Author’s response to reviews

Title: Treatment and referral patterns for psoriasis in United Kingdom primary care: a retrospective cohort study

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Author’s response to reviews: see over
Dear Dr. Henderson:

Thank you for the review of our manuscript entitled “Treatment and referral patterns for psoriasis in United Kingdom primary care: a retrospective cohort study”. We appreciate the careful and thoughtful review by the reviewers. We are pleased to respond to the reviewers’ comments and have revised the manuscript accordingly. Our response to each of the reviewers’ comments is provided below. A revised manuscript is also attached.

We look forward to hearing the status of the review of the revised manuscript.

**Editorial points:**

1. Ethical Approval
   Please can you move the ethical statement from the Acknowledgements section and include this information in the Methods section.
   Response: The ethical statement has been removed from the Acknowledgements section and included in the Methods section on page 5, last sentence in first paragraph.

2. Figure Legends
   Please can you remove the figure title and legend from the uploaded image. The figure title and legend should appear in the manuscript document after the references section.
   Response: The figure title and legend have been removed from the uploaded image. The figure title and legend are listed on page 19 after the reference section.

3. Formatting
   Please also ensure that your revised manuscript conforms to the journal style ([http://www.biomedcentral.com/info/ifora/medicine_journals](http://www.biomedcentral.com/info/ifora/medicine_journals)). It is important that your files are correctly formatted.
   Response: The revised manuscript files have been formatted to the journal style.

**Reviewer #1: Jianzhong Zhang**

**Major Compulsory Revisions:**

1. Page 3, line 5: authors stated “Higher mortality rates have been reported for severe disease in the UK.” Please specify what type of severe disease this refers to?
   RESPONSE: This sentence has been modified to clarify that severe disease refers to severe psoriasis (patients with history of systemic therapy). The change can be found on page 3, lines 5-6.
2. Too many figures and tables. Authors can choose to describe some of the contents of the tables in the text. We suggest eliminating a few tables that have no significant value to this study.

RESPONSE: Tables 3 and 5 have been deleted from the revised manuscript. The Results section text (pages 9-10) has been expanded to describe some of the deleted content from the tables. Tables 4 and 6 were combined into one table to provide the logistic regression results.

Minor Essential Revisions:

3. There are many factors associated with GP referrals to dermatologists that weren’t considered in this analysis. Examples of factors that also must be considered include: the severity of the skin lesions, and the patient’s understanding of the disease, the patient’s desire of improvement, and the effects of systemic therapy. If relevant details are not available, authors can describe how these absent factors may affect results of this analysis.

RESPONSE: The authors agree with the reviewer that many factors may be associated with GP referral to dermatologists. However, the analysis was limited to factors available in the GP electronic records. The factors noted by the reviewer, albeit important, were not recorded and not available for the study. Also, the study was focused on primary care of psoriasis and, in the UK GPs cannot prescribe systemic therapies so the effects of systemic therapy were not recorded by the GPs. The limitation of the lack of data for severity of psoriasis was noted in the Discussion section, page 13, second sentence of second full paragraph. To address the reviewer’s comment, the study limitations have been expanded to indicate that these important factors were not available in the THIN database (page 13, end of second full paragraph). The authors are not comfortable in speculating about the potential affect these factors may have on the study results because of the lack of data.

Reviewer #2: Steven Feldman

Major revisions:

1. New visits/population= incident health care utilization, not incident psoriasis. Perhaps other terminology should be used. This may grossly underestimate disease incidence if people with the disease don’t see a doctor for it, a reasonable assumption given that the vast majority of people with psoriasis do not have a visit for psoriasis in any given year. The high incidence in patients 60-69 may reflect that 60-69 year olds are more commonly seeing a doctor, while the people who develop psoriasis in their 20s and 30s aren’t commonly seeing their doctor, so psoriasis doesn’t get identified or coded.

RESPONSE: The authors understand the point of undiagnosed disease that the reviewer highlights here. However, the study did not use “new visit” to determine incidence of psoriasis. As described in the Methods section, a new diagnosis of psoriasis was used to calculate incidence. Also, in many instances throughout
the manuscript, the terminology of “newly diagnosed psoriasis” is used. To assist in clarifying the difference between diagnosed incident psoriasis and undiagnosed psoriasis (which this study does not deal with), the terminology of “incidence of ‘diagnosed’ psoriasis” has been added throughout the manuscript, where the terminology was not specific. Also, it was (is) stated in the Discussion section as part of the study limitations (page 13, line 14) that “patients with mild psoriasis may not have come to medical attention in which case diagnoses by AGPs may underestimate the incidence of psoriasis.”

Regarding the high incidence of diagnosed psoriasis in the 60-69 year old group and the possibility that it may be associated with greater frequency of visits to GPs than younger age groups, the incidence of diagnosed psoriasis peaked in the 30-39 year old group as well as the 60-69 year old group. Thus, the authors do not think that the high incidence in the 60-69 year old group is associated with greater likelihood of visiting the GP. However, this hypothesis cannot be tested in this study.

