

doi: 10.13241/j.cnki.pmb.2018.03.035

· 生物医学教学 ·

案例教学法结合多媒体教学法在超声专业教学中的应用研究*

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摘要 目的:研究案例教学法结合多媒体教学法在超声专业教学中的应用效果。**方法:**选择 2015 年 3 月到 2017 年 3 月在我院超声科实习的 112 名医学院学生进行研究,按照随机数字表法将医学生分成观察组及对照组,各 56 例,对照组采用传统教学法实施教学,观察组则采用案例教学法以及多媒体教学法实施综合教学,在每学期末,统计并对比两组学生理论成绩和实践成绩,以及两组学生对教学方式的满意度。**结果:**观察组的理论成绩和实践成绩各项目分值均分别明显高于对照组,差异均有统计学意义(均 $P < 0.05$)。观察组学生对教学方式的满意度为 98.21%,明显高于对照组的 87.50%,差异有统计学意义($P < 0.05$)。**结论:**案例教学法与多媒体教学法的综合应用能够有效提升超声专业学生的理论成绩和实践成绩,还可改善其对教学方式的满意度,效果较好,临床超声教学可考虑将此种教学方式推广,从而更有利于培养专业人才。

关键词:案例教学法;多媒体教学法;超声专业;医学生;教学;应用

中图分类号:G642 **文献标识码:**A **文章编号:**1673-6273(2018)03-557-04

Application Research of Case Teaching Method Combine with Multimedia Approach in Ultrasonic Major Teaching*

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ABSTRACT Objective: To study the application research of case teaching method combine with multimedia approach in ultrasonic major teaching. **Methods:** A total of 112 medical college students, who practiced in Xuanwu Hospital of Capital Medical University from March 2015 to March 2017 were selected and randomly divided into observation group ($n=56$) and control group ($n=56$). The control group received traditional teaching method, and the observation group received comprehensive teaching of case teaching method combined with multimedia approach. At the end of each term, the theoretical achievements and practical results of the two groups and the satisfaction degree for teaching methods of the two groups were done statistics and compared. **Results:** The theoretical achievements and practical results scores of the observation group were significantly higher than those of the control group, and the differences were statistically significant ($P < 0.05$). The satisfaction degree (98.21%) of the students in the observation group was obviously higher than that (87.50%) of the control group, the difference was statistically significant ($P < 0.05$). **Conclusion:** The comprehensive teaching of case teaching method combined with multimedia approach can effectively improve the theoretical achievements and practical results of the students in ultrasonic major, and also can improve the satisfaction of teaching methods, and the effect is better. In the clinical ultrasound teaching, this model of teaching can be widely promoted, which is more conducive to the cultivation of professionals.

Key words: Case teaching method; Multimedia approach; Ultrasonic major; Medical students; Teaching; Application

Chinese Library Classification(CLC): R642 **Document code:** A

Article ID: 1673-6273(2018)03-557-04

前言

超声专业学生若要成为一名合格的超声医师,首先要求其能熟练掌握专业知识,能够完成影像结果的动态采集并对其进行观察、分析,并结合患者的临床资料信息作出科学而合理的疾病诊断。临床研究发现,以往超声专业所采用的医学教学模式通常是传统讲授法,此教学法虽具有一定的作用,但可能会

因为学生仅通过被动接受的方式获取知识,无法对问题进行独立思考,导致不能充分满足当前临床诊断对超声教学的切实需求^[1-3]。同时,传统超声专业教学方式通常利用教案、黑板以及挂图等对学生进行理论性教学,教师在进行板书、清理黑板以及选择并悬挂合适挂图等操作时较易造成课堂时间的浪费,从而使得教师无法在有限学时内完成全部教学内容的讲授^[4-6]。因此,为超声专业的学生制定一套合理高效的教学方法,着重培

* 基金项目:北京市科技计划项目(Z16110000116060)

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(收稿日期:2017-09-16 接受日期:2017-10-10)

