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Does education of primary care professionals to support patient self-management improve patient outcomes in chronic disease management? Updated systematic review.

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### **Author Accepted Manuscript**

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**Does education of primary care professionals to support patient self-management improve patient outcomes in chronic disease management? Updated systematic review.**

**ABSTRACT**

**Background**

Our first systematic review included only two papers showing patient outcomes following health professional training for promoting patient self-management.

**Aim**

To present the updated review undertaken from September 2013 to August 2018.

**Design and Setting**

A systematic review was undertaken using the PRISMA guidelines, following the methodology of the first review and is outlined in the PROSPERO registered protocol (Database registration number: CRD42013004418).

**Method**

Six databases were searched - Cochrane Library, PubMed, ERIC, EMBASE, CINAHL and PsycINFO - in addition to Web searches, Hand searches and Bibliographies for articles published from September 1st, 2013 to August 31<sup>st</sup> 2018.

**Results**

Our updated systematic review showed more evidence is now available with 18 papers in the five year period from the 4,284 abstracts located. Twelve of these papers showed a difference between intervention and control groups. Of the 18 papers identified, 11 were assessed as having a low risk of bias and five overall were rated of weak quality.

The educational interventions with health professionals spanned a range of techniques and modalities and many incorporated multiple interventions including patient components.

There may be lack of adoption due to several challenges, including that complex interventions may not be delivered as planned and are difficult to assess, and due to patient engagement and the need for ongoing follow-up.

**Discussion**

More high quality research is needed on what methods work best and for which patients and what clinical conditions in the primary care setting. The practical implications of training healthcare professionals require specific attention.

**Keywords:** Self-management; Patient empowerment; Primary care; Chronic conditions

**Funding**

None.

**Registration**

PROSPERO registered protocol: CRD42013004418.

**How this fits in**

Despite a vast literature on the topic of patient self-management, evidence on the association between training of health professionals in patient self-management with measured patient health outcomes was rare prior to and up to two years after its incorporation into the WONCA Europe definition of general practice.

Since the previous systematic review, more published evidence is available to review (September 2013 to August 2018) which suggests a benefit to patient health outcomes and behaviour following health professional education. Interventions that include multiple aspects, follow-up and patient centred components are more likely to be successful; however, the implications for delivery and uptake in primary care need to be considered.

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## Introduction

The World Health Organisation (WHO) defines chronic conditions as those that encompass disability and disease that people 'live with' for extended periods of time.<sup>1</sup> The Chronic Care Model (CCM)<sup>2</sup> is an internationally accepted model for the management of non-communicable diseases (NCDs) and specifies self-management support as a key component. The concept of patient empowerment for self-management was introduced into the WONCA Europe definition of General Practice in 2011.<sup>3</sup> Patient empowerment is a core concept of patient centred care<sup>3,4</sup> – a widely called for concept<sup>5</sup> – and has been shown to be central to the improvement of self-management programmes<sup>6,7</sup> as has the need to recognise the phases of transformation for individual patients.<sup>8</sup>

Some studies demonstrate the benefit of self-management support<sup>9-18</sup> for people with chronic conditions; however, it is also reported that patients with chronic conditions tend to respond less to lifestyle interventions.<sup>19</sup> Primary care has a key role in supporting patient autonomy to develop their expertise in managing their own health and wellness<sup>20</sup> and has been identified as a potentially impactful avenue<sup>21</sup> with education and training noted as potential ways of engaging primary care clinicians in patient self-management support.<sup>22</sup> However, it is also recognised that visits in primary care may be brief and that low levels of readiness to change may exist among patients.<sup>23</sup>

Our first systematic review of 7,533 abstracts published prior to September 2013 included only two papers showing patient outcomes following health professional training for promoting patient self-management,<sup>24</sup> and both included papers suggested that primary care health professionals can help to harness patients' capacity to contribute to improvement of their own health outcomes. However, the review concluded the evidence was very limited on measured patient health outcomes.

The central focus of this project was to update that review and to systematically review the evidence from September 2013 to August 2018.

