·临床研究·

老年全膝关节置换术后康复训练依从性现状及其影响因素

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【摘 要】 **目的** 调查老年全膝关节置换术(TKA)患者术后康复依从性现状及其相关影响因素。**方法** 将2020年1月至2022年1月海南医学院第一附属医院收治的150例行TKA治疗的老年患者纳为研究对象,调查其出院后随访6个月内家庭康复训练依从性,并分析居家康复训练依从性对患者膝关节功能的影响。根据居家康复训练依从性量表得分,将患者分为高、中、低三个等级,并将高、中等级得分者纳为依从性良好组,低等级得分者纳为依从性不佳组。采用二元logistic回归模型分析影响老年TKA患者居家康复训练依从性的相关因素。采用SPSS 20.0软件进行数据分析。根据数据类型,组间比较分别采用t检验、单因素方差分析及χ^2检验。**结果** 共回收有效问卷133份,有效问卷回收率为88.67%。74例(55.64%)进行了下肢关节活动范围训练,51例(38.35%)进行了下肢肌肉力量训练,19例(14.29%)患者未进行家庭康复训练;11例(8.27%)患者未坚持训练1个月,67例(50.38%)患者坚持家庭康复训练1个月以上,26例(19.55%)患者坚持训练3个月以上,仅10例(7.52%)患者坚持训练6个月。高、中、低等级患者6个月后HSS量表得分均较出院时升高($P<0.05$)。6个月后,不同依从性等级患者美国特种外科医院膝关节(HSS)得分比较,差异均有统计学意义($P<0.05$);其中依从性优等者HSS得分高于中等者及差等者,依从性中等者HSS得分进一步高于差等者,差异均有统计学意义($P<0.05$)。行二元logistic回归分析观察到,婚姻状况($OR=1.738$,95%CI 1.224~2.469)、康复训练重要性认同感($OR=3.747$,95%CI 1.228~11.430)、害怕疼痛($OR=2.330$,95%CI 1.650~3.290)、社会支持水平($OR=0.263$,95%CI 0.091~0.759)、无人指导康复训练($OR=6.679$,95%CI 4.417~10.100)、出行不方便($OR=3.501$,95%CI 2.417~5.071)是影响其康复训练依从性的相关因素($P<0.05$)。**结论** 老年TKA患者术后家庭康复训练依从性普遍不高,婚姻状况、康复训练重要性认同感、害怕疼痛、社会支持水平、无人指导康复训练、出行不方便是影响其康复训练依从性的相关因素。

【关键词】 老年人;全膝关节置换术;家庭康复训练;依从性;影响因素
【中图分类号】 R684.3;R592 【文献标志码】 A 【DOI】 10.11915/j.issn.1671-5403.2024.09.146

Status quo and influencing factors of rehabilitation training compliance in elderly patients after total knee arthroplasty

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【**Abstract**】 **Objective** To investigate the status quo and its related influencing factors of postoperative rehabilitation compliance in elderly patients after total knee arthroplasty (TKA). **Methods** A total of 150 elderly patients receiving TKA treatment in our hospital between January 2020 and January 2022 were enrolled in this study. The compliance of home-based rehabilitation training within 6 months after discharge was investigated, and the effect of the rehabilitation training compliance on knee function was analyzed. According to rehabilitation compliance scale score, they were divided into high-, middle- and low-level grades, and then those with high-level and middle-level grades were assigned into good compliance group, while those with low-level grades into poor compliance group. Binary logistic regression model was applied to analyze the related factors of home-based rehabilitation training compliance in the elderly patients after TKA. SPSS statistics 20.0 was used for statistical analysis. Data comparison between two groups was performed using t test, One-way analysis of variance or χ^2 test depending on data type. **Results** In our survey, 133 valid questionnaires were obtained, with a recovery rate of 88.67%. Among them, 74 patients (55.64%) received motion training in lower limb joint range, 51 cases (38.35%) underwent strength training for lower limb muscle, and 19 patients (14.29%) did not carry out any home-based rehabilitation training. Eleven patients (8.27%) did not persist in training for 1 month, 67 patients (50.38%) persisted in home-based rehabilitation training for over 1 month, 26 patients (19.55%) persisted in training for more than 3 months, and only 10 patients (7.52%) persisted in training for 6 months. The hospital for special surgery knee (HSS) scale score was increased in all the patients with different compliance levels after 6 months than the score at discharge ($P<0.05$), and significant differences were

