四川大学学报（医学版） 2026，57（4）：1171－1178
J Sichuan Univ（Med Sci） DOI: 10.12182/20260760608

在线全文

婚姻伴侣关系质量与中老年人多重慢性病累积速率关系的ELSA数据库分析*

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【摘要】 **目的** 探讨婚姻/伴侣关系质量与中老年人多重慢性病累积速率的关联。**方法** 基于英国老龄化纵向研究（English Longitudinal Study of Ageing, ELSA）第4～11轮调查数据，采用多重插补链式方程填补协变量缺失值，拟合线性混合模型分析婚姻/伴侣关系质量类型与慢性病累积速率的关系，并按性别、年龄分层探究效应的异质性。**结果** 共纳入7 943名研究对象。相较于支持型（高支持-低压力）婚姻/伴侣关系，其余关系类型及无伴侣状态均与更快的慢性病累积速率相关。其中，无伴侣者累积速度最快（β=0.042, 95%CI: 0.033～0.051），冷漠型（低支持-低压力）和厌恶型（低支持-高压力）次之（β=0.029, 95%CI: 0.007～0.051; β=0.027, 95%CI: 0.013～0.041），矛盾型（高支持-高压力）效应相对较弱（β=0.018, 95%CI: 0.009～0.026）。女性对该效应更为敏感。**结论** 不良婚姻/伴侣关系（矛盾型、冷漠型、厌恶型）及无伴侣状态均与中老年人慢性病累积速率加快相关，应优先关注女性人群。

【关键词】 多重慢性病 婚姻质量 伴侣关系 中老年人

Association Between Marital/Partner Relationship Quality and Accumulation Rate of Multiple Chronic Conditions in Middle-Aged and Older Adults: An Analysis Based on Data From English Longitudinal Study of Ageing

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This study was supported by the National Natural Science Foundation of China General Program (No. 82574204).

[**Abstract**] **Objective** To investigate the association between marital/partner relationship quality and the accumulation rate of multiple chronic conditions in middle-aged and older adults. **Methods** This study was based on the data from waves 4 to 11 of the English Longitudinal Study of Ageing (ELSA). Multiple imputation by chained equations was used to handle missing covariates. Linear mixed-effects models were fitted to examine the association between marital/partner relationship quality types and the accumulation rate of multiple chronic conditions. Effect heterogeneity was further explored through stratified analyses by sex and age. **Results** A total of 7 943 participants were included. Compared with individuals in supportive marital/partner relationships (with high support and low strain), all other relationship types and having no partner were associated with faster rates of accumulation of chronic diseases. Individuals with no partners showed the fastest accumulation rate (β = 0.042, 95% CI: 0.033-0.051), followed by those in indifferent relationships (with low support and low strain) and aversive relationships (with low support and high strain) (β = 0.029, 95% CI: 0.007-0.051; β = 0.027, 95% CI: 0.013-0.041). Those in ambivalent relationships (with high support and high strain) showed a relatively weaker effect (β = 0.018, 95% CI: 0.009-0.026). Women were more sensitive to this effect. **Conclusion** Adverse marital/partner relationships (including ambivalent, indifferent, and aversive) and the absence of a partner are associated with an accelerated accumulation rate of multiple chronic diseases in middle-aged and older adults, and priority attention should be given to the female population.

[**Key words**] Multiple chronic conditions Marital relationship quality Partner relationship Middle-aged and older adults

多重慢性病定义为个体同时患有两种或多种慢性疾病[1]。全球超过1/3的成年人口存在多重慢性病，在60岁及以上老年人群中，该比例超过50%[2]。多重慢性病与功能受限、残疾、生活质量下降及过早死亡等不良结局密切相关[3]，给家庭和医疗系统带来沉重的照护与经济负担[4-5]。因此，识别其潜在风险因素对促进健康老龄化、减轻社会和医疗系统负担具有重要意义。

* 国家自然科学基金面上项目（No. 82574204）资助
△ 通信作者
出版日期：2026-07-20

社会关系对健康具有长期影响，且已被证实其影响程度可与吸烟等其他死亡风险因素相当[6-7]。其中，婚姻/伴侣关系对中老年人身心健康的影响最大[8]，相较于朋友、同事等其他社会关系，处于婚姻/伴侣关系中的个体彼此共享更多空间、时间及经济等资源[9]。多项研究已表明婚姻关系质量对中老年人健康具有深刻影响[10-12]。

