Reviewer's report

Title: An intercalated BSc degree is associated with higher marks in subsequent medical school examinations

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Reviewer: Olle Ten Cate

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Review of An intercalated BSc degree is associated with higher marks in subsequent medical school examinations

This paper reports on a relevant topic of interest. Language-wise it is well written and, as far as my limited knowledge of this topic reaches, the literature is reasonably referenced.

However, I am not fully convinced of the validity of the major conclusion of the authors, as stated in the discussion section (“intercalating was predictive of improved performance in degree assessments after students rejoined the MBChB”) and the abstract (“intercalating adds benefits in terms of improved performance in years 4 and 5”), as this suggests a causal relationship. I do not think this has convincingly been reported in this paper.

The authors wisely formulate “is associated with” in the title of the paper. If no causality was implied, the authors would be right, but then this paper does not report very interesting findings.

From the data presented, it may be well concluded that those who choose to take an intercalated degree after the third year are better students from the outset. This is not a very relevant finding, as those who apply for an IC “must have attained a minimum grade in the third year (roughly 2:1 standard)” (page 4).

1. Table 3 has not convinced me that the benefit of intercalation was larger in subsequent than in previous years. I am not a statistician, but it seems to me that if and alpha level of < 0.05 is adjusted because of 17 multiple parallel significance tests, p<0.01 is much too lenient; this should rather be 0.05/17 = 0.0029. If this were kept as criterion, only 4 differences would be significant; in years 1, 2, 3 and 4 respectively, all in written tests; none in OSCEs and essays.

2. Table 4 has not convinced me either because (1) it is not clear to me how differences between the students in all previous years (1, 2 and 3) were entered as covariates; (2) the Nagelkerke R2 coefficient is not explained and I can’t remember ever having seen it before and therefore cannot interpret it.

3. I wondered why mark bands were uses, if mean scores could have been used. In Table 2 chi square tests were carried out, while in stead t-tests for differences of means could have been used if no transformation to mark bands had been done. In addition, effect sizes could then have been calculated.
4. Page 6 states that “marginally more females did intercalated degrees”; I wonder whether this is true. From the figures given, I calculate that 18.1% of the males and 17.6% of the females chose an intercalated degree.

As a general conclusion, I would rather suggest that intercalation, by a student group that clearly outperforms their classmates in the first three years, adds relatively little to academic success in the fourth and fifth year, despite one extra year of study effort. The slightly better performance in those years is probably fully due to their superiority from the outset. Stimulating more Aberdeen students to intercalate, as the authors suggest, will probably diminish these differences.

This makes me hesitant to recommend publishing this article.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests