Delivering brief physical activity interventions in primary care: a systematic review of the prevalence, and factors associated with delivery, receipt, and patient receptivity

ABSTRACT

Background

Brief interventions (BI) involving physical activity (PA) screening and/or advice are recommended in primary care. However, the frequency of delivery is unknown.

Aim

To examine the extent to which PA BI are delivered in primary care and explore factors associated with delivery, receipt, and patient receptivity.

Design

A mixed methods systematic review, with a narrative synthesis of results.

Method

CINAHL, EMBASE, MEDLINE and PsychInfo were searched from January 2012 until June 2020 for qualitative and quantitative studies reporting the level of delivery and/or receipt of PA BI within primary care, and/or factors affecting delivery, receipt, and patient receptivity. Quality was assessed using the Mixed Methods Appraisal Tool. Attitudes and barriers towards delivery were coded into the Theoretical Domains Framework and the Capabilities-Opportunities-Motivation Behaviour model.

Results

After screening 13066 records, 66 articles were included. The extent of PA screening and advice in primary care varied widely (2.4% – 100%; 0.6% - 100%, respectively). PA advice was delivered more often to patients with a higher body mass index, lower PA levels, and/or more comorbidities. Barriers including a lack of time and training/guidelines remain, despite recommendations from the World Health Organisation and National Institute for Health and Care Excellence. Few studies explored patients' receptivity to advice.

Conclusion

PA BI are not delivered frequently or consistently within primary care. Addressing barriers to delivery through system-level changes and within training programmes could improve and increase the advice given. Understanding when patients are receptive to PA interventions could enhance healthcare professionals' confidence in their delivery.

Keywords

Primary care, Physical activity, Brief interventions, Health promotion, Disease prevention, Systematic review

How this fits in

(Summarise, in no more than four short sentences, what was previously known or believed on the topic and what your research adds, particularly focusing on the relevance to clinicians.)

Brief physical activity (PA) interventions delivered in primary care consultations can increase PA in the general population. However, there is a lack of understanding regarding the frequency and factors associated with delivery. This review reports high variation in the frequency and context of delivery and receipt and outlines common barriers and facilitators (coded within the TDF and COM-B model) to practitioner delivery. Identified barriers could be addressed through system-level changes, improved educational resources, and in practitioner training, to increase practitioner knowledge and confidence, and subsequently improve patient receptivity and PA uptake.

INTRODUCTION

Physical inactivity is a global public health problem[1, 2]. In the UK, levels of inactivity are increasing; approximately 32% of men, and 36% of women failed to meet the government's physical activity (PA) recommendations in 2018[3]. Physical inactivity increases the risk of poor physical and mental health, is estimated to account for as many deaths in the UK as smoking (one in six), and costs the NHS around £0.9 billion annually[4].

The World Health Organisation's (WHO) global recommendations on PA for health suggest PA advice should be provided within primary care[5]. Correspondingly, within the UK the National Institute for Health and Care Excellence (NICE) recommends that primary care practitioners should deliver 'brief' PA advice to patients who are not currently meeting PA guidelines[6]. NICE defines brief advice as, "verbal advice, discussion, negotiation or encouragement, with or without written or other support or follow-up"[6].

Previous reviews have found brief interventions (BI) to be effective at increasing (self-reported) PA in the short-term, with some evidence that this can be maintained in the longer term (12 months)[7, 8]. However, barriers to giving and receiving PA advice in primary care are rife: a review in 2012 reported a variety of barriers including lack of resources and perceived (in)effectiveness of advice[9]. Since that review was published, population PA levels have not substantially increased[10], despite various initiatives nationally and globally to increase PA advice delivered in primary care[11, 12]. Additionally, the UK's recent GP workforce 'crisis'[13, 14] may have impacted GPs' capacity to include PA discussions within consultations. Thus, an updated review on barriers and facilitators to PA advice in primary care is warranted. Furthermore, little is known about how often, and to who, this advice is given. This knowledge is crucial for understanding how BI for PA are implemented in practice, and identifying potential areas for improvement.

The aim of this mixed methods systematic review was to examine the extent to which brief PA interventions (PA screening and/or advice) are delivered in primary care and explore factors associated with delivery, receipt, and patient receptivity.

