论著·临床医学

老年慢阻肺患者压力适应三类分型且与运动恐惧水平呈梯度差异:一项横断面研究

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[摘要] **目的** 慢性阻塞性肺疾病(COPD)患者长期承受身心压力,易诱发不同程度的运动恐惧。压力适应是维持身心功能稳定的重要心理资源,既往研究多将其视为单一连续变量,忽视了群体内适应模式的异质性,且缺乏不同压力适应类型与运动恐惧关系的比较。本研究旨在识别老年COPD患者压力适应的潜在剖面类别,分析影响因素,并比较不同压力适应类型与运动恐惧水平的关联差异,为分层干预提供理论依据。**方法** 采用横断面研究设计方案,以便利抽样法于2026年4—6月抽取合肥市第一人民医院呼吸内科253例老年COPD住院患者,使用一般资料调查表、压力适应量表(stress adaptation scale,SAS)、坦帕运动恐惧量表(tampa scale for kinesiophobia, TSK)和社会支持评定量表(social support rating scale, SSRS)进行调查。潜在剖面分析识别压力适应的类别,单因素分析及多元Logistic回归分析不同潜在剖面的影响因素及各类别运动恐惧水平的差异。**结果** 253例老年COPD患者压力适应量表得分为35.00(30.00,40.00)分。潜在剖面分析将患者压力适应分为3个类别:低适应-恢复艰难压抑型(C1,80例,31.62%)、中适应-领悟复原迟缓型(C2,106例,41.90%)、高适应-灵活回弹获益型(C3,67例,26.48%)。模型拟合良好(AIC=4 644.510,BIC=4 792.912,aBIC=4 659.764,熵值=0.954,LMRT及BLRT均P<0.001)。多分类Logistic回归分析显示:以C1为参照,年龄60~69岁(C2 *vs* C1:OR=7.295;C3 *vs* C1:OR=14.594,均P<0.05)和居住地为城镇(C2 *vs* C1:OR=3.885;C3 *vs* C1:OR=5.330,均P<0.05)是C2和C3的共同独立保护因素;以C1为参照,患病时长<5年(OR=6.878,95%CI:1.193~39.646,P=0.031)及社会支持得分较高(OR=1.784,95%CI:1.403~2.268,P<0.001)是C3的独立保护因素;以C3为参照,文化程度为初中(OR=23.478,95%CI:6.079~90.674,P<0.001)、小学及以下(OR=7.395,95%CI:1.900~28.776,P=0.004)及自理能力为部分自理(OR=7.205,95%CI:1.223~42.464,P=0.029)是C2的独立危险因素。C1、C2和C3组的运动恐惧得分分别为:43.00(40.00,46.00)、40.00(35.75,42.00)和35.00(33.00,37.00)分,差异有统计学意义(H=75.817,P<0.001);运动恐惧检出率(TSK>37分)分别为83.8%、63.2%和17.9%,差异有统计学意义(χ^2=67.024,P<0.001),呈现随压力适应水平升高而逐级下降的趋势。**结论** 老年COPD患者压力适应可分为:低适应-恢复艰难压抑型、中适应-领悟复原迟缓型和高适应-灵活回弹获益型3类。年龄、居住城镇或农村、患病时长、自理能力、文化程度及社会支持是压力适应类别的独立影响因素;不同类型的运动恐惧水平和检出率存在显著梯度差异。应依据压力适应分型实施分层临床干预策略:C1患者应强化症状管理与心理疏导,降低其运动恐惧;C2患者应引导其深度反思与成长领悟,并关注其运动恐惧的缓解;C3患者可发挥其同伴支持作用,并维持其低运动恐惧水平。

[关键词] 肺疾病,慢性阻塞性;适应,心理学;运动恐惧症;社会支持;潜在类别分析

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Three latent profiles of stress adaptation and their gradient association with kinesiophobia in elderly patients with chronic obstructive pulmonary disease: a cross-sectional study

