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The role of social support as a moderator between resilience and levels of burden of multimorbidity management among general practitioners: a cross-sectional study in Portugal

Filipe Prazeres[1,2,3,*], Luísa Castro[3,4,5], Andreia Teixeira[3,5,6]

[1]Department of Medical Sciences, Faculty of Health Sciences, University of Beira Interior, Covilhã, Portugal
[2]Family Health Unit Beira Ria, Gafanha da Nazaré, Portugal
[3]CINTESIS@RISE, MEDCIDS, Faculty of Medicine of the University of Porto, Porto, Portugal
[4]School of Health of Polytechnic of Porto, Porto, Portugal
[5]MEDCIDS-Department of Community Medicine, Information and Decision in Health, Faculty of Medicine, University of Porto, Porto, Portugal
[6]AdiT-LAB, Instituto Politécnico de Viana do Castelo, Viana do Castelo, Portugal

[*]Corresponding author: Department of Medical Sciences, Faculty of Health Sciences, University of Beira Interior, Av. Infante D. Henrique, 6200-506 Covilhã, Portugal. Email: filipeprazeresmd@gmail.com

Background: Multimorbidity management poses significant challenges for general practitioners (GPs). The aim of this study is to analyse the role of resilience and social support on the burden experienced by GPs in managing patients with multiple health conditions in Portugal.

Methods: Cross-sectional quantitative study conducted among GPs in Portugal using an online questionnaire that included validated measurement tools: Questionnaire of Evaluation of Burden of Management of Multimorbidity in General and Family Medicine (SoGeMM-MGF), European Portuguese Version of the Resilience Scale (ER14), and the Oslo Social Support Scale-3 (OSSS-3) in Portuguese. A multiple linear regression analysis was conducted to examine the factors influencing the burden of managing multimorbidity.

Results: Two hundred and thirty-nine GPs were included, with 76.6% being female and a median age of 35 years. Most participants were specialists (66.9%) and had less than a decade of experience managing multimorbidity. Over 70% had not received specific training in multimorbidity. Female GPs and those with a higher proportion of multimorbid patients in the registries experienced higher burden levels. A multivariate regression model with moderation revealed that the effect of resilience on burden varied depending on the level of social support. Higher resilience was associated with higher burden in the "Poor Social Support" category, while it was associated with lower burden in the "Moderate Social Support" and "Strong Social Support" categories, although not statistically significant.

Conclusions: The study highlights the importance of GPs' social support and resilience in managing the burden of multimorbidity, with poor social support potentially worsening the effects of high resilience.

Key words: cross-sectional study, general practitioners, multimorbidity, resilience, social support

Background

Multimorbidity is frequently defined as the co-occurrence of multiple chronic diseases or health conditions in the same individual, commonly with a criterion of having more than one.[1,2] Multimorbidity is a significant concern for family practice,[3] not only because of its high prevalence (ranging from 12.9% to 95.1% according to a systematic review of observational studies[4]), but also because of the burden it places on patients, caregivers, and general practitioners (GPs).[5] As patients with multimorbidity are more likely to be elderly,[4] the prevalence and burden of this issue are expected to rise with the ageing of populations.

Multimorbidity is a complex subject that requires GPs to navigate a range of challenges, including coordinating care with multiple specialists, managing complex treatment regimens and medications, and delivering patient-centred care in the context of competing priorities and demands.[5,6] These challenges can be time-consuming and emotionally taxing, with GPs experiencing a sense of isolation when it comes to managing patients with multimorbidity,[6] frustration with entrenched patterns, and the perception of failure when they are unable to make an impact on patients,[7] and may contribute to their psychological burden. Furthermore, the high prevalence of multimorbidity means that GPs may be managing a large number of patients with complex and overlapping health needs. However, due to the present inadequate appointment time, lack of multidisciplinary teamwork, and insufficient GP education and training in the management of multimorbidity, their workload and burden may be further increased.[8] Despite these challenges, GPs managing multimorbidity try to find positive aspects in consultations, tailor support to individuals, encourage independence, negotiate time constraints, and support self-management to improve patients' health outcomes.[7]