收稿日期:2023-08-23;**接受日期**:2023-11-28
基金项目:海南省卫生计生行业科研项目(20A200507)
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observed in the score after 6 months of training among the 3 compliance groups ($P<0.05$), with the high-level compliance group having the highest score, followed by the middle-level and then low-level compliance groups in order ($P<0.05$). Binary logistic regression analysis showed that marital status ($OR=1.738$, 95%CI 1.224-2.469), recognition of the importance of rehabilitation training ($OR=3.747$, 95%CI 1.228-11.430), fear of pain ($OR=2.330$, 95%CI 1.650-3.290), social support level ($OR=0.263$, 95%CI 0.091-0.759), no guidance for rehabilitation training ($OR=6.679$, 95%CI 4.417-10.100) and inconvenient travel ($OR=3.501$, 95%CI 2.417-5.071) were related factors affecting the rehabilitation training compliance ($P<0.05$). **Conclusion** The compliance of postoperative family rehabilitation training is generally not high in elderly patients after TKA. Marital status, recognition of the importance of rehabilitation training, fear of pain, social support level, no guidance for rehabilitation training, and inconvenient travel are related factors affecting the compliance of rehabilitation training.

【Key words】 aged; total knee arthroplasty; home-based rehabilitation training; compliance; influencing factors

This work was supported by the Scientific Research Project of Health and Family Planning Industry of Hainan Province (20A200507).

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全膝关节置换术(total knee arthroplasty, TKA)能有效改善终末期膝关节骨性关节炎(knee osteoarthritis, KOA)患者膝关节疼痛症状,但大部分患者 TKA 术后依旧存在关节活动受限、跛行、下肢无力等关节功能障碍表现[1]。术后康复训练是改善各种关节障碍,保障膝关节功能恢复的关键[2]。术后康复效果与患者家庭康复训练依从性间密切相关,目前关于影响老年 TKA 患者家庭康复训练依从性的相关因素的报道各不相同[3,4]。本研究对老年 TKA 患者术后家庭康复现状进行分析,以期了解老年 TKA 患者家庭康复训练依从性的影响因素,现将结果报道如下。

1 对象与方法

1.1 研究对象

开展前瞻性研究,选取 2020 年 1 月至 2022 年 1 月于海南医学院第一附属医院进行 TKA 治疗的患者作为研究对象。

纳入标准:年龄≥65 岁;入院时诊断为膝骨关节炎;初次行单侧 TKA 治疗;可行家庭康复训练;具有良好的读写能力,可配合完成问卷调查。排除标准:合并肝肾功能不全;合并精神或智力障碍,不能配合研究;合并其他严重慢性疾病;TKA 术后严重并发症(如髌骨关节不稳定、伸膝装置断裂、术中血管神经损伤等),影响术后康复锻炼。本研究经海南医学院第一附属医院伦理委员会批准,参与者均知情且同意(伦理批号:2020024)。

1.2 方法

1.2.1 家庭康复训练计划 TKA 术后家庭康复训练目的主要为增强膝关节肌力与关节活动度。其中肌力训练包括股四头肌及腘绳肌定位收缩、踝关节主动屈伸、阻抗运动和交替等长肌等张收缩、行走及辅助上下楼训练等;关节活动度训练包括直腿抬高、膝关节主动/被动屈伸、抱膝下蹲、抗阻力伸屈膝训练等。教导患者借助常见的家居用品开展训练,每次训练 30 min,每天 3 次,训练至出院后 6 个月回院复诊。