尽管已有研究发现婚姻/伴侣关系与多重慢性病存在关联[13]，但这些研究多聚焦于关系的客观状态(已婚/离异/丧偶/未婚)，对关系质量如何影响慢性病累积仍缺乏深入探讨。同时，既往研究往往仅关注关系质量的单一维度(积极或消极)，未能同时考察其联合效应[14-15]。大量研究表明，慢性病数量随年龄增长的累积速率存在个体差异[16-18]，然而现有纵向研究对多重慢性病结局的测量大多仍为横断面式，难以考察个体内部慢性病的动态累积[19-20]。与静态的多重慢性病患病率相比，累积速率能够揭示疾病负担的动态演变趋势，有助于早期识别慢病累积加速的高风险个体[21]。

为填补上述空白，本研究使用了英国老龄化纵向研究(English Longitudinal Study of Ageing, ELSA)16年、8次重复测量数据。ELSA因具有长期纵向追踪、涵盖详细的多学科(经济、健康、社会)数据、代表性良好等优势而被广泛应用于国内外老龄化研究，为本研究提供了理想的数据来源。利用纵向重复测量数据进行分析，可有效控制未测量的非时变混杂因素，更准确地估计暴露与结局的动态关联[22]。本研究采用线性混合模型探讨婚姻/伴侣关系质量与中老年人慢性病累积速率的纵向关联，以期为延缓疾病进展和促进健康老龄化干预策略提供依据。

1 资料与方法

1.1 研究对象

数据来源于ELSA，研究对象为居住在英格兰的50岁及以上人群及其伴侣的代表性队列。该研究始于2002年，每2年随访一次，目前已完成11轮调查。数据通过计算机辅助的面对面访谈和自填问卷收集，每4年进行一次护士访视以评估生物标志物和进行人体测量。ELSA获得National Research Ethics Service伦理批准，所有参与者均提供知情同意，其研究设计与方法见既往文献[23]。

本研究采用ELSA第4～11轮(2008—2024)调查数据[24]，以第4轮为基线。基线的选择考虑到纳入早期受访者带来的较高失访率，同时ELSA第4轮较大规模补充了50～74岁的新受访者，样本更具年龄代表性[23]。在基线有自填问卷数据的受访者中，排除：(1)年龄<50岁或≥90岁；(2)配偶/伴侣关系质量类型缺失；(3)基线多重慢性病数据缺失；(4)无至少一次的多重慢性病随访数据。最终纳入分析者共7 943名，筛选流程见图1。