For GPs who face numerous challenges and stressors when working with patients who have multimorbidity, the ability to bounce back stronger and adapt to challenges and adversity,

Key messages

- Multimorbidity management poses significant burden for general practitioners.
- Females and GPs with higher numbers of multimorbid patients have higher burden.
- GP's poor social support potentially worsens the effects of high resilience.

without developing negative physical or mental health outcomes—resilience[9–12]—is an important characteristic that can improve their psychological well-being by lowering burnout rates,[13] and help them provide better care to their patients.[11] Given that little research is available that focuses specifically on physicians,[14] discussing resilience as a potential factor in managing the burden of treating multimorbidity can be particularly relevant and important for helping GPs to develop resilience and maintain their well-being while caring for patients with multiple chronic conditions.

Resilience is a dynamic process[10,15] that can be developed and enhanced over time through the acquisition of skills, attitudes, and supportive social resources.[16]

Social resources can play a crucial role in promoting resilience in individuals.[17,18] Research has shown that social support can have a protective effect on medical and psychological well-being,[17,19] by promoting adaptive coping with stress.[20] Social support through colleagues, professional networks, marriage, friends, and support groups can help physicians prevent burnout or other profession-related symptoms or illnesses.[21]

Cutrona and Suhr[22] described 2 types of social support: Action-facilitating support and Nurturant support. Action-facilitating support is aimed at helping the stressed individual solve or eliminate the problem causing their distress. It involves informational support, such as advice, factual input, and feedback on actions, as well as tangible aid, like offers to provide goods and services.[22] Nurturant support, on the other hand, focuses on comforting or consoling the stressed individual without necessarily solving the problem. It includes emotional support, which involves expressions of caring, concern, empathy, and sympathy, network support, which entails a sense of belonging among people with similar interests and concerns, and esteem support, which refers to expressions of regard for one's skills, abilities, and intrinsic value.[22]

The availability of social support can help mitigate the negative health effects of burnout among healthcare professionals who receive it.[23] Social support can also promote the strengthening of personal and professional relationships,[24] and higher professionalism in physicians.[25]

Overall, social support is an important factor in promoting resilience. By providing emotional, informational, and instrumental support, social networks can help healthcare professionals cope with stress, recover from adversity, and build the skills and resources necessary to navigate life and work challenges.

Given the positive impact that social support can have on promoting resilience, studying the role of social support in the context of treating multimorbid patients could be crucial. The burden of treating multimorbid patients can be significant, and having social support could potentially help GPs cope with stress and prevent burnout. This is even more important in countries where clinical decision support tools or systems are not available in the primary care context and where government-drafted clinical guidelines are only single disease oriented, such is the case of Portugal.

The aim of this study is to analyse the role of resilience and social support in the levels of burden of multimorbidity management among GPs in Portugal. The present study investigates the hypothesis that the relationship between resilience and the burden of managing multimorbidity is moderated by social support, meaning that the strength and/or direction of the relationship between burden and resilience varies across levels of social support.

Methods

Study design, setting, and participants

Amongst the Portuguese-speaking GPs working in Portugal, an online questionnaire was utilized to conduct a cross-sectional quantitative study during the months of May to July 2022.

To be eligible for the study, individuals must be Portuguese-speaking GPs working in Portugal, provide informed consent, and express their willingness to participate. The Google Forms platform was used to create the questionnaire, and the web link to the questionnaire was disseminated to the researchers' institutional mailing lists and medical groups on social media. This resulted in a snowball sample, where participants who were invited shared the online questionnaire with their own contacts.

Measurements

The variables that were evaluated in the first section of the questionnaire include sociodemographic and work-related factors: sex, age, workplace, profession, time working with patients with multimorbidity, proportion of patients with multimorbidity in the medical registry, and attended training on multimorbidity.

The subsequent sections of the questionnaire gathered psychological variables, which encompassed the following: Questionnaire of Evaluation of Burden of Management of Multimorbidity in General and Family Medicine (SoGeMM-MGF),[26] European Portuguese Version of the Resilience Scale (ER14),[27] and the Oslo Social Support Scale-3 (OSSS-3) in Portuguese.[28]

The Questionnaire of Evaluation of Burden of Management of Multimorbidity in General and Family Medicine (SoGeMM-MGF)[26] was used to measure physician burden. SoGeMM-MGF consists of 16 items, each with a 5-point Likert response scale ranging from 1 to 5. The total score corresponds to the sum of the 16 items. Higher sum scores indicate a higher perceived burden. The validated Portuguese version of the global scale has a Cronbach's alpha of 0.89,[26] while in the present study it was 0.78.

Physician resilience was assessed using the ER14,[27] which is the European Portuguese Version of the Resilience Scale.[29] ER14 is composed of 14 items, with each item having a response scale consisting of 7 ordered response alternatives.

The sum of the direct score can range from 14 to 98, and higher scores reflect greater resilience. The Portuguese version was validated among physicians, and Cronbach's alpha was 0.92 in the validation study,[27] while in the current study, it was 0.89.

The OSSS-3[30,31] is a self-reported measure of social support level, which consists of 3 items. These items assess the number of close confidants, the sense of concern from others, and the relationship with neighbours, emphasizing the availability of practical help. Scores on the scale range from 3 to 14, with higher values indicating stronger levels of social support and lower values indicating weaker levels. The sum score on the OSSS-3 can be used to classify social support into 3 broad categories: poor social support (scores between 3 and 8), moderate social support (scores between 9 and 11), and strong social support (scores between 12 and 14).[31] The validated Portuguese version of the global scale has a Cronbach's alpha of 0.529,[28] and of 0.47 in a recent Portuguese general population study during COVID-19 pandemic,[32] while in the present study it was 0.45. The small number of items on the scale is the reason for obtaining a low value of internal consistency. The scale has only 3 questions, and they are derived from different sources, which could be the reason why the results are weak. Additionally, different rating ranges were used.[28] Nevertheless, despite these limitations, the scale is still considered a useful tool for examining social support in studies involving mental health,[32,33] and therefore, we have decided to use it.

Sample size

Given the total number of Portuguese GPs, which is 8,198,[34] a sample size of 192–367 respondents was planned for the study. This range of sample sizes was determined based on the most conservative scenario, which assumes a proportion of 50%, and takes into account a level of confidence of 95% as well as an error margin ranging from 5% to 7%.

Ethics

The ethical standards outlined in the Declaration of Helsinki were adhered to in the current study, which received approval from the University of Beira Interior's Ethics Committee (CE-UBI-Pj-2022-027-ID1295). Participants provided electronic consent, and their responses were kept anonymous.

Statistical analysis

Data were exported from Google Forms to a Microsoft Excel file and analysed using SPSS Statistics (version 28.0; SPSS Inc., Chicago, IL, USA) and Jamovi software (The Jamovi project (2021). Jamovi (Version 1.6) [Computer Software], Sidney, Australia).

The following variables were included in the study: sex, age, practice type (Personalized Healthcare Unit—individual-based model; Family Health Unit A—family practice-based model, no pay-for-performance system; Family Health Unit B—family practice-based model, pay-for-performance system), professional level (General Practitioner Specialist; General Practitioner Trainee), experience dealing with multimorbid patients (≤5 years; >5 years and ≤10 years; >10 years), proportion of multimorbid patients in the medical registry of each doctor (≤50%; >50%), specific training in multimorbidity (no; yes), burden of managing multimorbidity—SoGeMM-MGF, Resilience Scale and social support—OSSS-3 (poor; moderate; strong). Categorical variables were described in terms of absolute frequencies (number of cases, *n*) and relative frequencies (percentage of cases, %), while normally distributed quantitative variables were described using mean (*M*) and standard deviation (SD), and non-normally distributed quantitative variables were described using medians (Med), interquartile interval [Q_1; Q_3], where Q_1 is the first quartile and Q_3 is the third one and the minimum and maximal values (min–max).

A multiple linear regression analysis was conducted having SoGeMM-MGF as dependent variable. Initially, simple linear regressions were performed for each independent variable to identify relevant predictors or potential factors influencing the levels of SoGeMM-MGF. Only the variables that showed correlations with the outcome at a significance level of $P \leq 0.20$ in the simple linear regressions were included in the subsequent multiple linear regression analyses. In the final multivariate model for SoGeMM-MGF, only the variables that remained statistically significant ($P < 0.05$) were retained. Process Macro v4 for SPSS was used to access the significance of the moderation effect in the multivariable regression model.[35]

The results of the linear regression were presented using unstandardized coefficients (β), 95% confidence intervals [95% CIs], and *P*-values. Model evaluation was carried out using the *F*-statistic for the overall model test, *P*-value, and coefficient of determination (r^2). The assumptions of the linear regression models were assessed based on 3 conditions: (i) normality of residuals was examined using histograms, (ii) the

Table 1. Characterization of the studied sample of 239 GPs in Portugal, 2022.

Variables	Description
Sex, *n* (%)	
Male	56 (23.4)
Female	183 (76.6)
Age, Med [Q_1; Q_3], min–max	35 [30; 44], 25–69
Practice type, *n* (%)	
Personalized Healthcare Unit (individual-based model)	54 (22.6)
Family Health Unit A (family practice-based model)	90 (37.7)
Family Health Unit B (family practice-based model P4P)	95 (39.7)
Professional level, *n* (%)	
General Practitioner Specialist	160 (66.9)
General Practitioner Trainee	79 (33.1)
Experience dealing with multimorbid patients, *n* (%)	
≤5 years	101 (42.3)
>5 and ≤10 years	46 (19.2)
>10 years	92 (38.5)
Proportion of multimorbid patients in the medical registry, *n* (%)	
≤50%	119 (49.8)
>50%	120 (50.2)
Specific training in multimorbidity, *n* (%)	
No	170 (71.1)
Yes	69 (28.9)

mean of the residuals was verified to be zero through *t*-tests, and (iii) homoscedasticity was checked by plotting residuals against the fitted predictive values.

The internal consistency of each questionnaire scale in the study sample was assessed using Cronbach's alpha (α), with a value above 0.7 considered acceptable. This assessment aimed to evaluate the reliability of the questionnaire measures.

In all conducted tests, *P*-values were deemed significant if they were less than 0.05.

Results

Two hundred and thirty-nine GPs completed the online questionnaire. The majority of the participants (183; 76.6%) were female and had a median age of 35 [30; 44] years. The majority of the GPs were specialists, 160 (66.9%). With respect to the management of multimorbidity, 61.5% of the GPs had experience dealing with patients with multiple chronic conditions for less than a decade. Furthermore, over 70% of the GPs had not received any specific training in multimorbidity (Table 1).

In terms of the burden of managing multimorbidity, the median score of SoGeMM-MGF was 62 [58; 66] points. As for GP resilience, the median score of the Resilience Scale was 77 [70; 85] points. Regarding social support, the median score of OSSS-3 was 11 [10; 12] points. Nineteen percent of GPs had poor social support, 51.5% had moderate social support, and 40.6% had strong social support.

Table 2 shows that sex and the proportion of multimorbid patients in the medical registry are related to the level of burden of managing multimorbidity in the studied GPs. Specifically, female GPs ($P = 0.042$) and GPs who had more than 50% of multimorbid patients in the medical registries ($P < 0.001$) were associated with higher levels of burden. Also, GPs with moderate social support had a greater burden compared with those with strong social support ($P = 0.02$).

