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Physical Activity Prescription by Canadian Emergency Medicine Physicians

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ABSTRACT

An increase in physical activity has been shown to improve outcomes in many diseases. An estimated 600,000 Canadians receive their primary health care from emergency departments (ED). This study aims to examine physical activity prescription by emergency medicine physicians (EPs) to determine factors that influence decisions to prescribe physical activity.

A survey was distributed to EPs via email using the Canadian Association of Emergency Physicians (CAEP) survey distribution protocol.

Responses from 20% (n=332) of emergency physician/residents in Canada were analyzed. 62.7% of EPs often/always counsel patients about preventative medicine (smoking, diet and alcohol). Only 12.7% (42) often/always prescribe physical activity. The CCFP-trained physicians (College of Family Physicians Canada) were significantly more likely to feel comfortable than CCFP-EM-trained physicians (Family Physicians with Enhanced Skills in Emergency Medicine) prescribing physical activity (p=0.0001). Both were significantly more likely than the FRCPC-trained EPs (Fellows of the Royal College of Physicians of Canada). 73.4% (244) of EPs believe the ED environment does not allow adequate time for physical activity prescription.

Family medicine-trained EPs are more likely to prescribe physical activity; the training they receive may better educate them compared to FRCPC-trained emergency medicine. Further education is required to standardize an approach to ED physical activity prescription.

Key Words: Exercise Prescription, Medicine, Emergency Medicine, Preventative Medicine, Physical Activity
INTRODUCTION:

Despite increasing public knowledge of the beneficial effects of physical activity, most Canadians and North Americans live sedentary lives. 85% of Canadians do not meet the national guidelines of 150 minutes of moderate to vigorous physical activity per week (Colley et al. 2011), (Tremblay et al. 2011). Physical activity has been shown to decrease the rates of many chronic diseases including but not limited to diabetes, hypertension and cardiovascular disease as well as increase a patient's overall quality of life (Penedo and Dahn 2015). Increased physical activity is the recommended first-line treatment of obesity and has an overall reduction in all-cause mortality (Wilson et al. 2015). The number of overweight and obese people in Canada is rising with 54% of Canadians self report being overweight and 27% being obese according to the most recent data. (Statistics Canada, 2016)

Health promotion and disease prevention have been shown to be effective interventions in the Emergency Department (ED) (Cummings et al. 2006). Emergency Physicians (EP) counseling patients on preventative health interventions has been shown to be effective without increasing wait-times. These interventions include updating their vaccinations, following the guidelines for Pap smear screening, smoking cessation and substance abuse counselling (Katz et al. 2012). A written prescription from a physician for physical activity has been shown to enhance physical activity uptake by patients. (Kallings et al. 2009) Physical activity prescription, written on a pad, and counselling has also been shown to decrease patients’ systolic blood pressure and weight resulting in improved fitness (Petrella et al. 2003). Importantly physical activity prescription must be defined. A prescription for physical activity should be viewed as any medication prescription; requiring a dose, frequency and duration. It should also include any adverse reactions. For example, activity X should be performed Y times for Z weeks. The dose,
frequency and duration are determined by the therapeutic goals of the prescription. The following is an example of a theoretical prescription “John Smith, Age 55, 150 minutes moderate-vigorous aerobic activity (swimming, jogging, cycling) per week for 12 weeks, please arrange appropriate follow up with primary care provider”.

As of 2010, 4.6 million Canadians were without a family physician; 13% of these Canadians visited the ED "when they were sick or in need of health advice." This equates to approximately 600,000 people who may benefit from health promotion and disease prevention strategies in the ED. (Nabalamba and Millar, 2007) EDs have become the “safety net” of the Canadian healthcare system, providing increasingly higher percentages of primary care (Grandes et al. 2009). The most common reasons for emergency room admissions are Chronic Obstructive Pulmonary Disease (COPD) and cardiac-related issues and in most cases these patients could benefit from physical activity, making this even more pertinent in the ED (Nabalamba and Millar, 2007). Despite the evidence for the benefits of physical activity and the positive impact of physical activity prescription, no studies to date have examined how frequently EPs prescribe physical activity. The primary objective of this study was to determine the frequency of physical activity prescription by Canadian physicians practicing emergency medicine. The secondary objective was to determine factors that influence the frequency of physical activity prescription in the ED. The education the physicians receive with respect to physical activity prescription and their familiarity with physical activity prescription resources were also explored.
METHODS:

A national, confidential, electronic 22-item survey (Appendix 1) was distributed to Canadian EPs and emergency medicine residents via email by the Canadian Association of Emergency Physicians (CAEP) survey distribution protocol in November/December 2015. An initial e-mail with a link to the survey was provided to all potential participants (n=1,665). A reminder e-mail was sent two weeks after the initial e-mail to improve the response rate.