1.2 研究方法

1.2.1 暴露测量

婚姻/伴侣关系质量类型(以下简称“伴侣类型”)通过

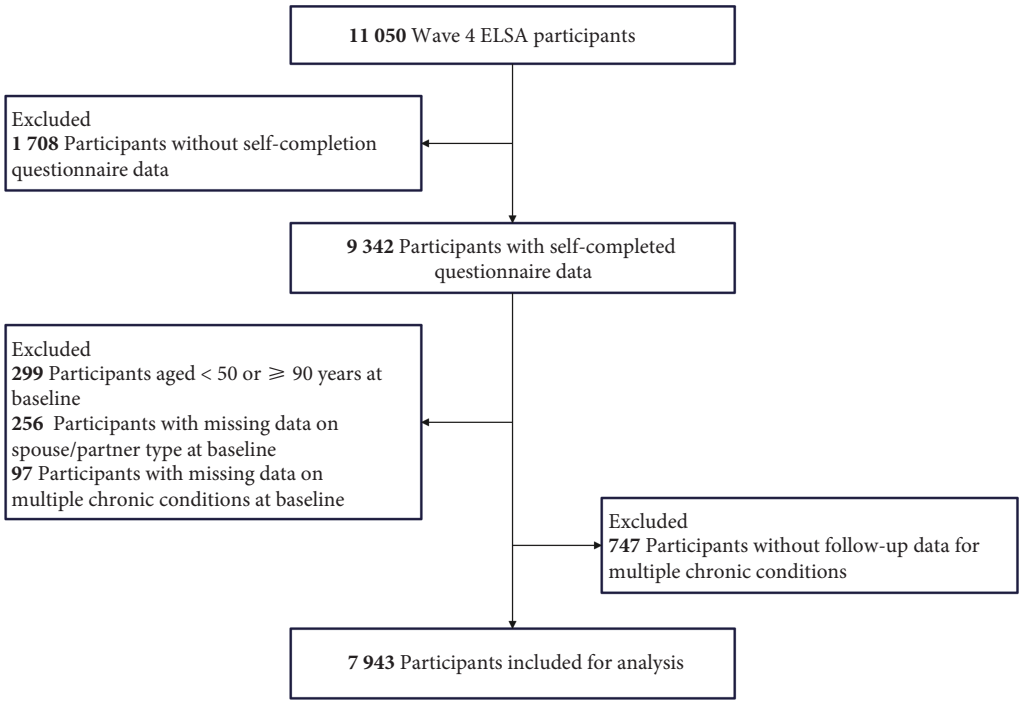


图 1 样本筛选流程图

Fig 1 Flowchart of sample selection

自填问卷评估, 受访者首先被询问是否有配偶或同居伴侣, 若有则继续回答以下2个维度共6个条目: (1)支持程度: ①“他们对于您对事物的感受的理解程度如何？”②“如果遇到严重问题, 您能在多大程度上依赖他们？”③“如果您需要倾诉自己的担忧, 您能在多大程度上向他们敞开心扉？”; (2)压力水平: ①“他们会在多大程度上批评您？”②“当您指望他们的时候, 他们在多大程度上会让您失望？”③“他们在多大程度上会让您心烦？”若无配偶/伴侣, 则跳过该部分。所有条目均采用4级评分: 1=很多, 2=一些, 3=一点, 4=完全没有。

伴侣类型分类规则依据现有文献[15,25-26]: (1)支持程度: 每个条目回答“很多/一些”计1分, 否则计0分, 3个条目均得1分为“高支持度”, 否则为“低支持度”; (2)压力水平: 每个条目回答“很多/一些”计1分, “一点/完全没有”计0分, 约半数(53%)的有伴侣受访者在全部3个条目中均得0分, 为避免丧失区分度, 将3个条目均得0分定义为“低压力”, 其余定义为“高压力”(表1)。

根据支持程度和压力水平的组合, 将伴侣类型分为支持型(高支持-低压力)、矛盾型(高支持-高压力)、冷漠型(低支持-低压力)、厌恶型(低支持-高压力)以及无伴侣。

表 1　伴侣关系中支持和压力的分类规则

Table 1　Classification criteria for partner support and strain

Dimension	Items	Response options	Classification criteria
Support	① How much does your spouse/partner really understand the way you feel about things? ② How much can you rely on your spouse/partner if you have a serious problem? ③ How much can you open up to your spouse/partner if you need to talk about your worries?	1 = A lot 2 = Some 3 = A little 4 = Not at all	(1) High support: “a lot/some” for all 3 items; (2) Low support: all other combinations.
Strain	① How much does your spouse/partner criticize you? ② How much does your spouse/partner let you down when you are counting on them? ③ How much do they get on your nerves?	1 = A lot 2 = Some 3 = A little 4 = Not at all	(1) High strain: at least one item answered as “a lot/some”; (2) Low strain: “a little/not at all” for all 3 items.

1.2.2　结局测量

在每一轮调查中, 受访者被询问是否曾被医生诊断为以下慢性疾病: 高血压、糖尿病、高血脂、心绞痛、心脏病发作(包括心肌梗死和冠状动脉血栓形成)、充血性心力衰竭、心脏杂音、心律失常、中风、慢性肺病(如慢性支气管炎、肺气肿等)、哮喘、关节炎、骨质疏松、帕金森病、恶性肿瘤、情感障碍(抑郁、焦虑和其他情绪问题)、精神病性疾病(包括精神分裂症和精神病)、阿尔茨海默病、痴呆、白内障、黄斑变性、糖尿病眼病及青光眼。其中, 抑郁症状通过抑郁自评量表(CES-D) 8项简版评估, 得分范围为0 ~ 8分, ≥4分视为存在抑郁症状[27-28]。

在ELSA中, 若受访者在某一轮调查中报告患有某种疾病, 下一轮会要求其对该疾病的存在进行确认。因此, 本研究对否认既往自述疾病的受访者进行事后校正[29]。对每位受访者计算其每轮调查中的慢性病总数, 且一旦某疾病在某一轮被报告, 即视为在后续所有调查中持续存在[21, 30-31]。

1.2.3　协变量测量

基于既往文献[25,32], 本研究纳入的协变量包括: (1)人口统计学因素: 年龄、性别、种族(白人/非白人); (2)社会经济因素: 受教育程度(初中及以下/高中/大学及以上)、家庭财富五分位; (3)生活方式因素: 体力活动水平(久坐/低强度/中等强度/高强度)、吸烟状况(从不吸烟/曾经吸烟/现在吸烟)、最近一年的饮酒频率(每月两次或更少/每周一次或两次/每天或几乎每天); (4)身体质量指数(body mass index, BMI)分组(根据世界卫生组织分类)[33]。此外, 为控制新型冠状病毒感染(coronavirus disease 2019, COVID-19)大流行的潜在混杂效应[34-35], 本研究额外纳入一个时期指示变量作为协变量。根据ELSA调查的时间节点, 将第10轮及之后(即2020年及以后)的观测赋值为1(疫情期), 此前的观测赋值为0(疫情前)。该变量作为固定效应纳入线性混合模型进行调整。其余协变量均在基线测量。

