PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Educational Interventions to improve prescribing competency: A systematic review
AUTHORS	Penm, Jonathan; Kamarudin, Gritta; Chaar, Betty; Moles, Rebekah

VERSION 1 - REVIEW

REVIEWER	Dr Mike Schachter Senior lecturer in clinical pharmacology Imperial College London SW7 2AZ No competing interests
REVIEW RETURNED	25-Jun-2013

THE STUDY	For the last heading No is a positive response!
GENERAL COMMENTS	This is a very comprehensive overview of a large literature of very variable quality. It si also very variable in terms of content, that is to say in the methods used in attempts to improve prescribing quality: that is except as concerns non-medical prescribing where there is little done so far. The authors rightly point out that the WHO guidelines could serve as a useful and relatively straightforward basis for future initiative. The authors might wish to comment on one aspect of these efforts at improvement. This is their persistence when the actual project ends. Often any improvements decay very qucikly.

REVIEWER	Dr. Sarah Ross University of Aberdeen Division of Medical and Dental Education
REVIEW RETURNED	10-Jun-2013

THE STUDY	As a systematic review of prescriber behaviour, some of these are not relevant.
GENERAL COMMENTS	This is a well written update on the subject of improving prescribing using educational methods. It helpfully includes non-medical prescribers, who have not been the subject of as much research to date. This is perhaps the only feature of this review which makes it worthy of publication as a range of reviews have been undertaken, including Brennan and Mattick in the BJCP within the last few months. I have a number of concerns with how this review has been designed, however the actual methods and execution seem entirely appropriate. Firstly, it would be useful if the authors defined 'prescribing competence', particularly as a number of related terms appear in the

	literature. Secondly, I am not sure how helpful it is to separate educational interventions from other types (e.g. behavioural). Thirdly, I wonder how easy it is to maintain a distinction between the upper parts of Miller's pyramid. I assume the distinction is made on whether real patients' prescriptions were used in the study. If the authors wish to stick with this separation, it needs to be clearer in the text. Fourthly, I would caution the authors in using prescribing errors as a proxy for competent prescribing given the large literature showing that most errors are unintentional. I do note that the authors acknowledge this point, but it needs further discussion in their introduction. My major concern is about what this paper adds to the literature. I wonder if more time and effort should be spent on implementing interventions underpined by the principles outlined in the WHO guide rather than further reviews of a diverse literature which is difficult to synthesise. A minor point is that 40 studies are referred to in the abstract, but 38 in the text.

VERSION 1 – AUTHOR RESPONSE

Reviewer: Sarah Ross
University of Aberdeen, Division of Medical and Dental Education

This is a well written update on the subject of improving prescribing using educational methods. It helpfully includes non-medical prescribers, who have not been the subject of as much research to date. This is perhaps the only feature of this review which makes it worthy of publication as a range of reviews have been undertaken, including Brennan and Mattick in the BJCP within the last few months.

Thank you for this comment. We have also included the review by Brennan and Mattick to ensure all relevant literature is included in our review.

The most recent review focuses on the hospital setting with an emphasis on new prescribers who were less than 2 years post-graduation. Although all new prescribers were included in this review, little was discussed regarding non-medical prescribers.

I have a number of concerns with how this review has been designed, however the actual methods and execution seem entirely appropriate.

Firstly, it would be useful if the authors defined 'prescribing competence', particularly as a number of related terms appear in the literature.

This has further been explained in relation to Millers pyramid by referring to Mucklow et al. article titled ‘Assessing prescribing competence’.

Mucklow et al. provides further examples of assessing prescribing competence based on Miller’s pyramid and its importance for the healthcare profession.

Prescribing competence (‘knows how’) - assessing prescriptions written for theoretical cases
Prescribing performance (‘shows how’) – assessing prescriptions written for real patients

Secondly, I am not sure how helpful it is to separate educational interventions from other types (e.g. behavioural).

Although we agree that behaviour intervention are of interest to the profession, it was outside the scope of this review we believe would be a worthy literature review of its own.

Thirdly, I wonder how easy it is to maintain a distinction between the upper parts of Miller's pyramid. I assume the distinction is made on whether real patients' prescriptions were used in the study. If the authors wish to stick with this separation, it needs to be clearer in the text.

This has been further clarified in the results when we classify studies by different parts of Millers pyramid stating:

Prescribing competence ('knows how') - assessing prescriptions written for theoretical cases
Prescribing performance ('shows how') – assessing prescriptions written for real patients

Fourthly, I would caution the authors in using prescribing errors as a proxy for competent prescribing given the large literature showing that most errors are unintentional. I do note that the authors acknowledge this point, but it needs further discussion in their introduction.

We have added this to the introduction when the idea of prescribing errors is first introduced stating:

Although many prescribing errors are unintentional, studies have shown that the prescribing performance of interns and medical students is poor, partly because of inadequate training

My major concern is about what this paper adds to the literature. I wonder if more time and effort should be spent on implementing interventions underpined by the principles outlined in the WHO guide rather than further reviews of a diverse literature which is difficult to synthesise.

We agree strongly with this point and hope that our literature review will highlight the importance of the WHO guide and implementing it in both the medical and non-medical prescribing fields in the future.

A minor point is that 40 studies are referred to in the abstract, but 38 in the text.

Thank you for this point, a total of 47 studies has now been added to the review that is reflected both in the text and the abstract.

Reviewer: Dr Mike Schachter
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No competing interests

This is a very comprehensive overview of a large literature of very variable quality. It si also very variable in terms of content, that is to say in the methods used in attempts to improve prescribing quality: that is except as concerns non-medical prescribing where there is little done so far. The authors rightly point out that the WHO guidelines could serve as a useful and relatively straightforward basis for future initiative.

The authors might wish to comment on one aspect of these efforts at improvement. This is their persistence when the actual project ends. Often any improvements decay very quickly.

Thank you for this point, we have added a comment in the discussion how long term studies are needed to ensure persistence of appropriate prescribing is maintained.

The current literature also does not show if the improvements in prescribing persists after the intervention occurs as many studies only assess up to a few months after the intervention. Higher quality studies looking at long-term changes in prescribing habits is required to assess the effectiveness of educational interventions on prescribing.