1.2.2 资料收集方法 一般人口学及疾病相关资料通过查阅患者病历获得,其他资料通过门诊复诊当面访谈、邮件、电话随访、微信等多种形式获得。资料收集步骤如下。(1)设计调查问卷前,查阅大量文献,充分咨询骨科专家,以确保资料收集的全面性与准确性。(2)统一培训调查人员,通过医院病案管理系统查阅被研究者相关资料并记录。(3)联系被研究对象,向其解释研究的目的、意义与保密性。(4)预留患者及其家属电话、微信、邮箱及家庭住址等联系方式,便于后期随访,患者回院复诊时为其开放绿色通道,鼓励其定期回院复诊。(5)调查问卷收集方式及时间。患者出院时,完成第一次问卷调查,对其一般人口学资料、病历资料、康复训练认知及态度、疾病不确定感、社会支持水平、康复自我效能及不良情绪进行统计;随访 6 个月,随访期间内,每隔 1 个月进行一次电话或微信视频随访,或在患者门诊复诊时,对其家庭康复训练依从性进行调查;出院后 6 个月回院复诊时,统计其训练依从性,并评估患者康复效果,骨科医师采用美国特种外科医院膝关节(hospital for special surgery knee, HSS)[11]评分评估膝关节功能。

1.2.3 质量控制 严格按照纳入及排除标准筛选研究对象,调查过程采用被试者自愿填写的方式,若被试者因视力或文化程度影响无法填写,则由调查者逐项阅读题目并根据被试者回复代为填写。该过程中避免引导性用词,当场回收调查问卷,排除漏填、误填问卷,确保问卷真实性及准确性,采用双人录入方式确保问卷录入不重不漏。

1.2.4 康复训练停止的原因 通过询问患者本人及其主要照顾者,收集患者停止康复训练的原因,包括无人指导、出行不方便、无体能执行康复锻炼方案、无康复锻炼动力、无时间、经济条件等。

1.3 研究工具

1.3.1 一般资料调查 自行设计问卷,调查患者性别、年龄、文化程度、居住地、婚姻状况、医疗支付方式、经济收入、膝骨关节炎病程、基础性疾病以及患者术后疼痛状况。

1.3.2 家庭康复训练依从性 参考相关文献[5]，制定家庭康复训练依从性量表。量表包括训练动作、训练次数、训练时间、训练频率、是否能主动进行训练、主动寻求帮助等11个条目，分为身体锻炼（条目1~5）、锻炼监督（条目6~8）以及主动寻求帮助（9~11）三个维度，各条目得分1~4分，分别表示做不到、偶尔可以做到、基本可做到及完全可做到。按照得分分为高（总得分≥33分）、中（总得分22~33分）、低（总得分<22分）三个等级。本研究将高、中等级得分者纳为依从性良好组，低等级得分者纳为依从性不佳组。

1.4 评估工具表

采用科室自制量表，了解患者对康复训练的相关态度。评估项目包括康复训练方法掌握程度、重要性认同、预期效果、害怕疼痛、担心关节移位以及关节肿胀、关节不适应感。采用疾病不确定感量表（Mishel uncertainty in illness scale, MUIS）评估患者疾病不确定感，量表得分越高，疾病不确定感越高[6]。采用肖水源等制定的社会支持评定量表（social support rating scale, SSRS）调查患者社会支持水平，量表总得分66分，得分越高，社会支持程度越高[7]。采用美国Waldrop等基于Bandura的自我效能理论研制的康复自我效能感量表（self-efficacy rehabilitation, SER）评估患者康复自我效能感，得分越高，自我效能感越强[8]。采用焦虑自评量表（self-rating anxiety scale, SAS）[9]及抑郁自评量表（self-rating depression scale, SDS）[10]评估患者焦虑及抑郁状况。

