

RESILIENCE AS A MEDIATOR BETWEEN CAREGIVER
STRESS AND MENTAL HEALTH IN HEALTHCARE WORKERS

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Abstract

Healthcare workers (HCWs) represent a category of employees facing numerous challenges that have a significant impact on their quality of life. This cross-sectional study explored the relationship between caregiver stress, resilience, and mental health (anxiety and depression) among 305 HCWs (Mean age=44.65; $SD=9.58$) using an online survey conducted between December 2022 and February 2023. Participants completed the Brief Resilience Scale (BRS), the Kingston Caregiver Stress Scale (adapted for formal caregiving) (KCSS), and the Depression Anxiety Stress Scales 21-R (DASS21-R). The results revealed a positive correlation between caregiver stress and both anxiety and depression, whereas resilience was negatively associated with caregiver stress. Mediation analysis, using macro-PROCESS, demonstrated that resilience partially mediates the relationship between caregiver stress and mental health. Specifically, caregiver stress negatively predicted resilience ($\beta=-0.37$), which in turn contributed to reduced anxiety ($\beta=-0.31$) and depression ($\beta=-0.31$). These findings suggest that interventions targeting both stress reduction and resilience enhancement could be effective strategies for improving HCWs' mental well-being and overall quality of life.

Cuvinte-cheie: profesioniști din sănătate, reziliență, anxietate, depresie, persoane cu dizabilități

Keywords: healthcare workers, resilience, anxiety, depression, persons with disabilities

1. INTRODUCTION

Scientific literature on the healthcare environment has highlighted its high global demand and significant challenges faced by healthcare workers (HCWs) (Chidi *et al.*, 2024). Among the most frequently identified difficulties are intense stress, diminished social esteem due to public criticism or lack of recognition, and burnout, which, in many cases, lead to severe mental health disorders such as anxiety and depression (Kang *et al.*, 2020; Akova *et al.*, 2022; Zheng *et al.*, 2024). HCWs stressors are numerous, ranging from the emotional toll of complex patient cases and the high workload, which requires both considerable mental effort and significant physical exertion (Smith *et al.*, 2022; Wei *et al.*, 2022). These stressors contribute to burnout (a reaction to ongoing interpersonal and

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emotional strains at work - Maslach *et al.*, 2001), which in turn increases the risk of mental health disorders like anxiety and depression. Additionally, these factors negatively impact quality of life, leading to role conflicts and job dissatisfaction. Continuous exposure to a high-stress work environment exacerbates these issues, ultimately contributing to a decline in the overall well-being of healthcare professionals (Pérez-Valdecantos *et al.*, 2022).

A key concern in occupational health research is the increasing burden of caregiver stress among HCWs, particularly those working with vulnerable populations. Caregiver stress is a specific form of occupational stress arising from the prolonged and emotionally intensive nature of caregiving duties (Dehghan *et al.*, 2017). Because comorbidities, neuropsychiatric manifestations, clinical diagnoses, or illness stages may interact, factors pertaining to caregiver stress may be complicated (Chang *et al.*, 2023). Unlike general workplace stress, caregiver stress involves emotional exhaustion, physical fatigue, and physical, intellectual and social stress caused by sustained exposure to patient suffering and high job demands (Dehghan *et al.*, 2017; Lunskey *et al.*, 2021). Caregiving stress for HCWs can include sleep deprivation and fatigue from heavy daily work, including transporting and repositioning patients, routine of caring jobs (Dehghan *et al.*, 2017). As a result, physical pain (Sun *et al.*, 2024) and anxiety and depressive symptoms (Cong *et al.*, 2021) are present.