1.3　统计学方法

根据伴侣类型分组描述基线特征。连续变量采用中位数(P_{25}, P_{75}); 分类变量采用频数和构成比。

协变量的缺失数据采用多重插补链式方程填补。研究采用线性混合模型。暴露为基线测量的伴侣类型, 结局为每轮调查时重复测量的慢性病数量。为探讨伴侣类型对多重慢病累积速率的影响, 模型中固定效应为伴侣类型、随访时间(年)及其交互项。其中交互项系数β表示其他伴侣类型与支持型相比慢性病的年累积数量差异(种/年); 随机效应包括随机截距(受访者)和随机斜率(随访时间), 以反映基线和随访期内的个体差异; 同时调整协变量[21, 36]。模型构建如下:

$$Y_{ij}=\beta_0+\beta_1 Time_{ij}+\beta_2 PartnerType_i+\beta_3(Time_{ij}\times PartnerType_i)+\gamma Z_i+\delta Covid_{ij}+u_{0i}+u_{1i}Time_{ij}+\varepsilon_{ij}$$

其中，Y_{ij}为第i个受访者在第j轮随访时的慢性病数量；$Time_{ij}$为随访时间(年)；$PartnerType_i$为基线测量的伴侣类型(以支持型为参照)；Z_i为基线协变量向量(年龄、性别、种族、受教育程度、家庭财富、体力活动、吸烟、饮酒和BMI分组)；$Covid_{ij}$为新冠疫情指示变量。β_3为伴侣类型与随访时间(年)的交互项系数。随机效应包括随机截距u_{0i}和随机斜率u_{1i}，假定服从二元正态分布。ε_{ij}为残差项，假定服从正态分布且与随机效应相互独立。

其次，对性别、年龄作分层分析，以探究伴侣类型效应的异质性，其中年龄的分层以60岁为界(参照国际惯例[37])。

为验证结果的稳健性，进行了以下敏感性分析：(1)为评估多重插补对结果的影响，排除基线有协变量缺失的个体(因BMI缺失比例较大，使用受访者邻近波次数据填补)；(2)为调整生活方式协变量(体力活动、吸烟、饮酒)对慢性病累积速率的可能影响，模型中加入生活方式协变量与随访时间的交互项；(3)为排除基线多重慢病对结果的影响，仅纳入基线无多重慢病的受访者(不考虑高血压和高血脂，因患病率较高)；(4)排除基线有精神疾病(情感障碍、精神病性疾病)的个体。

统计分析均使用R 4.4.3，双侧检验，$\alpha=0.05$。多重插补使用mice包[38]，线性混合模型使用lme4包[39]。

2 结果

2.1 一般资料

研究对象基线特征见表2。共纳入7 943名研究对象，基线年龄中位数为63.0(58.0，71.0)岁，其中女性占55.4%，男性占44.6%。多重慢性病患病率为55.0%。伴侣类型中，支持型个体占比最高(2 901名，36.5%)，其次为矛盾型(2 245名，28.3%)和无伴侣(2 055名，25.9%)，厌恶型(550名，6.9%)和冷漠型(192名，2.4%)占比较少。支持型个体的多重慢性病患病率最低(47.1%)，厌恶型(58.0%)和无伴侣者(67.5%)的患病率较高。

2.2 伴侣类型与多重慢性病累积速率的关联

调整所有协变量后，以支持型为参照组，其余伴侣类型均与中老年人慢性病累积加速相关。其中，无伴侣者慢性病累积速率最快，相较于支持型加速0.042种/年(β= 0.042，95%CI：0.033 ~ 0.051)；其次为冷漠型(β= 0.029，95%CI：0.007 ~ 0.051)和厌恶型(β= 0.027，95%CI：0.013 ~ 0.041)；矛盾型伴侣关系的加速效应相对较小(β= 0.018，95%CI：0.009 ~ 0.026)。调整后各类型的具体效应值见表3。图2展示了不同伴侣类型中老年人慢性病数量在随访期内的预测轨迹。

2.3 性别、年龄分层分析结果

2.3.1 性别分层

性别分层结果(图3A)显示，伴侣类型对中老年人慢性病累积速率的影响存在性别差异。在女性中，各伴侣类型均与更快的慢性病累积速率相关，加速效应的排序与主分析一致。而在男性中，仅无伴侣者($\beta=0.034$，95%CI：0.019 ~ 0.049)和矛盾型伴侣关系($\beta=0.014$，95%CI：0.002 ~ 0.026)与支持型在慢性病累积速率上的差异具有统计学意义，冷漠型和厌恶型则无统计学意义。

