

基于 CiteSpace 的国外 ICU 幸存者生活质量研究热点与趋势的可视化分析

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摘要: 目的: 本研究旨在评估近十余年国外 ICU 幸存者生活质量研究的热点与趋势, 并通过文献计量分析得出本研究的方向, 为我国进一步开展 ICU 幸存者生活质量的研究提供依据。方法: 我们通过 Web of Science 核心合集搜索科学引文索引扩展 (SCI-E) 数据库, 检索式采用自由词 + 主题词的方式, 限定时间为 2010 年至 2023 年。应用 CiteSpace 6.1R6 软件进行了文献计量分析。结果: 本研究共收录相关研究论文 908 篇。关键词分析结果表明, 过去 10 余年, 高频关键词有结局、创伤后应激障碍 (PTSD)、死亡率、呼吸窘迫综合征、急性肺损伤。在未来几年中, 研究热点是衰弱、运动能力、重症监护后综合征 (PICS)、体外膜肺氧合 (ECMO)、急性呼吸综合征等。结论: 国外 ICU 幸存者生活质量的发文量整体呈现上升趋势。ICU 幸存者生活质量总体低于正常人群, 影响因素较多, 干预措施证据不足, 未来尚需多中心, 大样本的 RCT 研究及规范、结构化的干预措施来提高 ICU 幸存者的生活质量。

关键词: 重症监护病房 (ICU); 幸存者; 生活质量; CiteSpace; 可视化分析

近年来, 由于重症监护质量的提高、重症监护医学和长期多器官支持技术的进步, 危重患者的医院死亡率显著下降^[1]。然而, 重症监护病房 (ICU) 幸存者的长期预后正逐渐成为一个现实问题。ICU 幸存者普遍存在身体、心理和认知损害, 常在出院后持续数月甚至数年^[2-3], 从而显著降低生活质量 (Quality of life Qol)。因此, 明确 ICU 幸存者生活质量的研究现状, 进一步了解引起生活质量下降的相关因素, 采取相应的干预措施, 有效预防 ICU 幸存者的生活质量下降是我们的终极目标。护士作为 ICU 幸存者生活质量改善团队中的一员, 发挥着重要作用。本研究检索了科学网 (Web of Science WOS) 核心合集 (Science Citation Index Expanded SCI-E), 运用 CiteSpace 软件进行文献计量学和可视化分析, 旨在了解国外 ICU 幸存者生活质量研究现状、相关研究发展趋势及研究热点, 为推动国内 ICU 幸存者生活质量相关研究的发展、提升 ICU 幸存者生活质量提供参考。

1 资料与方法

1.1 文献检索及筛选

两名研究人员于 2023 年 8 月 14 日检索 WOS.SCI-E, 采用主题词与自由词相结合的方式, 检索式如下:

#1: (((TS=(Intensive Care Units)) OR TS=(Intensive Care Unit)) OR TS=(Unit, Intensive Care)) OR TS=(ICU Intensive Care Units) 检索结果: 151832

#2: ((((((TS=(Survivors)) OR TS=(Survivor)) OR TS=(Long-Term Survivors)) OR TS=(Long Term Survivors)) OR TS=(Long-Term Survivor)) OR TS=(Survivor, Long-Term)) OR TS=(Survivors, Long-Term) 检索结果: 130264

#3: (((((TS=(Quality of Life)) OR TS=(Life Quality)) OR TS=(Health-Related Quality Of Life)) OR TS=(Health Related Quality Of Life)) OR TS=(HRQOL) 检索结果: 557075

#4: #1 AND #2 AND #3 检索结果: 1376

#5: (((#4) AND DT=(Article OR Review)) AND LA=(English))

AND PY=(2010-2023) 检索结果 : 1011

本次共检索出 1011 篇文献，将检索结果纳入 Zotero 进行查重和筛选。

1.2 纳入与排除标准

1.2.1 纳入标准

以 ICU 幸存者生活质量为主题的英文研究。

1.2.2 排除标准

(1) 非实证研究，如会议论文、评论、书籍等。(2) 文献数据不完整，重复发表或研究方法存在明显缺陷的文献。(3) 动物实验研究。(4) 研究对象为年龄 ≤ 18 岁 ICU 幸存者的相关文献。