This phenomenon is particularly pronounced in HCWs working in residential centers for individuals with disabilities, where professionals must maintain long-term relationships with residents, manage chronic conditions, and provide both medical care and psychosocial support (Pappa *et al.*, 2020; Pappa *et al.*, 2021). Consequently, symptoms such as anxiety, exhaustion, fears related to aggression and infections, and post-traumatic stress have frequently been reported (Sheerin *et al.*, 2022; Zhang *et al.*, 2024). An aggravating factor is the prolonged work schedule – shifts exceeding 12 hours or more than 40 hours per week – which has been associated with an increase in adverse events and medical errors, thereby affecting the quality of patient care and reducing attention to patient safety (Magerøy and Wiig, 2023). In certain instances, low pay, a lack of managerial assistance, and a lack of organizational resources make HCWs' stress levels even worse (Foster *et al.*, 2018; Sántha *et al.*, 2020). Furthermore, the efficacy of patient treatments is impacted by the decrease in HCWs' work productivity, which directly affects the standard of medical care (Franklin and Gkiouleka, 2021).

2. THE JOB DEMANDS-RESOURCES MODEL (JD-R)

To better understand the impact of stress on HCWs, we adopt the Job Demands-Resources (JD-R) model (Bakker and Demerouti, 2007; Bakker *et al.*, 2023). This model posits that workplace characteristics can be classified into job demands – factors requiring sustained effort that contribute to stress – and job resources – factors that help buffer stress and promote well-being. The JD-R model serves as a valuable framework for assessing the determinants of work-related stress.

Job demands, whether physical, psychological, or social, require specific skills or exertion, making them integral to the work environment. The JD-R model conceptualizes workplace dynamics as a balance, wherein adequate job resources help mitigate the detrimental effects of high job demands. This paradigm is particularly relevant in high-demand settings, such as healthcare, where employees face continuous stressors (Bakker *et al.*, 2023). By integrating personal demands (e.g., caregiver stress) and personal resources (e.g., resilience), the JD-R model allows for a comprehensive analysis of how external work-related factors interact with internal characteristics and experiences, ultimately influencing HCWs' ability to cope with challenges and perform effectively (Granziera *et al.*, 2022). Thus, the JD-R model provides a framework for examining the factors that shape HCWs' capacity to manage workplace demands and enhance resilience.

Caregiver stress is a significant job demand that can negatively affect mental health unless counterbalanced by job resources such as managerial support, autonomy, and personal resilience. In this study, we proposed that resilience functions as a personal resource that helps mitigate the adverse effects of job demands. Resilience is defined as the ability to adapt, recover, and thrive in the face of adversity (Smith *et al.*, 2023). The ability of HCWs to effectively adjust to work-related pressures, prevent psychological injury, and carry on delivering high-quality patient care is known as HCWs resilience (Cooper *et al.*, 2020). In the case of HCWs, resilience reflects their capacity to endure and adapt during challenging periods, serving as a protective factor against psychological stress (Setiawati *et al.*, 2021).

Studies conducted during the COVID-19 pandemic have identified a direct correlation between resilience, stress, and anxiety among HCWs (Mosheva *et al.*, 2020; Yöyen *et al.*, 2024). For example, research on HCWs during the pandemic revealed a significant negative correlation between resilience and anxiety/depression ($r > 0.30$; Roberts *et al.*, 2021; Wu *et al.*, 2022), as well as a moderate negative correlation ($r > 0.59$; Setiawati *et al.*, 2021). Moreover, resilience has been recognized as a protective factor against high levels of depression (Song *et al.*, 2020), with evidence showing that Japanese nurses with higher resilience are less likely to develop depression (Awano *et al.*, 2020).

Further studies suggest that resilience mediates the relationship between stress, anxiety, and depression among nurses (Lara-Cabrera *et al.*, 2021) and plays a crucial role in adaptation to stressful situations, such as those experienced during the COVID-19 pandemic (Zager Kocjan *et al.*, 2021). Additionally, research conducted on nursing students indicated that resilience buffers the relationship between stress caused by clinical practice and symptoms of depression and anxiety (Devi *et al.*, 2021).