Demographics, physical activity prescription habits and self-reported physical activity habits were collected. The study protocol was approved by the Health Science Ethics Review Board at Western University.

Data Analysis

Survey responses were collected through SurveyMonkey®. Standard descriptive statistics are presented in Table 1. Multinomial logistic regression (MLR) analyses were conducted to model variables predictive of physical activity prescription by Canadian EPs. MLR analysis is similar to a binomial logistic regression with the exception that MLR allows a categorical dependent variable with greater than two categories. In this study, an MLR analysis was conducted to predict how often EPs prescribe physical activity to their patients. This response variable was measured using five categories: never, rarely, sometimes, often, and always. The response option ‘never’ was selected as the reference category for this analysis. A second MLR was conducted to determine predictors of EP comfort levels when prescribing physical activity. Physician comfort was measured using three categories, ‘yes’, ‘sometimes’, and ‘no’ in which ‘no’ was selected as the reference category. In order to build the best predictive model, each predictor variable was tried separately in an MLR model. Predictor variables included: how often the EP asks about
physical activity habits, their familiarity with Canadian Guidelines, whether the EP believes physical activity prescription is an effective intervention in the ED, self-reported physical activity levels, how often they council patients on other preventative medicine, and demographic variables such as age, role in the ED, years of practice experience, and practice setting (tertiary or community hospital). A preliminary model was constructed for both MLR analyses using predictors that, when tried in the separate analyses, demonstrated model significance (p < 0.05). The preliminary model was tested and used to inform the final model by only including predictors that were significant (p < 0.05) in the preliminary analysis. Statistical significance of the final model was measured at the p < 0.05 level. All statistical analyses were performed using SPSS 23.0.

RESULTS:

Demographics

The results of our survey are from 20% of all emergency medicine staff physicians and residents from across Canada, including physicians from all provinces. The majority of respondents were staff physicians (84.5%) and most (62.5%) practice in tertiary care hospitals.

CCFP refers to physicians with 2 years of family medicine training. CCFP-EM refers to physicians with 2 years of family medicine training with an additional year of enhanced skills in emergency medicine. FRCPC refers to physicians with 5 years of emergency medicine specialist training.

A similar number of CCFP EM-trained EPs (41.9%) and FRCPC-trained EPs (39.8%) completed the survey. 84.2% of respondents rated their own physical activity levels as either
“moderately physically active” or “very physically active. Full demographic results are shown in Table 1.

**Physical Activity Prescription Statistics**

62.7% of respondents reported that they “often” or “always” counsel their patients about preventative medicine (including but not limited to smoking cessation, drugs and alcohol use, diet, and safe sex). However, 36.6% of respondents reported that they “rarely” or “never” ask their patients about their physical activity. 56.1% of physicians who were surveyed reported that they “rarely” or “never” prescribe physical activity, while only 12.4% state they do so “often”.

The survey indicated that 16.6% of respondents prescribe physical activity on an individualized patient-to-patient basis while only 6.3% of those who prescribe physical activity follow formal Canadian guidelines. 12.1% of respondents were familiar with educational tools such as those provided by “Exercise is Medicine”, an educational resource to assist physicians in prescribing physical activity. When asked if they feel comfortable prescribing physical activity given their current level of knowledge on the subject, 32.4% were not comfortable and 39.9% said they were “sometimes comfortable”. 76.1% of respondents said they felt other emergency medicine physicians “never” or “rarely” prescribe physical activity to their patients. 73.6% reported that there was insufficient time in the emergency department to permit physical activity prescription. When asked if physical activity prescription was an effective intervention in the emergency department, 80.8% (268) said either “yes” or “sometimes”.
Factors influencing physical activity prescription

Analyses were conducted to determine how physical activity prescription varies by other practice habits. Items on a 1-5 scale were treated as a continuous variable and plotted against a binary outcome of "do you prescribe physical activity" where never/rarely= NO and Sometimes, often, always=YES. 32.9% of the variation in whether physicians prescribe physical activity is explained by how often they ask patients about their physical activity habits. 23.6% of the variation is explained by how often they counsel patients in other areas of preventative medicine.

