Reviewer’s report

Title: Development of a complex intervention to promote appropriate prescribing and medication intensification in poorly controlled type 2 diabetes mellitus in Irish general practice

Version: 0 Date: 17 May 2017

Reviewer: Fabiana Lorencatto

Reviewer’s report:

Thank you for the opportunity to review this interesting manuscript, which summarises the development of an intervention targeting improved prescribing and medication intensification for patients with poorly controlled Type 2 diabetes in Irish general practice.

I have no major revisions to propose. Whilst I am enthusiastic about the manuscript and its methodological approach, I have a few comments/suggestions at this stage regarding content that could perhaps be better explained and clarified:

The abstract is clear, and provides a concise and representative summary of the manuscript.

Introduction:

The introduction is equally very clear. It provides a strong clinical rationale for the study, citing relevant literature to highlight the clinical ‘problem’ to be addressed, and the existing evidence base in this area. The intervention development approach (i.e. MRC guidance, and BCW) is also introduced in sufficient, concise detail for the readership of Implementation Science, who are likely quite familiar with these frameworks.

My only suggestion for the introduction would be that there is perhaps scope to draw on broader literature beyond prescribing for patients with Type 2 diabetes, to better contextualise the present study. For instance, there is a related literature on behavioural factors influencing appropriate polypharmacy in primary care, which can involve both escalating medications but equally decreasing multiple medications. Different factors are likely to influence whether practitioners are being asked to increase or decrease prescribing, emphasising the need for a tailored intervention development approach. For example, elements of the BCW approach (i.e. Theoretical Domains Framework, Behaviour Change Technique Taxonomy) has been applied to systematically develop appropriate polypharmacy interventions (see: Cadogan CA, Ryan C, Francis JJ, Gormley GJ, Passmore P, Kerse N, Hughes CM. Improving appropriate polypharmacy for older people in primary care: selecting components of an evidence-based intervention to target prescribing and dispensing. Implementation Science. 2015 Nov 16;10(1):161.).
Aims: The authors provide an over-arching aim, but given the multi-staged methodological approach, it would be helpful to have specific research questions/sub-objectives associated with each stage to enable greater linkage between the study objectives/methods/results for each stage.

Methods

- For stage 1, identifying the evidence base- I am unclear whether the intention of this manuscript is to report the methods/results of the systematic review or whether this will be published separately in further detail or is already published elsewhere? The authors cite the PROSPERO registration, but perhaps could make it clearer in the manuscript that full methodological details and findings of the review are described elsewhere?

- The authors mention and cite 'observational research' on p. 9, line 31 but provide no description of what this research entailed, in turn rendering it difficult to understand its contribution to the present study.

- COM-B behavioural diagnosis form (p. 9 line 53)- could this be described in greater detail or provided as supplementary material?

- For the workshops, were the stakeholders presented with the findings from the review? And observational research?

- How were findings from the systematic review, observational research and expert workshops triangulated/combined to inform the COM-B behavioural diagnosis? This is a key step but isn't described in sufficient detail on p. 9.

- I found the sequencing in the methods at times confusing. On p. 10 the authors describe each stage of the BCW approach, but it is unclear how this was actually operationalised in the present study? How were the target behaviours defined, how was the COM-B diagnosis conducted to identify the salient influences on the target behaviour? I believe this is likely linked to the content presented on p. 9 but it isn't clear which data is feeding into each stage of the BCW approach.

- Similarly, stage 2- how were the intervention functions selected? Were the mapping matrices that link intervention functions to COM-B components consulted? The authors mention later in the results on p. 15 that the APEASE criteria were applied, however this is methods content and should thus be described at this stage in the methods section instead.

- Stage 3, BCT selection is clearly described.

- Given the complexity of the multi-staged, multi-component approach to intervention development, a diagram/figure illustrating the process, research question and the data contributing to each stage would provide a helpful summary for the reader.
Results

- Overall, the results provide a detailed narrative of the overarching findings for each stage/step in the intervention development process. However, at times it reads like a description and/or repetition of the methods section (particularly Step 8, p.16-17). It is also not particularly clear what analyses/data led to each conclusion for each stage. The authors mention that their decisions/findings draw on the literature review, systematic review, observational research, workshops, contextual knowledge of the team etc. However, I think an important and interesting methodological point is how to integrate these different sources, which to prioritise as evidence, to reach a behavioural diagnosis. The structure of Table 1 is helpful, but again, it isn't clear which data contributed to each decision/description in each cell. Could the authors clarify, or perhaps add adjacent columns with supporting 'evidence' for the decision (e.g. findings from the review, quotes from workshop, etc?)

- A lot of the key findings regarding the resulting intervention development are presented in the supplementary tables. Would it be possible to include a summary table in-text that illustrates the progression from behavioural diagnosis (including relevant findings/evidence that informed the diagnosis) to relevant functions, relevant BCTs and how they are operationalised in the context of the DECIDE intervention? Such as the intervention development tables included in the following papers:


Discussion:

* The discussion provides a concise summary of the development process for this study. However, it could perhaps benefit from the inclusion of content that might help illustrate the contribution of this study to the literature more broadly. For instance, are there any methodological suggestions, lessons learnt or reflections on using this intervention development approach? This was a complex study involving multiple data sources. Are there any comments to be made regarding research efficiency? Did one data collection approach yield more insight over another etc? This may help increase the relevance and interest of the present study to the readership of Implementation Science, and readers looking to adopt a similar intervention approach.
Level of interest
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