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医学模拟教学结合以问题为导向的教学模式在重症医学教学中的应用研究

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摘要 目的:探讨医学模拟教学结合以问题为导向(PBL)的教学模式在重症医学教学中的应用价值。**方法:**选取 2015 年 1 月~2017 年 1 月在我院重症医学科轮转实习的五年制医学生 64 人作为研究对象。按随机数字表法将 64 名医学生分为 PBL 组(n=32)和结合教学组(n=32)。PBL 组采用 PBL 教学,结合教学组采用医学模拟结合 PBL 教学。分别在入科时和轮转实习结束时对两组学员进行理论考试和技能操作考核,记录成绩并比较。理论考试和技能操作考核后采取发放问卷进行调查的形式获得学员对教学效果的主观评价。**结果:**轮转实习结束时,两组理论考试分数差异无统计学意义($P>0.05$);而结合教学组技能操作考核成分数显著高于 PBL 组,差异具有统计学意义($P<0.05$)。两组学员在教学方法接受度高、学习兴趣提升、自学能力提升和临床诊疗水平提高所占比例差异无统计学意义($P>0.05$);结合教学组学员在团队协作能力提高、沟通能力与人文关怀提高和技能操作水平提高所占比例高于 PBL 组,差异有统计学意义($P<0.05$)。**结论:**与单独 PBL 教学相比较,医学模拟教学结合 PBL 的教学模式应用于重症医学教学对学员技能操作的掌握有更好的效果,同时能提高学员团队协作能力、沟通能力以及对患者的人文关怀,且受到学员的认同与喜爱,应在重症医学的教学实践中逐步完善并进一步推广应用。

关键词:医学模拟教学;以问题为导向的教学;教学模式;重症医学

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Application of Simulation-based Medical Education Combined with Problem-based Learning Teaching Model in Education of Critical Care Medicine

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ABSTRACT Objective: To investigate the application value of simulation-based medical education combined with problem-based learning (PBL) teaching model in education of critical care medicine. **Methods:** A total of 64 five-year medical students, who were practised in department of critical care medicine by turns from January 2015 to January 2017, were chosen and randomly divided into PBL group (n=32) and combined teaching group (n=32). PBL teaching model was used in the PBL group, while simulation-based medical education combined with PBL teaching model was used in the combined teaching group. Theoretical examination and skills assessment were carried out when students entered the department and at the end of rotation practice, and the scores of the two group were recorded and compared. After theoretical examination and skills assessment, questionnaires were used to obtain the subjective evaluation of the teaching effect. **Results:** After rotation practice, there was no significant difference in the theoretical test scores between the two groups ($P>0.05$), while the skills assessment scores of combined teaching group were higher than those of PBL group, the difference was statistically significant ($P<0.05$). There were no significant differences in the proportions of high acceptance of teaching methods, improvement of learning interest, improvement of self-learning ability and improvement of clinical diagnosis and treatment between the two groups ($P>0.05$). The improvement of team cooperation ability, communication ability and humanistic care and clinical skills of the combined teaching group were higher than those of the PBL group, the difference was statistically significant ($P<0.05$). **Conclusion:** Compared with individual PBL teaching, application of the simulation-based medical education combined with PBL teaching model in the education of critical care medicine has a better effect on the students' clinical skills and can improve students' teamwork ability, communication ability and humanistic care to patients, which has been recognized and loved by the students. It should be perfected and popularized in the teaching practice of critical care medicine.

Key words: Simulation-based medical education; Problem-based learning; Teaching model; Critical care medicine

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前言

重症医学是一门研究和治疗危重症的对应用性与实践性要求很高的临床医学学科^[1]。患者病情发展至重症时,往往已经不再是单纯某一个器官或系统的问题,因此有别于一般的临床医学,重症医学涉及多学科交叉,具有很强的综合性^[2-3]。重症医学的服务对象均为危重病人,诊疗活动均涉及患者的生命安全,因此医学生往往很难直接进行观摩与学习,也无法得到练习和机会^[4]。医学模拟教学是通过模拟出高仿真的患者以及高真实度的临床情境,以代替真实患者来进行临床教学和实践的一种方法,其在各个临床二级学科教学的应用均取得了较好的效果^[5-7]。以问题为导向的教学(problem-based learning, PBL)将临床问题作为讲授的基础,有研究报道^[8,9],将 PBL 运用在重症医学学科的教学,能明显提高医学生学习的积极性、创造性,并提高其解决实际问题的能力。本研究采用医学模拟教