养学生的临床思维、激发学生的学习兴趣、提升学生的专业能力是当前教学研究工作的重点。有报道提出,临床教学方式的种类较多,近年来案例教学法以及多媒体教学法的应用对超声专业的教学开启了新的思路^[7,8]。本文通过研究分析案例教学法结合多媒体教学法在超声专业教学中的综合应用效果,旨在为更好地培养超声专业医学人才提供相应的数据支持,现报道如下。

1 资料和方法

1.1 一般资料

选择 2015 年 3 月到 2017 年 3 月在我院超声科实习的 112 名医学院的学生进行研究,入选标准:(1)年龄 ≥ 25 岁;(2)所有研究对象对此次研究知情同意;(3)所有研究对象均已获得期末考试成绩。排除标准:(1)研究期间休学者;(2)未正常参与期末考试者;(3)研究资料缺失者。按照随机数字表法将其分成观察组以及对照组,各 56 名,其中观察组有男 40 名,女 16 名,年龄 25~30 岁,平均(27.21 $\pm$ 1.30)岁。对照组有男 41 名,女 15 名,年龄 26~30 岁,平均(27.88 $\pm$ 1.29)岁。两组一般资料比较差异无统计学意义($P>0.05$)。

1.2 研究方法

对照组通过传统教学法实施教学,由教师对超声理论知识进行精讲,并向学生展示超声图像,教授其诊断和治疗措施,每章节授课完成后,由授课的教师及时归纳所学的有关知识点。观察组则通过案例教学法以及多媒体教学法实施综合教学,课前由教师精心挑选典型性或代表性的超声图像用作学习案例,围绕此案例设计好课堂上的讨论问题,而后统一安排时间要求学生积极讨论,鼓励学生分组作出针对超声图像的初步诊断,并给出诊断依据及最新、最有效的治疗措施。要求学生积极交流学习心得,鼓励其畅所欲言,教师不干预学生的正常讨论,但

在必要时可适时加以引导,学生讨论并得出统一结论后,由教师针对其表现进行点评。对讨论过程中遇到的重点和难点均通过多媒体课件等方式加以演示,并酌情补充讲解。

1.3 观察指标

在每学期末,统计并对比两组学生理论成绩和实践成绩,以及两组学生对教学方式的满意度。其中理论成绩各项分值采用自拟考核试卷进行统计,此试卷共考核 8 个项目,分别为:(1)超声基础知识,20 分;(2)超声专业知识,20 分;(3)临床思维,10 分;(4)操作技能,10 分;(5)归纳能力,10 分;(6)文献检索能力,10 分;(7)学习兴趣,10 分;(8)自学能力,10 分。满分 100 分,分值越高,表示考核结果越好。实践成绩为学生在超声科实践中的积分值,由教师对学生一学期内的实践表现进行综合评价,分别从考勤、操作正确性、诊断准确度、治疗意见、诊断流程规范性等方面评价,每项 20 分,总分 100 分,分值越高,表示学生的实践成绩越好。通过自拟满意度评价量表评测学生对教学方式的满意度,此量表包括 20 个项目,每个项目 5 分,总分 100 分。分值 ≥ 80 分记为满意,分值为 60~79 分记为较满意,分值 <60 分记为不满意,满意度为满意与较满意者的比例之和。

1.4 统计学方法

对本文数据均应用 SPSS21.0 统计软件实施评价,其中计数资料用(n,%)表示,应用 χ^2 检验,计量资料用($\bar{x}\pm s$)表示,应用 t 检验, $P<0.05$ 为差异有统计学意义。

2 结果

2.1 两组理论成绩的对比

观察组理论成绩各项目分值均分别明显高于对照组,差异均有统计学意义(均 $P<0.05$),见表 1。

表 1 两组理论成绩的对比(分, $\bar{x}\pm s$)

Table 1 Comparison of theoretical achievements between two groups(scores, $\bar{x}\pm s$)