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[**Abstract**] **Objective** Chronic obstructive pulmonary disease (COPD) patients endure prolonged physical and psychological stress, which predisposes them to varying levels of kinesiophobia. Stress adaptation serves as a critical psychological resource for maintaining the stability of physical and mental functions. Previous studies have predominantly treated it as a single continuous variable, overlooking the heterogeneity of adaptation patterns within the population, and lacking comparisons of the relationships between different stress adaptation types and kinesiophobia. This study aims to identify the latent classes of stress adaptation in elderly COPD patients, analyze their influencing factors, and compare the differential associations between distinct stress adaptation types and kinesiophobia levels, thereby providing a theoretical basis for stratified interventions. **Methods** A cross-sectional study was conducted using convenience sampling. A total of 253 elderly inpatients with COPD admitted to Department of Respiratory Medicine of Hefei First People's Hospital between April and June 2026. General information questionnaire, Stress Adaptation Scale (SAS), Tampa Scale for Kinesiophobia (TSK), and Social Support Rating Scale (SSRS) were applied for survey. Latent profile analysis (LPA) was performed to identify latent classes of stress adaptation. Univariate and multinomial logistic regression analyses were employed to explore the influencing factors of latent profiles and to compare the differences in kinesiophobia levels across classes. **Results** The median SAS score was 35.00 (30.00, 40.00) among the 253 elderly COPD patients. LPA identified 3 latent classes of stress adaptation: low-adaptation with difficult and suppressed recovery (Class 1, C1, n=80, 31.62%), moderate-adaptation with delayed comprehension and recovery (Class 2, C2, n=106, 41.90%), and high-adaptation with flexible and resilient benefits (Class 3, C3, n=67, 26.48%). The model demonstrated good fit (AIC=4 644.510, BIC=4 792.912, aBIC=4 659.764, entropy=0.954, LMRT and BLRT both P<0.001). Multinomial logistic regression analysis revealed that, with C1 as the reference, aged 60–69 years (C2 *vs* C1: OR=7.295; C3 *vs* C1: OR=14.594, both P<0.05) and urban residence (C2 *vs* C1: OR=3.885; C3 *vs* C1: OR=5.330, both P<0.05) were common independent protective factors for C2 and C3, conversely indicating that older age and rural residence were independent risk factors for C1. With C1 as reference, disease duration <5 years (OR=6.878, 95%CI: 1.193 to 39.646, P=0.031) and higher social support score (OR=1.784, 95%CI: 1.403 to 2.268, P<0.001) were independent protective factors for C3. With C3 as reference, education level of junior high school (OR=23.478, 95%CI: 6.079 to 90.674, P<0.001) and primary school or below (OR=7.395, 95%CI: 1.900 to 28.776, P=0.004), as well as partial self-care ability (OR=7.205, 95%CI: 1.223 to 42.464, P=0.029) were independent risk factors for C2. The TSK scores for C1, C2 and C3 were 43.00 (40.00, 46.00), 40.00 (35.75, 42.00) and 35.00 (33.00, 37.00), respectively, with statistically significant differences (H=75.817, P<0.001). The detection rates of kinesiophobia (TSK score >37) were 83.8%, 63.2% and 17.9% for C1, C2 and C3, respectively, showing a significant between-group difference (χ^2=67.024, P<0.001) and a progressive decline with increasing stress adaptation. **Conclusion** Stress adaptation in elderly COPD patients is generally at a moderate level with marked heterogeneity. Age, residence, disease duration, self-care ability, education level, and social support are independent influencing factors for stress adaptation classes, and significant gradient differences are observed in kinesiophobia levels and detection rates across the 3 classes. These findings suggest that clinical

interventions should be implemented based on stress adaptation classes: for C1 patients, symptom management and psychological counseling should be strengthened to reduce kinesiophobia; for C2 patients, deep reflection and growth-oriented comprehension should be facilitated with attention to kinesiophobia alleviation; and for C3 patients, peer support should be leveraged, while their low kinesiophobia level should be maintained.

[**Key words**] Pulmonary Disease, Chronic Obstructive; Adaptation, Psychological; Kinesiophobia; Social Support; Latent Class Analysis

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慢性阻塞性肺疾病(COPD)是一种典型的慢性呼吸系统疾病,在老年群体中具有较高的患病率。COPD在我国60岁及以上人群中的患病率已超过27%,位列我国三大死亡原因之一[1-2]。患者因气流受限而反复出现呼吸困难,这一核心症状使其在日常活动中持续承受身心双重压力[2-3]。压力与应对理论[4]认为,个体对于压力的应对方式直接决定了压力的作用效果和影响走向。压力适应能力是个体在经历压力后恢复并取得个人成长的能力,属于积极的压力应对资源[5]。研究表明,良好的压力适应能力有助于COPD患者减轻心理负担、加快功能恢复,从而促进其健康结局[6]。社会支持作为外部资源的重要组成部分,通过提供情感慰藉、信息指导与实际帮助,能够有效缓冲压力对个体的负性冲击,是压力适应的关键促进因素[7-8]。然而,老年群体普遍存在较低水平的压力适应,这使得患者在日常活动时更易感知到呼吸困难,产生灾难化思维,进而形成运动恐惧[9-11]。运动恐惧症是指个体由于害怕机体受到伤害或再次损伤,而对身体活动表现出过度、非理性的畏惧[12]。其存在不仅会加重患者疾病负担,还会增加患者合并症风险、降低其生活质量[13-14]。目前,国内对于慢病人群压力适应的研究主要聚焦于以变量为中心的研究,忽略了群体间的异质性,且不同压力适应特征与运动恐惧的关联尚不明晰。潜在剖面分析旨在通过外显变量发掘群体的潜在异质性特征并加以分型,有助于锁定重点人群,以便后续实施更具靶向性的干预措施。故本研究运用潜在剖面分析探讨老年COPD患者压力适应的类别特征并分析其与运动恐惧的关联,旨在为医护人员制定个性化干预方案,提高患者压力适应能力、改善其运动恐惧提供参考。