A statistical modelling approach included all variables with a *P*-value ≤20% from the simple models. The variables included were sex, practice type, professional level, proportion of multimorbid patients in the medical registry, resilience, and social support. In the final model, only the significant variables ($P < 0.05$) were retained, together with the interaction between resilience score and the support social, [$F(6, 232) = 5.32$, $P < 0.001$, $r^2 = 12.1\%$, Table 3]. The interaction between resilience and social support showed a statistically significant effect ($P = 0.013$ for the resilience with moderate social support and $P = 0.045$ for resilience with strong social support) although the effect size is small ($r^2 = 2.4\%$, which represents the improvement in model fit due to the interaction term). All the residuals' assumptions were verified.

The results indicate that the direction and magnitude of the effect of resilience on burden differ across levels of social support. Specifically, the coefficient is positive (0.27) and statistically significant ($P = 0.043$) for the "Poor Social Support" category. The coefficient is negative for the "Moderate Social Support" (–0.09) and "Strong Social Support" (–0.03) categories, but neither of these coefficients is statistically significant ($P = 0.094$ and $P = 0.652$, respectively) (Fig. 1).

Table 2. Regression coefficients from simple linear regression model for SoGeMM-MGF as dependent variable, in 239 GPs in Portugal, 2022.

	β [95% CI]	*P*-value
Sex		
Male	Ref	
Female	2.07 [0.07; 4.06]	0.042
Age	–0.05 [–0.12; 0.03]	0.226
Practice type		
Personalized Healthcare Unit (individual-based model)	Ref	
Family Health Unit (family practice-based model)	–1.34 [–3.60; 0.92]	0.243
Family Health Unit (family practice-based model P4P)	–1.60 [–3.83; 0.64]	0.161
Professional level		
General Practitioner Specialist	Ref	
General Practitioner Trainee	–1.24 [–3.04; 0.56]	0.176
Experience dealing with multimorbid patients		
≤5 years	Ref	
>5 and ≤10 years	–0.53 [–2.87; 1.82]	0.658
>10 years	–0.03 [–1.93; 1.87]	0.977
Proportion of multimorbid patients in the medical registry		
≤50%	Ref	
>50%	3.34 [1.69; 4.99]	<0.001
Specific training in multimorbidity		
No	Ref	
Yes	–1.10 [–2.98; 0.77]	0.247
Resilience Scale	–0.05 [–0.13; 0.03]	0.187
OSSS-3 categorical		
Strong social support	Ref	
Moderate social support	2.10 [0.33; 3.87]	0.020
Poor social support	1.01 [–2.26; 4.28]	0.544

Table 3. Regression coefficients from multiple linear regression model with moderation for SoGeMM-MGF as dependent variable, in 239 GPs in Portugal, 2022.

	β [95% CI]	*P*-value
Proportion of multimorbid patients in the medical registry		
≤50%	Ref	
>50%	3.64 [2.00; 5.28]	<0.001
Resilience	0.27 [0.01; 0.53]	0.043
OSSS-3 categorical		
Poor social support	Ref	
Moderate social support	28.38 [7.61; 49.15]	0.008
Strong social support	21.93 [–0.22; 44.07]	0.052
Resilience × OSSS-3 categorical		
Resilience × Poor social support	Ref	
Resilience × Moderate social support	–0.36 [–0.64; –0.08]	0.013
Resilience × Strong social support	–0.30 [–0.59; –0.01]	0.045