1.5 统计学处理

采用SPSS 20.0统计软件进行数据分析。符合正态分布的计量资料用均数±标准差（$\bar{x}\pm s$）表示，两组间行独立样本t检验，干预前后行配对样本t检验；多组间计量资料行单因素方差分析，两两比较采用LSD-t检验。计数资料用例数（百分率）表示，采用χ^2检验。采用logistic回归模型分析影响患者依从性的相关因素。$P<0.05$为差异有统计学意义。

2 结 果

2.1 家庭康复项目及坚持时间调查

排除漏填、误填问卷后，共回收133份有效问卷，有效问卷回收率为88.67%。133例患者中有74例（55.64%）进行了下肢关节活动范围训练，51例（38.35%）进行了下肢肌肉力量训练，19例（14.29%）患者未进行家庭康复训练；11例（8.27%）患者未坚持训练1个月，67例（50.38%）患者坚持家庭康复训练1个月以上，26例（19.55%）患者坚持训练3个月以上，仅10例（7.52%）患者坚持训练6个月。

2.2 老年TKA患者家庭康复训练依从性调查结果

老年TKA手术患者术后家庭康复训练依从性得分平均（26.05±3.46）分，量表各维度条目均分从高到低排序依次是：身体锻炼、锻炼监督、主动寻求帮助（表1）。其中依从性优等者15例（11.28%），中等者88例66.17%），差等者30例（22.56%）。

表1 老年TKA患者家庭康复训练依从性调查结果

Table 1 Investigation results of family rehabilitation training compliance in elderly TKA patients

Dimension	Scoring range (points)	Actual score (points, $\bar{x}\pm s$)	Average score of items (points, $\bar{x}\pm s$)	Rank
Physical exercise	5-20	12.25±2.15	2.45±0.36	1
Exercise supervision	3-12	7.13±1.34	2.38±0.41	2
Actively seeking help	3-12	6.67±1.41	2.22±0.32	3

TKA: total knee arthroplasty.

2.3 家庭康复训练依从性对老年TKA患者膝关节功能的影响

3组患者6个月后HSS量表得分均较出院时升高（$P<0.05$）。6个月后，不同依从性等级患者HSS得分比较，差异均有统计学意义（$P<0.05$）；其中依从性高等者HSS得分高于中等者及差等者，依从性中等者HSS得分进一步高于低等者，差异均有统计学意义（$P<0.05$；表2）。

表2 家庭康复训练依从性对老年TKA患者膝关节功能的影响

Table 2 Comparison of knee function in elderly TKA patients with different family training compliance conditions

（points, $\bar{x}\pm s$）

Group	n	At discharge	After 6 months
Low compliance	30	46.33±11.15	66.28±13.27$^{\triangle}$
Moderate compliance	88	47.15±12.37	75.15±12.57$^{*\triangle}$
Excellent compliance	15	46.87±12.45	84.03±12.17$^{*\#\triangle}$
F		0.054	21.967
P value		0.947	<0.001

TKA: total knee arthroplasty. Compared with low compliance group, $^{*}P<0.05$; compared with moderate compliance group, $^{\#}P<0.05$; compared with at discharge in the same group, $^{\triangle}P<0.05$.

2.4 影响老年TKA患者家庭康复训练依从性的单因素分析

单因素分析提示，依从性不佳组患者非再婚状态患者占比、居住在农村占比、害怕疼痛程度、关节不适感、MUIS评分、SDS评分、无人指导康复训练患者占比、出行不方便患者占比、无体能执行康复训练方案患者占比、无康复训练动力患者占比均高于依从性良好组，家庭月收入、对康复训练重要性的认同度、SSRS评分、SER评分均低于依从性不佳组，差异均有统计学意义（$P<0.05$）；两组其余资料比较，差异均无统计学意义（表3）。

