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Perceptions and use of behaviour change interventions for physical activity in chronic respiratory disease in The Republic of Ireland

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Abstract

Objectives Behaviour change interventions may support physical activity behaviour in people with chronic respiratory disease. The most effective interventions for long-term physical activity behaviour change in this cohort remains unclear. This aim of this study was to explore the use and perceptions of behaviour change interventions by both providers of physical activity programmes for people with chronic respiratory disease and by people living with chronic obstructive pulmonary disease (COPD) in The Republic of Ireland.

Design Two anonymous online and paper-copy cross-sectional surveys, piloted and mapped to the COM-B model of behaviour change, were distributed via social media and relevant gate-keepers (e.g Irish Society of Chartered Physiotherapists, COPD Support Ireland) between November 2023 and April 2024. Findings were summarised using descriptive statistics including frequencies, percentages, means and medians. Relationships between variables were investigated using Chi^2 ($p = 0.05$).

Results The response rate to the provider survey was 71% (107/150), and 112 participants responded to the COPD cohort survey. Providers perceived encouragement, pertaining to theoretical constructs such as self-confidence, optimism and reinforcement to be the most effective techniques influencing physical activity behaviour. People with COPD perceived social support, pertaining to theoretical constructs such as interpersonal skills and social identity, to be the most effective interventions influencing their physical activity behaviour. Motivation was frequently identified as a common COM-B component, suggesting important links to this mechanism of action in influencing behaviour.

Conclusions Interventions with motivational components are perceived as effective influencers of physical activity behaviour by providers of physical activity programmes and by those living with chronic respiratory disease.

Contribution of the Paper

- Providers of physical activity programmes for people with chronic respiratory disease in The Republic of Ireland perceive that they are using encouragement, education, goal setting, education and social support as effective interventions to support behaviour change in chronic respiratory disease.
- People with COPD perceive social support and one-to-one interaction with trainers as effective interventions to support their physical activity behaviour.
- There may be discrepancies between male and female perceptions of effective interventions in the COPD cohort, and this warrants further research.

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- Interventions containing motivational components are perceived by both providers and people living with chronic respiratory disease as most effectively influencing physical activity behaviour in chronic respiratory disease.

Keywords: Chronic respiratory disease; Physical activity; Behaviour change; Chronic obstructive pulmonary disease

Introduction

Chronic respiratory disease (CRD), including diseases such as chronic obstructive pulmonary disease (COPD), asthma, cystic fibrosis and interstitial lung disease, results in breathlessness, poor lung function and physical deconditioning, in addition to fatigue, mental health challenges, and reduced quality of life for those affected [1,2]. The third leading cause of death worldwide, CRD poses a high socioeconomic burden with approximately 545 million people living with a CRD globally, presenting with high morbidity and mortality rates and a resultant 3.9 million deaths in 2017 [1,3]. In Ireland, an increasingly ageing population coupled with high smoking prevalence historically suggests the socioeconomic, healthcare and individual burden of CRD, in particular chronic obstructive pulmonary disease (COPD), will continue to increase [4]. It is estimated that 380,000 people in Ireland are living with COPD, with just 110,000 formally diagnosed [5] translating to the highest rate of hospitalisation of all organisation for economic co-operation and development (OECD) countries [4,6].

The concept of physical activity behaviour in chronic disease is complex. Physical activity is defined by the World Health Organisation as "any bodily movement produced by skeletal muscles that requires energy expenditure" [7]. People living with a CRD are less physically active than others due to a downward cycle of breathlessness, inactivity and exercise intolerance [8]. Pulmonary rehabilitation (PR) is recommended as non-pharmacological care for those with CRD, with COPD accounting for > 70% of all CRDs globally [1,9–11]. However, barriers to accessing and attending PR are well documented, with less than 5% of people with COPD accessing rehabilitation, and maintenance of benefits gained is difficult [1,12,13]. Access to PR programmes for people with COPD can be limited by financial, transportation and psychosocial constraints [11]. In a recent mixed methods review, patient-reported barriers to attending and adhering to PR programmes are outlined, including negative emotions, low perceived benefits and poor health literacy [11]. Self-reported limitations imposed by dyspnea and multiple common co-morbidities such as anxiety and depression in this population are perceived by people with COPD to place greater restrictions on PR adherence [11]. In light of these barriers to accessing PR for so many, long-term changes in physical activity behaviour in those with living with a CRD, in particular COPD, are required to minimise the impact of the disease whilst maintaining optimal physical function [8,9].

Both the capability, opportunity, motivation (COM-B) model for behaviour change and the theoretical domains framework (TDF) were developed by Susan Michie and colleagues, who sought not only to integrate and synthesise more than 30 theories of behaviour change, but to help those endeavouring to assess, diagnose and understand human behaviour by providing a comprehensive and practical tool suitable for real-world application [14,15]. Behaviour change models and frameworks such as the COM-B and TDF are commonly used in health sciences to help develop a "behavioural diagnosis" and inform a desired shift in behaviour using behaviour change interventions [14]. Michie *et al.* define behaviour change interventions as "co-ordinated sets of activities designed to change specified behaviour patterns" [14]. A recent systematic review and meta-analysis on twelve interventions such as counselling, step count monitoring and feedback for physical activity in COPD (n = 1211) demonstrated no significant long-term impact on physical activity assessed as steps per day when compared to control groups (SMD 0.16, 95% CI −0.03, 0.36; p = 0.10), however, when mapped to the TDF, the domains of goals, behaviour regulation and social influences related to some significant short-term (up to 12 weeks) improvements in physical activity and quality of life outcomes [15,16]. Similarly, a recent non-randomized controlled trial (n = 89) reports intervention group participants with COPD significantly benefitted from a short 12-week behaviour change theory based activity programme comprising multiple interventions including motivational interviewing, planning, goal setting and monitoring on outcomes such as total physical activity, sedentary behaviour, quality of life and exercise capacity (p < 0.001) [13]. Despite growing awareness of the importance of behaviour change theory in the promotion of physical activity, the most effective techniques to influence physical activity behaviour in the longer-term for those with a CRD, including COPD, are not yet clear.

Aim

The aim of this research was to determine provider and patient use and perceptions of behaviour change interventions for physical activity behaviour in those with a CRD in The Republic of Ireland.

Objectives

1) To determine whether and to what extent behaviour change interventions are used for physical activity in people with CRD in the Republic of Ireland.

2) To determine providers education on use of behaviour change interventions for physical activity in CRD.
3) To determine perceived physical activity levels of providers and people with COPD.
4) To use the COM-B model of behaviour change to inform identification of barriers and facilitators to physical activity behaviour and to evaluate interventions used [14].

Methods

Study design and participants

In the absence of a validated survey tool, two bespoke survey questionnaires were developed to determine the use and perceptions of behaviour change interventions for physical activity; one survey for providers of physical activity programmes for people with CRD and one survey for people living with the most prevalent CRD in the Republic of Ireland, COPD. The design of the survey questionnaires was informed by the results of the authors' systematic review and meta-analysis [16], wider relevant literature, perspectives of clinical and academic experts including a consultant respiratory physician (co-author TOC), two lecturers in respiratory physiotherapy (co-authors JB and TT), one person living with COPD and Michie *et al.*s COM-B model of behaviour change [14,15,17]. The COM-B model is widely utilized in healthcare research for its simplicity of use in characterizing and designing interventions, and so and informed our survey design [14,18]. However, we recognised that a limitation of the COM-B would be its lack of specificity in relation to drivers of behaviour change, and so we employed the TDF to further enhance our analysis and understanding, allowing us to present the granular aspects of theoretical domains and constructs related to the included interventions [15,18].

For both surveys, rigour and specification were ensured by adhering to the cornerstones of survey research; coverage, sampling, response and measurement [19]. A clear definition of the objectives of the study were initially outlined followed by identification of target population (coverage), determination of appropriate sample sizes and sampling techniques (sampling), application of suitable distribution methods and extensive piloting of surveys (response) and appropriate data analysis (measurement) [19]. Both surveys were piloted with specialist respiratory clinical and academic colleagues including a clinical specialist respiratory nurse, clinical specialist respiratory physiotherapist, a chronic disease self-management support co-ordinator, three lecturers in physiotherapy, a physical activity trainer working with people with COPD, and ten people living with a CRD (specifically COPD) and the questionnaires were amended in response to feedback. People with COPD requested that the questions were re-phrased and medical jargon removed, with greater utilization of layman's language in relation to behaviour change interventions. This questionnaire was shortened considerably in order to keep the survey time to less than ten minutes, the language was simplified and re-piloted without any further recommendations for changes [20]. The provider questionnaire was amended for typographical errors and clarity only.