1 对象与方法

1.1 研究对象

采用横断面研究设计方案,以便利抽样法抽取2026年4月至2026年6月在合肥市第一人民医院2个院区呼吸内科住院治疗的老年COPD患者作为调查对象。纳入标准:①年龄≥60岁;②符合慢性阻塞性肺疾病全球倡议(global initiative for chronic obstructive lung disease,GOLD)2025年修订版[15]中COPD的诊断标准;③签署知情同意书。排除标准:①伴随其他危重疾病;②有严重精神疾病;③存在严重视听障碍或沟通障碍,无法独立完成问卷。根据横断面研究样本量要求[16],Logistic回归分析样本量至少为自变量个数的10~15倍。本研究自变量共15个,包括:一般人口学变量(包括性别、年龄、婚姻状况、BMI、文化程度、月收入、居住地、居住状况、自理能力,共9个)、疾病相关变量(合并症数量、患病时长、是否出现呼吸困难,共3个)以及社会支持量表3个维度,按10倍估算并考虑20%的无效问卷,所需样本量至少[15×10/(1-0.2)]=187.5例,取整为188例。本研究已通过合肥市第一人民医院伦理委员会审核批准(2026-077-01),调查对象均知情同意并自愿参与。

1.2 研究流程

研究实施分为4个阶段:①研究准备:查阅文献、设计研究方案、编制一般资料调查表、通过伦理委员会审批;②预调查:选取30例被试者进行预调查,检验问卷的可理解性与可操作性,根据反馈微调调查表措辞;③正式调查:采用便利抽样法,由经过统一培训的研究者在合肥市第一人民医院两个院区的呼吸内科病房对符合纳排标准的住院老年COPD患者进行调查。④数据整理与分析:问卷当场回收并核查完整性,剔除无效问卷后进行数据编码录入,应用Mplus 8.3和SPSS 26.0进行统计分析。

1.3 研究工具

1.3.1 采集人口学及疾病相关资料 一般资料调查表由课题组自行设计,调查内容包括性别、年龄、婚姻状况、BMI、文化程度、月收入、居住地、居住状况、自理能力、合并症数量、患病时长、是否出现呼吸困难,共12项。

1.3.2 测量压力适应水平量表 压力适应量表(stress adaptation scale, SAS)由Smith等[17]编制,傅雨佳等[5]于2023年汉化修订中文版压力适应量表,主要

用于评估患者从压力事件中恢复并获得个人成长的能力。该量表涵盖2个维度10个条目,采用Likert 5级评分法,从“完全不符合”至“非常符合”计1~5分,总分为10~50分,分值与患者压力适应状态成正比。该量表的Cronbach's α=0.849,折半信度为0.874[5]。本研究中该量表的Cronbach's α=0.916。

1.3.3 评价运动恐惧程度量表 坦帕运动恐惧量表(tampa scale for kinesiophobia, TSK)由美国学者Miller等[18]于1991年研制,由胡文[19]于2012年引入并完成跨文化调适。该量表包含17个条目,采用Likert 4级计分法,“强烈不同意”至“强烈同意”分别计1~4分,总分范围为17~68分,总得分越高代表患者运动恐惧水平越高,>37分可判断患者存在运动恐惧。中文版TSK的Cronbach's α=0.778,内容效度指数为0.83[19]。本研究中该量表的Cronbach's α=0.806。

1.3.4 评估社会支持状况量表 社会支持评定量表(social support rating scale, SSRS)由肖水源[20]编制并修订,用于评估患者的社会支持水平。该量表包含3个维度10个条目。条目1~4、8~10,每个条目限选1项,选择1~4项分别计1~4分;条目5包含4个子条目,每个子条目从“无”到“全力支持”分别计1~4分;条目6、7回答“无任何来源”计0分,回答“有来源”,则根据来源数目计1~9分。总分为各条目计分之和,为11~62分,得分越高表明患者的社会支持水平越高。该量表的Cronbach's α=0.911[21]。本研究中该量表的Cronbach's α=0.754。

1.4 问卷调查法收集数据

在正式调查开始前,研究者需亲自向受试者及其家属告知研究目的、意义及匿名化处理原则,在获取知情同意后方可进入正式调查环节。问卷采用现场一对一发放形式,要求患者独立作答。调查过程中,研究者提供规范化引导语以阐明填写细则,并对受试者疑问予以当场解答。患者疾病相关的临床特征信息,由研究者通过调阅电子病历系统或直接问询患者本人进行采集录入。所有问卷现场回收,随即核查问卷填写的完整度,若发现缺项和漏项,立即引导患者当场补齐。若出现作答呈现明显规律性或所有条目选择完全一致的问卷,则作为无效样本予以剔除。