## Methods

A systematic review was undertaken using the PRISMA guidelines<sup>25</sup> and follows the methodology outlined in the PROSPERO registered protocol (Database registration number: CRD42013004418).<sup>26</sup>

### *Sourcing information*

Two specialist subject librarians assisted in the development of the search strategy, which replicated the strategy used in the first review and was designed to identify internationally recognised terminology in peer-reviewed journals. Full details of this strategy are available in the published protocol.<sup>26</sup> Six databases were searched - Cochrane Library, PubMed, ERIC, EMBASE, CINAHL and PsycINFO - in addition to Web searches, Hand searches and Bibliographies. Articles published from September 1st, 2013 to August 31st 2018 were included in the review, with the search conducted by GD and PP. The full search terms have been previously published.<sup>24</sup>

### *Selection criteria*

Studies with the following designs were included: systematic reviews, randomized controlled trials (RCTs), controlled clinical trials, interrupted time series, and controlled before and after studies. Participants were physicians in primary care settings, other clinicians in primary care settings and patients 18+ years with chronic conditions in primary care settings. Included interventions had an educational focus designed to train primary care clinicians to support patient self-management. This

review was concerned with all chronic conditions as they occur generically in the primary care setting, rather than focusing on any one specific chronic condition. Only articles including reference to patient outcomes, measured using validated measurement scales, were included. The primary patient outcome was change in patients' self-management behaviours; the secondary outcomes were changes in physical health measures, health behaviours including medical adherence and compliance, service utilisation, psychological health, psycho-social function (e.g. Quality of Life, SF36, SF12), physical functioning and knowledge. The eligibility of studies was determined using the inclusion and exclusion criteria listed in the registered protocol and shown in Table 1.

Table 1 here

#### *Data extraction*

All abstracts were reviewed using the RefWorks package to categorise the abstracts identified by the search. The initial review of abstracts was undertaken by RF with 10% of same re-checked by CC and AR. The full text articles of all those considered to be of possible relevance to the systematic review were read independently by AR and CC and categorised using the same exclusion reasons. Disagreements were reviewed by GD. The quality assessment and extraction of thematic content of the final list of articles applicable to the systematic review question were considered by CC and AR.

#### *Risk of Bias and Quality Assessment*

We assessed the risk of bias using the Cochrane Collaboration's tool for randomised trials<sup>27</sup> and assessed the overall quality of individual studies using the Quality of Assessment Tool for Quantitative Studies.<sup>28</sup> The risk of bias tool covers six domains of bias (selection bias, performance bias, detection bias, attrition bias, reporting bias, and other bias) with assessments on one or more aspects within each<sup>27</sup>. Reviewers rated six components of quality (selection bias, study design, confounders, blinding, data collection methods, and withdrawals and dropouts) leading to an overall methodological quality rating for each study of strong (no weak ratings), moderate (one weak rating), or weak (two or more weak ratings)<sup>28</sup>. Reviewers resolved rating disagreements through discussion.

#### *Data synthesis*

We performed a narrative data synthesis as per our original protocol<sup>26</sup> and the first systematic review<sup>24</sup> on this topic.

## **Results**

### *Study review and selection*

Overall 4,284 abstracts were found and 127 full text articles were retrieved and read (Figure 1). Following the second stage review, 18 articles reported patient outcomes and were included in the systematic review (Supplementary Table 1).

Fig. 1 here

All 18 papers were randomised controlled trials of educational interventions with primary care health professionals and examined their impact on patient outcome measures<sup>29-46</sup>. The primary outcome of this review is the effectiveness of educational interventions with health professionals in terms of patient outcomes. Twelve of the 18 papers observed a significant difference between patient outcomes of those attending the intervention and control practices.<sup>29,31-33,35-37,41,43-46</sup> Eleven papers overall - seven<sup>31,33,36,37,41,43,44</sup> of the 12 papers showing an effect and four<sup>30,34,38,40</sup> of the six not showing an effect - were considered to have a low risk of bias<sup>27</sup> (Supplementary Table 2). Among the seven papers which showed a difference in patient outcomes and had a low risk of bias, all were rated as moderate or strong in terms of the quality assessment<sup>28</sup> (Table 2). Among the four trials which did not show significant differences in outcomes and were considered to have a low risk of bias, two were considered of weak quality and two of moderate quality.

