.50	0.15	1.60	0.241
	Good	Ref	-	-	0.129
Religious life	Unsatisfactory	0.69	0.26	1.82	0.451
	Satisfactory	Ref			
Overall health satisfaction	(score)	0.97	0.76	1.24	0.826
Coping self-efficacy	(CSES score)	0.98	0.97	0.99	<0.001*

WES: Work environment satisfaction

Discussion

Levels and factors of resilience during and before COVID-19 crisis

There is a strong relationship between resilience and psychological wellbeing, self-esteem and quality of life among HCWs including medical students (34.35). We evidenced low levels of resilience among family residents with mean and median CD-RISC-25 scores less than 56 out of 100. These levels are significantly lower than those reported in most of the studies using CD-RISC-25 in various populations, during and before COVID-19 crisis.

An Indonesian study explored resilience and anxiety levels among 227 HCWs during the COVID-19 crisis, and found a mean CD-RISC-25 out of 69 (SD=15.8), which was inversely correlated with state and trait anxiety (36). A French study used the CD-RISC-25 among 422 physicians caring for COVID-19 patients in six hospitals. The questionnaire was implemented during curfew and results showed a median resilience score of 69 out of 100, which was independently associated with professional factors including anesthesiology specialty and high caseload level, besides other extraprofessional factors such as having children and high anxiety profile (37). In the pre-COVID-19 era, a study involving 740 US medical interns, in 2010, showed a mean CD-RISC-25 out of 75.3 (SD=11.9), and further data showed marked and gradual increase in the risk of depression during the internship (38). Another Korean study (2010) used the CD-RISC-25 among a sample of 576 medical students, nurses and firefighters, and found a mean score of 61.2 (13.0) (39). A study from Iran, in 2011, reported a mean CD-RISC-25 of 62.11 (SD=11.93) among 414 medical students (34).

These comparative figures raise concern about the levels of resilience among family medicine residents in Saudi Arabia and the probable higher impact of COVID-19 crisis with reference to other HCWs. This may be related to specific stressors faced by residents, which would require further exploration and supportive interventions, not only in family medicine residents but also from all other specialties (40).

In line with these conclusions, a bi-national study by Aljehani et al., demonstrated high impact of the COVID-19 crisis on the psychological resilience among Saudi and Bahraini surgery residents. Authors reported exacerbated frequency and severity of anxiety disorders over minor life stressors indicating reduced resilience, and incriminated exposure to moral challenges imposed by the COVID-19 crisis as one of the determinants of such effect on resilience. Additionally, the study reported the conscious use of stress relieving strategies among 23.5% of the residents, among which were exercise, psychotherapy and medications (41). However, authors did not use any validated scale to measure resilience or coping.

Factors associated with resilience

Low resilience levels and maladaptive coping are strong predictors for burnout among physicians (42). The significance of the COVID-19 crisis in impacting resilience probably results from the permanence and or recurrence of negative emotions that increase the state of anxiety and disrupt the coping strategies (43). On the other hand, when viewing resilience as an intermediate outcome to the individual's final response to professional stressors, it becomes judicious to design and implement resilience-promoting interventions in high-stress work settings such as the healthcare sector, notably during major healthcare crises (44,45).

Characteristics of coping among residents during COVID-19

Stressors facing HCWs include exposure to higher risk of infection, fear of spreading the virus among relatives, and the increased work load (46). Other stressors are more specific to the medical residents, notably those related to the academic aspects and requirements of the residency program. Some of these specific stressors may be shared with undergraduate students (47). Abrupt modifications of the practical training plans shift to online theoretical learning and uncertainty regarding academic promotion, and evaluation have been reported to be major sources of anxiety and distress among Saudi neurosurgery residents (48). Another qualitative study among hematology, oncology, and pharmacy residents highlighted the odd pressure due to over demanding care needs and inadequate preparation for the residency exams to be among the major concerns during the COVID-19 crisis. Authors suggested several proactive measures to improve residents' coping while maintaining adequate and safe practice (49). Another national study involving 240 residents and fellow trainees in medical and surgical specialties highlighted a substantial reduction in training opportunities, along with high rates of perceived lack of support and uncertainty regarding own role during the COVID-19 crisis. Furthermore, the majority of the trainees reported frequent anxiety (72.1%), low mood (64.6%), and feeling of loneliness (54.6%), with no remarkable differences between juniors and seniors (50).