3. THE PRESENT STUDY

Although studies have explored the role of resilience in mitigating workplace stress, limited research has examined its specific function in caregiver stress among HCWs working in vulnerable populations (Chiang *et al.*, 2021). Existing evidence suggests that perceived stress does not directly influence depression but rather impacts resilience levels, which then indirectly affect depression (Chen *et al.*, 2023). Furthermore, resilience has been found to fully mediate the relationship between physical fatigue and psychological distress and partially mediate the relationship between mental/emotional fatigue and

psychological distress (Fekih *et al.*, 2024). It was also, observed that in the case of 400 nurse practitioners, the associations between depressive symptoms and emotional labor were partially mediated by resilience (Jung and Baek, 2020).

Based on these findings, our study aims to:

1. Examine the relationship between caregiver stress and mental health (anxiety and depression) among HCWs working in residential centers.
2. Investigate whether resilience mediates the relationship between caregiver stress and mental health outcomes, following the JD-R model framework.
3. Explore the implications of these relationships for interventions aimed at improving the well-being of HCWs in high-stress caregiving environments.

By tackling these goals, our study advances knowledge of the psychological processes that underlie caregiver stress and provides factual support for the protective function of resilience in medical environments.

4. METHOD

4.1. Participants and data collection procedure

The study population comprised healthcare workers (HCWs) employed in residential centers for individuals with disabilities. A convenience sampling method was employed for participant selection. Inclusion criteria stipulated that participants be full-time employees of the specified centers, residing in Romania, and fluent in Romanian. Employees with fixed-term contracts were excluded.

The online survey, developed using Google Forms®, incorporated validated items. The survey link was disseminated through two channels: (1) direct email distribution to residential center staff and (2) distribution to supervisors within the General Directorate of Social Assistance and Child Protection (GDSACP), who were requested to forward it to healthcare professionals in the residential centers. Training and clarification regarding the survey were provided to the designated personnel responsible for link distribution. The survey required approximately 10–12 minutes to complete. Informal consent was obtained from participants prior to completion of the online questionnaire.

4.2. Instruments

1. *The Brief Resilience Scale* – BRS (Smith *et al.*, 2008; Smith *et al.*, 2023) assesses resilience using six items – three positively and three negatively worded – rated on a 5-point Likert scale from 1 - strongly disagree to 5 - strongly agree. All items pertain to negative experiences, such as hardships, unpleasant situations, and setbacks. An example item is *I have a hard time making it through stressful events*. To calculate the BRS total score, items 2, 4, and 6 are reverse-coded, and the average of all six items is computed. Based on a meta-analytical review of 121 studies, Smith *et al.* (2023) proposed the following resilience level cutoffs based on average scores: very low (1.00-1.82), low (1.83-2.66), medium-low (2.67-3.16), medium (3.17-3.66), medium-high (3.67-3.99), high (4.00-4.66), and very high (4.67-5.00). For the present study, confirmatory factor analysis reveals the following indices: $\chi^2/df=2.26$; CFI=0.97; TLI=0.96; RMSEA=0.064 [0.027–0.102]; SRMR=0.062; $p=0.017$.

2. *Kingston Caregiver Stress Scale* – KCSS (Kilik and Hopkins, 2006) is a 10-item self-report scale that measures caregiver stress for individuals with disabilities on a 5-point Likert scale, ranging from 1 - no stress to 5 - extreme stress. In this

study, only seven items from the KCSS were selected, specifically those addressing caregiving-related challenges. Items related to financial concerns and caregiving provided by family members were excluded. The selected items were adapted to evaluate stress among employees responsible for patient care in formal settings. These items were adapted to assess stress among employees providing care to patients in formal settings. An example item is: *Do you feel overwhelmed by the responsibilities of the patient care process?* Higher scores indicate greater stress for caregivers. The scale was validated on the Romanian population and provided evidence supporting the intercultural validity of the instrument (Iacob *et al.*, 2021). The goodness-of-fit indices for the selected items in this study were as follows: $\chi^2/df=1.91$; CFI=0.99; TLI=0.98; RMSEA=0.057 [0.016–0.093]; SRMR=0.023; $p=0.032$.

