Editorial

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Salami-slicing and duplicate publication: gatekeepers challenges

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The Scandinavian Journal of Pain receives manuscripts where it becomes apparent that the study material is part of a divided publication strategy. Salami-slicing or divided publishing refers to inappropriate fragmentation of data into the smallest publishable units [1]. The authors opt or seek to publish parts of a study in several papers instead of providing the full story in a single paper [2]. Duplicate publication sometimes referred to as a redundant or dual publication, implies reporting identical or very similar data in two or more papers [1] without explicitly stating that the data are recycled.¹ Duplicate publication is blatant scientific misconduct. Salami-slicing is a less severe offense, expressing undefined grey-zones of redundancy. However, the legitimate and necessary fragmentation of complex study data should be recognized [1] and should not be misinterpreted as salami-slicing, which is the unplanned and undisclosed serial publications originating from single study data.

Challenges

Salami-slicing and duplicate publication are harmful to health care research and societal interests [1]. The conduct may lead to distorting research data, e.g. falsely inflating the data volume, neglecting multiplicity issues, introducing data dredging [3], and performing ‘cherry-picking’ [4] by unplanned analyses: peer researchers; health professionals, and decision-makers are misled. The likelihood of introducing significant flaws in clinical guidelines and recommendations, ultimately affecting health care policy, unfortunately, is real. Most researchers

recognize the ubiquitously used phrase from systematic reviews or meta-analyses: “these results should be interpreted with caution as the quality of the evidence was moderate or very low” [5]. Salami-slicing or duplicate publication, if going unnoticed and being erroneously included by the epidemiologist, can easily be the “evidence” tipping the scale in the wrong direction of the truth since so few studies are available.

Quite insignificant, compared with the preceding issues, but salami-slicing and duplicate publication may also lead to the overuse of valuable time of journal editors, peer reviewers, readers of scientific literature, and research funding bodies.

‘Publish or perish’

Inequity in the academic reward system, based on publication quantity rather than scientific quality, introduces and maintains an asymmetry among researchers that may lead to unequal competition for academic honors and research funding [1]. When aspiring researchers are under constant pressure to increase the number of publications, the temptation to divide one set of data into several publications is perfectly understandable [6]. The fiercely competitive academic environment’s ramifications are aptly illustrated by the occasional small-scale study with a disproportionately high number of authors.

Prevalence of redundancy publication?

But how prevalent is the redundancy problem in the scientific literature? Systematic analyses indicate that 5–17% of the published papers include some form of redundancy [7–9]. A recent content analysis on policies of epidemiological and medical journals concluded that 36% of the journals included policies on duplicate publication while only 13% included policies on both salami-slicing and duplicate publication [1]. So, it is reasonable to conclude,

¹ Caveat, many publishers (including De Gruyter) allow work to be published to preprint servers before submission to peer-review (the use of this preprint option should be declared in the submission).

Table 1: The gatekeeper functions [1].

Gate-keeper	Responsibilities
Author	Plan the publication strategy at protocol stage
	Plan data analyses at protocol stage ^a
	Perform stipulated data analyses
	Report deviations from preplanned data analyses
	Avoid unnecessary <i>post-hoc</i> fragmentation
Peer reviewer	Submit related manuscripts from same data set
	Report suspected redundancy
	Develop policies & Guidelines
	Instruction for authors
	Plagiarism checker
Editor & Editorial office	Standard check for redundancy
	Delineate policy for violations

^aor in a Statistical Analysis Plan (SAP).

first, that redundancy publishing fairly frequently flies under the radar, and *second*, that the majority of journals do not present formulated policies on salami-slicing and duplicate publication (see Table 1).

Gatekeeping: avoiding the redundancy?

Authors submitting manuscripts, peer reviewers assessing the submissions, and editors selecting manuscripts for publication are all responsible gatekeepers ensuring the integrity of the research record and supporting the transparency in scientific communication (Table) [1, 10].

The *authors* are responsible for transparency, planning data analyses, and including a publication strategy in the protocol. After completing the study, the data analyses should be carried out as stipulated, and any *post-hoc* violations in the statistical processing should be indicated in the manuscript. During the manuscript preparation, the authors should be discouraged from dividing the results of a single study into multiple unplanned submissions. Authors are required to alert the editor whenever two or more manuscripts based on a subset of a larger data set are under review in another journal or have been published [10]. The related manuscripts must be accompanied and cross-referenced in the submission, giving the editor the opportunity to evaluate the complete data set. The reason for the divided publication strategy should be stated.

The *peer reviewers*, when becoming aware of or suspecting salami-slicing or duplicate publication, should

alert the editor. Careful and diligent bibliometric detective work is required when redundancy is suspected [10].

The *editors* have the ultimate authority and responsibility for delivering a journal with correct scientific information. The *editors* should, on an international level, e.g. COPE (The Committee of Publication Ethics) [11] and ICMJE (International Committee of Medical Journal Editors) [12], propagate policies and guidelines on redundant publication.² On the individual journal level, the editor is responsible for disseminating the policy on salami-slicing and duplicate publication in the 'Instructions for Authors'. Routines for plagiarism and redundancy checking should be implemented. The policy for sanctions should be clearly stated.

Conclusion

Redundancy publication is a significant problem in scientific communication and most likely will continue as long as the academic reward process is more centered on rapidly obtaining numbers than on publishing conscientiously and thoroughly performed research.

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² Readers requiring more information on the redundancy issue are recommended to visit these websites.

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