The first survey, a 24-item cross-sectional survey, consisting of 5-point Likert scale questions, multiple-choice responses and open questions was developed and distributed to providers (any discipline) of physical activity programmes for people with a CRD. The survey was designed to capture data relating to providers use and perceptions of behaviour change interventions in relation to the use of behaviour change strategies. Potential participants received a participant information leaflet and were eligible to complete the survey if they provided opportunities for physical activity for people with a CRD in the Republic of Ireland and their caseload comprised > 50% CRD cases (Supplementary materials 1).

The second survey was a 12-item questionnaire comprising 5-point Likert scale questions and multiple-choice responses. This survey was distributed to people with COPD, via gate-keepers, and designed to capture data on participants physical activity behaviour including perceptions of their own daily physical activity levels. Potential participants received a participant information leaflet and were eligible to participate in the survey if they had a diagnosis of COPD, spoke English, were over 18 years of age, living in the Republic of Ireland and able to provide informed consent (Supplementary materials 2).

National recruitment for both surveys consisted of purposive sampling across a range of gate-keepers to relevant organisations (e.g. the Irish Society of Chartered Physiotherapists (ISCP), Anail (respiratory nurses professional body), healthcare professionals working in Health Services Executive (HSE), chronic disease hubs, COPD outreach, COPD support Ireland, Asthma Ireland, acute hospitals, primary care centres). Social media advertisements were also used (e.g. X (Twitter)/ Facebook) in order to promote and distribute the survey. After extensive investigation including contacting multiple stakeholders, it was estimated that approximately 150 staff provide physical activity programmes for people with CRD across the Republic of Ireland and so these were targeted for the provider survey. We aimed to determine insights from a relatively homogenous population living with a common CRD i.e. COPD. An online sample size calculator was utilised to determine the minimum sample size required to effectively power this survey [21]. Based on an estimated population of 110,000 people with a confirmed diagnosis of COPD living in Republic of Ireland, and assuming normal distribution, the minimum recommended sample size n=106 (90% confidence level and 8% margin of error) was determined [6,20]. Story *et al.* report that although tighter margins of error, wider confidence intervals and bigger sample sizes may increase precision of the data, minimising participant burden while balancing precision and practicality is acceptable for the purposes of this exploratory research [20].

Data was collected and stored using the online survey tool Qualtrics XM Platform ™, or by paper copies returned to CH via stamped addressed envelopes between November 2023 and April 2024. Questions in both surveys mapped to one or more components of the COM-B model [14].

Data analysis

Data was entered from anonymous surveys into Excel spreadsheets, from Qualtrics, and analysed using the Statistical Package for Social Sciences (SPSS version 25). Descriptive statistics, means, standard deviations, percentages and frequencies, were used to summarise and describe the findings. Chi- squared tests (where p was set at 0.05) were used to investigate relationships in nominal data.

Where appropriate the COREQ guidelines were incorporated into the analysis of open questions [22]. Co-authors, physiotherapy lecturers and researchers CH (female, PhD student), JMcV (male, professor) and JB (female, professor) were conscious of their positionality and experience. CH undertook the initial mapping process and this was reviewed and confirmed by co-authors JMcV and JB, with any disagreements resolved by discussion between the three authors. Deductive interpretation utilizing manifest content analysis, was used to produce a phenomenological description of open questions [23,24], as the meaning of the text provided was easily identifiable [25–27]. Analysis, as per Bengtsson *et al.* [26], included decontextualization, recontextualization, categorization and compilation using relevant code names, descriptions and examples remaining as close as possible to the text [25,26]. Finally, findings were mapped to the Theoretical Domains Framework V2 (TDF) and the COM-B model in order to evaluate interventions and identify barriers and enablers to use of interventions [14,15]. The Theory and Techniques Tool was used to identify mechanisms of action where possible [28]. CH and JMcV undertook BCT v1 taxonomy online training module [29].

