BMC Psychology

RESEARCH

Open Access

Insights into general practitioners' self-care across 38 countries during the pandemic: a cross-sectional study

Ivana Keenan[1*], Esther Van Poel[2,3], Els Clays[2], Sara Willems[2], Milena Šantrić Milićević[4,5,6], Katica Tripković[7], Liubovė Murauskienė[8], Kathryn Hoffmann[9], Radost Assenova[10], Carmen Busneag[11,12,13], Gazmend Bojaj[14] and Claire Collins[1]

Abstract

Background The adoption of healthy self-care practices has proven necessary for professional life, as they often serve as a shield against stressors in the workplace. The COVID-19 pandemic created a high strain on general practitioners (GPs), contributing to increased workload, burnout, and anxiety. The present study aimed to identify self-care practices adopted by GPs amid the COVID-19 pandemic; and to explore the relationships between self-care practices and risk of distress.

Methods The current study utilized an online questionnaire arriving from the PRICOV-19 study, which was distributed among GP practices across 38 countries. The main focus was on the open-text responses where participants disclosed self-care practices employed to maintain mental health during COVID-19. The Six Domains of Self-Care theoretical framework was applied to investigate GP self-care practices across 6 domains including Physical, Professional, Relational, Emotional, Psychological, and Spiritual. The Mayo Clinic Well-Being Index (eWBI) was applied to assess mental well-being and risk of distress among GPs. The analysis was carried out using SPSS Statistics software.

Results In total, 2,949 GPs provided open-text responses on maintaining their mental health. 65.5% of GPs had an eWBI score of ≥ 2 and were considered at risk of distress. The majority of the participants prioritised physical (61.7%), followed by relational (38.0%) and psychological (34.6%) self-care practices to maintain their mental health during the pandemic. GPs who applied relational, physical, and professional self-care were significantly less likely to experience depression, stress, and emotional exhaustion, in comparison with the ones who did not apply these practices. GPs who practiced professional self-care practices had the lowest distress risk (eWBI = 1.99). Overall, 5% of GPs disclosed not applying any practices to maintain their mental health during the pandemic and were the most prone to mental health distress.

Conclusions GPs have navigated the pandemic uniquely, and despite applying self-care practices they faced some level of impact, hence self-care interventions for healthcare professionals should be regarded as essential rather than optional. A long-term investment in strategies focused on improving GPs' self-care is necessary to increase resilience among GPs and ensure their optimal well-being levels are achieved.

Keywords Self-care, Wellbeing, General practitioners, COVID-19

*Correspondence:
Ivana Keenan
Ivana.Keenan@ICGP.IE
Full list of author information is available at the end of the article

Background

Globally, the COVID-19 pandemic substantially affected the provision of primary care, pressuring GPs [1] to deliver additional patient care and adopt novel working approaches, including remote consulting and other eHealth initiatives [2–4]. The introduction of new working patterns has been accompanied by a greater workload, characterised by additional duties (such as conducting COVID-19 tests, administering vaccinations, managing phone consultations, and implementing hygiene measures) [5–7]. To enhance their professional competencies, many GPs increased the frequency and duration of consultations, sacrificing their resting and eating time, and sometimes resorting to medication to maintain self-efficacy. The combination of a heightened workload and swift changes due to the pandemic led to adverse effects on the mental and physical well-being of GPs. Previous studies have reported increased levels of stress, anxiety, burnout, reduced job satisfaction, as well as physical symptoms including migraines, exhaustion, and sleep disorders within the GP workforce [5, 8–12]. Given the substantial evidence of the fivefold crisis in the primary care workforce during and after the COVID-19 pandemic [13, 14], many opportunities emerged to promote self-care strategies and improve primary practitioners' health, safety, and well-being in response to pandemic challenges.

Evidence-based self-care interventions were recognised as tools beyond formal healthcare to promote health, prevent disease, maintain well-being, and assist individuals in coping with illness and disability [15–17]. Self-care can be defined as '*the ability to care for oneself through awareness, self-control, and self-reliance in order to achieve, maintain, or promote optimal health and well-being*' [18]. Personalised self-care encompasses various practices and strategies, aimed at improving individuals' overall well-being [19–21]. These strategies often involve prioritizing personal relationships, sustaining a balanced lifestyle, engaging in recreational activities, cultivating mindfulness, and exploring spiritual growth [19, 22]. The Six Domains of Self-Care theoretical framework (Fig. 1), suggests that individuals cultivate practices that nourish physical, psychological, emotional, social, spiritual, and professional domains to enhance their self-care and achieve a greater sense of balance and fulfillment in their lives [23].

Fostering adequate self-care practices among GPs in turn could enhance their ability to deliver safer, more effective, and higher quality of care to their patients [24, 25]; and effectively manage the negative consequences of increased workload, and burnout. However, some prior studies highlighted that physicians tend to neglect their health and well-being [26, 27] and prioritize the patients' needs over their own welfare [25]. A lack of self-care was

Fig. 1 Six Domains of Self-Care framework, including main domains and summary of categories

particularly evident during the COVID-19 pandemic when physicians, often driven by a strong sense of duty to protect patients and pervasive guilt when unable to provide the usual level of care [26, 28], neglected their own needs.

Considering the need to address caregiving fatigue and enhance resilience in times of crisis, it is essential to examine the self-care strategies GPs used during COVID-19. Hence, applying the Six Domains of Self-Care theoretical framework the present study aimed to (i) identify the self-care practices adopted by GPs amid the COVID-19 pandemic, and (ii) explore the relationships between self-care practices and risk of distress. The insights gained on self-care could be instrumental in creating effective approaches to support practitioners' mental health and overall well-being; and further guide the development of supportive policies.

Methods

Study design and setting

The current study utilized a dataset from the PRICOV-19 study. The PRICOV-19 study was initiated in 2020, and under the coordination of Ghent University (Belgium) employed an international consortium of more than 45 research institutes [29]. The main aim of the study was to investigate the impact of COVID-19 on the quality and safety of care provided in primary care, and the well-being of primary care providers [29]. In total, 38 countries (37 European countries and territories, and Israel) participated in this project.

The PRICOV-19 study is a cross-sectional study, employing an online self-reported questionnaire among general/family practices. The questionnaire employed in the study was developed and validated at Ghent University following a five-step procedure including a scoping literature review, Delphi procedure (face validity and content validity), cognitive interview and pretest (cross-cultural validity), pilot study, and expert consultation and review (face validity and content validity) [29]. The final version of the questionnaire included 53 items divided into six sections: 'Background questions', 'Patient flow', 'Infection prevention', 'Information processing', 'Communication'; 'Collaboration, collegiality, and self-care'. The questionnaire was translated into 38 languages, with more details available in the study protocol [29]. The Research Electronic Data Capture (REDCap) platform was employed for the dissemination of the questionnaire and data protection [30].

Study participants

The PRICOV-19 study had previously revised inclusion criteria before initiating the data collection. The inclusion criteria applied in the PRICOV-19 project were that all practices had to be general/family practices and the questionnaire was intended to be filled by GPs or GP trainees (with one questionnaire completed for the practice) [29]. The data for the PRICOV-19 study was collected between November 2020 and December 2021, however, the data collection period varied among the participating countries ranging from 3 to 35 weeks. A randomized sample of primary care practices in the country was preferred, however, some countries used convenience sampling [12, 29].

Inclusion criteria

For the purpose of the current paper, the inclusion criteria were applied to the original PRICOV-19 study dataset. As the current paper aims to analyse self-care practices employed by GPs during the pandemic, only the participants who disclosed that they were practicing as a GP and who provided an open-text response to the question 'In what ways do you maintain your mental health?' were included in the study. Participants who did not meet these inclusion criteria were excluded from the study.

Study instruments

The main aims of the current study were to (i) identify the self-care practices adopted by GPs amid the COVID-19 pandemic, and (ii) explore the relationships between self-care practices and risk of distress. Hence, the study incorporated two survey sections in the analysis: 1. 'Background questions' (including questions on general practice and participant characteristics, such as the years of experience working in general practice, practice location, and number of GPs in the practice; and finally, patient population composition including patients' vulnerability such as chronic conditions and financial stability). 2. 'Collaboration, collegiality, and self-care' (containing questions measuring the mental well-being and distress of the respondents; and an open-text question 'In what ways do you maintain your mental health?'). As the questionnaire was distributed to 38 countries and territories, the first step undertaken before data management and cleaning was translating all responses provided in the open-text section of the survey, into English.

The mental well-being and distress of the respondents

GP's well-being was assessed using the validated mental health self-assessment tool—the Mayo Clinic Well-Being Index (eWBI). Permission to use eWBI was previously granted [29]. The eWBI contained an expanded 9-item version assessing domains of emotional exhaustion, mental quality of life, depersonalization, stress, depression, physical quality of life, and fatigue; as well as the meaningfulness of work before and after the pandemic, and

balance between work and personal/family life before and after the pandemic. Within eWBI, participants responded to seven items by selecting either a yes (1) or no (0), while the other two items were rated on a 7-point or 5-point Likert scale. The calculations of the scores for the first seven items were carried out by assigning one for each 'yes' answer, and zero points for each 'no'; while the scores for the final two items were adjusted by adding one point to responses of strongly disagree/disagree; and subtracting one point to responses of agree/strongly agree, with no adjustments for neutral responses. The cut-off score was 2, indicating that persons with a score of 2 and above are at risk of distress, aligning with previous studies [12]. Overall, a higher score indicates a greater level of distress. Cases missing the eWBI data were excluded from the analysis.

Self-care practices for mental health maintenance

The PRICOV-19 questionnaire allowed participants to share their perspectives on how they maintain their mental health, in the open-text section of the survey. The responses in this section were investigated by applying the theoretical framework of the Six Domains of Self-Care [23]. The theoretical framework was based on 6 domains of self-care including Physical, Professional, Relational, Emotional, Psychological, and Spiritual. A supplementary 'domain' named 'Neglecting mental health' was included within the main 'domains' to capture responses from participants who disclosed neglecting mental health during the COVID-19 pandemic.

Quantitative content analysis [31, 32] assisted in the systematic organization and analysis of self-care practices applied by GPs during the pandemic. The primary reason for applying quantitative content analysis on open-text data was that the participants' responses in the text format were very brief and did not provide sufficient depth for meaningful pattern analysis or experiential insight. As a result, the only viable approach was to quantity the open-text data and allow for statistical analysis and comparison. Therefore, all open-text responses were categorised and coded under the main domains and categories suggested within the Six Domains of Self-Care framework *(Supplementary File 1).* A new category 'Additional coping strategies ' was added to the 'Emotional' domain, to capture various coping mechanisms that GPs applied, including self-protection by distancing and taking some time off. All responses in the open-text section of the survey were coded under the appropriate domain and category – as when GPs disclosed applying a self-care practice within any of the domains and categories, they received a score of 1 for each practice they applied (1 = yes, practice mentioned) and a score of 0 for those practices they did not apply (0 = no, practice not mentioned). Noting that GPs could apply multiple practices within domains. Coding revisions occurred after 500 responses were coded, resulting in further development to the 'practices' schema to add in-depth analysis. The final step involved working through 2,949 responses, analysing the frequencies of the main domains and categories, and interpreting the results. All 'practices' applied by GPs during the pandemic were coded and organised manually.

Data analysis

All data was initially analysed through single-choice questions employing descriptive statistics (count, and percentages). Pearson's Chi-Square test with Yates correction and an independent samples T-test with Bonferroni correction were used to determine whether there was a statistically significant relationship between participant well-being (eWBI scores) and self-care domains; p values < 0.05 were considered statistically significant. The missing values were excluded from the analysis, and percentages were based on the number of non-missing values. The IBM SPSS Statistics (version 27.0) software assisted the analysis.

Results

In total, 2,949 GPs responded in the open-text section of the survey on maintaining their mental health and were included in the study. Over a third of participants were located in cities (41.8%, $n = 1{,}231$), and employed in single-handed practice (37.2%, $n = 1{,}051$) (Table 1).

The majority of respondents experienced a risk of distress. The total eWBI scores among respondents ranged from -2 to 9, with a mean of 2.76 (SD = 2.76) and a median of 3. Overall, 65.5% ($n = 1{,}931$) of respondents had a score of ≥ 2 and, therefore, were considered at risk of distress (Fig. 2).

The highest levels of distress were disclosed regarding emotional exhaustion (67.5%), while the lowest levels of distress were recorded for fatigue (12.0%). Furthermore, most of the participants agreed or strongly agreed that their work is meaningful to them (71.5%), however, less than a third of respondents agreed or strongly agreed that their work schedule leaves enough time for their personal/ family life (29.6%) (Table 2).

Considering the open-text responses regarding maintaining good mental health, the majority of the participants prioritised *physical* self-care practices (61.7%, $n = 1{,}818$) to maintain their mental health during COVID-19 and achieve or support optimal functioning. A third of the participants also applied *relational* (38.0%) and *psychological* (34.6%) practices to maintain their mental health. Overall, the most commonly utilized practices were 'Physical exercise' (51.6%, $n = 1{,}523$), followed

Table 1 Main characteristics of the general practitioners and their practices during the COVID-19 pandemic

	%	N
Years of experience (*n* = 2941)		
0-9	23.3	686
10-19	25.2	740
20-29	28.7	844
30-39	22.8	671
Practice Location (*n* = 2942)		
Big (inner)city	31.6	930
Suburbs	10.2	301
(Small) town	18.4	542
Mixed urban–rural	20.2	595
Rural	19.5	574
Number of GPs working in the practice (*n* = 2823)		
1	37.2	1051
2	16.4	463
3	11.4	322
4	8.5	239
5+	26.5	748
Patients with chronic conditions[*] (*n* = 2892)		
Below average	4.8	139
Approx. average	55.0	1589
Above average	40.2	1164
Patients with financial problems[**] (*n* = 2845)		
Below average	22.6	642
Approx. average	54.6	1552
Above average	22.8	651

[*] Chronic conditions refer to 'health problems that require ongoing management over a period of years or decades'

[**] Financial problems refer to experiencing financial difficulties or living in a situation of poverty

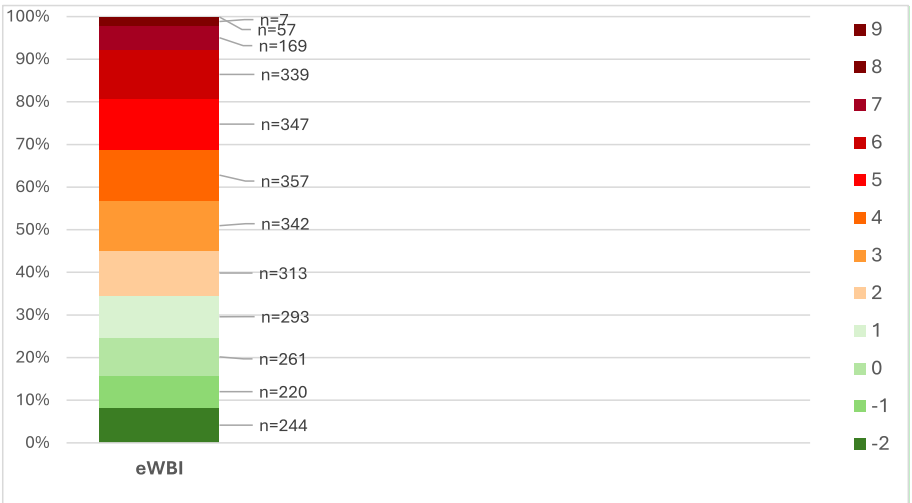
by 'Social integration & social support' (37.6%, $n = 1{,}108$) and 'Pursuing and satisfying intellectual needs' (32.8%, $n = 967$). Overall, 5% of the participants disclosed not applying any practices to maintain their mental health (Table 3). In comparison with an overall sample, GPs who neglected their mental health were more likely to have worked in general practice for more than 20 years (61.2%) and worked in rural areas (27.1%).

The Persons' Chi-square test and independent t-test analysis indicated several statistically significant associations between self-care practices, participants' well-being (eWBI components), and overall eWBI (Table 4).

The analysis revealed that participants who practiced physical self-care had a lower prevalence of depression (41.3%), compared to those who did not practice physical self-care (49.2%), with a difference being highly statistically significant ($p < 0.001$). Similar associations were observed for emotional exhaustion ($p < 0.001$) and stress rates ($p < 0.01$), where participants who applied physical self-care were significantly less likely to be emotionally exhausted (64.8%) and stressed (52.8%) in comparison with the ones who did not apply these practices (71.8% and 57.8% respectively) (Table 4).

Concerning relational self-care, the participants who engaged in these practices were significantly less likely to report depression ($p < 0.001$), with 38.5% feeling depressed compared with 47.9% experiencing depression and not engaging in relational self-care.

Participants who practiced professional self-care practices had the lowest distress risk (eWBI = 1.99). Further analysis indicated that participants' eWBI was significantly associated with physical (eWBI = 2.58,



** Risk of distress is defined as a score of ≥2*

Fig. 2 Total eWBI scores of the respondents ($n = 2949$)*

Table 2 GPs' eWBI components during the COVID-19 pandemic ($n = 2949$)

	%	n
Have you felt burned out from your work? – Emotional exhaustion	67.5	1990
Have you worried that your work is hardening you emotionally?—Depersonalization	56.0	1652
Have you often been bothered by feeling down, depressed, or hopeless?—Depression	44.3	1307
Have you fallen asleep while sitting inactive in a public place? – Fatigue	12.0	355
Have you felt that all the things you had to do were piling up so high that you could not overcome them?—Stress	54.7	1613
Have you been bothered by emotional problems (such as feeling anxious, depressed, or irritable)? – Mental quality of life	58.5	1725
Has your physical health interfered with your ability to do your daily work at home and/or away from home? -Physical quality of life	35.0	1032
The work I do is meaningful to me.		
1 (Strongly Disagree)	1.0	29
2	1.2	36
3	3.1	92
4	6.2	182
5	17.1	506
6	26.0	768
7 (Strongly Agree)	45.5	1346
My work schedule leaves me enough time for my personal/family life.		
1 (Strongly Disagree)	21.7	642
2	25.0	740
3	23.8	703
4	19.6	579
5 (Strongly Agree)	10.0	295

Table 3 Self-Care domains and practices applied by GPs during COVID-19 ($n = 2949$)