METHODS

Search strategy

We searched for quantitative articles reporting level of delivery and/or receipt of brief PA interventions within primary care consultations for health promotion/disease prevention, and quantitative/qualitative articles reporting factors affecting delivery, receipt, and patient receptivity. In July 2018, and again in July 2020, separate searches were carried out by an information specialist in CINAHL, EMBASE, MEDLINE, and PsychInfo (Supplementary Box S1 for example search terms). The review was prospectively registered on PROSPERO (CRD42018103812).

Article selection and data extraction

Two authors (RJT, LHH) screened the titles and abstracts using the inclusion criteria (Supplementary Box S2), erring on the side of inclusion. Three authors (RRS, LHH, AG) reviewed 20% of the titles and abstracts to ensure reliability. 20% of the full texts were double screened by LHH and AG, with disagreements arbitrated by RJB. References of included articles were hand searched for additional eligible studies.

One-hundred per cent of the data were extracted in duplicate by independent authors (LHH, AG, RJT, RRS), using an electronic spreadsheet. Discrepancies were checked by a third reviewer. Key study characteristics are listed in Supplementary Table 1, and the main outcomes of patient and practitioner receipt/delivery of PA BI in Supplementary Tables 3 and 4.

Quality assessment

Study quality was assessed using the Mixed Methods Appraisal Tool[15] by LHH, with 20% checked by AG.

Analysis

To examine the extent to which PA BI are delivered in primary care, quantitative data were extracted on the reported frequency of 1) PA screening, 2) delivery of PA advice by HCPs and 3) patient-reported receipt of PA BI. A

quantitative synthesis of this data was not possible due to large heterogeneity in the definition and measurement of PA BI. A narrative synthesis was therefore conducted.

To explore factors associated with delivery, receipt, and patient receptivity, quantitative data were extracted inductively from articles, in duplicate by LHH, AG, RJT, RRS, and coded as either patient or HCP/system factors. Qualitative data on HCP attitudes and perceived barriers towards delivery, and patients' views, attitudes, and receptivity towards PA BI were extracted inductively from the articles using the articles' own phrasing/codes. Similar codes were grouped together by LHH (expertise in behaviour change theory). Codes relating to HCP attitudes or barriers were mapped onto the Theoretical Domains Framework (TDF) and Capabilities-Opportunities-Motivation Behaviour model (COM-B) by LHH and RJB, to assist identification of key components for future interventions aiming to increase PA BI delivery.

RESULTS

The database searches identified 13,066 records once duplicates were removed (Figure 1), with 59 eligible articles. Hand searching references identified seven further studies, giving a total of 66 papers. The majority of studies collected data from healthcare professionals (HCPs; n=39), used cross-sectional surveys (n=52), and were American (n=20) (Supplementary Table 1).

Quality Assessment

The majority of studies were moderate quality. Most quantitative descriptive studies used appropriate statistical analyses (94%), and appropriate measurements (81%), many of which were pilot tested and/or developed using Delphi methods, or in consultation with key stakeholders (Supplementary Table 2). The risk of nonresponse bias, and the representativeness of the target population was unclear, or inadequate, in around half of these studies.

Level of PA screening by HCPs

Eleven studies reported the level of PA screening by practitioners (Figure 2; Supplementary Table 3). Data from medical chart audits in medium-high quality studies (n=6) reported that the proportion of patients who had their PA levels assessed ranged from 2.4% to 60.1% (median=43.5%)[16, 17]. The proportion of practitioners who reported assessing PA for at least some of their patients ranged from 8% to 100% (median=50%)[18,19].

Level of brief PA advice by HCPs

Thirty-one studies reported the extent to which practitioners provide PA advice or counselling (Figure 2; Supplementary Table 3). The proportion of practitioners who reported delivering PA advice/counselling ranged from 0.6% to 100% (median=64%)[19]. One high quality study analysed audiotaped consultations and reported that PA was discussed in 72% of patient visits[20, 21]. In contrast, the proportion of patients who were given PA advice/counselling, as determined by medical chart audit (in one high quality study), ranged from 1.5% to 52.2% (median=23.3%)[16].

Patient reported receipt of PA BI

Twenty-five studies provided data on patient receipt of PA BI (Figure 2; Supplementary Table 4). The proportion of patients reporting that they had received PA advice ranged from 7.7% to 76% (median=35%)[22, 23], with thirteen studies reporting fewer than 40% of patients recalled receiving PA advice.