Results

Demographics

Following initial screening questions and obtaining consent, a response rate of 71% (107/ 150) was achieved for the providers survey. The majority of providers were qualified in their profession 0 to 5 years (29/ 107, 27%) and worked in hospitals (59/ 180, 33%,) and chronic disease centres (28/ 180, 16%). One hundred and twelve participants responded to the survey of people with COPD, with 105 complete responses, ensuring the study was sufficiently powered. The majority of respondents to this survey were female (78/112, 70%), with 83% (93/112) of all respondents aged between 61 and 80 years of age (Table 1).

Table 1
Demographics of respondents with COPD (n = 112).

Sex:	Respondents = n (%)
Female	78 (70)
Male	33 (29)
Prefer not to say	1 (1)
Occupation:	
Working full time	7 (6)
Working part-time	5 (4)
Retired	75 (67)
Student	0 (0)
Carrer	1 (1)
On sick leave	5 (4)
Unemployed	3 (3)
Other	13 (12)
Prefer not to say	3 (3)
Age category:	
Under 40 years	2 (2)
41 to 50 years	3 (3)
51 to 60 years	12 (11)
61 to 70 years	45 (40)
71 to 80 years	40 (36)
81 to 90 years	8 (7)
91 to 100 years	2 (2)

Providers perceptions and use of behaviour change interventions for physical activity

Most providers (93/106, 88%) reported including behaviour change interventions in their programmes. In an open question ("What do you understand by the term 'behaviour change technique'?") providers understood the term to be centered on changing behaviour positively through facilitating and empowering patients. Behaviour change categories identified in open responses were motivation, opportunity, stages of change and health outcomes. Some specific behaviour change techniques were mentioned, e.g. "encourage", "empower", "motivational interviewing", "provide written information" and "education".

Encouragement (86/95, 91%), individualized goal setting (85/95, 89%), education (77/95, 81%) and providing written information (74/95, 78%) were reported by providers as the most frequently utilized techniques. Physical activity monitoring (41/95, 43%) and incentivisation (34/95, 36%) were reportedly utilized less often. Perceived effectiveness of interventions used by providers are presented in Fig. 1.

Perceptions and use of behaviour change interventions for physical activity by people with COPD

Women with COPD significantly perceived social support (57/71, 80%) and one to one interaction with a healthcare professional (53/67, 79%) to be very effective interventions influencing their physical activity. Monitoring (24/105, 23%) and counselling for physical activity (14/

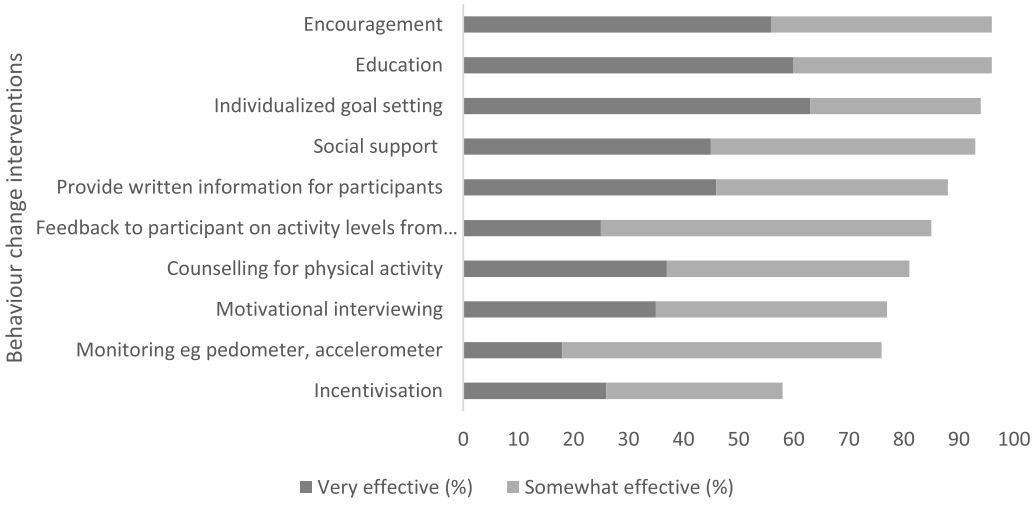

Fig. 1. Perceived effectiveness of interventions by providers: "Please indicate, in your opinion, how effective the following behaviour change techniques are in helping people with chronic respiratory disease to increase their physical activity levels or achieve their physical activity goals?".

105, 13%) were perceived to be less effective interventions overall (see Fig. 2).