3. *Depression Anxiety Stress Scales* – DASS21-R (Lovibond and Lovibond, 1995) contains 21 items assessed on a continuum from 0 - not at all in my case to 3 - most of the time in my case. The scale includes 3 factors: depression (e.g.: *I felt there was no pleasant emotion*), anxiety (e.g.: *I was in situations which made me so anxious that I was very relieved when it was over*), and stress-tension (e.g.: *I had the tendency to overreact to situations*). The study used the adapted Romanian version which demonstrated high psychometric properties (Albu, 2011). The scale was applied in its entirety, only the anxiety and depression subscales were required for the present study. The goodness-of-fit indices were: $\chi^2/df=3.43$; CFI=0.93; TLI=0.91; RMSEA=0.081 [0.078–0.097]; SRMR=0.049; $p<0.001$.

4. *Supplementary inquiries* collected information about the primary diagnoses of the individuals with disabilities under the care of HCWs. Participants were asked to check the primary diagnosis for each individual in their care from a list that included intellectual disabilities (e.g., intellectual handicap), sensory disabilities (e.g., hearing, visual impairment), neurological disorders (e.g., stroke, paralysis), genetic disorders (e.g., Down syndrome), and other disorders (e.g., cardiovascular disorders).

4.3. Ethical considerations

The study was conducted in full accordance with ethical principles, including the World Medical Association Declaration of Helsinki from 1975 as revised in 2013. The study was approved by the body responsible for research ethics of the Polytechnic University of Bucharest (Reg. No. 686/22.02.2022).

4.4. Hypothesis

The following hypothesis were established:

H1. Caregiving stress levels are positively correlated with symptoms of anxiety and depression.

H2. Resilience is negatively correlated with caregiving stress, anxiety, and depression.

H3: Resilience mediates the relationship among caregiving stress, anxiety, and depression.

4.5. Data analysis

The descriptive statistics used considered the analysis of data normality and the internal consistency of the verified scales through skewness and kurtosis indicators, and through the Shapiro-Wilk (S-W) test and, respectively, through the values of the alpha and omega coefficients. Mediation effects were examined through macro-PROCESS based on structural equation modelling for model estimation. A 95%

confidence interval and bootstrapping with 5.000 resamples were employed to assess the mediating model's relevance (Hayes, 2022). The chosen estimation method was Maximum Likelihood. A p-value <0.001 signified statistical significance. All the data were analysed with JASP 0.19.1.0 (Amsterdam University, Amsterdam, The Netherlands) programs.

5. RESULTS AND DISCUSSION

5.1. Socio-demographic and work characteristics of the sample

A summary of the study participants' characteristics is provided in Table no 1. The data are displayed as a percentages. The 305 HCWs in the final sample were

Table no 1.
Description of the sample of employees

Variables		N=305
Age	Mean age (<i>SD</i>)	44.65 (9.58)
Gender	Males	24.30
	Females	75.70
Work experience (years)	0.1-5	8.50
	5-10	12.80
	10-15	13.10
	15-20	15.10
	20-25	20.30
	>25	30.20
Workplace	Urban	70.20
	Rural	29.80
Education	Secondary school	15.73
	High school	72.45
	University studies	11.80
Labour sector	Public	89.20
	Private	10.80
Diagnosis of medically assisted patients	Autistic disorders	6.60
	Genetic disorders	3.00
	Neurological disorders	22.70
	Intellectual disabilities	38.70
	Sensorial disabilities	1.30
	Others	17.80
Marital status	Married	67.50
	Unmarried	18.20
	Divorced	14.20
Types of HCWs	Nurses	74.09
	Direct care staff	15.73
	Therapists	10.18
Geographical region	North-West	22.30
	North-East	18.00
	Capital	13.80
	Center	15.70
	South-East	4.30
	South-West	9.50
	West	3.60

