Author's response to reviews

Title: Factors associated with patients self-reported adherence to prescribed physical activity in routine primary health care

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Author's response to reviews: see over
To the editors, *BMC Family Practice*.

Dear Madame/Sir,

Thank you for giving us the opportunity to respond to the reviewers’ comments and revise our manuscript, 'Factors associated with patients self-reported adherence to prescribed physical activity in routine primary health care'.

We are grateful to the editor and the reviewers for a number of relevant and helpful questions and comments. We have carefully considered these and revised our manuscript. On the following pages, we have addressed each of these comments and described how we have implemented them into the revised manuscript.

We believe the revisions have improved the manuscript and hope the revised version and our replies will meet your approval and that you will find the manuscript suitable for publication in *BMC Family Practice*.

We would be happy to supply any additional information you require.

Yours Sincerely,

Matti E Leijon
General statement concerning general comments;

We are pleased to see that reviewer 1 find our manuscript well written, relevant, important and compelling. Furthermore, reviewer 1 found this type of investigation to ascertain the feasibility of procedures in clinical practice to be very useful, in accordance with the journal's orientation, and considers the article to be useful in describing how PA referral schemes might improve a population's PA level.

Reviewer 2 also states that this is an important area of aspect and that the manuscript itself is generally well written. However, reviewer 2 found the article of limited interest due to previous studies in this field (by our group and others) and due to the use of adherence as an outcome measure. Reviewer 2 also raises the issue of whether this study is an afterthought rather than being based on a real research question made in advance.

This article provides information on physical activity referral (PAR) schemes in routine practice. This is a popular and expanding field, with many different types of studies being conducted and published, both in the grey literature and in scientific journals. Still, one of the major problems is the gap between research and practice. One important reason for this is the paucity of studies that investigate programmes implemented in realistic clinical settings.

We are aware of that there are several weaknesses (e.g. lack of control group, use of a non-validated measure) in the present study. The title makes it clear that this study is conducted in “routine” primary health care. The context of the study makes it difficult to include control groups, as almost all the primary care units in the region (37 out of 42) wanted to participate. Still we do agree that the results would have been strengthened if a validated instrument had been used, but at the time of the study there were no such instrument available. And to the best of our knowledge, there still is not such an instrument. Our aim was to evaluate PARs implemented in routine clinical practice and we used different measures to assess the results. One way was the use of adherence as a self-report follow-up measure of physical activity level, an approach which does have certain shortcomings.

We believe that adherence can be an appropriate proxy measure of physical activity, especially in routine practice as support systems such as computerized records (journal systems) are not fully developed and easy to use. We believe
that this pragmatic approach adds new information of relevance for this field. We included some of this adherence data in the first drafts of a previous paper, but we were then asked to separate the findings and present them separately.

We also believe that there is a paucity of PAR studies conducted under realistic real-world conditions, using more heterogeneous populations and less support for providers in order to provide evidence of effectiveness. We included 3300 patients in our follow-up and believe that our results are of interest in this field, despite the above-mentioned shortcomings. Additionally, there is also relatively limited research concerning predictors of physical activity adherence.
Reviewer 1

- It’s not clear following which criteria a patient was prescribed either a home-based exercise or a facility-based activity, and this information should be clearly stated in the methods section.
- Also, more information about the characteristics of the two options should be necessary.
  - The information about the prescribing procedure and the prescription options are now more clearly described in the manuscript.
- Also, it could have been interesting to perform an intention-to-treat analysis to avoid the analysis bias.
  - The main focus of this paper is to present factors associated with adherence to PAR and we wanted to compare those reporting adherence to those who reported non-adherence.

MAJOR COMPULSORY REVISIONS

ABSTRACT

- The first sentence of the Conclusions section does not answer any aim of the study, from what had been stated before, and is not even mentioned in the Results section. Maybe they talk about feasibility of self-reported measurements of physical activity in the text of the paper, but the Abstract should stand alone. Either drop that sentence, or make a previous mention of it, at least in the Results section.
  - We agree with these comments and offer our apologies about the confused message about the feasibility of adherence in the abstract.
- The methods section should state the percentage of women in the sample population, the mean age ± SD, and the number of subjects that completed the 3 and 12-month follow-up.
  - The exact percentage of females is presented on page 10 in the result section. The information about drop outs etc. is presented in the first paragraph of the result section.
- In the results section you state that higher adherence was associated with prescriptions including home-based activities but in the methods section you do not state that there were different types of prescription.
We agree with this comment. A more detailed explanation is now included on page 6 in the method section (The prescription procedure).

- The results are devoid of any indication of the size of the associations in important outcomes; simply reporting that there was an association does not provide readers with enough information.
  - The associations/results used in the discussion are based on the results in table 2. The results in table 1 are only presented as basic information to the reader and to show that some variables appear to be significant (i.e. “referral practitioner” and “reasons for prescription”).