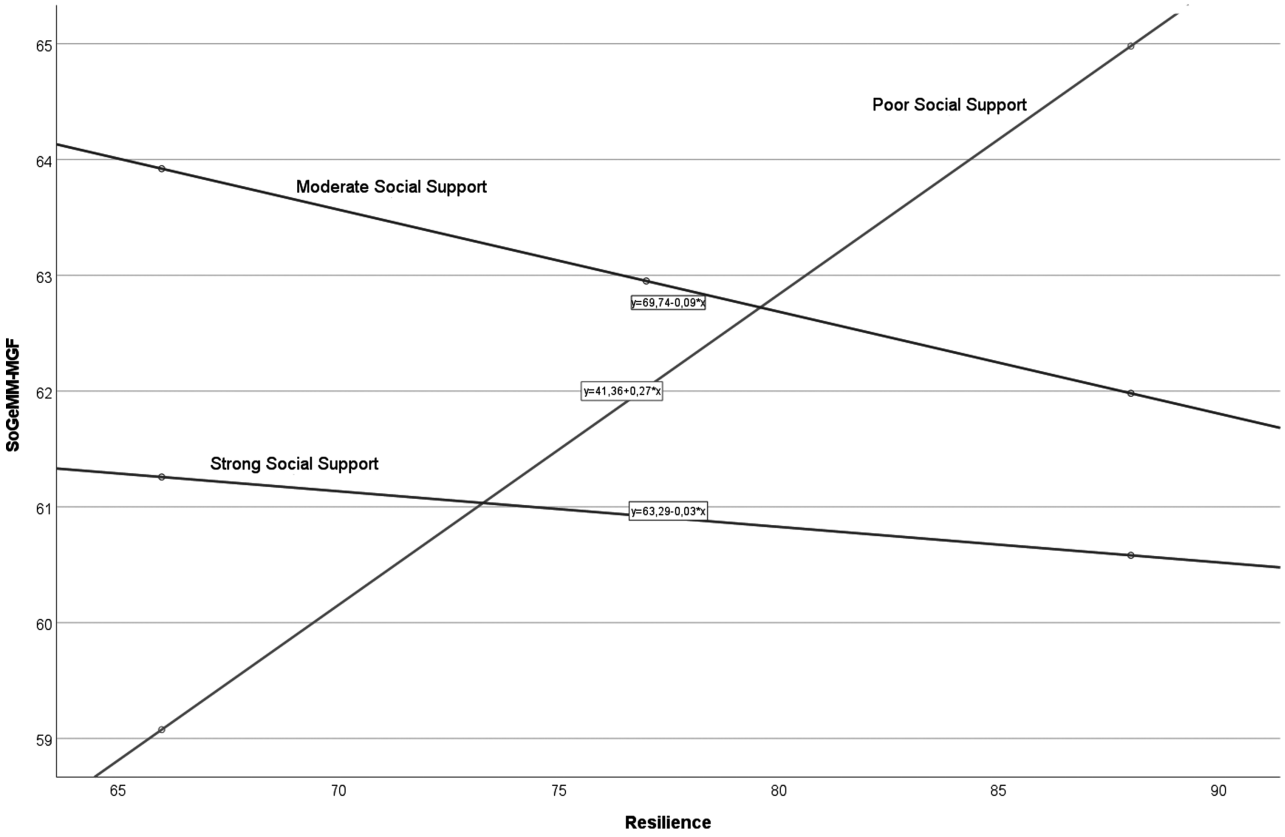

Fig. 1. Resilience and social support interactions for SoGeMM-MGF as dependent variable, in 239 GPs in Portugal, 2022.

Discussion

Regarding the relationship between resilience, social support, and burden of managing multimorbidity, the present study found that the effect of resilience on burden depends on the level of social support.

When social support is poor, higher levels of resilience are associated with higher levels of burden of managing multimorbidity. This means that if a GP has high levels of resilience but lacks social support, they may experience a greater burden. This could be because they may feel more pressure and responsibility to handle challenging situations on their own, which can increase their burden.

On the other hand, when social support is moderate or strong, higher levels of resilience are associated with lower levels of burden, although the effect is not statistically significant, as other factors may be contributing to the results.

Overall, the results indicate that social support can play an important role in how resilience affects burden, and it highlights the need for further research in this area.

The present study also revealed that the burden of managing multimorbid patients among GPs in Portugal was lower than that previously reported by GPs in a study of 1 single Portuguese health region.[36] However, GPs burden was higher than that reported by doctors in Cidade da Praia, Cabo Verde.[37] These differences may be attributed to a range of factors, including variations in practice settings, patient populations, and the individual characteristics of the healthcare providers.