Park and Folkman further argued that self-efficacy influences the appraisal of a given situation, which determines the individual's coping response to that situation (51). In the present study approach, coping self-efficacy was analyzed as a predictor for resilience, and coping levels were shown to be relatively low among the family medicine residents with a mean CSES score of 136.81. This is significantly lower than the mean score (159.62) reported in a community-based sample of adults from the United Kingdom, of whom 29.1% had a medical condition (52). Furthermore, the three coping styles were relatively low and highly correlated with Pearson's correlation coefficient R >0.9, compared with R 0.54 – 0.67 reported in the original study of the CSEC scale validation, which was conducted among HIV-seropositive men in the USA (53).

The low levels of coping self-efficacy may indicate vulnerability of the residents to stress and anxiety, with no significant effect of the COVID-19 status (53,54). Among the strategies to enhance resilience and prevent emotional exhaustion among residents are mindfulness and self-compassion (55).

Professional predictors of coping self-efficacy

This study showed WES to be a strong predictor of coping self-efficacy. A review article including 10 studies on Iranian nurses showed the association of job satisfaction with the levels of job stress and stress coping strategies, and highlighted the effect of cognitive and behavioral stress management training (56). A study from the US involving 7288 physicians showed increased risk of burnout compared with other workers, and family medicine was among the high-risk specialties while being associated with below average satisfaction with work-life balance (57). Beyond the healthcare sector, a study involving 23 organizations from the service and production sectors demonstrated the positive relationship between coping strategies, work environment, and job satisfaction (58). COVID-19 crisis has caused a significant disruption of the work environment in the healthcare sector globally, which impacted severely the work satisfaction among HCWs (59,60).

Extra-professional predictors of coping self-efficacy

Among the extra-professional predictors that were highlighted in this study is the spiritual and religious fulfillment. Findings showed that higher satisfaction regarding spiritual and religious fulfillment was positively associated with higher coping self-efficacy. Besides, it showed to be significantly associated with resilience level in the univariate analysis. A systematic review involving 31 international studies showed the significance of religious coping mechanisms to combat psychological distress among HCWs during COVID-19 crisis, notably in high prevalence settings (61). Spirituality and reliance on God constitute a source of hope, optimism, and internal peace for the believers, besides the religious teaching that promotes both physical and psychological health. This results in a highly positive effect of spirituality on coping and resilience, which reduces the risk of anxiety and depression during the times of crisis such as COVID-19 (62,63). Such observations suggest the relevance of implementing religious support of HCWs during major health crises, notably in conservative societies such as Saudi Arabia.

Study limitations

The major limitations of this study are the sampling method and data collection procedure, which do not enable reliable inter-group comparisons and affect the generalizability of the findings.

Conclusion

Family medicine residents are at high-risk of psychological distress during the COVID-19 crisis indicated by low resilience and coping self-efficacy levels. The model developed in this study highlighted major contribution of satisfaction with multiple work environment dimensions in determining the levels of coping. Furthermore, religious and spiritual fulfillment strongly predicted coping self-efficacy in this population of Islamic faith. Both predictors should be considered at the organizational level to promote coping and resilience among medical trainees in the times of major health crises. Further studies are warranted to explore specific stressors among medical residents and their implication in resilience and psychological well-being.

Acknowledgement

Authors want to acknowledge Dr. Mohamed Amine HAIRECHE for his support in preparing this manuscript.

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