2.3.2 年龄分层

年龄分层结果(图3B)显示，伴侣类型对慢性病累积的影响存在年龄异质性。无伴侣状态与厌恶型伴侣关系在各年龄层中均与慢性病累积加速相关；矛盾型伴侣关系仅在≥60岁亚组中表现出统计学关联($\beta=0.019$，95%CI：0.008 ~ 0.030)；冷漠型仅在<60岁亚组中观察到该关联($\beta=0.049$，95%CI：0.022 ~ 0.076)，且其加速效应在各伴侣类型中最大。

2.4 敏感性分析结果

敏感性分析结果显示：(1)排除基线协变量缺失个体后，结果与主分析基本一致，但冷漠型伴侣关系的加速效应未达统计学显著性($\beta=0.019$，95%CI：−0.005 ~ 0.043)，考虑与该类型样本量较小有关；(2)在模型中加入生活方式协变量与随访时间的交互项后，体力活动、吸烟与随访时间的线性交互项均具有统计学意义($P<0.001$)，体力活动水平的增加可延缓慢性病累积，而吸烟则加速慢性病累积；饮酒与随访时间的交互项虽亦显著($\beta=-0.009$，95%CI：−0.015 ~ −0.003，$P=0.002$)，但效应方向显示饮酒频率增加与慢性病累积延缓相关，且效应较弱，这可能与健康受访者更倾向于饮酒有关；在调整生活方式因素后，各伴侣类型对慢性病累积的加速效应依然存在，但效应值有所下降，提示生活方式因素可能部分介导了伴侣关系对慢性病累积的影响；(3)仅纳入基线无多重慢性病个体的结果与主分析一致；(4)排除基线有精神疾病(情感障碍、精神病性疾病)个体的结果与主分析一致。

3 讨论

本研究发现，相较于支持型伴侣关系，其他伴侣类型及无伴侣状态均会加速中老年人慢性病累积，提示伴侣关系中积极支持的缺乏或消极压力的存在均可能对健康产生不利影响。性别分层分析显示，女性对该效应更为敏感，而男性仅在无伴侣状态和矛盾型伴侣关系中表现出加速效应。此外，还发现效应的年龄异质性：矛盾型伴