Providers training and awareness of evidence for use of behaviour change interventions for CRD

Fig. 3 presents providers reported training and education in use of behaviour change interventions. Just 53 providers (53/118, 45%,) reported they had received professional training in relation to behaviour change interventions for CRD and only 16% of those had this as part of their undergraduate training. Some remaining respondents (16/118, 14%) reported various "other" sources of training, for example, Health Services Executive Ireland Make Every Contact Count (MECC) (provision of advice and referral to appropriate services) (7/118 6%) and local in-service training (3/118 3%) [30]. Twenty one percent (18/84) of provider respondents were reportedly unaware of the evidence.

Providers physical activity engagement

A large majority of providers (81/84, 96.43%) reported that they engaged in regular exercise. Fig. 4 outlines percentage of days per week that providers engage in moderate to vigorous physical activity (MVPA)) (Fig. 4) [31].

Physical activity engagement in people with COPD

Just over one third (38/111,34%) of people with COPD reportedly engage in MVPA between 2 and 4 days/week, with just 28% (31/111) reportedly engaging in MVPA daily and 18% (20/111) reporting that they never engage in regular physical activity. Respondents with COPD most commonly perceived that factors such as "feeling

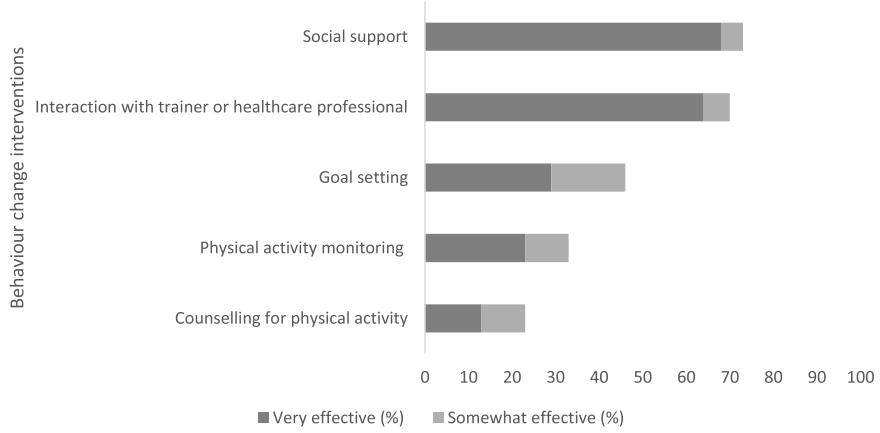

Fig. 2. Perceived effectiveness of interventions by people with COPD: "Some of the following techniques are used to influence physical activity behaviour. Which of the following techniques do you feel are most effective at helping you to be more active?".

Fig. 3. Training received by providers: "If you have received education or training in relation to behaviour change techniques for physical activity, where did you receive this training?".

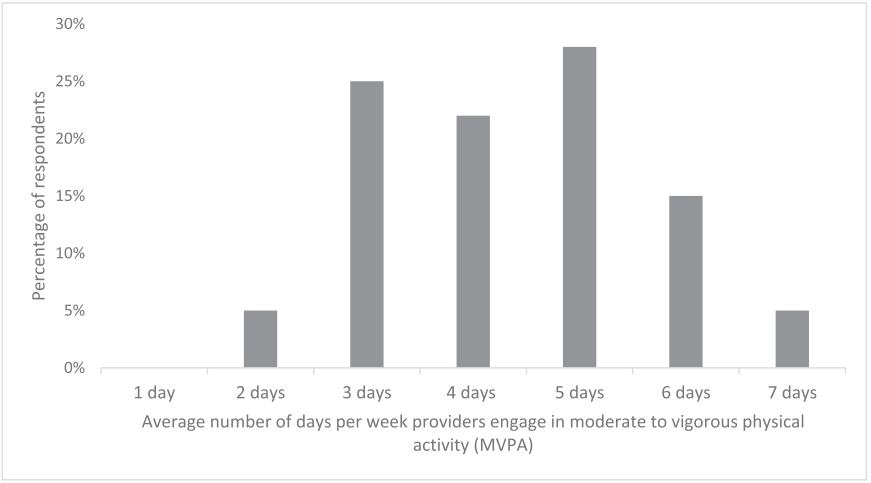

Fig. 4. Physical activity levels of people with COPD: "If you do engage in regular exercise, on average, how many days per week do you engage in moderate to vigorous physical activity (like a brisk walk)?" (Physical Activity Vital Sign, ACSM, 2021).