The median GP resilience level in the present study is similar to that found in a previous study conducted in Portugal with 511 physicians, which included 44% working in primary healthcare.[27]

Although sex was not included as a variable in the multivariable model, the present research found that female GPs have a higher burden when managing multimorbid patients compared with male GPs. A possible explanation for this might be that female healthcare providers tend to have higher levels of emotional exhaustion and are at greater risk of burnout than their male counterparts,[38–40] which can be attributed to a variety of factors, such as work–family conflict,[41,42] gender discrimination,[43] and societal expectations that women should primarily assume the responsibilities of caregiving within their homes.[44] This may contribute to higher levels of burnout and exhaustion, as women may have to balance caregiving duties at home with the demands of treating multimorbid patients at work,[5] such as managing complex medical conditions, coordinating care with other providers, and addressing the psychosocial needs of patients. Mitigating strategies, such as providing support systems, addressing gender biases, and implementing flexible working arrangements, could help reduce the burden and prevent burnout among female GPs. Further research is needed to better understand the mechanisms underlying the relationship between sex and burden and to develop interventions to support the well-being of GPs treating multimorbid patients.

The present study observed that among GPs with more than 50% of patients having multiple chronic conditions, their workload was amplified due to the burden of managing multimorbid patients. A possible strategy to reduce the burden on GPs is to promote team-based care models (as discussed by Schuttner and Parchman[45]), where GPs work

collaboratively with other healthcare providers, such as nurses, pharmacists, and social workers. However, even though a collaborative approach with nurses and clinical secretaries is present in GPs working in Family Health Units A and B, the inclusion of other healthcare providers (e.g. community pharmacists, social workers, psychologists) may further help distribute the workload and responsibilities of managing multimorbid patients, by assuming tasks that are otherwise done by the GPs, thus reducing the burden on individual GPs.

As stated, social support plays an important role in the burden of managing multimorbidity for GPs, as it can provide emotional and practical support and help GPs to better cope with the challenges of managing complex medical conditions. Therefore, it is essential to consider ways to improve social support for GPs, such as through the provision of peer support in the workplace and leader support (supportive work environment),[24] a healthy work–life balance, and counselling/mental health services. Overall, improving both social support[24] and resilience[46] may help to reduce the burden of multimorbidity management for GPs and promote better patient outcomes.

The present findings should be interpreted in light of several limitations. First, the study relied on an online self-report survey to collect data, which may have introduced response bias. Additionally, the study's non-probabilistic sampling strategy and cross-sectional design might not accurately reflect the complete population of Portuguese GPs and may limit its ability to infer causality. Nonetheless, the present study is the first national one on the topic. Furthermore, the reliability of the combined OSSS-3*RL14 variable, which was calculated by multiplying the social support and resilience scores, was found to be weak (Cronbach's alpha = 0.402), highlighting the need for caution in interpreting the results. It is worth noting that the original validation study of the social support scale also reported low Cronbach's alphas. Thus, future research using longitudinal designs and mixed-methods approaches is needed to further investigate the mediating role of social support and resilience in the burden of multimorbidity management.

Conclusions

In conclusion, this study provides insights into the burden of managing multimorbid patients among GPs in Portugal and identifies factors that can impact this burden. The study highlights the importance of GPs' social support and resilience in managing the burden of multimorbidity, with poor social support potentially worsening the effects of high resilience. Further research is needed to better understand the mechanisms underlying the relationship between GPs' sex and burden and to develop interventions to support the well-being of GPs treating multimorbid patients. Overall, this study also raises awareness into the challenges of managing multimorbid patients in primary care settings and highlights the need for ongoing efforts to improve support for healthcare providers in this context.

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Conflict of interest

None declared.

Ethical approval

This study received approval from the University of Beira Interior's Ethics Committee (CE-UBI-Pj-2022-027-ID1295). Participants provided electronic consent, and their responses were kept anonymous.

Author contributions

All authors had full access to the data and took responsibility for the integrity of the data and the accuracy of the analysis.

Data availability

The datasets presented in this article are not readily available because of Ethics Committee restrictions. Requests to access the datasets should be directed to the corresponding author.

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