



## SAMPL 指南:发表文献中的统计分析与方法

Thomas A. Lang (Tom Lang Communications  
和 Training International;

ORCID 0000-0002-7482-7727)

Douglas G. Altman (牛津大学医学统计中心主任;  
ORCID 0000-0002-7183-4083)

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### 引言

“他们是否有反思科学是奠基于只能由统计学推广的观察?如果医药没有忽略这个工具,这个进步的方法,这个学科会拥有许多正面的真理,而比较不会被认为是一门原则松散、含糊、靠推测的科学。”

早期法国精神病学家  
Jean-Etienne Dominique Esquirol,  
1838 年在《柳叶刀》杂志中引用<sup>1</sup>

第一篇关于生物医学文献中统计报告质量的研究在 1966 年发表。<sup>2</sup> 自此以后,类似的研究分数也陆续发表,而每篇文章都发现在大量已发表的研究中有运用、分析、解释或报告统计的错误,或者设计或进行研究的错误。(可以参考文献 3 到 19 的例子)除此以外,很多被点出的错误的严重程度甚至达到质疑作者的结论。<sup>5,18,19</sup> 这个问题也因为大部分文章发表在全球领先的同行评审普通医学期刊或专科期刊上而变得更严重。

尽管有更复杂的统计学程序的错误曾被点出<sup>19,22</sup>,奇怪地,很多错误是在利用基本、而非进阶统计方法时犯下的。<sup>23</sup> 这可能是由于进阶的统计方法是由统计学顾问

建议,所以他们会有能力完成分析。不过如果一般作者运用统计学的话,他们也会偏向使用中级统计方法。<sup>23-26</sup> 尽管如此,犯了大错误的文章仍然继续通过编辑过程或同行评审,然后在主要期刊上发表。

事实上低质量的统计报告问题是存在已久、很广泛、有可能成为严重的错误,这些错误大多与基础统计学有关,可是大部分生物医学文献的读者对此并不怀疑。<sup>27</sup>

在三十多年前,O' Fallon 和其同事提出:「应该建立规范统计学内容和形式的标准,指导作者准备稿件。」<sup>28</sup> 虽然自此有其他作者也重复支持这个建议,<sup>29-32</sup> 大部分期刊只在他们的作者指引部分中用一到两段的篇幅说明如何报告统计的方法和结果。<sup>33</sup> 可是,有鉴于很多统计学错误都跟基础统计学有关,一套完整且可理解的报告指引也许可以改善统计分析和其如何被记录。

SAMPL 指南的设计是为了可以被放在期刊的作者指引部分中。这些指南告诉作者、期刊编辑和审稿人如何报告基础统计方法和结果。虽然这些指引只限于最常见的统计分析,已经足够去避免很多经常在科学文章中发现的统计学报告问题。

不同于大部分实证医学的报告指引,例如 CONSORT 和 STROBE, SAMPL 指南并非由一个正式的达到共识的过程发展

出来，而是由已出版的指南中抽出。<sup>27,34-37</sup>此外，一次关于统计学报告错误的全面文献回顾揭示了近乎一致、如何报告最常用的统计方法的共识。<sup>27</sup>

统计分析跟研究本身的设计和活动有密切的关系。可是，在这里我们不会涉猎到这些问题。相反的，我们会把读者引至 [EQUATOR Network](#) 的网站，读者可以在这个网站上找到报告不同研究设计的指引。（例如，CONSORT<sup>38</sup>、TREND<sup>39</sup> 和 STROBE。<sup>40</sup>）这些用于报道研究方法的指引全部都包含报告统计学的项目，而在这里的指引更详细，补充跟其他方法指引内容而不重复。

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