Domains of self-care	% (n)[a]	Most frequent practices of self-care	% (n)
Physical	61.7 (1818)	Sleep	10.3 (305)
		Nutrition	1.3 (38)
		Exercise	51.6 (1523)
		Health maintenance and adherence	6.3 (185)
Relational	38.0 (1120)	Social integration & social support	37.6 (1108)
		Altruism	0.6 (18)
Psychological	34.6 (1021)	Pursuing and satisfying intellectual needs	32.8 (967)
		Self-awareness and mindful reflection on self	2.2 (64)
Spiritual	22.8 (671)	Religious participation & prayer	2.3 (68)
		Spiritual mediation	7.5 (221)
		Connecting with nature	14.5 (430)
Emotional	9.5 (279)	Additional coping strategies	5.5 (161)
		Reducing negative emotional experience	2.2 (65)
		Increasing well-being and happiness	2.3 (68)
Professional	7.0 (207)	Preventing Job stress and burnout	5.8 (172)
		Job engagement	1.3 (37)
Neglecting mental health[b]	4.9 (144)		

[a] Respondents may have mentioned more than one practice within each domain; the domain number, therefore, is based on a number of cases and will be greater than the sum of the practices within the domain

[b] Respondents within this category reported not applying any practices to maintain their mental health

Table 4 Relationship between participant well-being and self-care domains ($n = 2949$)

	Participants well-being																			
Participants Self-care	**Emotional Exhaustion % (n)**	***p-value***	**Depersonalisation % (n)**	***p-value***	**Depression % (n)**	***p-value***	**Fatigue % (n)**	***p-value***	**Stress % (n)**	***p-value***	**Mental quality of life % (n)**	***p-value***	**Physical quality of life % (n)**	***p-value***	**The work I do is meaningful to me x̄ (SD)**	***p-value***	**My work schedule leaves me enoughtime forpersonal/ familylife x̄ (SD)**	***p-value***	***Total* eWBI x̄ (SD)**	***p-value***
Physical		0.000***		0.110[na]		0.000***		0.967[n a]		0.008**		0.055[na]		0.001**		0.019*		0.011*		0.000***
Yes	64.8 (1178)		54.8 (997)		41.3 (751)		12.0 (218)		52.8 (959)		57.1 (1038)		32.7 (595)		-0.71 (.488)		0.14 (.861)		2.58 (2.781)	
N**o**	71.8 (812)		57.9 (655)		49.2 (556)		12.1 (137)		57.8 (654)		60.7 (687)		38.6 (437)		-0.66 (.534)		0.22 (.848)		3.04 (2.704)	
Professional		0.085[na]		0.000***		0.012*		0.449[na]		0.010**		0.004**		0.177[na]		0.964[na]		0.001**		0.000***
Yes	61.8 (128)		38.6 (80)		35.7 (74)		10.1 (21)		45.9 (95)		48.8 (101)		30.4 (63)		-0.69 (.532)		-0.03 (.900)		1.99 (2.961)	
No	67.9 (1862)		57.3 (1572)		45.0 (1233)		12.2 (334)		55.4 (1518)		59.2 (1624)		35.3 (969)		-0.69 (.505)		0.19 (.852)		2.82 (2.736)	
Relational		0.001**		0.057[na]		0.000***		0.043*		0.039*		0.229[na]		0.000***		0.000***		0.011*		0.000***
Yes	63.7 (714)		53.8 (602)		38.5 (431)		10.4 (117)		52.2 (585)		57.1 (639)		28.7 (322)		-0.75 (.453)		0.12 (.863)		2.41 (2.666)	
No	69.8 (1276)		57.4 (1050)		47.9 (876)		13.0 (238)		56.2 (1028)		59.4 (1086)		38.8 (710)		-0.65 (.533)		0.20 (.851)		2.97 (2.796)	
Emotional		0.613[na]		0.463[na]		0.599[n a]		0.860[na]		0.306[na]		0.548[na]		0.142[na]		0.086[na]		0.200[na]		0.107[na]
Yes	65.9 (184)		53.8 (150)		42.7 (119)		12.5 (35)		51. 6 (144)		56.6 (158)		30.8 (86)		-0.74 (.45)		0.11 (.867)		2.51 (2.776)	
No	67.6 (1806)		56.3 (1502)		44.5 (1188)		12.0 (320)		55.0 (1469)		58.7 (1567)		35.4 (946)		-0.69 (.511)		0.18 (.856)		2.79 (2.758)	
Psychological		0.076[na]		0.723[na]		0.043*		0.051[na]		0.638[na]		0. 597[na]		0. 012*		0.000***		0.050*		0.003**
Yes	65.3 (667)		56.5 (577)		41.7 (426)		10.4 (106)		55. 3 (565)		57.8 (590)		31.9 (326)		-0.77 (.445)		0.13 (.859)		2.55 (2.710)	
No	68.6 (1323)		55.8 (1075)		45.7 (881)		12.9 (249)		54.4 (1048)		58.9 (1135)		36.6 (706)		-0.65 (.532)		0.19 (.855)		2.87 (2.781)	

Table 4 (continued)

Participants Self-care	Participants well-being																			
	Emotional Exhaustion % (n)	***p-value***	**Depersonalisation % (n)**	***p-value***	**Depression % (n)**	***p-value***	**Fatigue % (n)**	***p-value***	**Stress % (n)**	***p-value***	**Mental quality of life % (n)**	***p-value***	**Physical quality of life % (n)**	***p-value***	**The work I do is meaningful to me x̄ (SD)**	***p-value***	**My work schedule leaves me enoughtime forpersonal/ familylife x̄ (SD)**	***p-value***	***Total* eWBI x̄ (SD)**	***p-value***
Spiritual		0.947[na]		0.019*		0.326[na]		0.759[na]		0.233[na]		0.154[na]		0.831[na]		0.122[na]		0.085[na]		0.820[na]
Yes	67.7 (454)		60.1 (403)		46.1 (309)		11.6 (78)		52. 6 (353)		61.0 (409)		34.6 (232)		-0.72 (.488)		0.12 (.858)		2.74 (2.736)	
No	67.4 (1536)		54.8 (1249)		43.8 (998)		12.2 (277)		55.3 (1260)		57.8 (1316)		35.1 (800)		-0.68 (.511)		0.19 (.856)		2.77 (2.768)	
Neglecting mental health		0.000***		0.002**		0.000***		0.001**		0.000***		0.021*		0.000***		0.000***		0.000***		0.000***
Yes	89.6 (129)		68.8 (99)		71.5 (103)		21.5 (31)		79.2 (114)		68.1 (98)		61.1 (88)		-0.37 (.668)		0.67 (.657)		4.90 (2.186)	
No	66.3 (1861)		55.4 (1553)		42.9 (1204)		11.6 (324)		53.4 (1499)		58.0 (1627)		33.7 (944)		-0.71 (.491)		0.15 (.858)		2.65 (2.742)	

'na' Relationship is not significant

*** Relationship is significant at the 0.001 level (2-tailed)

** Relationship is significant at the 0.01 level (2-tailed)

* Relationship is significant at the 0.05 level (2-tailed)

$p < 0.001$), professional (eWBI = 1.99, $p < 0.001$), relational (eWBI = 2.41, $p < 0.001$), psychological (eWBI = 2.55, $p < 0.01$), while no significant associations were found for emotional and spiritual self-care practices (Table 4).