35% males (Mean_{age}=41.41; *SD*=10.67) and 65% females (Mean_{age}= 45.78; *SD*=8.94). The group as a whole has an average age of M=44.65 (*SD*=9.58). Of them, 38.70% care for adults with intellectual disabilities, 22.70% for neurological

illnesses, 1.40% for sensory disabilities, 3.00% for genetic disorders, and 6.60% for patients with autism.

5.2. The descriptive and correlational analysis

Caregiver stress was negatively correlated with resilience ($r=-0.49$) and positively correlated with anxiety ($r=0.50$) and depression ($r=0.43$).

Resilience was negatively correlated with anxiety ($r=-0.43$) and depression ($r=-0.48$). Anxiety was positively correlated with depression ($r=0.84$) (all at $p<0.001$) (Table no 2). The data follow a non-normal distribution, as the Z-scores fall outside the range of -3.29 to 3.29, corresponding to a normal distribution for samples of 50–300 subjects (Kim, 2013). Additionally, the Shapiro-Wilk test (S-W) confirmed deviation from normality with values range between 0.78 and 0.97 ($p<0.001$ for all variables), indicating that the variables were not normally distributed.

Table no 2.
Descriptive and correlational statistics

Measures	Variables	1	2	3	4
BRS	Resilience	–			
KCSS	Caregiver stress	-0.49***	–		
	Depression	-0.43***	0.44***	–	
DASS21-R	Anxiety	-0.48***	0.50***	0.84***	–
	Means	3.49	2.03	4.08	3.10
	Skewness	-0.07	0.52	1.33	1.56
	Kurtosis	0.55	-0.69	1.56	1.94
	α	0.65	0.91	0.86	0.89
	ω	0.65	0.91	0.90	0.90

*** $p<0.01$

The robust value of over 0.90 for the coefficients obtained in the case of KCSS and DAS21-R confirms the internal consistency of the instruments and supports their reliability (Table no 2). In the case of BRS, the alpha and omega coefficients exceed 0.60, which is above the value considered adequate for the coefficients (Pallant, 2010). The correlations obtained confirm the proposed hypotheses.

5.3. Analysis of mediation effects

In the measurement model, caregiver stress was the independent variable and anxiety and depression as indicators of mental health were used as dependent variables. It was observed that all confidence intervals do not include 0, which means that all effects are statistically significant ($p<0.001$) (Table no 3). The results highlight that caregiver stress has a direct predictive effect on anxiety ($\beta=0.24$; 95%CI [0.162, 0.323]) and depression ($\beta=0.24$; 95%CI [0.145, 0.339]) indicating that higher levels of caregiver stress were associated with higher levels of anxiety and depression. At the same time, caregiver stress negatively influences resilience ($\beta=-0.37$; 95%CI [-0.450, -0.296]) which indicates that a high level of stress negatively affects a person's ability to be resilient. In turn, resilience has a negative effect on anxiety ($\beta=-0.31$; 95%CI [-0.418, -0.206]) and depression ($\beta=-0.31$; 95%CI [-

0.447, -0.191]), thus indicating that less resilient people are, the higher the levels of anxiety and depression (Figure no.1).