Table 2

All but two RCTs included condition homogeneous patients (those with diabetes, at risk or with CVD, asthma, COPD, depression or chronic headache). One study<sup>42</sup> included patients with at least one chronic condition (diabetes, [risk of] cardiovascular disease, asthma or COPD) and one study<sup>31,36</sup> included patients taking benzodiazepines daily for six months (including those with psychotic disorders, severe personality disorder, alcohol or illicit drug abuse or anxiety or depressive in hospital or being treated by a psychiatrist). Some studies reported multiple follow-up time points in one paper,<sup>30,38,40,41,44</sup> while other studies reported these in separate papers.<sup>31,36,33,37,45</sup> Vicens et al. reported on follow-up at 12 and 16 months<sup>31,36</sup> and Kristoffersen et al. reported at three, six and an average of 16 month follow-up<sup>33,37,45</sup>. Follow-up time varied across studies, from 1.5 to 36 months among studies achieving differences between intervention and controls, and three and 24 months among studies not showing differences in primary and/or secondary outcome measures.

The educational interventions with health professionals spanned a range of techniques and modalities, and many incorporated multiple interventions including patient components. None of the studies separated the impact of different intervention elements. Limited generalisability was a factor for all studies.

Successful programmes concluded that the need for ongoing patient follow-up and patient feedback is a time consuming factor.<sup>31,36,44</sup> However, a focus on person centred care with individualised care plans and/or recording of lifestyle goals in the patient medical record were noted factors in some successful studies.<sup>29,31,36,41,46</sup> One study surmised that a less time consuming structured intervention with a written individualised stepped-dose reduction plan is as effective in primary care as a more complex intervention involving follow-up visits.<sup>31</sup>

There may be lack of adoption due to several challenges, including that complex interventions may not be delivered as planned,<sup>31,32,36</sup> often due to workload implications,<sup>31,36,40</sup> due to high dropout rates and low study integrity.<sup>38,40,42</sup> Additionally, changes specifically due to the interventions are sometimes difficult to assess.<sup>44</sup> One study showed a positive impact of the intervention after three years follow-up to be 1.5 times more effective than usual care despite time and workload constraints.<sup>36</sup> Booster training was included in some of the successful interventions.<sup>43,44</sup> Cost-effectiveness analyses should form a part of all future evaluations according to one study,<sup>41</sup> given the intensity of the interventions and evaluations required.

A focus on person centred care where the care delivered is aligned to patients' needs and expectations and is interlinked to chronic disease management increases the effectiveness of intervention programs.<sup>46</sup> Low uptake of some of the patient interventions, such as goal setting and action planning, and patient motivation were noted as factors which may have reduced impacts.<sup>30,38,41</sup>

Studies showing a positive intervention effect suggest that improvements can be maintained with strategies, such as ongoing patient follow-up, patient feedback, individualised care plans, recording of lifestyle goals in the patient medical record and booster training.<sup>31,33,36,37,41,44,45</sup>

## **Discussion**

### *Summary*

The key finding of this systematic review is that since 2013, the scarcity of studies that assess the impact on patient outcomes of training primary care clinicians in patient self-management of chronic conditions has been somewhat addressed. However, the generalisability of results is limited and it is not clear which intervention aspects work best.

Our updated systematic review showed more evidence is now available with 18 papers in five years from September 2013 to August 2018 from the 4,284 abstracts located. Twelve of the 18 papers showed a difference between groups, indicating that training health professionals in general practice to support their patients' self-management activities results in improved patient outcomes. Seven of these were considered to have a low risk of bias, and overall nine were rated as moderate or strong on the quality assessment.

All educational interventions with health professionals in these papers spanned a range of techniques and modalities, and many incorporated multiple interventions including patient components. Several challenges, including that complex interventions may not be delivered as planned and are difficult to assess,<sup>31,32,36,44</sup> often due to workload implications,<sup>31,36,40</sup> were found to be limiting factors. Patient centred care appeared to increase the effectiveness of educational intervention with healthcare professionals in primary care.<sup>32,35,42,46</sup> Some studies reported multiple follow-up time points in one paper,<sup>30,38,40,41,44</sup> while others reported these separately.<sup>31,36,33,37,45</sup> Studies showing a positive intervention effect suggest that improvements can be maintained.<sup>31,33,36,37,41,44,45</sup>

### *Strengths and limitations*

The review was limited to papers where educational interventions for patient self-management with health professionals in primary care were undertaken and the resultant patient outcomes were measured. Differences in terminology and concepts could have resulted in some papers not being located or included; however, we have detailed our scope and criteria clearly.

Only articles in English were included which could lead to reporting and language bias. The quality of studies varied which could have introduced biases that can lead to over- or under- estimation of intervention effectiveness. Seven of the 18 included papers did not follow intention to treat analysis which could induce attrition bias.

