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EDUCATIONAL WORKSHOP ON PRESCRIBING EXERCISE

Exercise is Medicine Canada Physical Activity Counselling and Exercise Prescription Training, Improves Counselling, Prescription and Referral Practices Among Physicians Across Canada

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ABSTRACT

Exercise is Medicine Canada (EIMC) is an initiative that promotes physical activity (PA) counselling and exercise prescription within health care. The purpose of this study was to compare physicians' perceptions and practices around PA counselling and exercise prescription following EIMC training. Physicians (n=46) from 7 different provinces completed questionnaires initially and three-months following an EIMC workshop. Three-months post-intervention, physicians reported greater confidence compared to baseline, for providing physical activity and exercise (PAE) information to patients (79% vs 55%; $p<0.001$), assessing patients' PAE (69% vs 44%, $p=0.005$), answering patients' PAE questions (78% vs 54%, $p<0.001$), providing PAE advice (71% vs 43%, $p<0.001$), and identifying which patients would benefit from referral to qualified exercise professionals (77% vs 52%, $p=0.002$). At follow-up, physicians reported PA prescription barriers as less impactful (out of 4; all $p<0.05$), including perceived patients' lack of interest (2.75 to 2.25), lack of available resources (2.59 to 2.00), and lack of time (2.41 to 2.14). The proportion of physicians providing written exercise prescriptions increased from 20% to 74%. This study suggests that the completion of a one-day EIMC workshop increases physicians' confidence, knowledge and counselling behaviours of physicians in prescribing PAE.

Key words: Exercise Prescription, Physical Activity Counselling, Medical Education

Introduction

Engaging in sufficient physical activity (PA) is associated with a decreased risk of major chronic diseases (Lee et al. 2012). Despite its benefits, the vast majority of the Canadian population is insufficiently active (Colley et al. 2011). Primary Care Providers (PCPs) have been identified as serving a key role in promoting PA to their patients and PCP provided PA counselling and exercise prescription has been shown to increase patients' PA levels (Dasgupta et al. 2017; Orrow et al. 2012). Unfortunately, only 16% of Canadian family physicians (FP) provide written PA prescriptions to their patients (Petrella et al. 2007) due to barriers including lack of time, knowledge, education, training and lack of tools or resources reported by FPs (Smith et al. 2011; Hébert et al. 2012; O'Brien et al. 2017). FP education in specific skills of PA prescription increases physicians' self-efficacy and frequency of PA prescription to their patients (Jorgensen et al. 2012). Furthermore, insufficient educational opportunities have been cited as a primary contributor to the under-prescription of exercise (Hoffman et al. 2016) with most family residents desiring more exercise prescription training, citing their training inadequate (Solmundson et al. 2016). Windt et al. (2015) observed increases in confidence, knowledge and rates of PA prescription (28% increase) following an educational workshop, however that study was limited by a small, unique sample (n=25; British Columbia) and relatively short follow-up (one-month).

Exercise is Medicine Canada (EIMC) is a national initiative aimed at increasing the number of health care providers assessing, counselling and prescribing physical activity and exercise (PAE) as part of routine health care visits (EIMC 2017). Recently, EIMC embarked on a national program of workshops to train health care professionals how to provide PA counselling and exercise prescriptions to their patients (O'Brien et al. 2017).

The purpose of this study is to evaluate the impact of the EIMC training workshops, on PA counselling and exercise prescription practices, confidence and perceived barriers, initially (at baseline) and at three-month follow-up, among physicians across Canada.

Methods

Participants: Participants were recruited from EIMC workshops delivered across seven provinces. Out of 113 physicians who completed baseline surveys from the original EIMC workshops (O'Brien et al. 2017), 46 responded to the 3-month follow-up surveys, and were distributed as follows: Alberta (n=12), British Columbia (n=3), Manitoba (n=7), Nova Scotia (n=2), Ontario (n=8), Quebec (n=11), and Saskatchewan (n=2); one did not provide a location. Participants were mainly family physicians (n=42) with a few specialist physicians (n=4).