Factors associated with the delivery or receipt of PA BI

Patient factors

Twenty-three studies examined patient factors associated with PA BI (Supplementary Table 5). While the majority of evidence was mixed and inconclusive, the following patient factors were most consistently reported to be significantly and positively associated with the delivery or receipt of PA BI: high patient BMI (*n*=11), physically inactive/sedentary patients (*n*=5), patients with poorer health/more comorbidities (*n*=5), and patients who had more

physician visits (*n*=3). Patient gender and age was often found *not* to be associated with PA BI (*n*=11; *n*=6, respectively).

HCP/system-related factors

Twenty-four studies examined practitioner/system factors associated with PA BI (Supplementary Table 6). The majority of findings were inconsistent, except: female practitioners were more likely than male practitioners to assess PA (but not necessarily advise)[16, 24-27]; practitioners with higher levels of PA themselves[26, 28-30] and practitioners with positive beliefs about their capabilities and/or efficacy[16, 25, 26, 31] were more likely to deliver PA BI.

HCP attitudes and perceived barriers towards PA BI

Twenty-six quantitative and two qualitative studies[32, 33] examined HCP attitudes towards delivering PA BI. These were coded into the TDF[34] and COM-B[35] (Supplementary Table 7).

1. *Capabilities (psychological).* Twenty quantitative and one qualitative study reported barriers and facilitators that were coded under psychological capabilities. Nineteen of these reported attitudes that fit within the TDF 'knowledge'. In 12 of these, HCPs reported a personal lack of knowledge or training as a barrier to providing PA BI, with a request for additional training mentioned[36]. However, the majority of HCPs in 6 studies perceived they had sufficient knowledge or skills. In 2/4 studies that were coded under the TDF 'skills', practitioners reported difficulty in advising patients, or including it in their appointments[25, 37].

2. *Opportunity (physical).* Seventeen studies (including two qualitative studies) measured attitudes that were coded under the TDF 'Environmental context and resources', and the COM-B 'Physical opportunity' categories. The most commonly cited barriers within these themes were perceived time constraints for including PA discussions within consultations (n=17) and a perceived lack of local services or places to refer patients (n=8). Further barriers included perceived (lack of) availability of educational resources for

HCPs and (lack of) effective tools/information to give to patients, along with perceived (lack of) opportunities to follow-up on PA advice.

3. *Motivation (reflective and automatic).* The most commonly coded TDF category within Motivation was 'Beliefs about consequences' (n=19). Within this domain, the most commonly reported barriers to delivery PA BI were; HCP perceived (lack of) patient interest, motivation, or likelihood of adhering to advice(n=14), HCP perceived patient expectation of receiving pharmacological treatment(n=6), and HCP perceived (lack of) effectiveness of PA advice(n=7). Despite these barriers, most practitioners thought that PA BI were a part of their role(n=11), important(n=7), and the majority felt confident about their capabilities (self-efficacy) in providing PA BI and supporting behaviour change(n=8/13 studies).

Patients' views, attitudes, and receptivity towards brief PA interventions

Four high quality qualitative studies explored patient views and attitudes towards PA advice in primary care[38-41]. Patients felt they had no regular conversations about PA, and that PA conversations lacked substance. The need for a patient-centred approach, with follow-up communication was mentioned. Some patients were receptive to PA advice if clearly linked to contextual factors, such as the potential to reduce medication or pain. Some patients believed practitioners lack the confidence and knowledge to deliver PA BI, which influenced their receptivity towards advice. However, provider motivation and support were viewed as important for behaviour change.

DISCUSSION

Summary

This mixed-methods review of 66 studies worldwide suggests high variation in the extent to which PA is discussed with patients in primary care (PA screening: 2.4% – 100%; PA advice: 0.6% - 100%). Key practitioner barriers included a lack of time, training/guidelines, and perceived patient motivation/adherence to PA advice. Few studies have explored patients'

receptivity to such advice, however conversations with clear relevance to the patient's contextual factors (e.g. medication) appear to be valued.

Comparison with existing literature

This review provides an update of the literature on provider and patient barriers to delivering/receiving PA advice, following Campbell et al's (2012) review[9]. It extends their work through coding provider attitudes and barriers into the TDF and COM-B model. Similar provider barriers were identified; perceived likelihood of patient uptake, lack of resources (time, materials), and HCP confidence and knowledge. Lamming et al's (2017) umbrella review also reported time as a key practitioner barrier[7]. It is notable that these barriers remain despite an increased awareness of the importance of PA, and recommendations from WHO and NICE[5, 6]. There is a clear need to identify meaningful ways to tackle these persistent challenges.