INTRODUCTION/BACKGROUND

- At the end of this section, main aim is exposed in an unclear way. It could be changed for something like “We aimed to assess the effectiveness of a Swedish PAR scheme in actual PHC...”.
  - The aim has been revised.

METHODS

Study Setting: if space is an issue, I would exclude (or make into a very brief summary) the second paragraph of this subsection. Population of study not well defined. What about exclusion criteria? Or at least, age range to recruit...

- We consider it necessary to report on some features of care at these centers, for example the number of visits per day, or the number of patients per professional. This is an aspect that may influence the feasibility of any intervention.
  - Exclusion criteria etc., please see general statement above. More information about catchment area is now included on page 5 in the method section.

Intervention (quoting) “was intended to be patient-centred... and to take into consideration the patient’s current activity level, activity history, capacity, motivation, and interests.”, so I guess it is quite varying depending on patient characteristics. But, is there any way to make readers understand the different schemes of intervention prescribed?? A brief and space-saving way to do this would be quoting a published report on this, which probably must be available in the literature.
These patients were recruited in routine practice. Unfortunately this kind of information is not available.

Under "The prescription procedure" we consider it necessary to include an outline, a chart is possible, with the outline of the proposed intervention.

We do not believe this is required due to the pragmatic nature of this study. Moreover, the prescription procedure differed between patients due to the patient-centered concept.

Moreover, on page 8, second paragraph, are shown aspects of activities that should be included in the section "The prescription procedure":

"The activities could either be home-based (free-living or lifestyle activities such as walking) or structured facility-based provided by a local physical activity organization. Patients who were issued home-based activities and structured facility based activities were classified into a combination category”.

We agree with this comment and that information is now included in “The prescription procedure” section.

Page 7, last paragraph. I suppose that patients included in group 1 and 2 were not included in the study? Not clear enough.

As stated at the beginning of the section “The prescription procedure”, persons eligible to receive PARs were all ordinary PHC patients whom the regular staff believed would benefit from increased physical activity. This also could include patients in group 1 and 2 as some of these patients could be in need of more activity, or different kind of activity.

Page 8. The question used to assess adherence hadn’t been previously validated. You should give some rationale as to why you decided to use this particular question. The main outcome is measured using a non validated questionnaire. Some validated questionnaires on therapeutic persistence are available. If there is a major cause not to use them, it should be clearly exposed in the text.

Please see general comment above.

Patients paid the physical activity centre fee by themselves, so a selection bias might be present (only people with enough resources to afford it are studied, and they are supposed to be better at following doctor’s prescriptions). This should be stated as a limitation in the Discussion section, but it is not at all.
As this intervention is patient-centered, meaning that the patients themselves were involved in the prescription process, we do not believe that this is a big issue.

Statistical analyses: authors say “As the aim of the study was to analyze adherence, patients reporting part adherence were excluded from these analyses...”. I don’t think just excluding partially adherent patients is the best solution; they can be somehow different than the rest of the population of study. Also, alternative statistical methods to logistic regression are available to deal with categorical non-binary outcome variables, so the analysis of them is feasible.

We are glad about this comment as this is one of the most discussed issues when we started to analyze this material. In our opinion and according to our aim, we were interested in examining factors associated with adherence.

MINOR ESSENTIAL REVISIONS

INTRODUCTION/BACKGROUND

The sentence starting at page 4, line number 3 should be referenced, as it seems to quote evidence based knowledge, but it isn’t.

The reference is placed after the subsequent sentence.

METHODS

More visual information on loss to follow-up (flow-chart) could be helpful.

References: It should review the high benchmark 2, delete "In".

The comment is a little bit unclear; we do not really understand it.

Table 1:
Diabetics in monitoring, appears to have less than 3 months (195) at 12 months (196). What is the explanation?

Simply that more diabetic patients have answered the 12 month follow-up than the 3 month follow-up.

Reviewer 2

Major Compulsory Revisions

The authors do not present a strong case for the value of adherence to a particular prescribed form of activity. The group reporting “I’m active but in
another activity than the prescribed activity”, were removed from the regression analysis (Table 2) but are a group of interest as they have become physically active. Surely it is more important from an individual and public health perspective to know whether someone has become physically active (by participating in any form of physical activity), rather than to know whether or not they are undertaking the activity prescribed by a health professional 3 or 12-months earlier?

- We are glad about this comment as this is one of the most discussed issues when we started to analyze this material. In our opinion and according to our aim, we were interested in examining factors associated with adherence.