The participants who did not apply any strategies to maintain their mental health were more likely to experience the highest level of distress in comparison with participants who applied any self-care practice (eWBI = 4.90, $p < 0.001$), while the application of emotional or spiritual practices was not significantly associated with an overall distress score (Table 4).

Discussion

Summary of principal findings

The current study investigated self-care practices applied among 2,949 GPs to maintain mental health during the COVID-19 pandemic. Over two-fifths of GPs who participated in the study were located in cities and a third were employed in single-handed practices. The study revealed that the average eWBI was 2.76, where two-thirds of surveyed GPs scored ≥ 2 and were considered at risk of distress. The majority of GPs reported maintaining their mental health during the COVID-19 pandemic through physical (two-thirds of all respondents), followed by relational (one-third) and psychological (one-third) practices. GPs who applied professional practices were considered at the lowest risk of distress, while emotional and spiritual practices were not found to be significantly correlated with an overall distress score. Overall, 5% of GPs disclosed not applying any practices to maintain their mental health during the pandemic. A significant study finding is that individuals who did not engage in practice to maintain good mental health during the COVID-19 pandemic were more likely to experience distress, indicating that neglecting mental health needs must not be an option in volatile times.

Comparison with existing literature

Over the last decade, there has been increased attention to improving physicians' mental health and well-being, by applying various strategies focused on preventing or reducing physician burnout [33–36]. Self-care strategies proved to be particularly vital during the pandemic period, which presented numerous challenges and high levels of psychological distress for both healthcare professionals and the general population. The present study highlighted the critical role of physical, relational, and professional practices in maintaining mental health among GPs during the pandemic, noting that GPs who applied these practices were less likely to experience well-being issues (including emotional exhaustion, stress, and depression) than GPs who did not. The findings of our study align with previous research that has explored resilience among healthcare professionals during the pandemic. For instance, doctors and other healthcare workers, who applied physical activity during the pandemic period were reported to be more content and experience lower levels of anxiety, depression, and emotional exhaustion [37–39]. Similar results were found in other studies demonstrating that healthcare workers frequently relied on exercise, adequate sleeping patterns, and appropriate nutrition, as their primary coping strategies to manage the pandemic-related stressors [39–41]. On the other hand, a study conducted among Slovenian GPs revealed no relationship between overall burnout and regular physical activity, indicating that physical activity did not have a protective effect on the overall burnout of doctors, which may have contributed to the exceptional time of the pandemic [42].

The application of relational practices was also found to be beneficial for the GP's well-being, where 38% of the participants in our study applied relational practices including spending time with friends, and family, and having supportive peer relationships. In our study, friends and family were identified as pillars of encouragement, motivation, and resilience, enabling GPs to provide continuity of patient care in challenging times during the pandemic. These results corroborate prior research that highlights the importance of social relationships (peers, friends, and family) among healthcare professionals during the pandemic [40, 43–46]. Personal and informal support channels described as 'oasis of stability and understanding' [47], were particularly important in escaping the hectic reality of changing general practice amid pandemic [45]. Our study emphasises that GP peer support, recognised as a platform for sharing thoughts, and experiences, aligns with previous research, where peer support among GPs acts as a resource for emotional support and affirmation, fostering strong bonds and aiding the elevation of distress, especially during the challenging times [43, 46]. Another notable aspect of the current study is that GPs who applied professional self-care practices (including work-life balance, reduction of working hours, and continuing self-development) had the lowest risk of distress (eWBI = 1.99). The previous research has established a positive link between establishing work-life balance and well-being [48–50], however a paucity of research where a direct connection between eWBI with self-care practices applied to maintain mental health, has been noted. Therefore our study distinguishes itself from others, by associating mental health distress scores with the importance of maintaining a work-life balance for effective self-care.

Finally, in total 5% of the participants in the study disclosed not applying any strategies to maintain their mental health, it is imperative that support is provided

to this cohort. Although the study was situated during the COVID-19 pandemic, which is seen as a particularly stressful period, the prevalence of distress among healthcare workers is not breaking news. Our findings corroborate prior research findings consistently reporting that the increased workload and uncertainties faced by GPs point to a need to address this area and that the findings related to the pandemic are not restricted to it [12, 51, 52]. As highlighted by previous studies, failure to prioritize self-care, which is often perceived as a shortcoming, rather than a natural reaction to challenging circumstances GPs face, unequivocally leads to burnout, decreased productivity, and ultimately diminishes overall well-being [2, 11, 44].

Implications for practice and future research

As self-care practices and strategies play a crucial role in maintaining the mental health of GPs, further development of additional methods to promote and support these healthy behaviors is needed.

The implementation of policies focused on the promotion of work-life balance (including vacation and leave policies; family-friendly workplace practices, and provision of facilities that encourage physical activity at and to the workplace) would be beneficial to enhance the overall well-being of GPs. As physically active doctors are more likely to offer exercise advice and promote physical activity among their patients [53, 54], promoting GPs' physical activity would greatly benefit GPs and the general population.

The current study demonstrated that the application of professional practices such as balancing between work and personal life, reduction of working hours, and continuing self-development, contribute to the lowest risk of distress. Previous studies indicate that since work stressors are strongly related to burnout, interventions focused on altering work demands and responsibilities (i.e. ensuring sufficient time to complete work tasks) are likely to be more effective in improving physicians' well-being [46, 54]. Fostering a supportive work environment – through promoting a positive workforce culture, holding regular meetings to discuss workload and challenges – and enhancing resources such as teamwork efficiency, and clinician autonomy [35, 55] is shown to be beneficial. Initiatives such as mental health education, confidential counseling services, and flexible work arrangements can be implemented to address the issue of burnout and the risks of neglecting mental health.