### *Comparison with existing literature*

Challenges to the delivery of such multifaceted programmes in primary care were identified by many of the studies. While some were related to research integrity, others were related to the feasibility of implementing interventions, particularly complex or prolonged interventions, in the real world setting as discussed elsewhere in the literature.<sup>23</sup>

Patient centred care was identified as improving intervention effectiveness and is supported by findings that highlight the impact of good communication and trust<sup>47,48</sup> and the importance of personalised support and goal setting,<sup>49</sup> suggesting that empowerment based strategies result in increased and longer self-efficacy improvement.<sup>7</sup> This concept of patient centred care supports the findings of the previous systematic review in relation to the role of motivational interviewing.<sup>24</sup>

#### *Implications for Research and/or practice*

There is a need to distil what methods work best in different settings and for different patients.<sup>50,51</sup> Incorporating the phases of transformation that individuals are in should be incorporated into future studies to enhance this understanding.<sup>8,23,52</sup>

Patient empowerment represents a challenge for health care professionals,<sup>7</sup> and hence further research needs to ensure to capture the contextual element<sup>8</sup> and practice needs to find ways to overcome the real world limits.<sup>7,23,48,51,53</sup> Whole health system changes<sup>48,51,54</sup> and the use of information and communication technology (ICT) are recommended.<sup>48,54</sup>

It has been recommended elsewhere, and is supported here, that treatment integrity and fidelity data should be reported in all behaviour change studies.<sup>23,53</sup>

#### **Conclusions**

Patient self-management support is recognised to be an effective component of comprehensive integrated chronic disease management. However, more high quality research is needed on what methods work best and for which patients and what clinical conditions in the primary care setting. The practical implications of training healthcare professionals require specific attention.

#### **Contributors**

CC co-conceived the project, undertook review of a percentage of the abstracts, undertook the full text review and drafted the paper.

GD undertook the literature search, undertook review of a percentage of the abstracts and contributed to the paper.

PP undertook the literature search and contributed to the paper.

RF undertook the review of all abstracts.

AR co-conceived the project, undertook review of a percentage of the abstracts, undertook the full text review and contributed to the paper.

All authors approved the final version of the paper.

## Declaration of interests

We declare no competing interests.

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**Table 2: Quality rating of included papers**