1.3 文献筛选

将文献导入 Zotero，去除题目相同，重复的文献。两名研究人员根据纳排标准，阅读、筛选文献。过程中对存在争议的文献，由两人共同讨论后，决定是否纳入或排除。

1.4 数据处理

将符合纳入标准的文献以纯文本格式导出，记录内容选择全记录与引用的参考文献。选用 CiteSpace 6.1R6 软件，时间分区设置选择 1 年，演算阈值 (TopN% perslice) 设置为 50。剪切方式按照常规确定为 Pathfinder 法。

2 结果

2.1 国外 ICU 幸存者生活质量发文量情况

本研究初步检索文献数量为 1011 篇，经过筛选，符合纳排标准的文献为 908 篇。绘制折线图，横坐标为发表年份，纵坐标为发文数量。国外 2010-2023 年国外 ICU 幸存者生

活质量发文量呈现一个波动上升趋势，到 2021 年达到了顶峰，跟 2021 年新型冠状病毒肺炎 (COVID-19) 相关研究增多有关，之后逐渐回落。见图 1。



图 1 2010 年 -2023 年国外 ICU 幸存者生活质量研究发文量情况

2.2 国外 ICU 幸存者关键词共现分析

将聚类词性设置为名词性短语，关键词作为节点类型，选用“Pathfinder”为剪切方式，由此生成 460 个节点，788 条线，网络密度 0.0075，见图 2。图中节点颜色代表发文时间，节点大小代表发文量。节点越小，发文量越小，反之则越多。发文年代由近到远由节点颜色从深到浅代表。节点之间的连线则代表文章之间的关联性。去除与主题相关的关键词，高频关键词有结局 (Outcome)、创伤后应激障碍 (Posttraumatic Stress Disorder PTSD)、死亡率 (Mortality)、呼吸窘迫综合征 (Respiratory distress syndrome)、急性肺损伤 (Acute lung injury)。

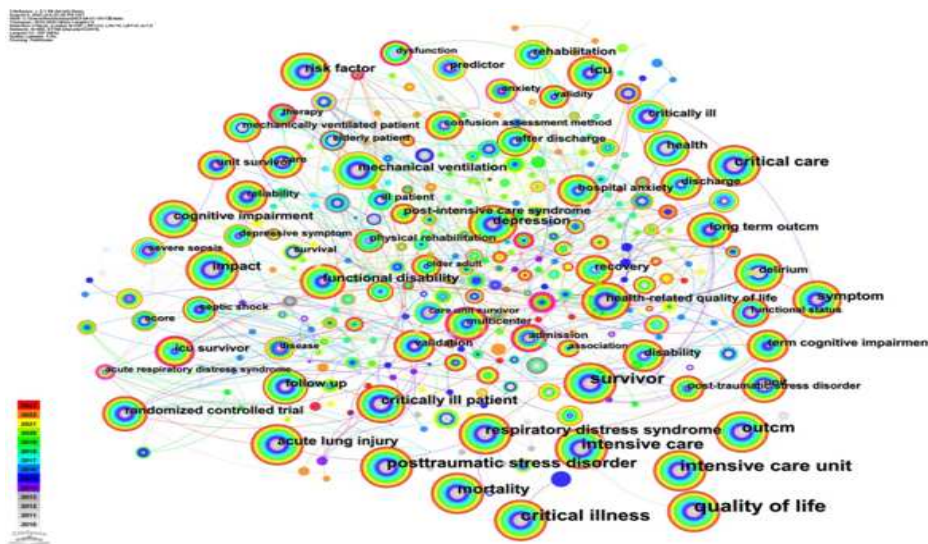


图 2 国外 ICU 幸存者生活质量研究高频关键词共现分析图

2.3 国外 ICU 幸存者生活质量的高频关键词聚类分析

关键词聚类分析运用 LLR 分析法, 采用时间线视角获得时间线上关于 ICU 幸存者生活质量的的突显词, 见图 3。线上节点的大小代表相应的发文量, 节点颜色表示发文年份。节点横向代表相同聚类, 节点纵向代表高频词汇出现年份。图中有 10 个聚类, 每个聚类标签均是共现网络中的关键词, 图中显示每个聚类里面关键词所出现的年份以及发展情况。从图中文献中分析可见 ICU 幸存者生活质量研究主要聚焦于 2010 年~2013 年, 之后研究逐渐趋于规范化, 且研究范围不断扩展, 研究内容逐渐深入, 例如健康相关生活质量的研究则从最开始的现况调查、评估工具的运用、相关因素的研究以及相应干预措施的探讨。研究手法也逐渐多样化, 观察性研究、队列研究以及随机对照试验研究。