Further development of the educational modules focused on self-care among GPs would aid burnout prevention, overall resilience, professional satisfaction, and achieving a better work-life balance, which in return would aid overall healthcare quality. Ultimately, integrating self-care education training curricula, and/or continuous professional development courses can lead to healthier and happier doctors who are better equipped to provide high-quality care for their patients. Empowering health workers to practice self-care should be fully or partially supported with health and educational technologies.

The study's findings can aid governmental authorities and healthcare decision-makers in gaining a deeper understanding of what matters to GPs in a crisis. The self-care practices GPs applied (e.g. exercise, health diets, reduction of working hours, access to peer support) need to be considered as a component of structural strategies to build supply, sustain workforce capacity, and improve the well-being of GPs to foster effective primary care services resilience in Europe.

Limitations of the study

The present study utilises a large cohort and therefore provides robust evidence for an overall understanding of the practices applied by GPs during the COVID-19 pandemic.

However, limitations are noted. Firstly, self-care practices were identified through an open-text question 'How do you maintain your mental health?'. The vast majority of the responses were very brief—mainly recounting the practices GPs applied. Therefore, the brevity of individual responses limited in-depth analysis and failed to capture the complexity of respondents' thoughts and experiences. Further research should consider exploring self-care practices through a qualitative research lens. Conducting a qualitative longitudinal study may offer more comprehensive insights and allow a comparison of GPs' well-being and self-care practices applied at different time points, including at the start and the peak of the pandemic.

Secondly, a risk of recall bias is also present, as there is a possibility that some participants reported the practices they apply most frequently, and may have overlooked other self-care practices, also applied in their lives.

Finally, the participants in the PRICOV study who explicitly answered that they neglect their mental health are probably not the only ones who do so. There is a likelihood that those who did not provide open-text responses on maintaining their mental health also did not practice self-care.

Conclusion

While GPs have applied different self-care practices to navigate the pandemic, this study highlights that two-thirds were at risk of distress. Therefore, fostering self-care interventions for GPs should be regarded as essential rather than optional and an ethical and moral obligation

within the profession. Our study shows that enhancing adequate self-care has been essential for GPs to effectively manage the negative consequences of increased workload and burnout and navigate uncertainties. Practicing self-care has helped GPs sustain well-being and likely contributed to their effectiveness in the volatile times of the COVID-19 pandemic. Considering that the COVID-19 pandemic has only exacerbated an ongoing workforce crisis in general practice, providing individual, practice, and system-level support is essential to ensure a sustainable and healthy general practice workforce.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s40359-024-02066-0.

Supplementary Material 1: Supplementary File 1. Self-care framework, with categories and practices.

Acknowledgements
We are grateful to general practitioners across all countries who dedicated their time to participating in the study. We also thank Ms. Zoe De Winter for her contributions to open-text translations from original languages to English and Ms. Patricia Patton for diligently proofreading the paper.

Authors' contributions
S.W. led the conceptualization and design of the study. S.W. & E.V.P. led the overall coordination of the study. I.K. led the authorship group, analyzed the data, drafted the first version of the paper, and undertook final editing and submission. I.K., M.S.M, K.T. & E.V.P. contributed to the literature review. M.S.M. & I.K. wrote the introduction. I.K., E.V.P., C.C., E.C. & K.T. wrote the methods section. I.K., E.V.P., C.C., E.C., M.S.M. & K.T. contributed to data interpretation. I.K., M.S.M. & S.W. contributed to the discussion. C.C. supervised the drafting of this paper. L.T., H.K., R.A., C.B. & G.B. reviewed the paper. All authors have read and agreed to the published version of the manuscript.

Funding
The PRICOV-19 data collection was undertaken without funding in individual countries. A small grant was received by Ghent University from the European General Practice Research Network (EGPRN) to cover data cleaning; no grant number applies. The APC for this paper was funded by the first author's institution—the Irish College of GPs (ICGP).

Data availability
The anonymized data is held at Ghent University and is available to participating partners for further analysis upon signing an appropriate usage agreement.

Declarations

Ethics approval and consent to participate
The study was conducted in accordance with the Declaration of Helsinki and was approved by the Research Ethics Committee of Ghent University Hospital (project number BC-07617). Additional research ethical approval was obtained in participating countries if required in that country or by the participating institution's policies.
The responses were anonymous; however, all respondents provided informed consent at the start of the questionnaire.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Author details
[1]Irish College of General Practitioners, Dublin, Ireland. [2]Department of Public Health and Primary Care, Ghent University, Ghent, Belgium. [3]Department of Public Health and Primary Care, Quality and Safety Ghent, Ghent University, Ghent, Belgium. [4]Institute of Social Medicine, Faculty of Medicine, University of Belgrade, Belgrade, Serbia. [5]Laboratory for Strengthening Capacity and Performance of Health System and Workforce for Health Equity, Faculty of Medicine, University of Belgrade, Belgrade, Serbia. [6]Ministry of Science, Technological Development, and Innovation of the Republic of Serbia Project Contract Number 451-03-47/2023-01/200110, Belgrade, Serbia. [7]Institute for Public Health, Belgrade, Serbia. [8]Department of Public Health, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania. [9]Department of Primary Care Medicine, Medical University of Vienna, Vienna, Austria. [10]Department of Urology and General Practice, Faculty of Medicine, Medical University of Plovdiv, Plovdiv, Bulgaria. [11]Spiru Haret University, Bucharest, Romania. [12]Medical Department, National Romanian Television, Bucharest, Romania. [13]Individual Medical Office "dr. Busneag Carmen", Bucharest, Romania. [14]Management of Health Institutions and Services, Faculty of Health Science, Heimerer College, Pristina, Kosovo.