1.5 统计学方法

以老年COPD患者压力适应能力量表的10个条目作为外显变量,使用Mplus 8.3软件进行潜在剖面分析,从1个潜在剖面类别开始建立数据模型,逐步增加模型中的类别数量,确定拟合指标最好的模型为最终模型。模型拟合指数如下:①赤池信息准则(AIC)、贝叶斯信息准则(BIC)及样本校正的贝叶斯信息准则(aBIC),其值越小,表明模型拟合越好;②罗-梦戴尔-鲁本校正似然比检验(LMRT)及基于Bootstrap的似然比检验(BLRT)评估模型的拟合差异,P<0.05表明k个类别的模型显著优于k-1个类别的模型;③信息熵用于评估模型分类的精确度,越接近于1表示分类越精确,信息熵≥0.8表明分类准确率超过90%。采用SPSS 26.0软件进行统计分析,符合正态分布的计量资料以$\bar{x}\pm s$表示,非正态分布的计量资料以$M(P_{25},P_{75})$表示,组间比较采用Kruskal-Wallis H检验,计数资料采用例数、百分比或百分率表示,组间比较采用χ^2检验。采用多因素Logistic回归分析探究各因素对不同潜在剖面的影响,将单因素分析中差异有统计学意义的变量作为自变量,纳入多元Logistic回归模型进行分析。采用逐步向前似然比法进行变量筛选,最终模型仅保留具有统计学意义的变量。P<0.05表示差异有统计学意义。

2 结果

2.1 老年COPD患者压力适应存在低、中、高3种异质性分型

本研究共发放问卷270份,回收有效问卷253份,有效问卷回收率为93.7%;其中男性195例(77.1%),女性58例(22.9%)。以压力适应量表10个条目作为外显指标,依次建立1~5个潜在剖面模型,见表1。随着模型数目的增加,AIC、BIC和aBIC逐渐减小,类别

表1 老年COPD患者压力适应潜在剖面模型拟合指标(n=253)

Table 1 Potential profile model fitting indicators for stress adaptation in elderly COPD patients(n=253)

Class	AIC	BIC	aBIC	LMRT(P)	BLRT(P)	Entropy	Categorical probability
1	6 025.830	6 096.498	6 033.094				
2	5 062.768	5 172.303	5 074.028	<0.001	<0.001	0.903	0.395/0.605
3	4 644.510	4 792.912	4 659.764	<0.001	<0.001	0.954	0.316/0.419/0.265
4	4 501.730	4 689.000	4 520.980	0.002	<0.001	0.967	0.268/0.378/0.051/0.303
5	4 403.134	4 629.271	4 426.380	0.218	<0.001	0.957	0.052/0.269/0.372/0.218/0.089

COPD: chronic obstructive pulmonary disease; AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; aBIC: sample-adjusted BIC; LMRT: Lo-Mendell-Rubin adjusted likelihood ratio test; BLRT: Bootstrap likelihood ratio test

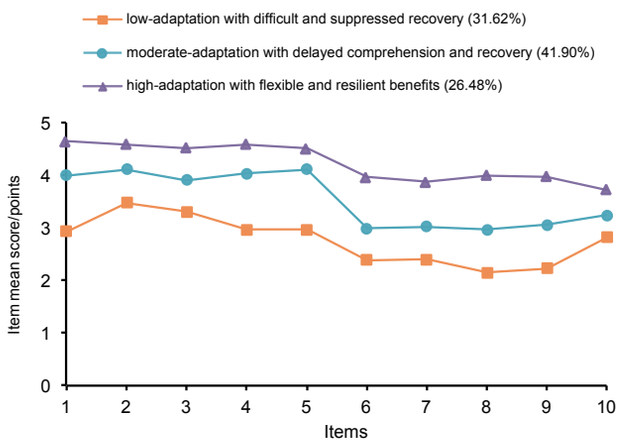


图1 老年COPD患者压力适应3个潜在剖面的特征分布

Figure 1 Characteristic distribution of 3 latent profiles of stress adaptation in elderly COPD patients

2、3、4的信息熵均>0.800,且LMRT和BLRT均有统计学意义(P<0.05),将各类别模型aBIC指数绘制成陡坡图后,在3个类别处存在明显拐点,最终确定选择3分类潜在剖面模型为最佳。所有条目均转换为正向化计分,得分越高代表压力适应越好。基于分类结果绘制潜在剖面图,见图1。根据各条目均分特征对3个剖面进行命名,类别1共80例(31.62%),该类患者在条目8(我从压力事件中恢复不需要花很长时间)和条目9(在经历压力事件时,我不会感到很辛苦)得分最低,故命名为低适应-恢复艰难压抑型(C1);类别2共106例(41.90%),该类患者在条目6(当不好的事情发生时,我能够恢复到原本的状态)和条目8(我从压力事件中恢复不需要花很长时间)得分最低,提示其基本复原能力不足,同时条目7(我往往能从经历的困难中吸取教训)得分亦偏低,反映出缺乏将压力经历转化为积极领悟的能力,整体较类别1已有明显改善,故命名为中适应-领悟复原迟缓型(C2);类别3共67例(26.48%),该类患者压力适应各条目均分处于最高水平,故命名为高适应-灵活回弹获益型(C3)。

2.2 老年COPD患者压力适应处于中等水平

在253例老年COPD患者中,压力适应量表得分为35.00(30.00,40.00)分,处于中等水平。心理弹性维度得分为21.00(17.00,24.00)分,心理繁荣维度得分为14.00(12.00,16.00)分。