Follow-up Reflection Questionnaire: Participants attended a full-day – 6 hour accredited EIMC workshop and completed an initial reflection survey within that workshop (O'Brien et al. 2017). Self-reflection questionnaires included: demographics, practice history (<10%, 11-25, 26-50, 51-75, 76-100), confidence (0%-100% using 10% intervals), barriers (1-4; 1=not at all difficult, 4=completely prevents me from counselling), and resource information and were consistent with previously used measures as described by O'Brien et al. (2017). In brief, variables were based on previous work in the areas of: exercise prescription (Petrella et al. 2007, Dacey et al. 2013), self-efficacy on PAE practices (Hébert et al. 2012) and current healthcare providers' practices and barriers (Dillman et al. 2010; Shields et al. 2013) as they influence PAE practice. In addition to re-assessing the measures given at baseline, the 3-month follow-up survey (survey link via email) asked participants about the usefulness of the EIMC resources, how they changed their practice as a result of attending the workshop and resources they use in discussing PAE with their patients. The workshop is described in greater detail by O'Brien et al. (2017). In brief, the

interactive workshop covered 5 key topics: i) benefits of PAE, ii) exercise vital sign, iii) PA counselling, iv) motivational interviewing, and v) aerobic and resistance exercise, and involved case studies and practical exercises to address patient specific barriers. This evaluation was approved by the Acadia University Research Ethics Board.

Data and Statistical Analysis: Descriptive statistics (mean±standard deviation) were completed on primary variables in SPSS Statistics Version 23.0, IBM, New York. Data was compared between respondents and non-respondents using independent-sample t-tests. The percentage of patients receiving PAE readiness assessments, PAE recommendations, and exercise prescription was analyzed through frequency statistics. A self-efficacy composite score was calculated by adding all confidence variables at each time point. Pre- and Post-workshop confidence and barrier impact variables were compared using paired t-tests. Open-ended responses were separated into meaning units and categories were created based on the frequency of distinct responses, in order to perform quantitative textual analysis (theme responses ÷ number of respondents × 100%).

Results:

Demographics: Participants consisted of an equal proportion of men and women with an average age of 49±9 years and most with more than 10 years of experience as a physician (79%). Most attendees saw more than 15 patients per day (72%), spent less than 25 minutes with them (68%), and included PA content in most patient appointments (51%). There were no differences in demographics, confidence, barriers or baseline PAE practice ($p>0.05$) between respondents ($n=46/113$, 40.7%) and non-respondents ($n=67/113$, 59.3%).

Provider Physical Activity and Exercise Knowledge: The percentage of physicians that report being moderately knowledgeable or greater increased from 71% to 98%. The percentage of

physicians reporting very knowledgeable and above increased from 17% to 54%. Physicians who reported either “not at all” or “slightly” knowledgeable decreased from 28% to 2%.

Provider Physical Activity and Exercise Confidence: At follow-up, there was a higher reported confidence to provide PAE information, assess patient’s readiness to begin PAE, answer patient PAE questions, provide advice for special PAE considerations, and make appropriate referrals (see Table 1). Overall, self-efficacy increased by 40% ($p<0.001$).

TABLE 1.

Provider Physical Activity and Exercise Counselling Barriers: The percentage of barriers identified by physicians was similar to, or increased at follow-up (see Table 2). However, overall, patients’ barrier impact ratings *decreased* an average of 21%. Initially, the most identified (% of physicians) and most impactful barrier (out of 4) was patients’ interest in exercise (97.8%, 2.75/4).

TABLE 2.

Provider Physical Activity and Exercise Practices: The percentage of physicians assessing patient physical activity readiness most of the time at baseline and follow-up, was 26% and 50% respectively (Figure 1A). The percentage of physicians recommending PAE to their patients most of the time at baseline and follow up was 39% and 61% respectively (Figure 1B). Compared to baseline, the percentage of physicians providing patients with written exercise prescriptions >10% of patient counselling sessions went from 20% to 74% (Figure 1C).

FIGURE 1.