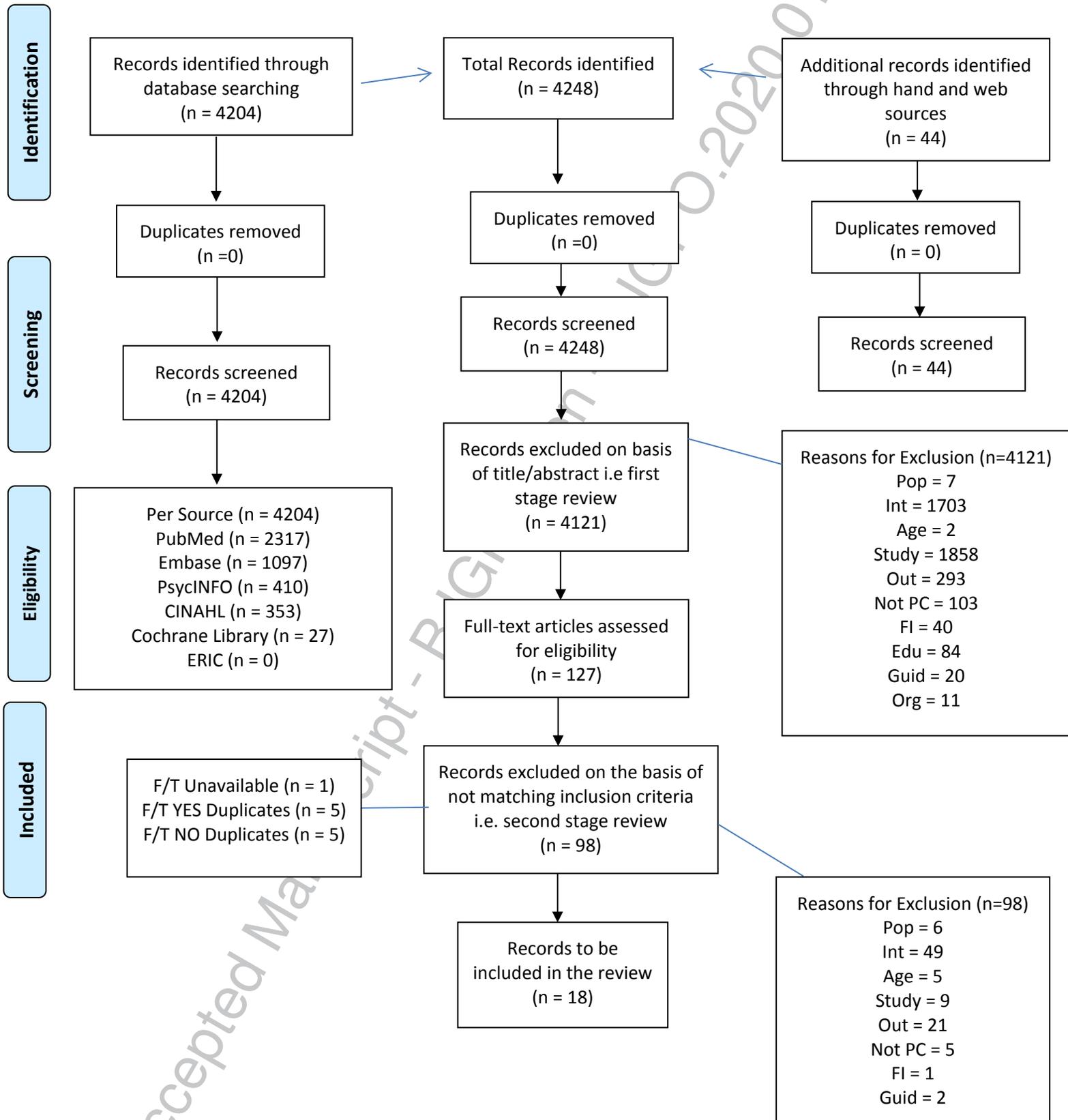
<b>First Author</b>	Global Score	A	B	C	D	E	F
Tobe [29]	WEAK	weak	mod	weak	weak	strong	mod
Kruis [30]	MOD	weak	strong	strong	mod	strong	mod
Vicens [31]	STRONG	strong	strong	strong	weak	strong	strong
Keeley [32]	STRONG	mod	strong	strong	strong	strong	strong
Kristoffersen [33]	MOD	weak	strong	strong	strong	strong	strong
van Dijk-de Vries [34]	WEAK	Weak	strong	weak	mod	strong	mod
Racic [35]	STRONG	strong	strong	strong	mod	strong	strong
Vicens [36]	STRONG	strong	strong	strong	strong	strong	strong
Kristoffersen [37]	MOD	weak	strong	strong	strong	strong	strong
Zwar [38]	WEAK	weak	strong	strong	strong	mod	strong
van Lieshout [39]	MOD	weak	strong	strong	mod	strong	strong
Vaillant-Roussel [40]	MOD	weak	strong	mod	mod	strong	mod
Griffiths [41]	STRONG	strong	strong	mod	mod	strong	mod
Eikelenboom [42]	STRONG	strong	strong	strong	mod	strong	strong
Ramli [43]	MOD	strong	strong	strong	weak	strong	strong
Keeley [44]	MOD	weak	strong	strong	mod	strong	strong
Kristoffersen [45]	WEAK	weak	strong	strong	weak	strong	strong
Baldeón [46]	WEAK	weak	strong	weak	mod	strong	mod

**Table 1: Inclusion and exclusion criteria.**

<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>	<b>Exclusion code</b>
English papers	Non- English papers	Eng
Adults (18+)	Study population <18	Age
Primary Care/Community	Secondary Care/Hospital	Not PC
Chronic conditions, chronic illness, chronic disease, non-communicable disease (NCD)	Acute conditions	Acute
Study Type- Systematic reviews, meta- analysis, RCTs, controlled clinical trials, interrupted time series. Controlled before and after studies	Study Type- Qualitative studies, populations studies, surveys, cross sectional, uncontrolled before and after studies (cohort)	Study
Education and training of primary care Health Professionals for patient education in promoting change, behaviour change, lifestyle change, patient engagement, patient empowerment, motivational skills, patient collaboration, patient adherence and compliance, Patient self management, decision making, patient problem-solving	Not education/training of health care professionals	Int
	Not primary care health professionals	Pop
	Primary outcome measures not included	Out
	Direct patient education only	Edu



**Figure 1: PRISMA Flow Diagram**



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