2.3 老年COPD患者不同压力适应潜在剖面类别间一般资料与社会支持差异显著

老年COPD患者中,男性195例(77.1%),女性58例(22.9%),其他一般资料见表2。研究结果显示,3个分型患者的年龄、文化程度、居住地、个人月收入、合并症数量、患病时长、自理能力、呼吸困难,差异具有统计学意义(P<0.01),见表2。C1、C2及C3患者社会支持得分分别为45.00(44.00,46.00)、46.00(45.00,48.00)、49.00(48.00,50.00)分,组间比较差异具有统计学意义(H=99.839,P<0.001)。

2.4 年龄、居住地、患病时长、社会支持、文化程度及自理能力是老年COPD患者压力适应剖面的独立影响因素

以3个潜在剖面类别为因变量,单因素分析中差异有统计学意义的指标为自变量进行多元Logistic回归分析,包括年龄、文化程度、居住地、月收入、合并症数量、患病时长、自理能力、是否出现呼吸困难及SSRS总分,共9个变量。其中,SSRS总分以连续变量形式代入,其余分类变量的赋值方式见表3。多元Logistic回归分析结果显示,以C1为参照,年龄60~69岁(OR=7.295,95%CI:1.539~34.586)和城市居住(OR=3.885,95%CI:1.757~8.593)是区分C2与C1的显著因素;以C1为参照,年龄60~69岁(OR=14.594,95%CI:2.509~84.891)、患病时长<5年(OR=6.878,95%CI:1.193~39.646)、城市居住(OR=5.330,95%CI:1.267~22.413)以及SSRS总分(OR=1.784,95%CI:1.403~2.268)是区分C3与C1的显著因素;以C3为参照,初中文化程度(OR=23.478,95%CI:6.079~90.674)、小学及以下文化程度(OR=7.395,95%CI:1.900~28.776)以及部分自理能力(OR=7.205,95%CI:1.223~42.464)是患者归属于C2的危险因素,SSRS总分(OR=0.598,95%CI:0.473~0.756)是保护因素。具体见表4。

2.5 不同压力适应分型老年COPD患者的运动恐惧得分与检出率存在显著差异,且随压力适应水平升高呈梯度下降趋势

不同压力适应分型老年COPD患者的运动恐惧量表得分及检出率比较,见表5。对3组患者的运动恐惧量表总分与检出率进行两两比较,结果显示:C1-C2、C1-C3、C2-C3组间差异均有统计学意义(均P<0.001)。在运动恐惧检出率(TSK>37分)方面,C1中有83.8%的患者存在运动恐惧,C2中有63.2%,而C3仅有17.9%,呈现随着压力适应水平升高,运动恐惧检出率逐级下降的趋势。

表2 老年COPD患者的一般资料及压力适应潜在剖面的单因素分析[例(%),$M(P_{25},P_{75})$]

Table 2 Univariate analysis of general data and latent profiles of stress adaptation in elderly COPD patients [n (%), $M(P_{25},P_{75})$]

Items	Total (n=253)	Low-adaptation with difficult and suppressed recovery (C1) (n=80)	Moderate-adaptation with delayed comprehension and recovery (C2) (n=106)	High-adaptation with flexible and resilient benefits (C3) (n=67)	χ^2/H	P
Gender						
Male	195(77.1)	57(71.2)	80(75.5)	58(86.6)	5.107	0.078
Female	58(22.9)	23(28.8)	26(24.5)	9(13.4)		
Age/years						
60 *to* <70	69(27.3)	2(2.5)	24(22.6)	43(64.2)		
70 *to* <80	54(21.3)	19(23.8)	28(26.4)	7(10.4)	74.132	<0.001
80 *to* 89	130(51.4)	59(73.7)	54(51.0)	17(25.4)		
Marital status						
Married	228(90.1)	71(88.8)	94(88.7)	63(94.0)	1.566	0.457
Unmarried/divorced/widowed	25(9.9)	9(11.2)	12(11.3)	4(6.0)		
BMI/(kg/m^2)						
<18.5	28(11.1)	5(6.2)	14(13.2)	9(13.4)		
18.5 *to* <24.0	102(40.3)	34(42.5)	48(45.3)	20(29.8)	10.855	0.093
24.0 *to* <28.0	96(37.9)	34(42.5)	30(28.3)	32(47.8)		
≥28.0	27(10.7)	7(8.8)	14(13.2)	6(9.0)		
Education level						
Primary school and below	104(41.1)	52(64.9)	40(37.7)	12(17.9)		
Junior high school	78(30.8)	21(26.3)	51(48.1)	6(9.0)	107.83	<0.001
High school/technical secondary school and above	71(28.1)	7(8.8)	15(14.2)	49(73.1)		
Residence						
Urban	168(66.4)	31(38.7)	78(73.6)	59(88.1)	43.957	<0.001
Rural	85(33.6)	49(61.3)	28(26.4)	8(11.9)		
Living arrangement						
Living with others	232(91.7)	73(91.2)	96(90.6)	63(94.0)	0.678	0.712
Living alone	21(8.3)	7(8.8)	10(9.4)	4(6.0)		
Monthly personal income/yuan						
<3 000	165(65.2)	68(85.0)	73(68.8)	24(35.8)		
3 000~5 000	49(19.4)	8(10.0)	18(17.0)	23(34.3)	40.371	<0.001
> 5 000	39(15.4)	4(5.0)	15(14.2)	20(29.9)		
Number of comorbidities						
None	59(23.3)	6(7.4)	25(23.5)	28(41.9)		
1	80(31.6)	26(32.5)	32(30.2)	22(32.8)	28.576	<0.001
2	52(20.6)	21(26.3)	22(20.8)	9(13.4)		
≥3	62(24.5)	27(33.8)	27(25.5)	8(11.9)		
Disease duration/years						
<5	67(26.5)	13(16.2)	19(17.9)	35(52.2)		
5 *to* 8	61(24.1)	19(23.8)	28(26.4)	14(20.9)	32.950	<0.001
>8	125(49.4)	48(60.0)	59(55.7)	18(26.9)		
Self-care ability						
Partial self-care	55(21.7)	25(31.2)	27(25.5)	3(4.5)	16.855	<0.001
Complete self-care	198(78.3)	55(68.8)	79(74.5)	64(95.5)		
Dyspnea						
Yes	225(88.9)	78(97.5)	94(88.7)	53(79.1)	12.548	0.002
No	28(11.1)	2(2.5)	12(11.3)	14(20.9)		
Social support score	46.00 (45.00, 48.00)	45.00 (44.00, 46.00)	46.00 (45.00, 48.00)	49.00 (48.00, 50.00)	99.839	<0.001

