



患者门户系统在老年冠心病慢病远程管理中的应用及效果*

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【摘要】 目的 探讨基于患者门户系统(PPS)建立的个人电子健康记录(PHR)和慢性病管理平台在老年冠心病患者的应用及对自护能力、应对方式及生活质量的影响。方法 选取2019年1月–2021年6月某三甲医院收治的532例老年冠心病患者为研究对象,随机分为研究组269例和对照组263例。对照组患者进行常规出院办理和随访,研究组患者基于PPS建立的PHR和慢性病管理平台进行出院办理和随访。管理6个月、12个月、18个月后应用自护能力测评表(ESCA)、医学应对问卷(MCMQ)、西雅图心绞痛问卷(SAQ)对两组患者的自护能力、应对方式、生活质量,分析管理效果进行评价。结果 管理前,两组患者的各量表得分差异无统计学意义。管理6个月、12个月、18个月后,两组患者的ESCA量表评分均高于管理前($P<0.05$);两组患者MCMQ量表中面对维度评分高于管理前($P<0.05$),回避和屈服维度评分低于管理前($P<0.05$);两组患者SAQ量表评分均高于管理前($P<0.05$)。管理6个月、12个月、18个月后,研究组的ESCA量表评分均高于对照组($P<0.05$);研究组的面对维度评分高于对照组,回避和屈服维度评分低于对照组($P<0.05$);研究组的SAQ量表评分均高于对照组($P<0.05$)。研究组服药依从率为83.27%,高于对照组的69.96%($P<0.05$)。研究组不良心血管事件发生率为4.09%,低于对照组的10.27%($P<0.05$)。研究组急诊和再入院平均次数低于对照组($P<0.05$)。研究组患者满意度评分高于对照组($P<0.05$)。结论 基于PPS建立的PHR和慢性病管理平台可提高老年冠心病患者的就医便利性,有利于改善自护能力、应对方式和生活质量,管理效果良好。

【关键词】 冠心病 慢病管理 患者门户系统 个人电子健康记录 自护能力 应对方式 生活质量

Application and Effect of Patient Portal System in the Remote Management of Chronic Diseases for Older Adults With Coronary Heart Disease

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【Abstract】 Objective To investigate the application of personal health record (PHR) and chronic disease management platform established on the basis of patient portal system (PPS) in managing older adults with coronary heart disease and to examine the effect on patients' self-care ability, coping mode, and quality of life. **Methods** A total of 532 elderly patients with coronary heart disease were included in the study. All the participants enrolled were admitted to a tertiary-care hospital between January 2019 and June 2021. They were randomly assigned to the study group (269 cases) and the control group (263 cases). Patients in the control group were discharged with the routine discharge procedures and received the routine follow-up care. On the other hand, patients in the study group were discharged and followed up through the PHR and chronic disease management platform established on the basis of PPS. After 6 months, 12 months, and 18 months of patient management, the Exercise of Self-Care Agency (ESCA) Scale, Medical Coping Modes Questionnaire (MCMQ) and Seattle Angina Questionnaire (SAQ) were used to evaluate the patients' self-care ability, coping mode, and quality of life, respectively. The patient management effects of the two groups were analyzed. **Results** Before the management programs started, there was no statistically significant difference in the scores for the scales between the two groups of patients. After 6 months, 12 months, and 18 months of patient management, the ESCA scores of both groups were higher than those before patient management started ($P<0.05$). Facing scores in the MCMQ of both groups were higher than those before patient management started ($P<0.05$), while the scores for avoidance and yielding were lower than those before patient management started ($P<0.05$). The SAQ scores of both groups were higher than those before patient management started ($P<0.05$). After 6 months, 12 months and 18 months of patient management, the ESCA scores of the study group were always higher compared with those of the control group ($P<0.05$). The facing score of the study group was higher, while the scores for avoidance and yielding were lower compared with those of the control group ($P<0.05$). The SAQ scores of the study group were higher compared with those of the control group ($P<0.05$). The medication compliance rate in the study group (83.27%) was higher than that in the control group (69.96%) ($P<0.05$). The incidence of adverse cardiovascular events in the study group (4.09%) was lower

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than that in the control group (10.27%) ($P < 0.05$). The average times of emergency treatment and readmission in the study group were lower compared with those of the control group ($P < 0.05$). The patient satisfaction score of the study group was higher compared with that of the control group ($P < 0.05$). **Conclusion** The PHR and chronic disease management platform established on the basis of PPS can increase the convenient access to medical care among elderly patients with coronary heart disease, which is conducive to improving their self-care ability, coping mode, and quality of life. In addition, the patient management effect is good.