Comparing PA to other behaviour change discussions, diet, weight, and smoking is often discussed more frequently than PA, whereas alcohol is discussed less[42-49]. Furthermore, a survey in Sweden and the US reported that more patients wanted to receive support on diet, weight, and smoking than PA. Therefore PA discussions could be conducted alongside advice on diet and/or weight to increase delivery frequency and patient receptivity.

Implications for practice

PA BI were more frequently delivered to patients with higher BMIs, a greater number of comorbidities, and who were physically inactive. Patients believed that their practitioners' perception of their activity levels and physical capabilities influenced their likelihood of receiving advice. Practitioners must therefore be cautious not to stigmatise patients when deciding when and how to conduct these conversations: if the patient feels they are being stigmatised it could have detrimental effects on their psychological and physical health[50] and may increase inactivity[51].

Patients often under-reported receiving PA advice, suggesting that focussed HCP training on delivery skills may be needed to increase patient

engagement with advice. Opportunistic PA BI tailored to what is realistically feasible around their lifestyles are likely to be most effective.

The parallels between HCP perceived barriers to BI for PA compared with smoking cessation[52] and obesity[53], notably time constraints, lack of experience, and lack of patient motivation, suggests a cultural shift is desirable, to address HCP placing preventative lifestyle interventions as lower priorities compared with disease management (including pharmacotherapy)[54]. Whilst any attempts to address the physical inactivity epidemic are multifaceted with a need to engage all stakeholders, primary care HCP have a key role owed to the high frequency of patient contact[55] coupled with the trust patients put in HCP[56].

To address this challenge, HCP, particularly GPs, need evidence to realise that behavioural interventions have an important place in holistic patient-centred evidence-based medicine, with reassurance that patients will engage with and benefit from them. HCP also need clear interventions to offer, with education at undergraduate and postgraduate level and made essential in continuing professional development. The recently launched UK's 'Moving Medicine' toolkit[57] may help overcome knowledge and resource barriers. However, a recent study demonstrated that despite educational training successful addressing GPs' barriers to providing opportunistic weight loss interventions during a trial, after the trial ended, GPs reported the same barriers as pre-trial[58]. Therefore, wider system changes may also be required.

Implications for research

There is limited research on patient views towards receiving PA interventions in primary care. Three of the four studies in this review were limited to samples of adults aged 60+ living in North America[38, 39, 41]. Research is needed on patient receptivity towards PA discussions within the UK, amongst a wider age-range, to inform practitioner training and increase patient engagement with advice.

Only four studies were UK-based[44, 59-61], and all indicated that rates of PA BI are low: 15% of GPs reported delivering PA advice to all patients, 18% - 35% of patients reported receiving advice, and 53% of patients reported PA screening. More research is needed in the UK to better understand the prevalence, factors associated with, and barriers and enablers to delivering/receiving PA BI in UK primary care.

Current research fails to adequately describe the content of PA interventions, thus, we are unable to comment on the quality of advice given. Future research would benefit from describing the BI and the context in which it is delivered, using the Behaviour Change Taxonomy[62] and TIDIER checklist[63].

Strengths and Limitations

This review is the first to report on the prevalence of PA BI in primary care, and link HCP perceived barriers and facilitators to the COM-B and TDF.

Only articles written in English were included, due to a lack of translation resources. Only 20% of article screening and quality assessment was conducted in duplicate. Only peer-reviewed, published articles were included, therefore a publication bias may be present. This review focuses solely on PA screening and advice: we excluded studies that examined specific exercise referral schemes or prescriptions (including social prescribing). Future research may benefit from comparing the frequencies of these. Due to a lack of detail within the articles, we were unable to code BCTs, despite planning to in our protocol. The large heterogeneity of outcome measures made cross-study and cross-cultural comparisons challenging.

The quality of studies were often reduced by the sample not being representative of the target population (or lack of detail to assess this), and a high risk of non-response bias. Therefore caution should be taken when generalising findings. It is possible, especially in the HCP sample that those with a particular interest in PA were more likely to participate. Therefore the prevalence of PA BI reported in this review may be an overestimation.

CONCLUSION

Prevalence of the delivery and receipt of PA BI within primary care varies widely, with many studies reporting low levels of delivery/receipt. HCPs have identified a number of barriers to delivering PA advice, including time, knowledge, and confidence. Addressing these barriers through system-level changes and training programmes could improve the consistency, quality, and frequency of advice given. A better understanding of when patients are most receptive to PA interventions within primary care could enhance the effectiveness of interventions and increase HCPs confidence to discuss PA with their patients.