2. The Conclusion section of the Abstract reiterates some of the data in the Results section (with similar redundancy in the Discussion text) and provides nothing new, no implications of the study, no clinically relevant take home message.

RESPONSE: The conclusion section of the abstract (page 2) has been changed to provide the clinical relevance and implications of the study.

3. The purpose of the study (“The objectives of the present study are to estimate the incidence of psoriasis and describe the clinical characteristics and treatment patterns for incident psoriasis patients being referred to specialist (dermatologist) care”) does not entail testing any specific hypothesis, so perhaps it is not surprising that nothing particularly interesting was found.

RESPONSE: This is a descriptive estimation study that provides current estimates for psoriasis. No specific hypothesis testing was proposed due to the limited data published on referral patterns. To our knowledge, there are no other studies that have provided data for psoriasis patients referred from primary care to secondary care. We could have hypothesized that specific patient characteristics or treatment patterns were associated with referral but this approach would have limited the focus of the investigation to specific factors rather than the broader descriptive approach which found that frequent GP visits and prescription for topical agents were associated with increased likelihood of referral.

4. The introduction is overly long with much general information about psoriasis that isn’t directly pertinent to the study. Extraneous issues are raised (such as “a detailed analysis of treatment patterns in primary care, especially for patients who are referred to specialist care, is lacking”) that aren’t addressed by the study.
RESPONSE: The introduction section has been shortened (pages 3-4) to focus on the information pertinent to the study. Lines 9-12 (first paragraph) were deleted. The information on the topical and systemic agents for psoriasis has been condensed (second paragraph). The statement on observational studies (page 4, lines 11-12) was deleted. The sentence mentioned by the reviewer (page 4, lines 13-14) has been modified to delete the mention of a “detailed analysis”. The study did examine the treatment patterns in primary care for patients who were referred, so this revised sentence is relevant and important.

5. The paper can be further shortened by referring interested readers to other works describing the methodologic details of the THIN database. RESPONSE: The Methods section describing the THIN database was shortened by the deletion of lines 6-7 on page 5 and lines 12-14, page 5.

6. Figure 1 provides most of the interesting information in the manuscript. Limiting the manuscript to a brief report with one figure plus one table would make it more succinct. RESPONSE: The manuscript has been shortened as described above. The number of tables has been reduced to 3 from 6 tables. The authors believe that it is important to describe the study population (Table 1) as well as provide the incidence rates by age and gender (Table 2). Tables 4 and 6 (logistic regression results) were combined into one table (Table 3).

7. Much of the Discussion brings up speculation that wasn’t tested by the study design. RESPONSE: The discussion has been modified to eliminate speculation as well as clarify specific statements regarding the interpretation of the results. The statements regarding patients use of OTC creams and ointments has been deleted (page 12, lines 7-12). The first statements in the first paragraph on page 12 have been revised for clarity about severity of disease. The new sentences are: “Most patients in the present study were referred immediately after the psoriasis diagnosis. One possible reason is these patients may present with severe psoriasis at the time of diagnosis, necessitating immediate referral to a dermatologist.” The statement regarding GPs seeing patients routinely has been deleted (page 12, lines 16-17). The sentence at the top of page 13 regarding the progression of treatment has been modified to more accurately describe the use of agents at index and within 30 days prior to referral.

8. I don’t understand how the authors make the logical leap to claim, “These findings indicate that GPs see their psoriasis patients routinely and manage them with increasingly potent topical medications before referring them to a dermatologist.” “Routine” wasn’t defined in the study, much less measured. The timing of when prescriptions were given was not
assessed in such a way as to know whether GPS were prescribing increasingly potent topicals or not.

RESPONSE: We appreciate the reviewer pointing out these inconsistencies. As noted in the response to item 7, the Discussion has been modified to correct and clarify these statements. The first statement regarding GPs seeing their patients routinely, etc. has been deleted (page 12, lines 16-17). The second statement (page 13, lines 2-3) regarding progressing to more potent therapies was changed to indicate that a greater proportion of patients were prescribed corticosteroids, vitamin D analogues and non-biologic systemic therapy within 30 days prior to referral than at index.

9. “The factors associated with referral may help in understanding which patients need specialist care where systemic therapies (biologic and non-biologic) can be prescribed according to the guidelines,” may be an interesting question, though I find the wording hard to understand, but factors associated with the need for systemic therapy were not included in this study.

RESPONSE: This statement on page 12, second paragraph, line 19) has been modified to provide greater clarity and to indicate that the factors associated with referral may be used in the future to identify and refer appropriate patients earlier to improve the control of their psoriasis.

The authors believe that with the help of the reviewers the manuscript has been enhanced and the study findings clarified. We appreciate the reviewers’ feedback in making this a better manuscript.

Sincerely,

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