【Key words】 Coronary heart disease Chronic disease management Patient portal system
Personal health record Self-care ability Coping mode Quality of life

流行病学调查显示我国60岁以上人群冠心病患病率高达2.78%^[1]。冠心病是常见慢性病,患者需要长期服药治疗,给家庭、社会带来沉重的经济负担。我国冠心病慢性病管理还较为滞后,冠心病慢病健康档案的建立缺乏大数据支持,冠心病患者的自我管理能力和自我管理能力较低。基于患者门户系统(patient portal system, PPS)^[2]建立的个人电子健康记录(personal health records, PHR)^[3]和慢性病管理平台能够较好地解决上述问题,效果已得到国外多项研究验证^[4-5]。该平台通过PPS系统构建以患者为主索引的PHR,形成患者数字化健康信息交换并智能化分析,实施连续性、全病程的慢性病管理^[6-7]。为响应国家慢病一体化和数字化管理的号召,我们借鉴国外慢性病管理平台建设经验,搭建基于PPS的PHR和慢性病管理平台,以某三甲医院老年冠心病患者为例验证该平台在老年冠心病患者的应用及对自护能力、应对方式及生活质量的影响,报道如下。

1 对象与方法

1.1 研究对象

选取2019年1月-2021年6月某三甲医院收治的老年冠心病患者。纳入标准:①符合冠心病的诊断标准^[8];②年龄 ≥ 60 岁;③符合我国职工基本医疗保险或城乡居民基本医疗保险报销流程;④病情稳定,意识清楚,沟通交流无障碍;⑤能够熟练使用智能手机。排除标准:①肝肾功能不全;②中枢系统疾病;③骨折、脏器创伤、感染性疾病等;④合并哮喘、慢阻肺、肺纤维化、消化性溃

疡、病毒性肝炎、血液病、甲状腺疾病、结缔组织与风湿性疾病等;⑤生活自理能力差;⑥老年性痴呆;⑦精神病;⑧不配合研究者。本研究符合医院伦理委员会批准,审批号:伦审(研)2023年第44号,患者均已签署知情同意书。估算样本量为547例。本研究共纳入560例患者,采用随机数字表法进行随机分组,分为研究组和对照组各280例。本研究为随机对照双盲设计,患者及干预实施者均不知晓具体分组类别,由统计学专业人员进行编盲并保存盲底,研究结束后再揭盲。实际完成研究532例(失访脱落28例),其中研究组269例(失访脱落11例),对照组263例(失访脱落17例)。两组基线资料比较差异无统计学意义($P > 0.05$),详见表1。

1.2 方法

1.2.1 构建PPS和慢性病管理应用场景

利用WebSocket技术和区块链技术将物联网设备、患者管理端和PPS系统链接形成整体健康管理平台,将患者个人信息、门诊病史、住院信息利用md5加密技术进行信息加密处理,上传至PPS。通用工作模式见图1。

设计用户登录端,以微信公众号的形式展示,授权出院患者输入密码登录账号。设置患者可访问的数据权限,平台维护人员设置出院患者可下载的数据到PPS并通过医院提供的数字接口导出数据。