Figure 1. Flow diagram of search strategy

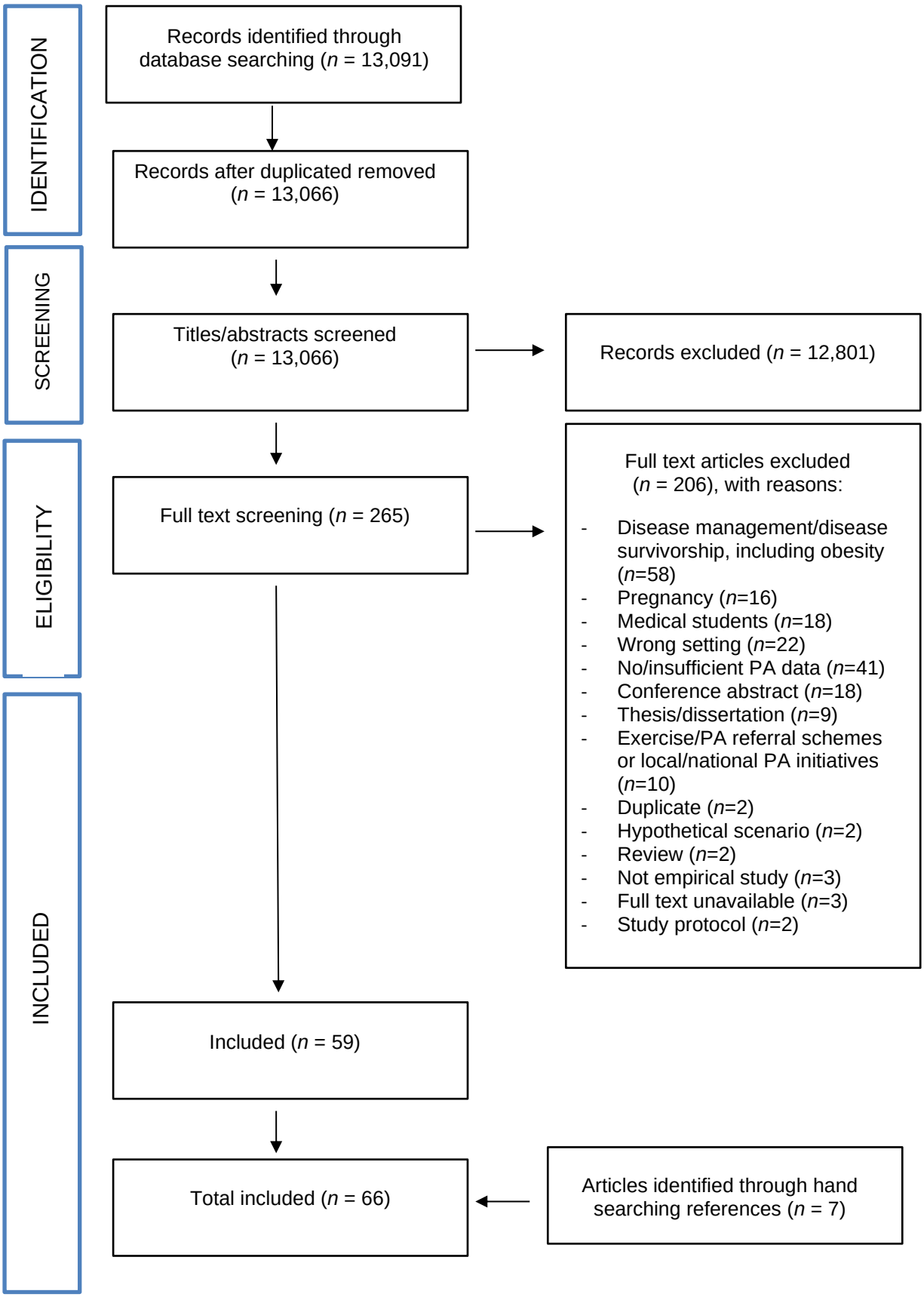
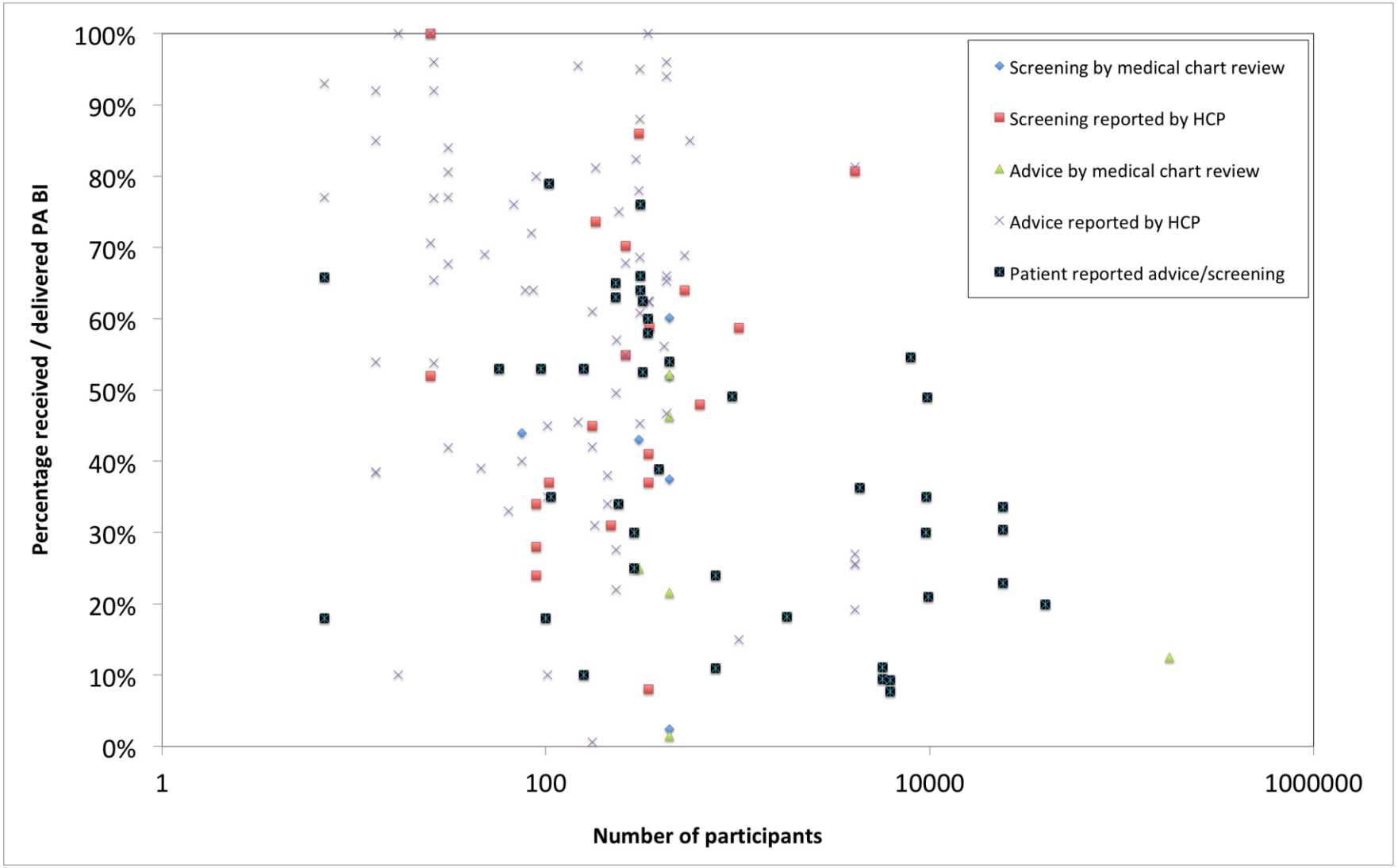


Figure 2. Frequency of physical activity brief interventions in primary care.



Scatter plot detailing the frequency of PA BI delivery/receipt as reported by patients, healthcare professionals, and medical chart reviews (Y-axis), plotted against the number of participants in each study (X-axis).

Funding

This review was supported by funding from Yorkshire Cancer Research and Cancer Research UK. MT is supported by a Cancer Research UK programme grant (C569/A16891). DP is supported by the strategic research programme funded by the Scottish Government's Rural and Environmental Science and Analytical Services (RESAS) Division. RJB is supported by Yorkshire Cancer Research Fellowship funding.

Ethical Approval
Not required as not an empirical study.

Competing Interests
The authors have no competing interests to declare.

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