表 3 影响老年 TKA 患者家庭康复训练依从性的单因素分析

Table 3 Univariate analysis of family rehabilitation training compliance in elderly TKA patients

Factor	Good compliance group (n=103)	Poor compliance group (n=30)	t/χ^2	P value
Gender[n(%)]			2.171	0.141
Male	50(48.54)	10(33.33)		
Female	53(51.46)	20(66.67)		
Age[n(%)]			2.938	0.087
65–75 years	66(64.08)	14(46.67)		
≥75 years	37(35.92)	16(53.33)		
Education level[n(%)]			1.607	0.448
Primary school and below	56(54.37)	15(50.00)		
Middle school	30(29.13)	12(40.00)		
College and above	17(16.50)	3(10.00)		
Marital status[n(%)]			18.304	<0.001
Married	75(72.82)	9(30.00)		
Unmarried	28(27.18)	21(70.00)		
Medical payment method[n(%)]			0.985	0.611
Medical insurance	70(67.96)	18(60.00)		
Self-paying	25(24.27)	10(33.33)		
Others	8(7.77)	2(66.67)		
Accompanying disease[n(%)]			4.000	0.135
None	15(14.56)	7(23.33)		
1 type	52(50.49)	18(60.00)		
≥ 2 types	36(34.95)	5(16.67)		
Surgical side[n(%)]			0.374	0.541
Left	45(43.69)	15(50.00)		
Right	58(56.31)	15(50.00)		
Family monthly income[n(%)]			12.984	0.002
<3 000 yuan	21(20.39)	16(53.34)		
3 000–<5 000 yuan	32(31.07)	7(23.33)		
≥5 000 yuan	50(48.54)	7(23.33)		
Place of residence[n(%)]			4.522	0.003
Urban area	50(48.54)	8(26.67)		
Rural area	53(51.46)	22(73.33)		
Main caregiver[n(%)]			0.345	0.842
Spouse	60(58.25)	17(56.67)		
Children	36(34.95)	10(33.33)		
Others	7(6.80)	3(10.00)		
Understanding of rehabilitation training method[n(%)]			2.483	0.289
Full	13(12.62)	7(23.33)		
Basic	56(54.37)	16(53.34)		
No	34(33.01)	7(23.33)		
Recognition of importance of rehabilitation training[n(%)]			21.921	<0.001
Yes	26(25.24)	2(6.67)		
Uncertain	63(61.17)	12(40.00)		
No	14(13.59)	16(53.33)		
Fear of pain[n(%)]			12.534	0.002
Often	27(26.21)	18(60.00)		
Occasionally	55(53.40)	11(36.67)		
Never	19(18.45)	1(3.33)		
Worrying about joint displacement[n(%)]			0.025	0.988
Often	20(19.42)	6(20.00)		
Occasionally	60(58.25)	17(56.67)		
Never	23(22.33)	7(23.33)		
Joint swelling[n(%)]			0.954	0.621
Often	25(24.27)	9(30.00)		
Occasionally	61(59.22)	18(60.00)		
Never	17(16.50)	3(10.00)		
Joint discomfort[n(%)]			7.436	0.024
Often	25(24.27)	12(40.00)		
Occasionally	33(32.04)	13(43.33)		
Never	45(43.69)	5(16.67)		
MUIS(points, $\bar{x}\pm s$)	54.36±10.15	62.12±12.74	3.471	<0.001
SSRS(points, $\bar{x}\pm s$)	41.15±6.15	30.15±5.15	8.921	<0.001
SER(points, $\bar{x}\pm s$)	90.15±12.15	83.15±11.79	2.795	0.006
SAS(points, $\bar{x}\pm s$)	41.12±7.18	42.77±8.14	1.074	0.285
SDS(points, $\bar{x}\pm s$)	37.58±6.45	43.59±7.15	4.382	<0.001
No guidance for rehabilitation training[n(%)]	44(42.72)	24(80.00)	12.923	<0.001
Inconvenient travel[n(%)]	36(34.95)	21(70.00)	11.654	<0.001
No physical ability to carry out rehabilitation training regimen[n(%)]	20(19.42)	17(56.67)	16.054	<0.001
No motivation for rehabilitation training[n(%)]	17(16.50)	13(43.33)	9.573	0.002
No time for rehabilitation training[n(%)]	10(9.71)	3(10.00)	0.002	0.962