开发冠心病为例的慢病管理操作界面和功能模块,包括患者纳入模块、病情记录模块、医患交流模块、日程安排模块、医保结算模块、状态和结果模块。

在用户交互层面,为医生提供慢病管理操作界面,医

表1 两组患者基线资料比较

Table 1 Comparison of baseline data between the two groups of patients

Group	n	Sex/case (%)		Age/yr., $\bar{x} \pm s$	Body mass index/ (kg/m^2), $\bar{x} \pm s$	History of coronary heart disease/yr., $\bar{x} \pm s$	Education attainment/case (%)		
		Male	Female				Primary school and below	Junior high school	Senior high school and above
Study	269	179 (66.54)	90 (33.46)	69.33 \pm 5.36	23.05 \pm 1.47	4.88 \pm 1.25	86 (31.97)	108 (40.15)	75 (27.88)
Control	263	185 (70.34)	78 (29.66)	70.09 \pm 6.28	22.83 \pm 1.56	5.06 \pm 1.72	92 (34.98)	119 (45.25)	52 (19.77)
χ^2/t			0.888	1.492	1.689	1.405		4.834	
P			0.346	0.136	0.092	0.161		0.089	

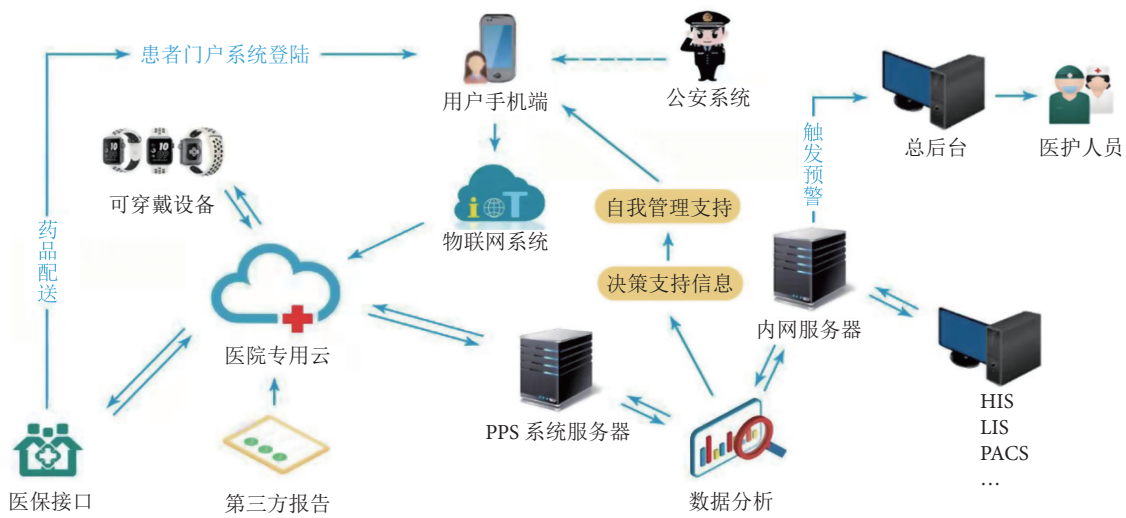


图 1 基于PPS建立的PHR和慢性病管理平台的通用工作模式

Fig 1 General working mode of the PHR and the chronic disease management platform constructed on the basis of PPS

生可根据患者信息结合医疗大数据建议,调整医嘱方案。护士可调整健康宣教内容,进行生活方式上的慢病管理,必要时双方可以直接进行在线交流辅导。

在软件接口层面,为健康管理呼叫中心、医生移动终端、患者移动终端提供软件服务远程接口。冠心病慢病管理路径见图2。慢性病管理平台的手机登录端见图3。

1.2.2 成立PPS慢病管理团队

团队成员13人,其中科主任1人、心内科专科医师3人(高、中、初级职称各1人)、心内科专科护士3人(高、中、初级职称各1人)、延续护理中心主管护师1人、医保审核

员1人、信息技术维护专员3人、医务科管理组长1人。团队所有人员进行规范化培训,培训内容包括冠心病的指南、诊疗、护理、并发症、随访等,规范慢病管理标准操作流程、应急管理。

1.2.3 方法

对照组患者按照传统方式进行出院办理和随访,护士在患者出院时进行出院健康宣教,指导患者至住院部结算处进行出院结算。患者出院后3 d护士电话随访。研究组基于PPS建立的PHR和慢性病管理平台进行出院办理和随访。对冠心病患者实施慢性病管理共18个月,