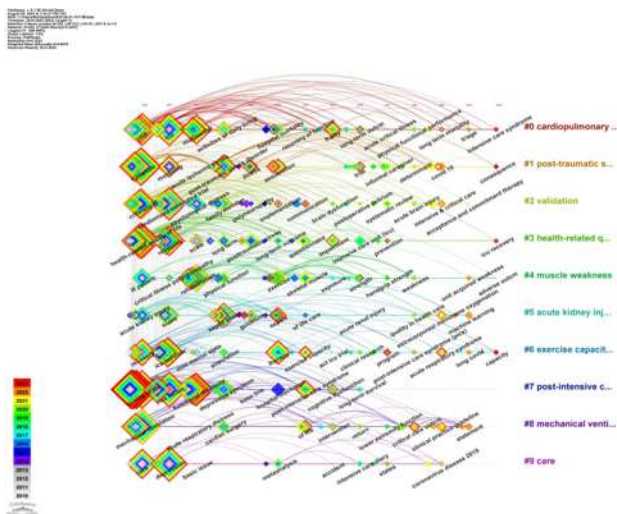


图 3 国外 ICU 幸存者生活质量研究高频关键词聚类分析图

2.4 国外 ICU 幸存者生活质量研究的高频关键词突变度分析

“突变词”是在一段时间内重复使用的词。基于被引爆炸最高的术语的分布, 我们可以预测研究前沿。图 4 显示了从 2010 年到 2023 年引用爆发最高的前 25 个术语。绿色条表示不频繁的关键字引用, 而红色条表示频繁的关键字引用。在未来几年中, 研究热点是衰弱 (Frailty)、运动能力 (Exercise capacity)、重症监护后综合征 (Post-intensive care syndrome)、体外膜肺氧合 (Extracorporeal membrane oxygenation ECMO)、急性呼吸综合征 (Acute respiratory syndrome) 等。

Top 25 Keywords with the Strongest Citation Bursts

Keywords	Year	Strength	Begin	End	2010 - 2023
survival	2010	7.13	2010	2012	
prolonged mechanical ventilation	2010	5.28	2010	2011	
elderly patient	2010	4.76	2010	2012	
term	2010	3	2010	2011	
major trauma	2010	2.93	2010	2013	
short form 36	2010	2.92	2010	2015	
long term survival	2011	5.65	2011	2015	
admission	2010	3.46	2011	2012	
unit survivor	2012	3.77	2012	2016	
psychological distress	2012	3.34	2012	2017	
critically ill patient	2010	3.34	2012	2014	
septic shock	2013	2.95	2013	2014	
long term outcome	2012	4.46	2014	2017	
ill patient	2010	5.59	2015	2018	
physical rehabilitation	2012	3.42	2016	2019	
impairment	2017	3.61	2019	2021	
critical care outcome	2020	4.08	2020	2023	
frailty	2017	3.91	2020	2023	
exercise capacity	2016	3.81	2020	2023	
mental health	2011	3.78	2020	2021	
pulmonary function	2010	2.91	2020	2021	
post-intensive care syndrome	2016	7.76	2021	2023	
extracorporeal membrane oxygenation	2021	4.11	2021	2023	
acute respiratory syndrome	2021	4.08	2021	2023	
acute respiratory distress syndrome	2011	3.35	2021	2023	

图 4 国外 ICU 幸存者生活质量研究高频关键词突现信息分析图

3 讨论

健康相关生活质量作为 ICU 幸存者远期预后的一项重要指标, 国外学者进行了大量研究。

3.1 ICU 幸存者生活质量现状明确

很多学者对本地区 ICU 幸存者生活质量现况做了调查, ICU 幸存者健康相关生活质量整体上低于同年龄、性别组正常人群^[4-6], 常常在 ICU 出院后持续数月甚至数年, 且身体健康维度低于心理健康维度^[6-8]。ICU 常见疾病, 如脓毒症^[9]、ARDS^[10]、创伤^[11]等幸存者出院后健康相关生活质量均低于常模。2021 年起, 大量学者对 COVID-19 出院后健康相关生活质量进行了研究, 得出健康相关生活质量 (HRQoL) 在生理和心理两个维度均显著降低^[12-13], 与 ICU 其他疾病相似。但不同入院诊断组之间有显著差异: 心脏手术患者的 HRQoL 好于慢性肾衰竭患者的 HRQoL^[14]。