MUIS: Mishel uncertainty in illness scale; SSRS: social support rating scale; SER: self-efficacy rehabilitation; SAS: self-rating anxiety scale; SDS: self-rating depression scale.

2.5 影响老年 TKA 患者家庭康复训练的多因素回归分析

将患者家庭康复训练依从性作为因变量，单因素中有意义的指标作为自变量，多因素回归分析提示，婚姻状况、康复训练重要性认同感、害怕疼痛、社会支持水平、无人指导康复训练、出行不方便是影响其康复训练依从性的相关因素（$P<0.05$；表4）。

3 讨 论

康复训练是保障 TKA 患者术后下肢功能恢复的关键，有研究表示，术后康复训练依从性与患者关节功能恢复速度呈正比[12]。术后康复训练依从性不佳将降低肌肉力量，增加关节僵硬与关节功能障碍发生风险[13]。本研究调查发现，老年 TKA 患者术后主要以下肢关节活动范围训练为主，但训练坚持时间普遍不长。后期随访发现，患者家庭康复依从性越高，其出院 6 个月后膝关节功能越好。说明良好的康复训练依从性在保障 TKA 患者术后膝关节功能恢复效果中极为重要。但本研究中，老年 TKA 患者术后家庭康复训练依从性多处于中差等水平（78.67%），依从性优等者仅占比 10%。

本研究发现，婚姻状况、害怕疼痛、康复训练重要性认同感、社会支持水平、无人指导康复训练、出行不方便是影响老年 TKA 患者家庭康复训练依从性的相关因素，具体原因如下。（1）婚姻状态：与非在婚状态的老年患者相比，在婚状态者可从配偶处获得更多的支持，这有助于提高患者的精神及生理面貌，进而促进康复训练依从性。与 Trief 等[14]研究结论一致。（2）害怕疼痛：相关研究表明，害怕疼痛是导致髋膝关节置换术患者术后康复训练依从性低的重要原因[15]。膝关节置换术后存在一定的疼痛感，但若患者夸大疼痛感知强度，将引发疼痛恐惧，增加疼痛感知灵敏性，对康复训练产生抵触心理，降低训练依从性。（3）康复训练重要性认同感：TKA 术后康复训练周期长，患者需储备足够的康复训练知识及技能，而缺乏康复训练重要性认知，将降低患者主动学习并储备相关知识的积极性，降低训练依从性[16]。（4）社会支持水平：社会支持水平是指个体利用周边外部资源降低创伤事件对自身的应激反应。高水平的社会支持可提高患者术后训练依从性。（5）无人指导康复训练与出行不方便：无人指导康复训练对患者家庭康复训练依从性的影响最大（$OR=6.679$，95%CI 4.417～10.100）；有研究显示，这也是 TKA 患者中断康复训练的主要原因[17]。由于各种原因，患者出院后可利用的医疗资源少，康复训练相关知识储备少，多数患者主要通过回院复诊获取康复训练相关信息，而部分患者术后行动不便、出行困难，不能按时回院复诊，导致医师不能帮助其及时调整训练计划，进行康复训练宣教，进而降低患者居家训练依从性。随着互联网与移动设备的普及，已有研究利用互联网背景设计康复训练计划与监督平台，Blasco 等[18]研究显示，应用虚拟助手能有效提高老年 TKA 患者家庭康复训练依从性，提高其膝关节功能，减轻疼痛感。

针对以上研究结果，本研究建议重视非在婚状态的老年 TKA 患者家庭康复现状，为其提供更多的关心及训练支持；并向患者解释训练及关节康复过程中存在疼痛是正常现象，帮助患者理性看待疼痛，鼓励其克服疼痛，坚持康复训练；并通过发放小册、录制康复训练视频、微信公众号等方式，增强患者对康复训练重要性的认识；采用家庭访问、微信视频等方式，为不方便出行的患者提供更多的训练指导；同时联合患者家属，给予患者更多关心及支持，以提高老年 TKA 患者家庭康复训练依从性。

表4 影响老年 TKA 患者家庭康复训练的多因素回归分析

Table 4 Multivariate regression analysis of family rehabilitation training in elderly TKA patients

Factor	β	SE	$Wald\ \chi^2$	OR	P value	95%CI
Marital status	0.553	0.179	9.544	1.738	0.002	1.224-2.469
Family monthly income	-0.711	0.451	2.485	0.491	0.116	0.203-1.189
Recognition of importance of rehabilitation training	1.321	0.569	5.390	3.747	0.021	1.228-11.430
Fear of pain	0.846	0.176	23.106	2.330	<0.001	1.650-3.290
Joint discomfort	0.469	0.258	3.305	1.598	0.070	0.964-2.650
Disease uncertainty	0.789	0.411	3.685	2.201	0.056	0.984-4.926
Social support level	-1.336	0.541	6.098	0.263	0.014	0.091-0.759
Self-efficacy level	-0.711	0.368	3.733	0.491	0.054	0.239-1.010
Depression score	1.366	0.788	3.005	3.920	0.084	0.837-18.366
No guidance for rehabilitation training	1.899	0.211	81.000	6.679	<0.001	4.417-10.100
Inconvenient travel	1.253	0.189	43.952	3.501	<0.001	2.417-5.071
No physical ability to carry out rehabilitation training regimen	0.658	0.411	2.563	1.931	0.110	0.863-4.321
No motivation for rehabilitation training	0.458	0.311	2.169	1.581	0.142	0.859-2.908

TKA：total knee arthroplasty.

但本研究所纳入的研究样本量较少,所得结论可能存在偏倚,且属于单中心研究,为增强研究结论的可靠性,还需开展大样本多中心研究。

综上,老年 TKA 患者术后家庭康复训练依从性普遍不高,患者对康复训练依从性的认识、害怕关节疼痛、社会支持水平以及无人指导康复训练与出行不便影响其依从性。

【参考文献】

[1] Kurihara Y, Ohsugi H, Choda K, *et al*. Relationships between early postoperative gait biomechanical factors and patient-reported outcome measures 6 months after total knee arthroplasty[J]. Knee, 2021, 28: 354-361. DOI: 10.1016/j.knee.2020.12.021.

[2] 刘思雨, 戴付敏, 蒋梦蝶, 等. 老年全膝关节置换患者疾病感知与居家康复依从性的关系研究[J]. 护理管理杂志, 2021, 21(10): 721-725. DOI: 10.3969/j.issn.1671-315x.2021.10.008.

[3] Terradas-Monllor M, Ochandorena-Acha M, Beltran-Alacreu H, *et al*. A feasibility study of home-based preoperative multimodal physiotherapy for patients scheduled for a total knee arthroplasty who catastrophize about their pain[J]. Physiother Theory Pract, 2023, 39(8): 1606-1625. DOI: 10.1080/09593985.2022.2044423.

[4] 梁玉, 李艳芳, 乔娜. 老年全膝关节置换术患者术后康复训练依从性观察及其影响因素[J]. 中华老年多器官疾病杂志, 2024, 23(5): 341-345. DOI: 10.11915/j.issn.1671-5403.2024.05.073.

[5] 赵改云, 许燕玲. 人工关节置换术后康复训练依从性测量工具的研究现状[J]. 护理研究, 2019, 33(2): 294-298. DOI: 10.12102/j.issn.1009-6493.2019.02.026.