breathless" (44/105, 42%), "fear of becoming breathless" (44/105, 42%), "coughing" (37/105, 35%) and fear of falling (31/105, 30%) make it difficult for them to be active on a daily basis. The majority of respondents (86/95, 91%) believed that physical activity can help them to manage their lung disease- Fig. 5 presents disease factors which

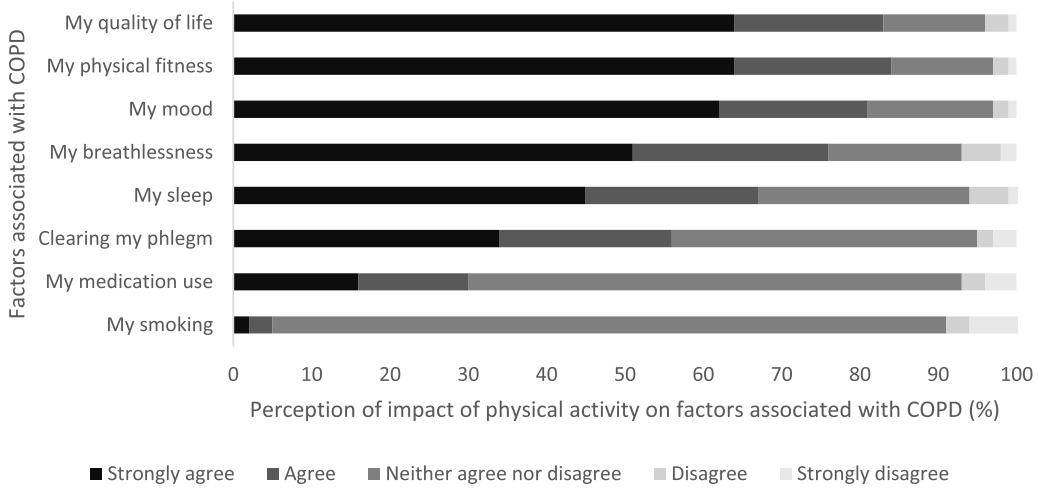

Fig. 5. Perception of impact of physical activity on factors associated with COPD: "Physical activity helps me to manage my:".

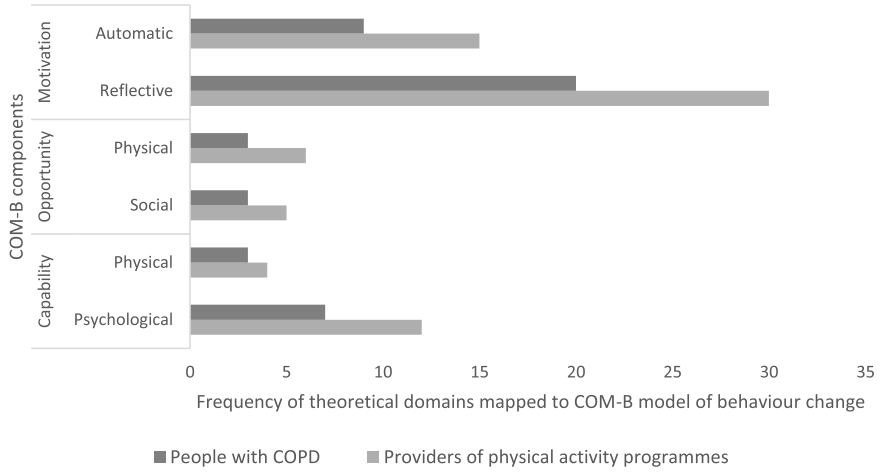

Fig. 6. Frequency of theoretical domains mapped to components of COM-B model; people with COPD and providers of physical activity programmes.

respondents perceive physical activity helps them to manage.

Findings mapped to TDF and COM-B: providers

Table 2 (Supplementary materials 3) presents behaviour change interventions perceived by providers to effectively influence physical activity behaviour in CRD mapped to individual domains and constructs of the TDF and the COM-B [15,18]. "Encouragement" was most commonly reported by providers as an effective and frequently utilized intervention to influence physical activity behaviour in CRD, and we mapped "encouragement" to "reinforcement" as a construct. Social support and motivational interviewing, while perceived as slightly less effective interventions by providers, mapped to the greatest number of theoretical domains (n = 10/11 each) and constructs (n = 37/128, n = 29/128 respectively). The theoretical domain common to all interventions for providers (n = 10) was "reinforcement", with "goal/ target setting" the most frequently mapped construct across interventions (n = 7).