表3 变量赋值方式

Table 3 Assignment of variables

Variable	Assignment methods
Age	60~<70 years =1, 70~<80 years =2, 80~89 years =3 (reference)
Education level	Primary school and below =1, Junior high school =2, High school/technical secondary school and above =3 (reference)
Residence	Rural =0 (reference), Urban =1
Monthly personal income	<3 000 yuan =1, 3 000~5 000 yuan =2, >5 000 yuan =3 (reference)
Number of comorbidities	None=1,1 comorbidity =2,2 comorbidities =3, ≥3 comorbidities =4(reference)
Disease duration	<5 years =1,5~8 years =2,>8 years =3(reference)
Self-care ability	Complete self-care=0(reference), Partial self-care=1
Dyspnea	No=0(reference),Yes=1
Total score of SSRS	Original value substituted
Latent profile class of stress adaptation	Low-adaptation with difficult and suppressed recovery=1; Moderate-adaptation with delayed comprehension and recovery=2; High-adaptation with flexible and resilient benefits=3

表4 老年COPD患者压力适应潜在类别影响因素的多元Logistic回归分析

Table 4 Multinomial logistic regression analysis on influencing factors for latent classes of stress adaptation in elderly COPD patients

Group	Variable	β	*SE*	*Wald*	*P*	*OR*(95%*CI*)
C2 *vs* C1[a]	Constant	−2.583	2.009	1.652	0.199	
	Age (60—<70 years)	1.987	0.794	6.264	0.012	7.295 (1.539—34.586)
	Residence (urban)	1.357	0.405	11.232	0.001	3.885 (1.757—8.593)
C3 *vs* C1[a]	Constant	−26.940	5.923	20.689	<0.001	
	Age (60—<70 years)	2.681	0.898	8.903	0.003	14.594 (2.509—84.891)
	Disease duration (<5 years)	1.928	0.894	4.656	0.031	6.878 (1.193—39.646)
	Residence (urban)	1.673	0.733	5.214	0.022	5.330 (1.267—22.413)
	Total score of SSRS	0.579	0.122	22.360	<0.001	1.784 (1.403—2.268)
C2 *vs* C3[b]	Constant	24.358	5.754	17.918	<0.001	
	Education level (junior high school)	3.156	0.689	20.958	<0.001	23.478 (6.079—90.674)
	Education level (primary school and below)	2.001	0.693	8.329	0.004	7.395 (1.900—28.776)
	Self-care ability (partial self-care)	1.975	0.905	4.762	0.029	7.205 (1.223—42.464)
	Total score of SSRS	−0.514	0.120	18.430	<0.001	0.598 (0.473—0.756)

a: C1 was used as the reference group; b: C3 was used as the reference group

表5 老年COPD患者压力适应不同分型的运动恐惧得分与检出率比较[分数,$M(P_{25},P_{75})$,n(%)]

Table 5 Comparison of kinesiophobia scores and detection rates in elderly COPD patients with different potential profiles of stress adaptation [score, $M(P_{25},P_{75})$, n(%)]