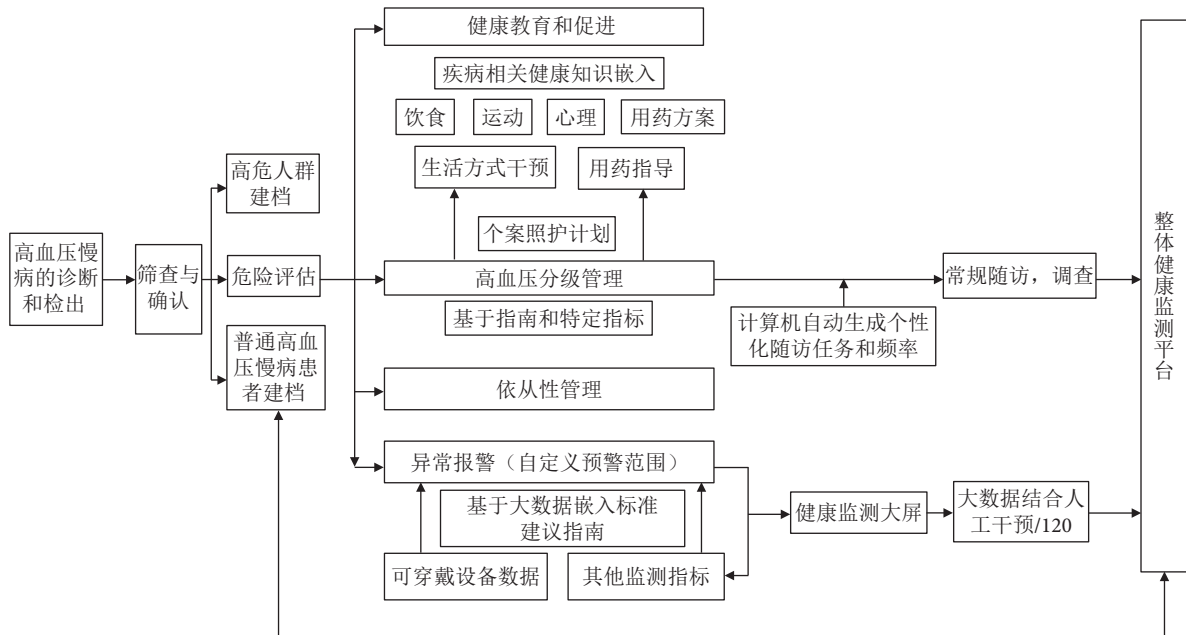


图 2 基于PPS建立的PHR和慢性病管理平台制定的冠心病慢病管理路径

Fig 2 Chronic disease management pathway for coronary heart disease developed through PHR and chronic disease management platform constructed on the basis of PPS



图 3 基于PPS建立的PHR和慢性病管理平台的手机登录端

Fig 3 The mobile phone login terminal of PHR and chronic disease management platform constructed on the basis of PPS

每隔6个月进行一次随访。

1.3 观察指标

管理前、管理6个月、管理12个月、管理18个月分别采用以下问卷和指标进行评价。

1.3.1 自护能力

应用自护能力测评表(Exercise Of Self-Care Agency, ESCA)^[9]。

1.3.2 应对方式

应用医学应对问卷(MCMQ)^[10]。

1.3.3 生活质量

应用西雅图心绞痛问卷(Seattle Angina Questionnaire, SAQ)^[11]。

1.3.4 管理效果

评价患者管理期间的服药依从率、不良心血管事件、急诊和再入院次数、患者满意度评分。不良心血管事件包括心肌梗死、房颤室颤、心力衰竭。自行编制患者满意度问卷,进行问卷调查。

1.4 统计学方法

使用SPSS 22.0统计分析软件。计量资料以 $\bar{x} \pm s$ 表示,两组数据间比较采用独立样本t检验、配对t检验。计数资料以例(%)表示,两组数据间比较采用 χ^2 检验。