Received: 16 July 2024 Accepted: 8 October 2024
Published online: 20 December 2024

References

1. World Organization of Family Doctors Europe. 2023 Revision of the Definition of General Practice/Family Medicine. https://www.woncaeurope.org/news/view/2023-revision-of-the-definition-of-general-practice-family-medicine. Accessed 1 Aug 2024.
2. Khalil-Khan A, Khan MA. The impact of COVID-19 on primary care: a scoping review. Cureus. 2023;15(1):e33241.
3. Verhoeven V, Tsakitzidis G, Philips H, et al. Impact of the COVID-19 pandemic on the core functions of primary care: will the cure be worse than the disease? A qualitative interview study in Flemish GPs. BMJ Open. 2020;10:e039674-2020–039674.
4. Gray R, Sanders C. A reflection on the impact of COVID-19 on primary care in the United Kingdom. J Interprof Care. 2020;34(5):672–8.
5. Schrimpf A, Bleckwenn M, Braesigk A. COVID-19 Continues to Burden General Practitioners: Impact on Workload, Provision of Care, and Intention to Leave. *InHealthcare.* 2023; 11 (320).
6. Vučak J, Popovic B, Ljubotina A, Vojvodić Ž, Sabljak D, Zavidić T. Changes in consultation mode during different phases of the COVID-19 pandemic in Croatian family medicine: a cross-sectional study. BMJ Open. 2023;13(1): e066325.
7. Mahlknecht A, Barbieri V, Engl A, Piccoliori G, Wiedermann CJ. Challenges and experiences of general practitioners during the course of the Covid-19 pandemic: a northern Italian observational study—cross-sectional analysis and comparison of a two-time survey in primary care. Fam Pract. 2022;39(6):1009–16.
8. Jefferson L, Heathcote C, Bloor K. General practitioner well-being during the COVID-19 pandemic: a qualitative interview study. BMJ Open. 2023;13(2): e061531.
9. Dutour M, Kirchhoff A, Janssen C, Meleze S, Chevalier H, Levy-Amon S, Detrez MA, Piet E, Delory T. Family medicine practitioners' stress during the COVID-19 pandemic: a cross-sectional survey. BMC Fam Pract. 2021;22(1):1–8.
10. Jefferson L, Golder S, Heathcote C, Avila AC, Dale V, Essex H, van der Feltz CC, McHugh E, Moe-Byrne T, Bloor K. GP wellbeing during the COVID-19 pandemic: a systematic review. BJGP. 2022;72(718):e325–33.
11. Lewis S, Willis K, Bismark M, Smallwood N. A time for self-care? Frontline health workers' strategies for managing mental health during the COVID-19 pandemic. SSM Ment health. 2022;2: 100053.
12. Collins C, Clays E, Van Poel E, Cholewa J, Tripkovic K, Nessler K, de Rouffignac S, Šantrić Milićević M, Bukumiric Z, Adler L, Ponsar C. Distress and wellbeing among general practitioners in 33 countries during COVID-19: results from the cross-sectional PRICOV-19 study to inform health system interventions. Int J Environ Res Public Health. 2022;19(9):5675.
13. Russo G, Perelman J, Zapata T, Šantrić-Milićević M. The layered crisis of the primary care medical workforce in the European region: what evidence do we need to identify causes and solutions? Hum Resour Health. 2023;21(1):55.
14. Azzopardi-Muscat N, Zapata T, Kluge H. Moving from health workforce crisis to health workforce success: the time to act is now. Lancet Reg Health Eur. 2023;35:100765.