有合并症的患者生活质量评分显著较低^[15]。体外膜肺氧合治疗后 12 个月, 近一半的幸存者经历了生活质量恶化^[16]。近 1/4 的肺移植患者 6 个月内 HRQoL 显著受损^[17]。虽然研究显示 HRQoL 随着时间的推移会有所改善, 但仍低于健康受试者^[8,18]。生活方面改善最多的是身体功能、身体角色、活力和社会功能^[4]。

同样, 各位学者对 ICU 幸存者健康相关生活质量的测量工具也做了大量的研究, 综述显示^[19], 1999 年后, 63%

测量 (QoL) 的文章使用 (Short-Form 36 SF-36), 19% 使用 (EuroQol five-dimensional EQ5D-5L)。SF-36 和 EQ-5D 由研究人员在 20 世纪 90 年代引入, 随后被推荐用于重症监护幸存者研究。

3.2 ICU 幸存者健康相关生活质量影响因素复杂

ICU 幸存者的生活质量受到多个因素的影响。研究显示, 与较低生活质量有关的危险因素有高龄^[7, 20-25]、女性^[7,21,23]、入院前生活质量^[22,25-26]、急性生理与慢性健康 (APACHE-II) 评分^[4,27]、机械通气时间^[20,22-23,28-29]、住院时间延长^[7,25-27,29]、合并症^[23,26,28-31]、虚弱和 ICU 获得性衰弱 (ICU-AW)^[25,29]、失业^[7,23-24,28,32]、ICU 后综合征^[33]、睡眠质量差或失眠^[27,34]、独居或居住在长期照护机构^[7,18]。另外, 有研究指出, 较低的社会经济地位与较低的自我报告的身体成分评分相关^[35]。急性和持续性肌肉量减少, 与 3 个月时的健康相关生活质量和身体功能下降相关^[36]。

保护因素有: ICU 日记可减少 ICU 幸存者的焦虑和抑郁, 改善健康相关的生活质量^[37]。在 COVID-19 ICU 幸存者中, 作者发现低分子肝素治疗是 6 个月时生活质量身体部分改善的预测因素^[38]。社会支持与心理 HRQOL 呈正相关^[6]。

身体状况、心理健康状态、社会支持以及个人特征和社会背景等因素都可能对 ICU 幸存者的生活质量产生重要影响。鉴于这些因素的复杂性, 我们需要全面考虑和综合干预来提高 ICU 幸存者的生活质量。

3.3 ICU 幸存者健康相关生活质量干预措施发文章较少, 证据不足, 缺乏大型 RCT 研究

虽然不少学者对 ICU 幸存者的生活质量干预措施做了一系列的研究, 但目前存在的问题是, RCT 研究相对较少, 且只有少数报告了 Qol 结局。证据总体质量较低。就目前报道的一些干预措施来说, 身体方面有康复治疗^[39-41]、早期运动^[42-43]、神经肌肉电刺激^[41,44]、减少 ICU 衰弱^[45]; 心理方面有 ICU 日记^[46-47]; 以上研究成果观点不一, 无法得出可行的干预措施。也有学者对本领域预测模型进行了研究, 虽然还需要更多的长期数据来确定模型的准确性, 但在未来, 预测模型可以帮助决策^[48-49]。

为了改善 ICU 幸存者的远期结局, 未来需要来自使用标准化结局的稳健干预研究的更多证据, 以支持和提高 ICU 幸存者的生活质量。

3.4 ICU 幸存者生活质量的研究热点和趋势

本研究显示, 未来几年的研究热点为重症监护结局、衰弱、重症监护后综合征、ECMO、急性呼吸综合征和 ARDS。这些关键词反映了对 ICU 幸存者康复和生活质量的关注, 以及在这些领域中的研究和发展。

4 结论

国外 ICU 幸存者生活质量的发文章整体呈现上升趋势, 提示 ICU 幸存者生活质量领域受到较高重视, 是研究热点。ICU 幸存者生活质量研究范围不断扩展, 研究手段不断增加, 研究内容更加具体化, 与医学技术的发展密切关联。ICU 幸存者生活质量总体低于正常人群, 影响因素较多, 干预措施证据不足, 未来尚需多中心, 大样本的 RCT 研究及规范、结构化的干预措施来提高 ICU 幸存者的生活质量。

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