学与 PBL 结合与单纯的 PBL 教学模式进行对比,以期为重症医学学科教学提供新的方法和思路。

1 资料和方法

1.1 一般资料

选取 2015 年 1 月~2017 年 1 月在我院重症医学科轮转实习的五年制医学生 64 人作为研究对象。纳入标准:① 学生均知情且同意;② 入科考试理论成绩与技能考核成绩均 >60 分;③ 已在我院其他科室实习 2 个月以上。排除标准:① 中途退出者;② 对带教老师安排不服从者。按随机数字表法将 64 名医学生分为 PBL 组(采用 PBL 教学,32 例)和结合教学组(采用医学模拟结合 PBL 教学,32 例)。两组医学生的性别、年龄、入科时理论考试成绩与技能考核成绩比较均无统计学差异($P>0.05$),可比性良好。见表 1。

表 1 两组医学生一般资料对比

Table 1 Comparison of general data between two groups

Groups	Cases	Gender(male/female)	Age(years)	Theoretical examination score when entered department(scores)	Skills assessment score when entered department (scores)
PBLgroup	32	15/17	21.84± 0.46	76.46± 6.31	69.87± 4.16
Combined teaching group	32	16/16	21.70± 0.51	75.97± 6.47	70.41± 4.12
X ² /t	-	0.250	1.153	0.307	-0.522
P	-	0.617	0.253	0.760	0.604

1.2 教学方法

教学开始前均告知两组医学生将要采用的教学方法,使其对所采用的教学模式有一定程度的认识。两组由 5 名我院的高年资医师共同授课。

1.2.1 PBL 组教学方法

PBL 组采用单纯的 PBL 教学模式:① 课前准备:课前将学员按 4-6 人分组,带教老师根据教学大纲及重症医学科常见、典型的病症选择案例和提出中心问题;学员课前预习教学内容,并根据提出的问题自行查阅相关资料,并将查阅到的内容以及遇到的问题做好记录;② 小组讨论:学员交流各自得到的信息以及遇到的问题,讨论结束后小组推选出一名代表,对讨论结果进行总结,并给出课前问题的解决方案,以及提出讨论过程中未解决的问题;③ 归纳总结:带教老师对学员所给出的方案进行点评,并就讨论过程中的问题进行补充讲解。

1.2.2 结合教学组教学方法

结合教学组在 PBL 教学的基础上结合医学模拟进行教学:PBL 教学方法与 PBL 组相同,在讨论阶段增加医学模拟环节,通过构建与实际临床工作相似的情境,通过标准化病人扮演患者让学员共同参与诊疗过程,同时应用医学模拟人等道具培训学员的临床技能操作。

1.3 教学效果评价

教学效果的评价采用以理论考试和技能操作考试为主的客观评价和以问卷调查为主的主观评价。

1.3.1 理论考试与技能操作考核

理论考试采取闭卷的形式,满分为 100 分,所有试题均从题库随机抽取,且每次考试所选择的题目难度相当。技能操作考核试题由带教老师统一设计,以医学模拟人代替患者考核学员的操作技能,5 名老师现场评分取平均值,最高分 100 分。分别于两组学员入科时及轮转实习结束时进行理论考试和技能考核。

1.3.2 问卷调查

采取发放问卷进行调查的形式获得学员对教学效果的主观评价。问卷内容共 7 项,包括对教学方法接受情况、学习兴趣提高、自学能力提升、团队协作能力提高、沟通能力与人文关怀提高、临床诊疗水平提高和技能操作水平提高。问卷于理论考试和技能操作考核结束后发放,共计发放 64 份问卷并全部收回,且所回收的问卷均为有效问卷。

1.4 统计学方法

采用 SPSS19.0 软件对数据处理分析,学员年龄、理论考试成绩、技能考核成绩等计量资料用($\bar{x} \pm s$)的形式表示,采用双侧 t 检验,学员性别构成、问卷评价等计数资料以 n(%)的形式表示,采用 χ^2 检验。检验标准设置为 $\alpha=0.05$ 。

2 结果

2.1 两组理论考试与技能操作考核分数对比

轮转实习结束时两组均安排理论考试与技能操作考核。其中,两组理论考试分数差异无统计学意义($P>0.05$);而结合教

学组技能操作考核分数显著高于 PBL 组, 差异具有统计学意义($P < 0.05$)。见表 2。

表 2 两组理论考试与技能操作考核分数对比($\bar{x} \pm s$, 分)

Table 2 Comparison of theoretical examination and skill assessment scores between two groups($\bar{x} \pm s$, scores)

Groups	Cases	Theoretical examination scores	Skills assessment scores
PBLgroup	32	86.18± 8.74	75.31± 6.96
Combined teaching	32	87.63± 7.31	88.23± 6.18
t	-	-0.720	-7.852
P	-	0.474	0.000

2.2 两组问卷调查结果比较

两组均在理论考试与技能操作考核结束后进行问卷调查, 结果显示两组学员在教学方法接受度高、学习兴趣提升、自学能力提升和临床诊疗水平提高所占比例差异无统计学意义

($P > 0.05$); 结合教学组学员在团队协作能力提高、沟通能力与人文关怀提高和技能操作水平提高所占比例均高于 PBL 组, 差异有统计学意义($P < 0.05$)。见表 3。

表 3 两组问卷调查结果比较[n(%)]

Table 3 Comparison of questionnaire results between two groups [n(%)]

Survey items	PBLgroup(n=32)	Combined teaching group (n=32)	χ^2	P
High acceptance of teaching methods	28(87.50)	30(93.75)	0.736	0.391
Improvement of learning interest	29(90.63)	29(90.63)	0.000	1.000
Improvement of self-learning ability	30(93.75)	31(96.88)	0.349	0.554
Improvement of team cooperation ability	21(65.63)	30(93.75)	7.819	0.005
Improvement of communication ability and humanistic care	15(46.88)	26(81.25)	8.212	0.004
Improvement of clinical diagnosis and treatment	26(81.25)	29(90.63)	1.163	0.281
Improvement of clinical skills	19(59.38)	31(96.88)	13.166	0.000

3 讨论

近年来重症医学发展迅速, 对重症医学科人才的需求大量增加^[10]。然而由于传统临床教学的水平和环境不能满足重症医学科的教学、重症患者无法配合教学、临床实践教学难度大等诸多原因, 我国现阶段从事重症医学的医务工作者多来自其他临床科室^[11,12]。而专科医师虽然有良好的专业知识储备, 但其重症医学知识相对缺乏, 综合总结问题的能力也往往与重症医学科的要求有一定的差距^[13]。如何在教学资源缺乏的情况下培养出合格的重症医学人才, 成为重症医学人才培养的关键问题^[14]。

PBL 教学模式是以医学生为主体的一种教学模式, 它强调培养医学生解决具体临床问题的能力^[15]。与传统教学中教师向医学生灌输知识的模式不同, PBL 教学模式充分调动学员学习的主动性、积极性^[16]。学员自主地对具体临床问题探讨解决, 在此过程中临床思维得到培养, 并对全面了解疾病的发生、发展以及诊疗有较大帮助^[17]。该方法最初于 1969 年由美国教授 Borrows 提出^[18], 并迅速为欧美国家所接纳, 而目前国内医学教育改革也多以此为热点, 在国内外的相关报道中^[19-22], PBL 教学的应用均取得了不错的成果。医学模拟教学倡导向医学生提供尽可能贴近临床实际的临床场景, 并创造高仿真的模拟病人, 以此展开教学与考核^[23,24]。医学模拟教学的特点是在模拟医疗

环境的同时无医疗风险^[25], 同时其所使用的教学用具可重复利用、训练内容规范且相对真实、手段丰富而成本较低, 在解决缺少教学资源、培养学员临床诊断与各项操作能力上均有较好效果^[26,27]。

本研究中两组学员理论考试成绩均较好, 且差异无统计学意义, 提示 PBL 教学模式对学员理论知识的掌握有较大的帮助。PBL 教学模式中, 带教老师将教学目标与实际相结合, 要求学员充分利用现代化手段自主查阅资料, 同时在讨论中, 将自己获得的理论知识充分地运用到具体问题的解决中, 学以致用因而对理论知识的理解更为深刻。本研究中结合教学组学员技能操作考核成绩显著高于 PBL 组学员, 说明医学模拟联合 PBL 教学模式较单独的 PBL 教学模式, 对学员技能操作的提升效果更为明显。究其原因, 医学模拟教学中对真实临床场景的模拟以及医学模拟人等道具的使用, 使得学员有了更多的实践机会, 在多次、重复的实践中, 学员的操作技能也得到了稳步的提升。对学员的问卷调查显示, 两组学员在教学方法接受度高、学习兴趣提升、自学能力提升和临床诊疗水平提高方面差异无统计学意义, 提示单独的 PBL 教学模式和医学模拟结合 PBL 的教学模式均受到学员欢迎, 且在提升学员学习兴趣、自学能力和临床诊疗水平上有较好效果, 与相关研究报道结果一致^[28-30]。结合教学组学员在团队协作能力提高、沟通能力与人

文关怀提高和技能操作水平提高所占比例均高于 PBL 组。推测其原因为医学模拟教学中各学员均有明确分工,促进了学员间的相互交流合作,因而能在培养学员团队意识上有较大作用;同时因在教学中采用了标准化病人,对学员与患者的沟通及人文关怀有一定的要求,学员在对其诊治的过程中,沟通能力及对患者的人文关怀均有提高;而医学模拟人等道具的使用,使得学员能更好地将理论与实践相结合,学员的技能操作也能及时地得到教师的指导。

综上所述,与单独 PBL 教学相比较,医学模拟教学结合 PBL 的教学模式应用于重症医学教学对学员技能操作的掌握有更好的效果,同时能提高学员团队协作能力、沟通能力以及对患者的人文关怀,且受到学员的认同与喜爱,应在重症医学的教学实践中逐步完善并进一步推广应用。

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