Findings mapped to TDF and COM-B: people with COPD

In our survey of people with COPD, social support (social influences), one-to-one interaction with a trainer and goal setting were perceived as effective interventions to help respondents to be more physically active, with physical activity monitoring and counselling perceived to be the least effective Theoretical domains of beliefs about capabilities, reinforcement and goals were common to all interventions perceived by people with COPD to be effective, including common constructs such as empowerment, reinforcement and goal target/ setting and goals (autonomous/ controlled), outlined in Table 3 (Supplementary materials 4).

The COM-B component of motivation emerged as mapping most frequently to theoretical domains of included interventions across both surveys, as represented in Fig. 6 [18].

Discussion

The aim of this study was to explore patients' and providers' use and perceptions of behaviour change interventions for physical activity in CRD. Findings were reported and synthesised using behaviour change theory informed by the COM-B model and the TDF [14,15,17,18]. A positive response rate to both surveys indicates that respondents perceived this topic to be important [32].

This study found that encouragement of physical activity was perceived by providers to be both the most effective and frequently utilized technique to influence physical activity in CRD, with individualized goal setting, education, providing written information and social support also used by providers. Social support, which mapped to the most theoretical domains, was perceived by people with COPD, predominantly women in our survey, to be the most effective intervention to influence their physical activity behaviour. Motivation was frequently identified as a common COM-B component across both surveys, suggesting important links to this mechanism of action in influencing behaviour change.

There were similarities in the perceived effectiveness of behaviour change interventions between patients and health care providers, with "motivation" emerging as an important component of interventions. Interventions perceived by providers to be effective, such as education, goal-setting and social support reflect some recently reported qualitative findings, in a cohort of people with COPD, where the aim of the study was to reduce sedentary time using COM-B informed behaviour change interventions [33]. However, a recent systematic review and meta-regression of 19 trials investigating the long-term (12 month) effectiveness of behaviour change interventions (e.g. instruction on how to

perform behaviours, demonstration and practice) for maintenance of training related gains following exercise programmes for COPD (n = 2103 participants), reports only small gains in exercise tolerance (SMD 0.48, 95% CI 0.19 to 0.77) and quality of life (SMD 0.22, 95% CI 0.03 to 0.41) [34]. Elsewhere in the literature social support, goals and planning, feedback and monitoring are described as supporting motivation to sustain behaviour change in CRD, suggesting consensus on the most effective interventions for long-term impact for physical activity remains unclear [16,33,35].

Figures published in relation to hospitalisations for COPD in Ireland, based on OECD and Hospital In-Patient Enquiry data, reveal significant discrepancies between male and female admissions for COPD, with female hospitalisation rates significantly higher than that of males [36]. Women predominantly responded to our survey of people with COPD, where social support was identified as the most effective behaviour change intervention to influence physical activity. Our respondents perceptions are supported by the evidence-based links to social influences and environmental context as effective mechanisms of action for social support in The Theory and Techniques Tool for behaviour change [28]. Our findings are further reinforced by relevant literature, where interventions related to domains such as social influences, reinforcement and regulation of behaviour appear to effectively influence physical activity behaviour in COPD [16,35,37–39]. Despite the possibility of selection bias among respondents to our survey, evidence suggests internal and external motivation has a powerful influence on behaviour, and so future studies are required to explore sex-specific motivation for physical activity in COPD, where intrinsic and extrinsic motives may influence healthy physical activity behaviour differently among sexes [35].

Literature suggests an association between physically active healthcare providers and their ability to influence healthy attitudes in those with COPD [40]. Almost all provider respondents to our survey reported they engage in exercise regularly, demonstrating a high personal motivation for physical activity. This is reflected in the literature, in particular among physiotherapists, where younger healthcare providers with higher education levels appear to comply with health and physical activity guidelines [40]. A recent survey of Irish healthcare provider's (doctors, physiotherapists, occupational therapists, nurses) (n = 347) role in educating and motivating older patients for physical activity revealed a lack of education in effective promotion of physical activity [41]. Similar to our findings, the components of capability and opportunity were identified as lacking in provider's ability to promote physical activity. One single definition of behaviour change did not emerge from our survey of providers implying a broad approach to facilitating change. Lack of providers education on behaviour change theory, in particular at undergraduate level, highlights an opportunity for future development in this influential cohort. With almost all our provider respondents appearing motivated to exercise regularly in some capacity, the potential impact of their healthy attitude to physical activity on their patients with CRD warrants further exploration.