Provider Physical Activity and Exercise Counselling Resources: the mean EIMC prescription pad rating was 3.72 ± 0.62 (5 = extremely useful) with most of the physicians finding the EIMC prescription pad to be at least moderately useful to their practice (96%). Physicians were most

likely to use the EIMC prescription pad with patients who were inactive but who they believe to be ready for PAE (85%). In open-ended responses physicians changed their practice by referring to qualified exercise professionals (63% of physicians), referring to online resources (50% of physicians), provide patient with tangible aid (i.e. pedometer; 37% of physicians) and/or using an educational resource (27% of physicians).

Changes to Practice: At baseline, physicians generated 93 written statements regarding *proposed* changes to practice, including, more exercise prescriptions (54% of physicians) and to discuss PAE in more depth (52% of physicians). At follow-up, physicians generated 88 written statements regarding *actual* changes to practice. Almost half (46%) of the follow-up statements were reflective of at least one of the proposed changes and 40% reflected changes that were different than originally proposed. The percentage of physicians who changed their practice by prescribing exercise was 71% while those who discussed PAE with their patients in more depth was 47%.

Discussion

The results of this study suggest that a full-day workshop, increased physician's PA counselling confidence and rates of exercise prescription and decreased the impact of physician perceived barriers to PA counselling and prescription.

Physicians' overall self-perceived confidence to perform the various skills of PAE increased by 40% post-intervention, which is greater than the 13% increase (6.2 to 7.0 out of 10) in physician confidence that was similarly reported following a 3-hr exercise prescription workshop in British Columbia (Windt et al. 2015).

The overall impact of barriers significantly decreased ~20%. Specifically, lack of patient interest and lack of resources, both decreased in frequency and impact at follow-up and although

lack of time remained a commonly identified as a challenge, physicians attributed a lower impact to it. Interestingly, despite indicating *continuing* barriers to prescription the overall rates of exercise prescription delivered to patients by physicians increased following training. The percentage of physicians reporting that they feel ‘moderately knowledgeable’ or greater, in PA counselling and exercise prescription, increased from 21% to 97%. This improvement appears greater than the increase in self-reported knowledge from 7.2 to 8.5 out of 10 reported following a similar continuing medical education training study (Dacey et al. 2013).

The results of this study suggest that providers who have greater confidence in PAE may have a greater belief in the benefits of physical activity in their patients’ health, potentially a greater understanding of patients’ challenges in overcoming their personal PA barriers, and likely a greater ability to help patients self-manage. This study was not designed to assess whether provider educational training translates into patient behavioral change; however, in a previous intervention in diabetes education (Dillman et al. 2010), patient PAE participation increased as result of counselling following a similar PAE workshop intervention.

In the current study, the percentage of physicians assessing and recommending PAE most of patient counselling sessions increased by ~20%, while the percentage of physicians providing exercise prescriptions *at all* increased from 20% to 74%. These clinically important results suggest physicians who were not prescribing exercise initially began to start incorporating exercise prescription into their practice, similar with the Windt et al. (2015) study where written prescriptions increased from 40% to 68%.

The follow-up respondents changed their practice as a result of the workshops by increasing their rates of PAE discussion and prescription, in keeping with acute intentions by O’Brien et al. (2017). It appears that providing PAE training in combination with workshop

participants formally writing their intentions to alter their practice attributed to the educational training, together contributed to physician participants achieving and sustaining their intended practice changes three-months later.

Previous research has identified that more tools and resources are needed to support PCPs in PA counselling and exercise prescription (Smith et al. 2011; O'Brien et al. 2017). The EIMC prescription pad was shown to be useful at initiating PAE counselling and was most commonly used on patients identified as inactive but were perceived as ready to be active, of who are more likely to increase their activity in comparison to their unmotivated counterparts (Dillman et al. 2010). The most cited resource that physicians use to assist them in patient PAE counselling is referrals to qualified exercise professionals. A goal of EIMC is to increase the use and collaboration of qualified exercise professionals in the prevention and treatment of chronic disease (EIMC 2017). Physicians appear most likely to involve other health care practitioners and resources including referral for detailed exercise programming as a means of helping their patients increase PA behaviors.