表 2　研究对象的基线特征

Table 2　Baseline characteristics of the study participants

Characteristic	Overall (n = 7 943)	Supportive (n = 2 901)	Ambivalent (n = 2 245)	Indifferent (n = 192)	Aversive (n = 550)	No partner (n = 2 055)
Age / years, Median (P_{25}, P_{75})	63.0 (58.0, 71.0)	62.0 (57.0, 69.0)	63.0 (57.0, 70.0)	60.0 (55.0, 67.5)	61.0 (56.0, 68.0)	69.0 (61.0, 76.0)
Age group /case(%)						
< 60 years	2 598 (32.7)	1 089 (37.5)	760 (33.9)	88 (45.8)	212 (38.5)	449 (21.8)
⩾ 60 years	5 345 (67.3)	1 812 (62.5)	1 485 (66.1)	104 (54.2)	338 (61.5)	1 606 (78.2)
Sex /case(%)						
Female	4 403 (55.4)	1 508 (52.0)	972 (43.3)	123 (64.1)	381 (69.3)	1 419 (69.1)
Male	3 540 (44.6)	1 393 (48.0)	1 273 (56.7)	69 (35.9)	169 (30.7)	636 (30.9)
Ethnicity /case(%)						
White	7 757 (97.7)	2 848 (98.2)	2 187 (97.4)	189 (98.4)	531 (96.5)	2 002 (97.5)
Non-white	183 (2.3)	51 (1.8)	58 (2.6)	3 (1.6)	19 (3.5)	52 (2.5)
Missing	3	2	0	0	0	1
Education /case(%)						
Below high school	2 932 (37.0)	880 (30.4)	807 (36.1)	79 (41.4)	205 (37.4)	961 (46.8)
High school or equivalent	2 211 (27.9)	872 (30.2)	591 (26.4)	51 (26.7)	164 (29.9)	533 (25.9)
College or above	2 777 (35.1)	1 139 (39.4)	838 (37.5)	61 (31.9)	179 (32.7)	560 (27.3)
Missing	23	10	9	1	2	1
Wealth quintiles /case(%)						
1st (Lowest)	1 084 (15.0)	180 (7.1)	187 (9.4)	22 (13.3)	50 (10.7)	645 (31.6)
2nd	1 337 (18.5)	419 (16.4)	338 (17.1)	30 (18.1)	100 (21.3)	450 (22.0)
3rd	1 466 (20.3)	503 (19.7)	410 (20.7)	42 (25.3)	120 (25.6)	391 (19.2)
4th	1 607 (22.3)	672 (26.3)	475 (24.0)	38 (22.9)	108 (23.0)	314 (15.4)
5th (Highest)	1 715 (23.8)	777 (30.5)	572 (28.9)	34 (20.5)	91 (19.4)	241 (11.8)
Missing	734	350	263	26	81	14
Physical activity level /case(%)						
Sedentary	361 (4.5)	81 (2.8)	101 (4.5)	3 (1.6)	22 (4.0)	154 (7.5)
Low	1 717 (21.6)	502 (17.3)	434 (19.3)	53 (27.6)	131 (23.8)	597 (29.1)
Moderate	4 109 (51.8)	1 587 (54.7)	1 179 (52.5)	98 (51.0)	290 (52.7)	955 (46.5)
High	1 752 (22.1)	729 (25.1)	530 (23.6)	38 (19.8)	107 (19.5)	348 (16.9)
Missing	4	2	1	0	0	1
Smoking status /case(%)						
Never	3 222 (40.6)	1 256 (43.3)	868 (38.7)	74 (38.5)	237 (43.1)	787 (38.3)
Former smoker	3 669 (46.2)	1 350 (46.6)	1 113 (49.6)	84 (43.8)	226 (41.1)	896 (43.6)
Current smoker	1 050 (13.2)	294 (10.1)	263 (11.7)	34 (17.7)	87 (15.8)	372 (18.1)
Missing	2	1	1	0	0	0
Frequency of alcohol consumption /case(%)						
Monthly or rarer	2 897 (37.2)	880 (30.8)	695 (31.6)	77 (40.5)	247 (46.4)	998 (49.8)
Once or twice a week	1 966 (25.3)	769 (26.9)	599 (27.3)	44 (23.2)	120 (22.6)	434 (21.6)
Daily or almost daily	2 920 (37.5)	1 210 (42.3)	903 (41.1)	69 (36.3)	165 (31.0)	573 (28.6)
Missing	160	42	48	2	18	50
Body mass index /case(%)						
< 18.5 kg/m²	50 (0.7)	6 (0.2)	13 (0.7)	1 (0.6)	3 (0.7)	27 (1.6)
18.5 to < 25.0 kg/m²	1 744 (26.0)	655 (26.6)	432 (22.6)	47 (29.2)	114 (26.0)	496 (28.7)
25.0 to < 30.0 kg/m²	2 812 (42.0)	1 101 (44.7)	839 (43.9)	59 (36.6)	170 (38.7)	643 (37.2)
⩾ 30.0 kg/m²	2 094 (31.3)	699 (28.4)	625 (32.7)	54 (33.5)	152 (34.6)	564 (32.6)
Missing	1 243	440	336	31	111	325
Chronic diseases (number) /case(%)						
0–1	3 573 (45.0)	1 535 (52.9)	1 041 (46.4)	98 (51.0)	231 (42.0)	668 (32.5)
2–3	2 871 (36.1)	965 (33.3)	846 (37.7)	67 (34.9)	196 (35.6)	797 (38.8)
⩾ 4	1 499 (18.9)	401 (13.8)	358 (15.9)	27 (14.1)	123 (22.4)	590 (28.7)

表 3 伴侣类型与慢性病累积速率的关联

Table 3 Associations between partner relationship type and chronic disease accumulation rate

Partner relationship type	β (95% CI)	t	P
Supportive	0 (Ref.)	—	—
Ambivalent	0.018 (0.009, 0.026)	4.17	< 0.001
Indifferent	0.029 (0.007, 0.051)	2.58	0.010
Aversive	0.027 (0.013, 0.041)	3.77	< 0.001
No partner	0.042 (0.033, 0.051)	9.43	< 0.001

β represents interaction coefficients of partner relationship type and follow-up time (years), indicating the additional annual increase in the number of chronic diseases compared to the supportive group (Ref.). The model is adjusted for age, sex, ethnicity, education, household wealth, physical activity, smoking status, alcohol consumption, BMI, and COVID-19 period.