15. Laposha I, Smallfield S. Examining the occupational therapy definition of self-care: A scoping review. Occup Ther Health Care. 2020;34(2):99–115.
16. World Health Organization. Classification of self-care interventions for health: a shared language to describe the uses of self-care interventions. In Classification of self-care interventions for health: a shared language to describe the uses of self-care interventions 2021. Geneva: World Health Organization; 2021.
17. World Health Organization. WHO guideline on self-care interventions for health and well-being, 2022 revision: executive summary. Geneva: World Health Organization; 2022.
18. Martínez N, Connelly CD, Pérez A, Calero P. Self-care: A concept analysis. Int J Nurs Sci. 2021;8(4):418–25.
19. Sanchez-Reilly S, Morrison LJ, Carey E, Bernacki R, O'Neill L, Kapo J, Periyakoil VS, Thomas JD. Caring for oneself to care for others: physicians and their self-care. J Support Oncol. 2013;11(2):75.
20. Matarese M, Lommi M, De Marinis MG, Riegel B. A systematic review and integration of concept analyses of self-care and related concepts. J Nurs Scholarsh. 2018;50(3):296–305.
21. Skovholt TM, Trotter-Mathison M. The resilient practitioner: Burnout prevention and self-care strategies for counselors, therapists, teachers, and health professionals. New York: Routledge; 2014.
22. Posluns K, Gall TL. Dear mental health practitioners, take care of yourselves: A literature review on self-care. Int J Adv Couns. 2020;42:1–20.
23. Butler LD, Mercer KA, McClain-Meeder K, Horne DM, Dudley M. Six domains of self-care: Attending to the whole person. J Hum Behav Soc Environ. 2019;29(1):107–24.
24. Pipas CF. Caring for me is caring for you: the power of physician self-care and personal transformation. Fam Pract Manag. 2020;27(2):17–22.
25. Farrar C. Exploration of physician attitudes about self-care and personal mental health: possible barriers to physician well-being. 2020. Dissertations. https://digitalcommons.nl.edu/diss/454. Assessed 1 Jun 2024.
26. Creese J, Byrne JP, Conway E, Barrett E, Prihodova L, Humphries N. We all really need to just take a breath: composite narratives of hospital doctors' well-being during the COVID-19 pandemic. Int J Environ Res Public Health. 2021;18(4):2051.
27. Slat EA, Parsley IC, Gold JA. recognizing decline in physician Wellbeing: When to Seek Help or Intervene. Mo Med. 2021;118(6):494.
28. Wilson CA, Metwally H, Heavner S, Kennedy AB, Britt TW. Chronicling moral distress among healthcare providers during the COVID-19 pandemic: A longitudinal analysis of mental health strain, burnout, and maladaptive coping behaviours. Int J Ment Health Nurs. 2022;31(1):111–27.
29. Van Poel E, Vanden Bussche P, Klemenc-Ketis Z, Willems S. How did general practices organize care during the COVID-19 pandemic: The protocol of the cross-sectional PRICOV-19 study in 38 countries. BMC Fam Pract. 2022;23(11):11.
30. Harris PA, Taylor R, Minor BL, Elliott V, Fernandez M, O'Neal L, et al. The REDCap consortium: building an international community of software platform partners. J Biomed Inform. 2019;95: 103208.
31. Neuendorf KA. The Content Analysis Guidebook. Thousand Oaks, CA: Sage Publications; 2002.
32. Creswell JW. Research design. Qualitative, quantitative, and mixed method approaches. 3rd ed. Thousand Oaks: SAGE Publications; 2009.
33. McClafferty HH, Hubbard DK, Foradori D, Brown ML, Profit J, Tawfik DS. Section on Integrative Medicine. Physician health and wellness Pediatrics. 2022;150(5): e2022059665.
34. Sauerteig SO, Wijesuriya J, Tuck M, Barham-Brown H. Doctors' health and wellbeing: at the heart of the NHS's mission or still a secondary consideration? Int Rev Psychiatry. 2019;31(7–8):548–54.
35. De Simone S, Vargas M, Servillo G. Organizational strategies to reduce physician burnout: a systematic review and meta-analysis. Aging Clin Exp Res. 2021;33:883–94.
36. Locke R, Lees A. A literature review of interventions to reduce stress in doctors. Perspect public health. 2020;140(1):38–53.
37. Mendes TB, Souza KC, Franca CN, Rossi FE, Santos RP, Duailibi K, Tuleta I, Armond JD, Stubbs B, Neves LM. Physical activity and symptoms of anxiety and depression among medical students during a pandemic. Revista Brasileira de Medicina do Esporte. 2021;27(6):582–7.
38. Wang H, Zheng X, Liu Y, Xu Z, Yang J. Alleviating doctors' emotional exhaustion through sports involvement during the COVID-19 pandemic: The mediating roles of regulatory emotional self-efficacy and perceived stress. Int J Environ. 2022;19(18):11776.
39. Shechter A, Diaz F, Moise N, Anstey DE, Ye S, Agarwal S, Birk JL, Brodie D, Cannone DE, Chang B, Claassen J. Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic. Gen Hosp Psychiatry. 2020;66:1–8.
40. Htay MN, Marzo RR, Bahari R, AlRifai A, Kamberi F, El-Abasiri RA, Nyamache JM, Hlaing HA, Hassanein M, Moe S, Abas AL. How healthcare workers are coping with mental health challenges during COVID-19 pandemic?-A cross-sectional multi-countries study. Clinical epidemiology and global health. 2021;11: 100759.
41. Petzold MB, Plag J, Stroehle A. Dealing with psychological distress by healthcare professionals during the COVID-19 pandemia. Nervenarzt. 2020;91:417–21.
42. Bunc KT, Selič-Zupančič P, Uplaznik J. Did physical activity prevent burnout among family physicians in Slovenia during the COVID-19 pandemic? Research Square. 2023. https://doi.org/10.21203/rs.3.rs-3183936/v1.PreprintpostedonlineJuly24.
43. Carbone R, Ferrari S, Callegarin S, Casotti F, Turina L, Artioli G, Bonacaro A. Peer support between healthcare workers in hospital and out-of-hospital settings: a scoping review. Acta Bio Med. 2022;93(5):e2022308.
44. Smallwood N, Karimi L, Pascoe A, Bismark M, Putland M, Johnson D, Dharmage SC, Barson E, Atkin N, Long C, Ng I. Coping strategies adopted by Australian frontline health workers to address psychological distress during the COVID-19 pandemic. Gen Hosp Psychiatry. 2021;72:124–30.
45. Gordon L, Scanlan GM, Tooman TR, Walker KA, Cairns P, Ferguson J, Aitken G, Cecil J, Cunningham KB, Smith KG, Johnston PW. Heard, valued, supported? Doctors' wellbeing during transitions triggered by COVID-19. Med Educ. 2022;56(5):516–26.
46. Davies M, Carr D, Dugan J, Hart N, Kirkpatrick R, Loughrey C, Loughrey P, O'Neill G. Support FOR general practitioners DURING Covid-19. Ulster Med J. 2021;90(3):151.
47. Zwack J, Schweitzer J. If every fifth physician is affected by burnout, what about the other four? Resilience strategies of experienced physicians. Acad Med. 2013;8(3):382–9.
48. Bodendieck E, Jung FU, Conrad I, Riedel-Heller SG, Hussenoeder FS. The work-life balance of general practitioners as a predictor of burnout and motivation to stay in the profession. BMC Primary Care. 2022Aug 30;23(1):218.
49. Werdecker L, Esch T. Burnout, satisfaction and happiness among German general practitioners (GPs): A cross-sectional survey on health resources and stressors. PLoS ONE. 2021;16(6): e0253447.
50. Dhingra V, Dhingra M. Who doesn't want to be happy? Measuring the impact of factors influencing work–life balance on subjective happiness of doctors. Ethics, Medicine and Public Health. 2021Mar;1(16): 100630.
51. Beech J, Fraser C, Gardner T, Buzelli L, Williamson S, Alderwick H. Stressed and overworked: what the Commonwealth Fund's 2022 International Health Policy Survey of primary care physicians in 10 countries means for the UK. The Health Foundation; 2023. https://www.health.org.uk/publications/reports/stressed-and-overworked. Accessed 1 Mar 2023.
52. Irish College of General Practitioners. Shaping the Future: Discussion Paper on Workload and Workforce Crisis in General Practice in Ireland. Irish College of GPs. 2022. https://www.icgp.ie/speck/properties/asset/asset.cfm?type=LibraryAsset&id=9D6A8295%2D73F2%2D4623%2D816F366DC386B2A1&property=asset&revision=tip&disposition=inline&app=icgp&filename=Shaping%5Fthe%5FFuture%5F%2D%5FICGP%5FDiscussion%5FPaper%5FWorkforce%5FWorkload%5FCrisis%5Fin%5FGeneral%5FPractice%5FOctober%5F2022%2Epdf. Accessed 1 Feb 2024.
53. Woodhead G, Sivaramakrishnan D, Baker G. Promoting physical activity to patients: a scoping review of the perceptions of doctors in the United Kingdom. Syst Rev. 2023;12(1):104.
54. Selvaraj CS, Abdullah N. Physically active primary care doctors are more likely to offer exercise counselling to patients with cardiovascular diseases: A cross-sectional study. BMC Prim Care. 2022;23(1):59.
55. Jung FU, Bodendieck E, Bleckwenn M, Hussenoeder FS, Luppa M, Riedel-Heller SG. Burnout, work engagement and work hours–how physicians' decision to work less is associated with work-related factors. BMC Health Serv Res. 2023;23(1):157.

Publisher's Note