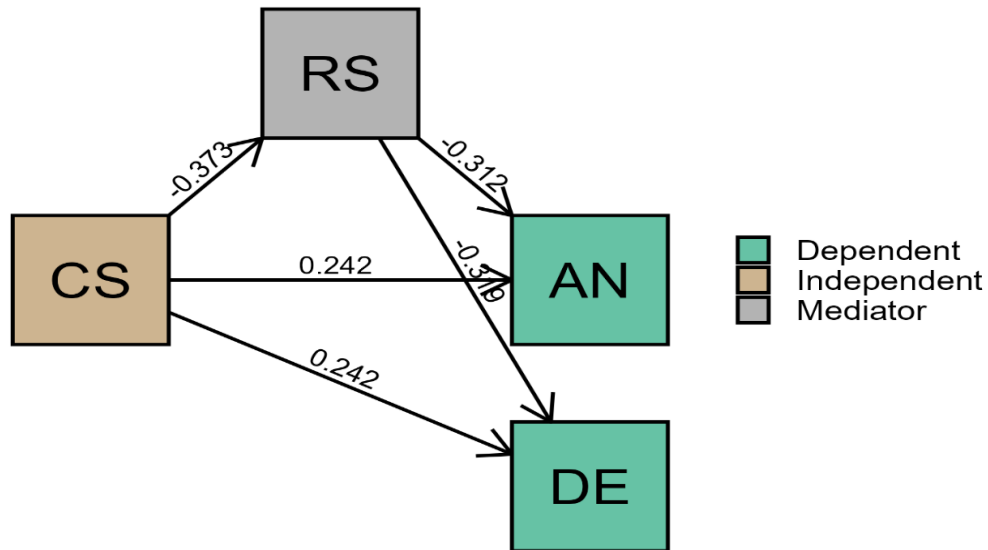


Figure 1. The mediating effect of resilience in the relationship between caregiver stress and anxiety and depression

Note: CS-Caregiver stress; RS-resilience; AN-anxiety; DE-depression

The bootstrap confidence interval method, which assesses the importance of mediation effects, was employed to examine the indirect effects. It estimates the true value of the mediation effect by continually resampling the sample data to provide confidence ranges. Caregiver stress has an indirect predictive effect on anxiety and depression *via* resilience with an indirect effect value of 0.11 for both anxiety (95%CI [0.070,0.163]) and depression (95%CI [0.065,0.173]).

Due to the fact that p is significant (<0.001) it can be stated that resilience partially mediates the mentioned relationship. The R^2 value for resilience is 0.24, and for anxiety and depression it is 0.32 and 0.25, respectively. Hypothesis 3, according to which resilience will mediate the relationship between caregiver stress and anxiety/depression, is confirmed.

Table no 3.
The mediation effects of resilience

Direct and indirect effects	Parameter Estimates	SE	95%CI	p
Caregiver Stress→ Resilience	-0.37	0.03	-0.450,-0.296	0.001
Resilience→ Anxiety	-0.31	0.05	-0.418,-0.206	0.001
Resilience →Depression	-0.31	0.06	-0.447,-0.191	0.001

Caregiver Stress →Anxiety	0.24	0.04	0.162,0.323	0.001
Caregiver Stress →Depression	0.24	0.06	0.145,0.339	0.001
Caregiver Stress → Resilience →Anxiety	0.11	0.02	0.070,0.163	0.001
Caregiver Stress →Resilience →Depression	0.11	0.02	0.065,0.173	0.001
Total effect				
Caregiver Stress →Anxiety	0.35	0.04	0.285,0.433	0.001
Caregiver Stress →Depression	0.36	0.05	0.273,0.449	0.001

6. DISCUSSION AND CONCLUSIONS

This study aimed to investigate the role of resilience as a mediator in the relationship between caregiving stress and the mental health of healthcare workers (HCWs) who provide care for individuals with disabilities. The findings confirm that caregiving stress has direct effects on anxiety and depression, reinforcing the notion that HCWs working in this field are particularly vulnerable to mental health deterioration. These results contribute to a deeper understanding of the psychological mechanisms underlying caregiving stress and provide empirical evidence on the protective role of resilience in healthcare settings.