Our finding of low MVPA engagement among people with COPD may be representative of challenges to physical activity in this population. Our respondents commonly reported breathlessness and fear of breathlessness as barriers to being physically active, concordant with a recent questionnaire of people with COPD (n = 493) where fear of breathlessness was significantly associated with low motivation towards physical activity ($p < 0.001$) [39]. Low motivation, poor self-efficacy and lack of resources which may otherwise enable physical activity engagement are well-recognised in the literature and support our findings [39].

Strengths and limitations

This study has some strengths and limitations. These are the first surveys of their kind designed specifically to capture data on perceptions of behaviour change interventions for physical activity in CRD in healthcare providers and people with COPD using similar methodology. While we did obtain data regarding providers location of work and years qualified, we did not explore participants' professional background, age or sex as we sought to focus on the nature and delivery of behaviour change interventions. We believe it is clear from the responses that training in behaviour change interventions is required regardless of profession or demographics and this should be a focus of future research. We did not explore participants with COPD's previous engagement with PR in our survey, however we accept that this may have influenced the results to some degree, as those who attend or have attended PR in the past may have been influenced by their experience, capability or motivation to be physically active. We cannot exclude the possibility of selection bias among participants in either survey, with high physical activity levels reported by providers, whose role it is to promote physical activity, and the larger number of female responses evident in the COPD cohort. We used The Physical Activity Vital Sign (ACSM) to determine participants own perceptions of their daily/ weekly PA levels, but tools to determine longer- term impact of interventions on PA levels may be useful in future research. In order to ensure brevity of the surveys it was not possible to include all 93 recognised interventions from the Behaviour Change Techniques Taxonomy V1 and future studies should consider inclusion of less utilized interventions to determine [17]. In order to ensure brevity of the surveys it was not possible to include all 93 recognised interventions from the Behaviour Change Techniques Taxonomy V1 and future studies should consider inclusion of less utilized interventions to determine participants perspectives. We are confident, however, that the interventions included in this survey reflect those commonly utilised by respondents as analysis of open responses did not reveal any other interventions. Despite being used widely across healthcare literature however,

it may be possible that there are limitations to the breadth and scope of the COM-B model which informed our study [15,17,28]. Further, there may be errors in our mapping of the interventions, however raters undertook training and mapping was cross checked by a third person in order to negate any possible errors. Finally in the absence of a current register of formally diagnosed cases of COPD in The Republic of Ireland and due to the nature of the open distribution of the survey of people with COPD, we acknowledge that an unknown denominator may affect the generalizability of the findings. However we are satisfied that the completeness of the survey responses and the homogeneity of the population provides us with sufficient data to inform this early exploratory research.

Conclusion and implications of key findings

People with CRD need to maintain healthy physical activity behaviour in order to manage their disease. Despite a reported lack of training in the use behaviour change interventions for physical activity and the absence of evidence to support specific interventions in the longer-term, respondent-providers of programmes for people with CRD in the Republic of Ireland are incorporating interventions into their work. Encouragement, education, goal-setting and social support are frequently utilised to influence positive behaviour change. People with COPD, women in particular, perceive interventions such as social support and one-to-one interaction with a trainer as helpful in influencing their physical activity behaviour. Mapping to a theoretical framework was helpful to evaluate findings in respect to capability, opportunity and motivation. Motivation appears to be an important mechanism of action in perceived effective interventions. Future studies, informed by behaviour change theory, could examine the relationship between providers own motivation for physical activity and their influence on people with CRD. This study shows that behaviour change interventions including motivational components, such as encouragement and social support, are frequently perceived to effectively influence physical activity behaviour in people with CRD.

Ethical approval

Ethical approval for both studies was granted by Clinical Research Ethics Committee of the Cork Teaching Hospitals: ECM 03/2025/PUB.

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Conflict of Interest

None declared.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.physio.2025.101841.

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