Class	Total	Kinesiophobia score	Kinesiophobia detected
Low-adaptation with difficult and suppressed recovery(C1)	80	43.00(40.00,46.00)	67(83.8%)
Moderate-adaptation with delayed comprehension and recovery(C2)	106	40.00(35.75,42.00)[a]	67(63.2%)[a]
High-adaptation with flexible and resilient benefits(C3)	67	35.00(33.00,37.00)[ab]	12(17.9%)[ab]
H		75.817	67.024
P		<0.001	<0.001

TSK score >37 indicates the presence of kinesiophobia. a: P<0.001, compared with the low-adaptation with difficult and suppressed recovery class; b: P<0.001, compared with the moderate-adaptation with delayed comprehension and recovery class

3 讨论

3.1 基于3类分型的分层干预:低适应者需强化症状管理与家庭支持,中适应者需激发内省与主动决策,高适应者需赋能引领与同伴辐射

本研究结果显示,老年COPD患者压力适应得分位于中等区间,与Lan等[22]和娄正磊等[23]的研究结果相似。该结果表明,医护人员应予以充分重视,并在此基础上制订科学、精准的个性化干预措施,以有效提升该群体的压力适应水平。基于潜在类别分析结果,老年COPD患者的压力适应可归为3种不同类别,各类别间特征迥异,证实了该人群内部的明显异质性。①C1占比31.62%。该亚组多为高龄、低学历及低收入人群。受限于自身资源与认知储备,此类患者面对疾病时常感应对乏力,疾病掌控感薄弱,整体调适能力欠佳。因此,针对此类患者,应聚焦其核心症状问题并关注其心理健康。医护人员应重点加强疾病相关知识教育及心理健康教育,帮助患者夯实基本自我管理技能,解决关键症状带来的困扰。建议医护人员引入阶梯式肺康复训练[24],并充分调动家庭支持系统参与,以免加重患者心理负担,从而有效减少患者的压力源。②C2占比最高,达41.90%。该亚组患者具备基本的压力应对能力,能够在疾病压力下维持一定的心理稳态,但其从压力体验中恢复的进程明显迟缓,对压力经历的消化、反思与意义提炼能力不足,难以将复原经验快速转化为成长性动力。针对这类患者,应授予患者情绪调节技巧,并鼓励患者在日常管理中进行自我决策,提升自我效能。建议临床医护人员推行承诺与接纳疗法,辅助患者顺应压力情境,并引导其主动介入康复计划制订环节,以期达到个人实质性领悟成长[25-26]。③C3占比26.48%。该亚组患者展现出较强的自我调节与适应能力。针对这类患者,医护人员可减少非必要的干预,给予其更大的自我管理空间,同时可发挥该类患者的榜样辐射作用,鼓励其带动前两组同伴开展互助支持,以促进群体心理改善[27]。

3.2 促进压力适应的因素(短病程、高社会支持)应被充分利用,阻碍压力适应的因素(高龄、农村居住、低文化、自理不足)需针对性干预

本研究结果显示,相较于C1,60~69岁及居住在城镇的老年COPD患者,归属于C2和C3的概率均更高。这一结果从反向角度印证,年龄较大和农村居住是低压力适应水平的独立影响因素,与Moe等[28]和Jin等[29]的研究结果相似。分析其内在机制,高龄患者常伴随呼吸肌力减弱、骨骼肌萎缩等增龄性改变,导致日常活动能力与体力储备显著下降,使其应对疾病负担的生理基础更为脆弱;并且,高龄患者认知灵活性与情绪调节能力往往出现衰退,面对疾病带来的持续压力时更易采取消极回避的应对方式,从而加剧了陷入低适应状态的风险[30]。农村居住的影响则主要体现在外部支持条件的匮乏。已有研究[31]表明,农村COPD患者因医疗资源匮乏、健康信息不足,其心理状态与生活质量均会受到显著负面影响。故此类患者难以获得有效的外部缓冲,这进一步加剧了其压力适应的困难。年龄较大和农村居住分别从内在恢复能力与外部资源保障两个层面,共同加剧了老年COPD患者从压力事件中恢复的困难程度(条目8)与压力情境下的压抑体验(条目9),这构成了低适应型患者“恢复艰难”与“压抑”特征的主要根源。因此,医护人员应有意识地关注高龄和农村老年COPD患者的情绪状态,为其营造放松的康复环境;并加强疾病相关知识的健康宣教,帮助患者建立对疾病的正确认知,鼓励其适应疾病,促进压力适应能力的提升。

本研究结果显示,相较于C1,病程较短、社会支持越强的老年COPD患者归属于C3的概率更大。这表明,短病程和充足的社会支持是高水平压力适应的保护因素。分析原因可能在于,病程较短的老年COPD患者中,部分尚未出现严重的呼吸困难症状,疾病对日常生活的影响尚未固化为持续性负担,因此这类患者对治疗与康复的主动性较强,更倾向于形成积极的压力适应状态[32]。此外,本研究还发现,社会支持程度更强的老年COPD患者更易归属于C3。该结果与Lan等[22]的研究结论一致。原因可能是,社会支持程度较强的患者能够从家庭、朋友处获得情感理解和实际帮助,从而提高自我效能感,进而有效缓冲疾病带来的压力。短病程和充足的社会支持两者的协同作用促进了患者压力后恢复的效率与压力后成长性领悟的深度,这构成了高适应型“灵活回弹”与“成长获益”特征的关键路径。因此,在临床工作中,医护人员应当重视COPD早期患者的主动干预,充分利用其积极适应的潜力;对于社会支持薄弱的患者,应联合患者家属构建以家庭为中心的健康教育与康复方案[33],通过家属参与式的照护与督导,协助患者建立有效的家庭支持网络,以提升整体适应水平。

