Reviewer's report

Title: The impact of income support systems on healthcare quality and functional capacity in workers with low back pain: a realist review protocol

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Reviewer: Claire Duddy

Reviewer's report:

This is a protocol for a realist review exploring the influence of 'income support systems' on two outcomes for workers with low back pain. The realist approach seems ideal for this complex topic: as the authors rightly recognise, this review has the potential to deliver new insights about the role of context in determining how and when income support systems influence healthcare quality and functional capacity for those with this condition. The overall justification for the study and its design as a realist review is clear, especially in light of the existing literature that signals the potential influence of a wide range of contextual factors and the nature of income support systems themselves on the chosen outcomes (lines 84-85, 88-91, 95-99). The identified research questions (lines 123-126) are straightforward, easy to understand and important.

However, there are several aspects of the protocol that require clarification or modification:

1. Could the authors provide further information on the inclusion of the 'healthcare quality' outcome, and how it will be defined during the review? (e.g. as described in lines 84-86, 219). How will the authors cope with variation in 'healthcare quality' outcomes in the literature? More importantly, could they provide more detail on the relationship between this outcome and the final 'functional capacity' outcome? The authors assert that 'healthcare quality' will 'indirectly' influence capacity (lines 138-139), but the link between these two is not interrogated and seems to me to have the potential to vary, not least in relation to how 'quality' is interpreted and measured. The step between 'quality' and 'capacity' might be better framed as a hypothesis that could be tested in this (or another) review.

2. Some aspects of the description of the realist review approach are not quite correct. The description of the 'philosophy of realism' (lines 104-106) reads as if realism somehow simply embodies both a constructivist and positivist outlook simultaneously, but this ignores realism's distinct ontological position, which understands reality as layered and deep, and the fact that both positivist and constructivist approaches are ultimately concerned only with the 'empirical' level of reality (as measured or interpreted). An accessible summary of these philosophical differences is available amongst the RAMESES training materials (http://www.ramesesproject.org/media/RAMESES_II_Philosophies_and_evaluation_design.pdf). In addition, the reference to 'realist evaluation' as the 'central component of a realist review' (line 107) confuses two distinct study designs: 'realist evaluation' refers to an evaluation (primary research) study, probably employing a mixed methods approach to produce programme theories, whereas 'realist review' is a distinctive approach for evidence synthesis (secondary research).
3. I would suggest that the authors revisit and clarify their working definitions of 'mechanism' and 'context':

   a. At the moment, no clear definition of 'mechanism' is provided. The authors' initial theories refer to 'the mechanisms describing how income support systems may impact healthcare quality and functional capacity' (lines 130-131), but the 'mechanisms' identified (illustrated in Figure 1) seem here to be possible features of 'income support systems' and so might be more accurately characterised as interventions or policies. The descriptive texts provided in Figure 1 do seem to hint at potential generative mechanisms (in the realist sense) related to these features. For example, for 'mechanisms' 1, 3 and 4 it is clear that funding structures will shape the incentives faced by healthcare providers/employers and their responses to these incentives may well be the active mechanisms here. Figure 2 goes further, hypothesising a 'target income' type of mechanism in operation in the identified contexts, leading to an outcome of unnecessary treatment (although again here the relationship between 'lower healthcare quality' and 'lower functional capacity' is assumed to be straightforward). It is likely that it is not possible to fully characterise 'mechanisms' in the realist sense at this early stage of the review, but the authors might consider using alternative terminology when describing aspects of income support systems, to avoid confusion later.

   b. The description of 'context' that the authors provide (lines 148-154) is quite confusing. The authors initially suggest that this will include features of particular income support and healthcare systems (lines 148-149, and borne out in Figure 2), but then go on to say that contextual factors are 'not directly related to an income support, healthcare or workplace system'. As currently worded, these seem contradictory statements and some clarification would be welcome.

4. Information relating to the methods that will be employed to gather evidence for the review could be much clearer. Figure 3 is straightforward but the text is confusing. Specifically:

   a. Does the described 'purposive, iterative search strategy' (line 179) refer to the searches already undertaken during theory development, or some new searches?

   b. What do the authors mean by 'select searches' of databases? I have never come across this terminology before.

   c. The authors seem to suggest that they will run 5 separate searches, relating to each of their initial theories (lines 180-181), but the description of the search strategy itself (lines 195-199) does not seem to reflect this plan. If the authors could provide more detail on the proposed search strategies, or the method by which the search strategies will be developed later, this would help to make their approach more transparent.

5. In relation to eligibility criteria for inclusion in the review, could the authors do more to clarify the difference between 'general eligibility' and 'relevance'? It seems most likely that screening will proceed on the basis of the 'general eligibility' criteria (as outlined in Table 1) first, before criteria of 'relevance' and 'rigour' are applied, and perhaps the authors could do more to describe the approach that will be used for screening. Will the author who conducts the searches apply these screening criteria before all the authors independently consider the identified 'subset of important literature for each initial theory'? Will any other authors be involved in double screening, or will all authors screen and extract data from all search results (as seems to be implied in line 228)? It would be helpful if these processes could be clarified. In addition, it would be useful if the authors could expand on some of their intended
exclusion criteria. Specifically, what is the rationale for excluding opinion pieces and letters
(which could potentially contribute to theory building), and how will the authors handle studies that
include, for example, some participants of working age alongside those of non-working age, or
participants with NSLBP caused by traumatic injury alongside those without this aetiology (or indeed
studies that do not provide this information)?

6. The authors propose characterising income support and healthcare systems in different countries and
regions with reference to 'policies, policy summaries, and legislation relevant to the country or region'
(lines 244-245). They refer to the 'concrete boundaries' of differing approaches, which seems an
implicit acknowledgement that such documents are likely to be technical, and omit 'soft' information
about how such systems work and are understood by those who run and use them in practice. The
authors indicate that they hope that their interviewees may provide additional insight in this area, but
it's not clear that this concern will form part of the sampling strategy for this group, and it would be
useful here I think to explicitly acknowledge this potential limitation, and perhaps whether it could also
be addressed via the inclusion of other kinds of secondary literature in the review.

7. In relation to the proposed semi-structured interviews, could the authors provide a rationale for their
choice of approach, and analysis? It seems notable that the authors have not chosen to adopt a 'realist
interviewing' approach.

There are also a couple of minor points to address:

1. Could the authors provide citations to support the statement "Research...has simply revealed there
may be an interaction" (lines 96-99).

2. In line 310, should this sentence read, 'realist reviews are an iterative, non-linear process'? If the
authors mean 'interactive', in what way?

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