侣关系的加速效应仅出现在≥60岁的老年人中，而冷漠型仅在< 60岁人群中观察到。

研究结果首先证实了配偶/伴侣的客观存在对慢性病累积的加速效应，这与Wang等[13]的多国队列研究结果一致，可能与婚姻/伴侣关系带来的物质与情感支持有关[9-10]。然而，关系质量同样是影响健康的重要因素。本研究发现，即使在有伴侣的中老年人中，较差的关系质量仍会加速慢性病累积。其影响可能通过健康行为(如体力活动和饮食[40]、睡眠[41]等)、心理健康(抑郁、焦虑和精神疾病等)[42]以及一系列生物学机制(如心血管反应性增强、神经内分泌功能紊乱、免疫失调等)[9,11]介导。值得注意的是，关系中积极与消极层面的共存(矛盾型)同样值得关注。Uchino等[14]发现，处于矛盾型伴侣关系中的个体冠状动脉钙化风险更高。多项关于婚姻质量的研究指出，

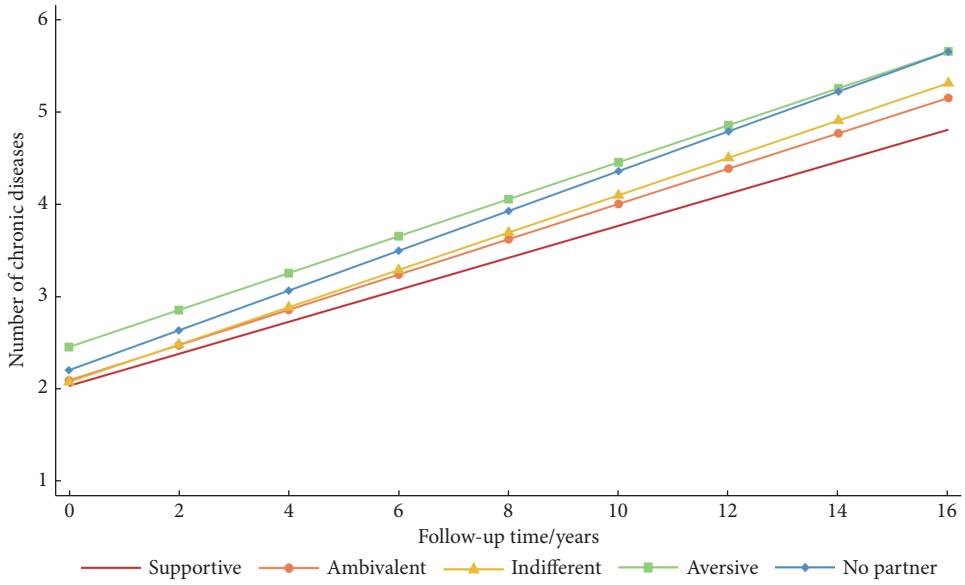


图 2 各伴侣类型随访期内的慢性病数量预测

Fig 2 Predicted number of chronic diseases over the follow-up period with stratification by partner relationship type

The model is adjusted for age, sex, ethnicity, education, household wealth, physical activity, smoking status, alcohol consumption, BMI, and COVID-19 period.

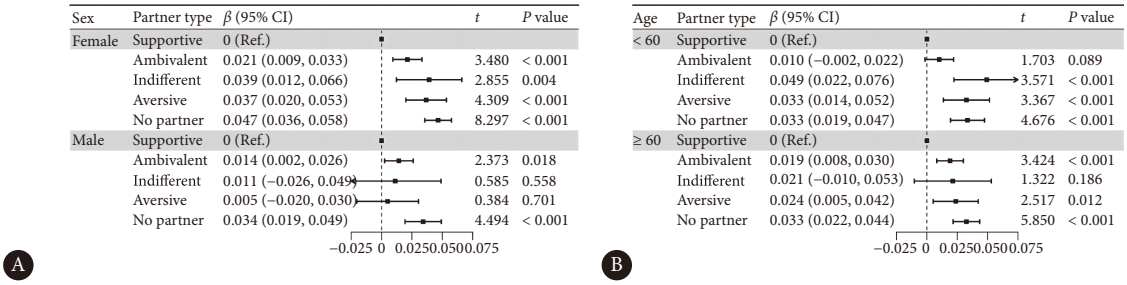


图 3 按性别和年龄分层的伴侣类型与慢性病累积速率关联的差异

Fig 3 Differences in the association between partner types across genders and ages and the accumulation rate of chronic diseases

A, Stratification by sex, adjusted for age, ethnicity, education, household wealth, physical activity, smoking status, alcohol consumption, BMI, and COVID-19 period; B, stratified by age group (< 60 yr. vs ≥ 60 yr.) and adjusted for sex, ethnicity, education, household wealth, physical activity, smoking status, alcohol consumption, BMI, and COVID-19 period.