本研究结果显示,相较于C3,文化程度为初中及以下、生活部分自理的患者归属于C2的概率更大。这表明,文化程度较低及自理能力为部分自理是中适应水平的独立危险因素。研究[29]表明,教育程度作为健康的社会决定因素,通过影响个体的信息处理能力与

应对资源,进而影响其心理适应状态。本研究中,文化程度较低的中适应型患者具备基本的健康信息理解能力,能够了解基础的疾病知识和自我管理策略并执行,但其主动寻求更深层的疾病认知或进行经验反思的倾向相对薄弱,因而领悟能力处于阻滞状态[34]。另外,对于生活不能完全自理的患者而言,因功能受限而更有可能获得来自家庭或照护者的实质性支持,但与此同时,这种支持也可能使患者安于现状,弱化了其主动克服困难的能力,领悟复原的发生亦因此受阻[35]。低文化程度、生活部分自理两者的叠加效应限制了患者从压力经历中领悟(条目7)与高效完成压力后恢复(条目6、条目8)的能力,这构成了中适应型"领悟滞后"与"复原迟缓"双重阻滞特征的根本障碍。因此,提示医护人员对此类老年COPD患者不宜仅停留于健康知识的单向传递或照护层面的常规供给,而应在疾病宣教过程中有意识地融入引导式提问,并在照护环节为其保留适度的自主决策空间,推动其从被动接受转向主动领悟。

3.3 以压力适应为靶点的认知重构干预有助于阻断运动恐惧的逐级放大效应

本研究结果显示,不同分型压力适应水平与老年COPD患者运动恐惧的关联存在差异。其中,C1患者的运动恐惧的得分最高,运动恐惧检出率最高;C2患者居中;C3患者得分最低,运动恐惧检出率最低。分析原因,C3的患者通常具备充足的心理弹性资源与外部支持以及更强的疾病应对能力与自我效能感,故对疾病症状的负面预期相对较低,因而更能够理性看待运动训练的必要性与安全性,不易因担心呼吸困难或运动损伤而产生过度回避行为[36]。相反,C1因长期处于"恢复艰难"与"压抑"的心理定势中,在面对疾病时更容易出现焦虑、失控等消极情绪,其对运动相关不适症状的感知更为敏感,从而导致运动恐惧水平和检出率较高[37]。C2患者则介于上述两种状态之间,该类患者虽具备基本的压力应对能力,但缺乏将压力经历转化为成长性领悟的能力,难以从日常活动经验中提取正性反馈,导致其对身体活动的认知评价仍以威胁性预期为主,故运动恐惧水平和检出率高于高适应组。上述发现提示,未来临床实践中应将老年COPD患者的压力适应状态纳入常规评估,对于压力适应水平欠佳的患者,建议在运动训练前引入心理疏导与认知重构干预[38],以矫正其对呼吸困难信号的灾难化认知,打破"恐惧-回避"的恶性循环,协助其从运动体验中提炼积极意义,逐步降低运动恐惧水平,进而提升康复依从性与生存质量。

3.4 研究局限性

本研究存在以下局限性:①本研究仅选取1所三级甲等医院的住院患者,样本代表性有限,研究结论的外部效度有待多中心、大样本研究进一步验证。②本研究为横断面调查,无法观察压力适应随时间变化的动态轨迹,也未进一步探讨压力适应与运动恐惧之间的中介或调节机制,未来研究可采用结构方程模型和纵向设计,深入分析各变量间的作用路径与机制并追踪患者的压力适应变化趋势。③本研究仅纳入有限的人口学、疾病相关及社会支持变量,其他潜在影响因素未纳入分析,有待后续研究进一步拓展。

本研究采用潜在剖面分析,系统识别出老年COPD患者压力适应的3种异质性类别,即低适应-恢复艰难压抑型、中适应-领悟复原迟缓型与高适应-灵活回弹获益型。年龄、居住地、患病时长、自理能力、文化程度及社会支持是上述类别的独立影响因素。不同压力适应分型患者的运动恐惧水平及检出率呈显著的梯度差异,表现为压力适应能力越高,运动恐惧水平和检出率越低,提示压力适应是运动恐惧的重要关联因素。因此,临床上应依据患者压力适应分型的特征差异,匹配差异化的干预路径,在提升压力适应能力的同时关注运动恐惧的评估与改善,以实现精准化护理与分层管理。

利益冲突 本文所有作者声明不存在利益冲突

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