$P < 0.05$ 为差异有统计学意义。

2 结果

2.1 两组患者管理前后的自护能力比较

管理前,两组患者ESCA量表评分比较差异无统计学意义($P > 0.05$)。管理6个月、12个月、18个月后,两组患者的ESCA量表评分均高于管理前($P < 0.05$)。研究组管理6个月、12个月、18个月后的ESCA量表评分均高于对照组($P < 0.05$),见表2。

2.2 两组患者管理前后的应对方式比较

管理前,两组患者MCMQ量表面对、回避、屈服各维度评分比较无差异($P > 0.05$)。管理6个月、12个月、18个月后,两组患者面对维度评分高于管理前($P < 0.05$),呈升高趋势;回避和屈服维度评分低于管理前($P < 0.05$),呈降低趋势。研究组管理6个月、12个月、18个月后的面对维度评分高于对照组,回避和屈服维度评分低于对照组($P < 0.05$),见表3。

2.3 两组患者管理前后的生活质量比较

见表4。管理前,两组患者SAQ量表评分比较,差异无统计学意义。管理6个月、12个月、18个月后,两组患者SAQ量表评分均高于管理前($P < 0.05$),呈升高趋势。

表 2 两组患者管理前后ESCA量表评分比较 ($\bar{x} \pm s$)

Table 2 Comparison of ESCA scores between the two groups of patients before and after patient management ($\bar{x} \pm s$)

Group	n	Before patient management	After 6 months of patient management	After 12 months of patient management	After 18 months of patient management
Study	269	98.76±23.18	120.93±31.75*	126.50±27.16*	127.43±25.82*
Control	263	101.53±25.33	114.18±26.73*	115.85±30.09*	117.30±29.33*
t		1.315	2.657	4.288	4.223
P		0.189	0.008	<0.001	<0.001

* $P < 0.05$, compared with before patient management.

表 3 两组患者管理前后MCMQ量表评分比较 ($\bar{x} \pm s$)Table 3 Comparison of MCMQ scores between the two groups of patients before and after patient management ($\bar{x} \pm s$)

Dimension	Group	<i>n</i>	Before patient management	After 6 months of patient management	After 12 months of patient management	After 18 months of patient management
Facing	Study	269	16.58±4.09	19.02±4.63*	20.14±4.35*	20.36±4.21*
	Control	263	17.04±4.25	18.11±3.59*	18.20±4.66*	18.45±4.70*
	<i>t</i>		1.267	2.532	4.976	4.939
	<i>P</i>		0.206	0.012	<0.001	<0.001
Avoidance	Study	269	16.89±4.24	15.17±4.04*	13.52±3.18*	13.27±4.05*
	Control	263	17.05±5.03	16.23±4.28*	15.87±4.26*	15.16±4.43*
	<i>t</i>		0.408	2.940	7.213	5.1353
	<i>P</i>		0.683	0.003	<0.001	<0.001
Yielding	Study group	269	10.33±2.58	8.42±2.61*	8.16±2.07*	7.79±1.86*
	Control group	263	9.98±2.34	9.05±2.52*	8.65±2.11*	8.32±2.03*
	<i>t</i>		1.622	2.825	2.725	3.128
	<i>P</i>		0.105	0.005	0.007	0.002

* $P < 0.05$, compared with before patient management of the same group.表 4 两组患者管理前后的SAQ量表评分比较 ($\bar{x} \pm s$)Table 4 Comparison of SAQ scores between the two groups of patients before and after patient management ($\bar{x} \pm s$)

Group	<i>n</i>	Before patient management	After 6 months of patient management	After 12 months of patient management	After 18 months of patient management
Study	269	51.18±10.82	60.37±9.25*	66.82±12.53*	70.14±10.77*
Control	263	50.56±11.43	55.12±10.89*	60.40±13.48*	63.02±14.59*
<i>t</i>		0.642	5.985	5.691	6.387
<i>P</i>		0.521	<0.001	<0.001	<0.001

* $P < 0.05$, compared with before patient management of the same group.