Groups	n	Basic knowledge of ultrasound	Professional knowledge of ultrasound	Clinical thinking	Operation skills	Inductive ability	Literature retrieval ability	Learning interest	Ability to study independently	Total score
Observation group	56	18.21 $\pm$ 1.36	18.75 $\pm$ 1.08	8.16 $\pm$ 0.47	8.12 $\pm$ 0.66	9.01 $\pm$ 0.54	9.25 $\pm$ 0.66	8.38 $\pm$ 0.32	8.15 $\pm$ 0.73	88.06 $\pm$ 1.49
Control group	56	14.76 $\pm$ 1.33	14.65 $\pm$ 1.62	7.63 $\pm$ 0.82	6.71 $\pm$ 0.54	6.67 $\pm$ 0.72	6.71 $\pm$ 1.02	7.06 $\pm$ 1.24	6.71 $\pm$ 0.58	70.58 $\pm$ 1.55
t	-	13.572	15.758	4.196	12.373	19.457	15.645	7.713	11.558	60.840
P	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

2.2 两组实践成绩的对比

异均有统计学意义(均 $P<0.05$),见表 2。

观察组的实践成绩各项目分值均分别明显高于对照组,差

表 2 两组实践成绩的对比(分, $\bar{x}\pm s$)

Table 2 Comparison of practical results between two groups(scores, $\bar{x}\pm s$)

Groups	n	Check work attendance	Correctness of operation	Diagnostic accuracy	Therapeutic advice	Standardization of diagnostic process	Total score
Observation group	56	16.33 $\pm$ 2.10	17.78 $\pm$ 1.79	15.94 $\pm$ 1.82	17.02 $\pm$ 1.13	16.81 $\pm$ 0.32	84.17 $\pm$ 5.43
Control group	56	15.23 $\pm$ 2.06	15.38 $\pm$ 2.11	14.29 $\pm$ 1.98	16.26 $\pm$ 2.03	15.08 $\pm$ 0.34	76.20 $\pm$ 8.11
t	-	2.798	6.491	4.591	2.448	27.728	6.111
P	-	0.006	0.000	0.000	0.016	0.000	0.000

2.3 两组学生对教学方式的满意度对比

对照组的 87.50%, 差异有统计学意义($P < 0.05$), 见表 3。

观察组学生对教学方式的满意度为 98.21%, 明显高于对

表 3 两组学生对教学方式的满意度对比[n(%)]

Table 3 Comparison of satisfaction degree of teaching methods between two groups [n(%)]

Groups	n	Satisfied	Satisfied relatively	Dissatisfied	Satisfaction degree
Observation group	56	29(51.79)	26(46.43)	1(1.79)	55(98.21)
Control group	56	21(37.50)	28(50.00)	7(12.50)	49(87.50)
t	-				4.846
P	-				0.028

3 讨论

伴随医学教育体制的不断改革更新, 超声专业已被设立为一门单独的课程, 并且适当延长了超声诊断学的相应学时。虽然超声专业归属为医学影像学的范畴, 但是其同样着重强调培养学生的个性化操作水平以及临床思维能力等。经调查发现, 由于超声诊断所涉及的教学内容较多, 时间相对紧迫, 学生接受起来较为吃力^[9-11]。因此, 如何在短期内传授较多且较复杂的超声诊断知识, 使学生充分理解、接受并能够学以致用是超声专业教学工作的重点之一, 同时这也是当前超声教学方法相关研究中急需解决的问题。有报道指出, 超声专业教学不但要帮助学生在短期内迅速掌握有关超声医学的基础理论知识以及临床检查的操作技巧, 同时还应该引导学生探索该学科的学习方法, 树立正确的临床思维^[12-14]。本研究将医学院的学生作为研究对象, 分析案例教学法结合多媒体教学法在超声专业教学中的综合应用价值, 并进行教学成果的考核总结, 旨在为其他超声专业教师提供可靠的教学建议。