This study used a pre-post study design; the lack of a control group means it cannot be confirmed whether provider's behaviors were solely attributed to participation in the training intervention. The study is limited by its response rate, likely attributed to the three-month follow-up and occupational demands of PCPs. Additionally, those who participated in the workshop did so out of their own interest which may have attracted physicians who likely, at baseline perceived PAE as beneficial and may have responded in a socially desirable way; reporting higher knowledge confidence and prescription rates before and following the intervention.

Future research should add to the sample size and include a longer follow-up time to evaluate physician' sustained behavioral change in clinical practice. Additionally, patients'

actual PA levels and behaviors should be assessed. Compared to the only other Canadian study analyzing the impact of PAE training, this study had a much larger sample size and longer follow-up period allowing for both greater relative statistical power and more concrete conclusions.

Conclusions

Our findings showed that an EIMC workshop on PA counselling and exercise prescription had sustained impact; increasing the knowledge, attitudes and practice behaviors of physicians over a three-month period post-intervention. The results highlight the importance of providing educational training to primary care providers to support PA promotion for chronic disease prevention and management in regular clinical practice, as a lack of training and education are common barriers to exercise prescription identified by practitioners. While medical schools and residency programs consider addressing gaps in exercise medicine in their formal academic curriculum, educational and training barriers can readily be addressed through continuing medical education programs, such as the one-day workshop facilitated in the present study.

Key Points:

-Despite the negative health consequences of a physically inactive lifestyle and population rates of physical inactivity, primary care providers (PCP) experience many barriers and lack confidence in discussing PA with patients.

-A full-day educational workshop increased confidence by 40%, decreased the impact of barriers by 20%, and increased the percentage of PCPs who prescribe exercise at all from 20% to 74% three-months later.

-Educational workshops appear to be an effective method of incorporating more PA discussion and written exercise prescriptions into PCPs daily practice three-months later.

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Competing Interests: JRF has received unrestricted research grant from Steps Count. JRF is the Chair of Exercise is Medicine Canada (EIMC). EIMC has received in-kind contributions of product and marketing from StepsCount. PO is an EIMC faculty and has a Chair in Cardiovascular Prevention and Rehabilitation at the University Health Network sponsored by GoodLife Fitness.

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Table 1. Changes in confidence to counsel PAE initially compared to three-months post-workshop.

	Initial	Follow up	Difference	p-value
Provide PAE Information	55 ± 26	79 ± 13	24	0.001
Assess Patient PAE Readiness	44 ± 26	69 ± 18	25	0.005
Answer Patient PAE Questions	54 ± 26	78 ± 13	24	0.001
PAE Advice for Individuals with Special Considerations	43 ± 23	71 ± 15	28	0.001
Appropriate PAE Referral	52 ± 29	77 ± 17	25	0.002
Self-Efficacy Composite Score	251 ± 119	376 ± 66	40	0.001

Data presented as mean ± SD. Physicians (n=45). Note. PAE, physical activity and exercise

Table 2. Barriers identified and their impact on physical activity counselling and prescription initially and three-month follow-up.

Variable	Initial		Follow up		Change in rating (%)	p-value
	% identifying barrier	Rating /4	% identifying barrier	Rating /4		
Patients not interested in exercise	97.8	2.75	95.7	2.25	-18.2	0.001
Lack of guidance/resources in exercise for those with chronic disease	95.7	2.59	91.3	2.00	-22.8	0.001
Lack of time	95.7	2.41	97.8	2.14	-11.2	0.017
Patient prefer medication management	78.3	2.34	97.8	1.65	-29.5	0.001
Other lifestyle changes more important	91.3	2.09	91.3	1.57	-24.9	0.006
Personal knowledge	78.3	2.00	93.5	1.64	-18.0	0.026
Lack of exercise education in medical school	84.8	1.91	89.1	1.43	-25.1	0.001
Lack of evidence for effectiveness of exercise	71.7	1.21	65.2	1.00	-17.4	0.104

Note: p-value compares Barrier Ratings (out of 4).

Figure 1. The percentage of patients that physicians report: A) performing physical activity and exercise readiness assessments on, B) recommend engaging in physical activity and exercise, C) providing exercise prescriptions to.

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