性别是婚姻关系质量健康效应的重要调节因素[11,43-44]。本研究中女性对伴侣关系质量的健康效应更为敏感, 可能的解释是女性倾向于从人际关系中获得身份认同的社会化特质, 以及在婚姻中承担更多的家务劳动与养育者角色[9,11]。婚姻质量更可能影响女性的幸福感[12], 相比之下, 婚姻满意度对男性的重要性不及女性[43]。研究还发现, 婚姻关系中的负面体验对自评健康水平下降的影响在年长者中大于年轻人[45], 这与本研究中矛盾型(高支持-高压力)伴侣关系仅在≥60岁人群中显著加速慢性病累积的发现一致。随着年龄增长, 个体对婚姻压力的生理脆弱性增加(可能与免疫功能下降[46]、慢性病增多等因素有关), 且婚姻压力的负面效应可能随时间累积, 导致不良婚姻质量对健康的损害在老年阶段被放大[45]。Choi等[47]发现, 婚姻关系中的伴侣支持在年长者(≥65岁)中具有更显著的健康保护效应。而本研究发现缺乏支持的伴侣关系(冷漠型)仅在<60岁人群中显著加速慢性病累积。由于本研究将婚姻/伴侣关系的积极和消极层面综合考虑, 该结果可能提示积极与消极层面之间存在交互作用。需要注意的是, 非同居伴侣关系在本研究中并未涉及, 已有研究指出其对身心健康的保护效应不及同居关系[48]。

本研究的主要优势在于: (1)首次探讨了婚姻/伴侣关系质量与中老年人慢性病累积速率的关联。并进一步按性别和年龄分层, 揭示了效应的异质性。(2)基于ELSA 16年随访数据, 对同一个体的慢性病数量进行多次重复测量, 能够观察个体内部慢性病的动态累积过程。伴侣类型分类依据现有文献, 具有充分的理论基础。(3)进行了多项敏感性分析, 结果与主分析结果基本一致, 验证了结果的稳健性。但本研究也存在一定局限性: 首先, 疾病信息为自我报告, 可能存在信息偏倚, 通常会系统性低估慢性病的真实患病率。因此, 本研究中关联的估计相对保守。其次, 部分伴侣类型样本量小, 可能影响模型统计效能。冷漠型伴侣关系在排除协变量缺失个体的敏感性分析中的加速效应未达到统计学显著性, 可能由于样本量减少导致统计把握度不足, 或该类型效应本身较弱, 因此该类型的结果需谨慎解读。此外, 不能完全排除反向因果关系与残余混杂(如遗传因素、早期逆境、协变量时变等)的可能性, 以及未考虑失访和死亡对慢性病数量随访观测的可能影响(如健康幸存者偏倚)。最后, 因数据限制未能纳入所有应测量的疾病种类(如消化系统、泌尿系统和肌肉骨骼疾病等)[49]; 以及样本来自英国, 外推性有限, 需在不同文化背景人群中验证。本研究未探讨伴侣关系质量影响慢性病累积的潜在中介机制以及不同类型疾病的细分影响, 有待未来研究进一步检验。

综上, 婚姻/伴侣关系质量是影响中老年人慢性病累积速率的重要因素。不良关系类型(矛盾型、冷漠型、厌恶型)及无伴侣状态均与累积加速相关, 女性更为敏感, 且存在年龄异质性。提示健康老龄化干预应关注中老年群体的婚姻/伴侣关系质量, 并针对不同性别和年龄段制定精准策略。

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作者贡献声明　陈睿负责论文构思、数据审编、正式分析、调查研究、研究方法、可视化、初稿写作和审读与编辑写作, 向毅负责数据审编和软件, 辛明伦负责验证和审读与编辑写作, 肖雄负责论文构思、经费获取、研究项目管理、提供资源和监督指导。所有作者已经同意将文章提交给本刊, 且对将要发表的版本进行最终定稿, 并同意对工作的所有方面负责。

Author Contribution　Chen Rui is responsible for conceptualization, data curation, formal analysis, investigation, methodology, visualization, writing--original draft, and writing--review and editing. Xiang Yi is responsible for data curation and software. Xin Minglun is responsible for validation and writing--review and editing. Xiao Xiong is responsible for conceptualization, funding acquisition, project administration, resources, and supervision. All authors consented to the submission of the article to the Journal. All authors approved the final version to be published and agreed to take responsibility for all aspects of the work.

利益冲突　所有作者均声明不存在利益冲突

Declaration of Conflicting Interests　All authors declare no competing interests.

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（2026－04－22收稿, 2026－06－23修回）

编辑 刘 华

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Editorial Office of *Journal of Sichuan University (Medical Sciences)*