[6] Cal A, Aydin Avci I. Turkish adaptation of the Mishel uncertainty in illness scale-community form[J]. Perspect Psychiatr Care, 2021, 7(4): 2006-2013. DOI: 10.1111/ppc.12874.

[7] Li N, Yao X, Ji H. Relationships among disease knowledge, social support, anxiety and self-efficacy in patients after total knee arthroplasty: a chain mediating effect[J]. Nurs Open, 2023, 6(8): 113-122. DOI: 10.1002/nop2.1723.

[8] Wang Q, Hunter S, Lee RL, *et al*. Mobile rehabilitation support *versus* usual care in patients after total hip or knee arthroplasty: study protocol for a randomised controlled trial[J]. Trials, 2022, 23(1): 553-566. DOI: 10.1186/s13063-022-06269-x.

[9] Alesi D, Meena A, Fratini S, *et al*. Total knee arthroplasty in valgus knee deformity: is it still a challenge in 2021?[J]. Musculoskelet Surg, 2022, 106(1): 1-8. DOI: 10.1007/s12306-021-00695-x.

[10] Wang Y, Liu Y, Li X, *et al*. Prospective assessment and risk factors of sleep disturbances in total hip and knee arthroplasty based on an enhanced recovery after surgery concept[J]. Sleep Breath, 2021, 25(3): 1231-1237. DOI: 10.1007/s11325-020-02213-y.

[11] Bade MJ, Christensen JC, Zeni JA Jr, *et al*. Movement pattern biofeedback training after total knee arthroplasty: randomized clinical trial protocol[J]. Contemp Clin Trials, 2020, 91(7): 973-982. DOI: 10.1016/j.cct.2020.105973.

[12] 李柳. 老年人工髋关节置换术后康复锻炼依从性与疗效相关性分析[J]. 医学信息, 2014, 27(38): 106. DOI: 10.3969/j.issn.1006-1959.2014.38.138.

[13] Crecelius CR, Van Landuyt KJ, Schaal R. Postoperative management for articular cartilage surgery in the knee[J]. J Knee Surg, 2021, 34(1): 20-29. DOI: 10.1055/s-0040-1718605.

[14] Trief PM, Ploutz-Snyder R, Britton KD, *et al*. The relationship between marital quality and adherence to the diabetes care regimen[J]. Ann Behav Med, 2004, 27(3): 148-154. DOI: 10.1207/s15324796abm2703_2.

[15] Rewald S, Lenssen AFT, Emans PJ, *et al*. Aquatic cycling improves knee pain and physical functioning in patients with knee osteoarthritis: a randomized controlled trial[J]. Arch Phys Med Rehabil, 2020, 101(8): 1288-1295. DOI: 10.1016/j.apmr.2019.12.023

[16] Lindberg MF, Aamodt A, Badawy M, *et al*. The effectiveness of exercise therapy and education plus cognitive behavioral therapy, alone or in combination with total knee arthroplasty in patients with knee osteoarthritis — study protocol for the MultiKnee trial[J]. BMC Musculoskelet Disord, 2021, 22(1): 1054. DOI: 10.1186/s12891-021-04924-z.

[17] Mehta SJ, Hume E, Troxel AB, *et al*. Effect of remote monitoring on discharge to home, return to activity, and rehospitalization after hip and knee arthroplasty: a randomized clinical trial[J]. JAMA Netw Open, 2020, 3(12): 328-336. DOI: 10.1001/jamanetworkopen.2020.28328.

[18] Blasco JM, Díaz-Díaz B, Igual-Camacho C, *et al*. Effectiveness of using a chatbot to promote adherence to home physiotherapy after total knee replacement, rationale and design of a randomized clinical trial[J]. BMC Musculoskelet Disord, 2023, 24(1): 491. DOI: 10.1186/s12891-023-06607-3.

(编辑: 温玲玲)