Furthermore, mediation analysis demonstrated that resilience partially mediates the relationship between stress and both anxiety and depression. This suggests that, while resilience serves as a psychological buffer, mitigating the negative effects of stress, it does not fully eliminate them. HCWs with high resilience levels exhibited lower anxiety and depression, whereas those with lower resilience were more susceptible to mental health impairments. These findings reinforce the Job Demands-Resources (JD-R) model by illustrating how resilience functions as a key personal resource that buffers the impact of caregiving stress.

A comparison with other studies highlights the consistency of these results across different populations. For example, research on adolescents found that resilience partially mediated the relationship between stress and symptoms of anxiety and depression. Specifically, stress was negatively associated with resilience and positively correlated with anxiety and depression symptoms (Anyan and Hjemdal, 2016). Similarly, previous studies (Lara-Cabrera *et al.*, 2021) have identified within three series of partial mediation that resilience as a mediating variable in the relationship between stress and anxiety, depression and mental distress. The present study extends these findings to a population that has been less examined compared to hospital medical staff.

Notably, our results diverge from prior research (Chen *et al.*, 2023), which suggested that perceived stress did not have a direct effect on depression. This discrepancy may be attributed to the unique stressors faced by HCWs in residential care settings, such as prolonged exposure to patients with chronic conditions and the necessity of forming long-term emotional connections with those under their care.

The practical implications of these findings are significant. Given the mediating role of resilience, healthcare institutions should prioritize strategies that foster this capacity. For example, programs focused on increasing job satisfaction (Askaripoor *et al.*, 2024) and improved work-life balance (Meekes *et al.*, 2021),

could directly address the stressors impacting resilience. Furthermore, incorporating mentorship programs for HCWs could enhance empathetic communication skills, a key component of resilience in caregiving roles (Julia-Mora *et al.*, 2025). Building on the demonstrated effectiveness of cognitive-behavioral techniques in improving coping strategies (Chidi *et al.*, 2024), resilience-focused interventions could equip HCWs with practical skills to manage stress and enhance their overall mental health. The study suggests the need for resilience-building training specifically designed for HCWs in disability care. These programs should focus on practical strategies for managing the emotional demands of caregiving. The study also highlights the impact of caregiving stress on mental health. Therefore, organizations should ensure sufficient staffing to reduce workload and prevent burnout; at the same time, facilitate counseling services for employees who are exhausted. Although the study focuses on HCWs in disability care, it could be extended to other caregiving environments such as palliative care.

Study limitations and future research directions

As with any research, the present study has certain limitations that should be acknowledged. First, there was a gender imbalance within the sample, as HCWs in residential centers for individuals with disabilities were predominantly females. Therefore, the findings may be more applicable to this demographic group. Second, the reliance on self-report measures introduces potential bias due to social desirability effects. Third, the use of a convenience sampling method may have led to selection bias, as supervisors might have forwarded the survey primarily to HCWs perceived as highly engaged or less stressed, potentially underestimating the true levels of caregiving stress and mental health challenges in this population.

Future research should address these limitations and should employ more robust sampling strategies and longitudinal designs to better understand the complex interplay between stress, resilience, and mental health in HCWs caring for individuals with disabilities. Additionally, future studies should examine factors such as the duration of caregiving experience in residential centers to provide a more nuanced perspective on occupational stress. Expanding sample sizes would allow for cluster analyses to identify profiles of employees most vulnerable to stress in residential care settings. A particularly valuable direction for future research would be to compare HCWs across different types of healthcare environments – such as acute, long-term, intensive, and palliative care – to identify setting-specific stressors and protective factors.

In conclusion, our findings emphasize the critical role of resilience as a psychological resource that helps HCWs manage caregiving stress and protect their mental health. In order to improve the resilience of HCWs, psychologists employed by Romania's General Directorates of Social Assistance and Protection of the Child shall conduct psychological assistance and counseling sessions. By fostering resilience through structured programs, health care institutions can contribute to the overall well-being of professionals working in high-stress caregiving environments, ultimately improving both worker satisfaction and patient care quality.

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