2. Are the methods appropriate and well described?

Major Compulsory Revisions

a) More detail on the PAR is needed. For example, do prescriptions include recommendations on the frequency, duration and intensity of activity?

- The prescription form included a line about frequency, duration and intensity of the activity. Unfortunately, this was infrequently used and therefore this data are not presented. However, we still believe that these aspects have been part of many prescription discussions. Another aspect is that this intervention is patient-centered and the patients are involved in the prescription process, which makes it even more difficult to provide more information than what is already presented.

b) Clarification is needed as to why patients already doing 5-7 days of activity at baseline would be prescribed physical activity. This group (n=475) makes up nearly 20% of the sample justification is therefore needed to explain the inclusion of an ‘already active’ group in the analysis.

- As stated at the beginning of the section “The prescription procedure”, persons eligible to receive PARs were all ordinary PHC patients whom the regular staff believed would benefit from increased physical activity. This also could include patients doing 5-7 days of activity at baseline, as some of these patients could be in need of more activity or a more intensive activity or different kind of activity.

c) It would have been more informative if the study was designed to collect information on adherence to physical activity in general at 3 and 12-months, in
addition to adherence to the prescription. Having delved further into the literature I see the authors have indeed collected this information but have published it separately and not therefore provided details on PA levels at 3 and 12-months but have referred to this data in very general terms (page 10 and 14).

- We agree with this comment, but these results have already been presented elsewhere. However, we really believe that this adherence perspective is an interesting alternative to using self-reported physical activity levels before and after an intervention, especially related to the methodological difficulties related to measuring/assessing physical activity.

Minor Essential Revisions

d) Reference 8 is in Swedish and not accessible by general audience so should be replaced by another reference or the key content described in the text.

- This reference is always complemented with other references but is important to use do to fact that it also is an important tool in our work. This book will soon be published in English.

3. **Are** the data sound?
   - Good participation and follow-up rates achieved

Major Compulsory Revisions

- Data on physical activity levels (days/week) at 3 and 12-months would assist in interpretation of the adherence results.

- This data have been presented elsewhere. Please, see previous comments above also related to this question.

4. **Does** the manuscript adhere to the relevant standards for reporting and data deposition?
   - Yes

5. **Are** the discussion and conclusions well balanced and adequately supported by the data?

Major Compulsory Revisions

a) The discussion should expand on the previously published PA rates at 3- and 12-months (page 14)

- We believe that the scope of this paper differs from the previous one.
b) Comment could be made on why adherence to a different activity to that prescribed is a good/bad outcome of PAR. It is not clear to me why adherence to a prescribed activity is key in determining the success of a PAR programme.

  o We have answered this question, please see above.

c) The discussion should include some reference to recent intervention studies that use exercise referral with measurement of adherence to PA to place the present study findings in the context of other approaches to assessing PAR in routine care.

  o To our knowledge there are no such studies to relate to other than those already used.

6. Are limitations of the work clearly stated?
The authors acknowledge some limitations, such as the use of self-reported measures.

Major Compulsory Revisions
  • The lack of detailed data on actual physical activity levels to accompany adherence measure is an important limitation of these present study.
    o Please, see general comments.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

Major Compulsory Revisions
a) The authors have published 2 previous papers that appear to relate to the same dataset, one of which is referenced. (Ref 1: Leijon et al 2009, Scand J Med Sci) is cited on page 8 stating that PA levels are reported elsewhere. A second paper: Leijon et al 2008 BMC Health Services Rsh 8:201 is not cited but appears to provides some of the background detail that the present paper has omitted. If this is the same study data collection, a reference should be provided by the authors.

  • We have now included the second paper as a reference in the background section.

b) The authors have cited review papers to support their arguments but have not presented data from more recent primary publications. In one example the authors state “there is a paucity of pragmatic PAR studies conducted in routine practice that involve more heterogeneous populations” (ref 14: Eakin et al 2004
review).

A quick literature search returns a number of studies that meet this criteria that could be cited, for example:


- We have used some of these studies as references in previous work. However, we still believe that there is a paucity of pragmatic studies, conducted in real-world clinical practice, based on methods that are feasible and “realistic” for use by practitioners.

8. Do the title and abstract accurately convey what has been found?

Major Compulsory Revisions
a) Abstract: Methods. It would be useful to have more detail about study population (male/female, age range, whether general population or disease specific)
   - We have now added “general population in this section.

Minor Essential Revisions
b) Abstract: Conclusions. Is there a word missing in this sentence? Should it be “The results suggest that [measurement or assessment] of self-reported...is feasible”
   - This is now corrected in the manuscript

c) Fullstop missing at end of sentence

9. Is the writing acceptable?
The paper is well written overall.

Editing
• Page 13 – reference 6 needs to be in square brackets not (6)
  o This is now corrected in the manuscript