本研究发现, 观察组实践成绩各项目分值均分别明显高于对照组, 这表明了观察组的综合教学模式不仅能够提升学生的理论成绩, 同时也有助于提升其实践成绩。原因主要是因为观察组所用的教学模式做到了传授知识和指导实践这二者的兼顾, 更有利于学生主动参与到理论学习和科室实践过程中^[15]。具体而言, 临床思维能力的培养, 可在案例教学法的实践和分析过程中完成。该教学法要求学生结合临床实际病例进行自主学习, 并全程参与接诊、询问病史、临床超声检查操作以及图像分析、出具报告等一系列流程, 同时要求学生能做到自行对患者交代患病情况以及针对患者提出的问题作出合理解答^[16-18]。应用多媒体教学法时, 教师无需进行板书及挂图操作, 有效争取到更多的时间用于知识讲解, 进而可在限定的时间内完成教学内容传授^[19-21]。多媒体信息有助于学生理解抽象而复杂的超声知识, 可激发学生的兴趣, 便于长久记忆。此外, 多媒体教学可以在介绍超声基础知识的同时, 实时加入疾病相关的超声图像, 便于学生鉴别记忆。学生可通过将超声图像与病理改变进行结合探讨, 互动总结出正确的结论, 激发并提高学生参与教学和互动学习的乐趣, 加速教学进度, 提高了教学成果^[22-24]。尤其是针对部分较难鉴别的临床病变, 需将声像图和患者的病理、生理性改变互相结合并分析, 方可得到准确的诊断结论。多项研究均指出, 超声医师在面对“异病同像”或者“同病异像”等情况时, 理清头绪并作出正确诊断较为困难^[25-27]。此时不但

要求其掌握精准的检查手法, 还必须具有丰富的专业解剖知识以及充分的想象空间, 最重要的是还需要具有超强的临床思维能力。案例教学法借助教师及学生之间和谐的分组讨论平台, 促进师生交流, 能帮助双方发现实际操作难点, 通过反复性的实践研究和探讨, 最终达到克服难点的目的。此法不但可加深学生对专业知识的理解和掌握, 还有助于提升其临床操作能力。学生在不断实践和解决困难的同时, 其学习热情也得到了激发, 并培养了更浓的学习兴趣, 进而使学生获得可自主学习的能力。多媒体教学可将图像、声音以及视频等内容结合应用于授课过程当中, 使学生受到多方位的感官刺激, 加深其对知识的理解, 并增加对该学科的兴趣, 扩展思维空间, 同时也利于科室实践^[28]。换言之, 多媒体教学能够使以往单调而乏味的超声知识通过声音和图像以及影视和动画等方式形象地呈现在学生面前, 这使教师的课件图文并茂, 从多角度刺激了学生的感官, 帮助其进入诊断情景, 使其在脑海中出现诊断画面, 将抽象的知识逐步形象化, 进而使得静态的知识表现出动态化的场景, 有效地激发了学生的学习兴趣, 而且更有利于缓解其学习负担, 帮助其开阔想象的思维空间, 最终达到理想的教学目的。例如, 在学习运用超声造影进行肝内结节的良恶性鉴别时, 通过多媒体课件可较好地动态展示结节增强的方式, 使课堂上的学生对于此病的情况一目了然, 并可使其获得较为深刻的记忆。有报道指出, 结合多媒体教学进行施教, 将以往超声专业的学生较难理解的知识点通过图像进行表达, 使学生更易理解掌握, 不但减轻了学生的学习负担, 还提高了教学效果^[29]。此外, 本文还发现, 观察组学生对教学方式的满意度为 98.21%, 明显高于对照组的 87.50% ($P < 0.05$), 这提示了学生也更倾向于接受观察组的教学方式, 原因主要与观察组所用教学方式充分激发了学生的学习兴趣, 鼓励其积极参与到科室实践中, 使其获得更好的期末成绩, 最终也提升了其对观察组教学方式的认同感。这在 Lewiss RE 等人^[30]的报道结果中也可发现类似的结论。

综上所述, 案例教学法与多媒体教学法的综合应用能够有效提升超声专业的教学效果, 帮助学生增加其理论与实践的考核成绩, 同时还可提升学生对教学方式的满意度, 在超声专业的教学过程中具有重要的应用价值, 值得对此种教学方式加以推广。

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