研究组管理6个月、12个月、18个月后的SAQ量表评分均高于对照组($P < 0.05$)。

2.4 两组患者管理效果比较

见表5。研究组服药依从率为83.27%，高于对照组的

69.96% ($P < 0.05$)。研究组不良心血管事件发生率为4.09%，低于对照组的10.27% ($P < 0.05$)。研究组急诊和再入院平均次数低于对照组 ($P < 0.05$)。研究组患者满意度评分高于对照组 ($P < 0.05$)。

表 5 两组患者管理效果比较

Table 5 Comparison of patient management effects between the two groups

Group	<i>n</i>	Medication compliance rate/case (%)	Adverse cardiovascular events/case (%)	Times of emergency treatment and readmission ($\bar{x} \pm s$)	Patient satisfaction score ($\bar{x} \pm s$)
Study	269	224 (83.27)	11 (4.09)	3.81±0.95	84.25±12.14
Control	263	184 (69.96)	27 (10.27)	5.06±1.27	77.62±10.50
χ^2/t		13.178	7.650	12.902	6.744
<i>P</i>		<0.001	0.006	<0.001	<0.001

3 讨论

本研究借鉴国外慢性病管理平台建设经验,在成都市某三甲医院搭建基于PPS的PHR和慢性病管理平台,对

老年冠心病患者开展为期18个月的管理和随访。结果显示,管理前老年冠心病患者的ESCA和SAQ量表评分处于较低水平,实施慢性病管理后,老年冠心病患者的ESCA和SAQ量表评分显著增加,说明基于PPS的PHR和

慢性病管理能够有效提升老年冠心病患者的自护能力,改善生活质量,慢病管理效果良好。

在应对方式和生活质量上,本研究发现老年冠心病患者在应对疾病时采取面对的应对评分低于常模,而回避和屈服的应对评分高于常模,说明老年冠心病患者更倾向于采取回避和屈服的应对方式。这可能是因为患者角色的改变引起患者心理上的变化,疾病导致经济、家庭、工作出现改变,加上冠心病要求健康的饮食运动方式与患者原来的生活方式相差较大,患者较难做出改变,部分患者存在消极情绪,采取回避和屈服的方式^[12]。本研究在实施PPS的PHR和慢性病管理平台管理后,患者的应对评分升高,回避和屈服的评分降低,说明应用该平台的慢病管理同样有助于促使患者采取更加积极的应对方式,这与张晓雅等^[13]研究报道相符。吴雪娟等^[14]研究实施冠心病慢病管理,干预后冠心病患者的应对方式问卷评分明显提高,西雅图心绞痛量表评分明显提高,上述说明良好的冠心病慢病管理模式能够提高生活质量。本研究也显示研究组管理后的生活质量高于对照组,与上述研究观点相似,说明基于PPS的PHR和慢性病管理有利于促进冠心病恢复,提高生活质量。

基于PPS的PHR和慢性病管理平台为患者提供了一个自助服务平台,患者可以使用手机自主登录、查看个人健康信息和电子医疗记录、预约就诊、通过智能穿戴设备实施生命体征健康监控。医护人员通过实施健康教育、线上开药,制定个性化的诊疗方案,完善门诊-住院-随访的数字化慢病闭环管理。刘群等^[15]、林珠等^[16]研究发现慢病管理可以提高冠心病患者的服药依从性,并且有利于降低冠心病患者的急诊再入院率。本研究结果显示,在管理后老年冠心病患者的服药依从率提高,不良心血管事件发生率降低,急诊和再入院平均次数也降低,患者满意度较高。这是因为本研究构建的PPS系统联合远程慢性病管理平台具有实时监测、智能预警、远程监护等功能,患者可同步通过可穿戴智能设备了解自我生命体征紧急信息。当疾病发病风险较高时系统及时通过可穿戴智能设备向患者做出预警,医务人员通过后台查看系统紧急情况下发出的急救信号及时对接或联系院前急救。

综上所述,基于PPS建立的PHR和慢性病管理平台可提高老年冠心病患者的就医便利性,有利于改善自护能力、应对方式和生活质量,管理效果良好。从国家层面而言,健全基于PPS的PHR和慢性病管理平台对完善公共卫生医疗体系、促进慢性病的预防和管理具有积极意义,可供借鉴。

* * *

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