A significantly higher proportion of CCFP (62%) and CCFP-EM (52%) trained physicians report prescribing physical activity compared to FRCPC (31%) trained physicians (p=0.001). The practice setting was also significantly associated with physical activity prescription. A higher proportion of EPs working in community hospitals with <30,000 patient visits/year (63%) and >30,000 patient visits/year (54%) report prescribing physical activity when compared to those working in tertiary care centers (37%) (p=0.002). The number of years in practice was also associated with physical activity prescription. EPs that have practiced for greater than 16 years were more likely to prescribe physical activity (59% vs. 43%) (p=0.0009).

EPs’ age in was also significantly associated with physical activity prescription. EPs who are 50 years old or more were significantly more likely to prescribe physical activity (57% vs. 38%) (p=0.047).

EPs who follow formal Canadian guidelines for physical activity prescription of 150 minutes of moderate to vigorous physical activity per week were significantly more likely to feel comfortable prescribing physical activity (88%) compared to those who do not follow formal guidelines (64%) (p=0.001). Practice setting was also associated with physical activity prescription comfort. A significantly higher proportion of EPs working in community hospitals
with <30,000 patient visits (82%) and >30,000 patient visits (78%) report being comfortable prescribing physical activity compared to tertiary care centers (61%) (p=0.004). EPs who report they are comfortable prescribing physical activity were significantly more likely to prescribe physical activity (60%) than EPs who report they are not comfortable (11%) (p=0.001).

EPs who follow formal Canadian guidelines for physical activity prescription were more likely to prescribe physical activity (75%) compared to those who do not follow formal guidelines (38%) (p=0.001). EPs who report that physical activity prescription is an effective intervention in the ED were significantly more likely to prescribe physical activity (48%) than those who felt that it is not effective (27%) (p=0.002). A significantly higher proportion of CCFP (83%) and CCFP-EM (75%) trained physicians report feeling comfortable prescribing physical activity compared to FRCPC (56%) trained physicians (p=0.001)

DISCUSSION:

Despite the increasing role of health promotion and disease prevention in EDs, physical activity remains on the periphery of physician-patient discussions. Most EPs counsel their patients about preventative medicine. However, a much smaller fraction asks their patients specifically about their physical activity, and even fewer prescribe it. Most respondents felt that other EPs rarely prescribe physical activity to their patients, even though 44% self-report that they sometimes or often prescribe physical activity. Of EPs surveyed, only 36% feel comfortable prescribing physical activity. Those who reported feeling comfortable prescribing physical activity were significantly more likely to do so. If we could increase EP’s comfort with physical activity prescription, we could potentially increase the rates of physical activity prescription in EDs. The EPs who follow formal guidelines, which are based on the WHO (WHO, 2011) and
Canadian (Tremblay et al. 2011) guidelines recommending 150 minutes of moderate to vigorous physical activity per week, are significantly more likely to prescribe physical activity to their patients. It has been demonstrated that it is feasible to educate physicians on formal guidelines to incorporate physical activity prescription into their practices. (Windt et al. 2015) (O’Brien et al. 2017) A full day workshop on the assessment of patient’s physical activity levels and instructions on written prescriptions for physical activity increased physician’s intent and confidence in prescribing physical activity to patients. (O’Brien et al. 2017) A similar 3-hour seminar increased the proportion of physicians who reported prescribing physical activity increased from 40% to 68% after this intervention. (Windt et al. 2015) This could be replicated for physicians practicing in an emergency department setting.

Training background significantly predicted an EP’s physical activity prescription habits and their level of comfort at prescribing physical activity. CCFP-trained physicians were more likely to prescribe physical activity than CCFP (EM)-trained physicians. Both groups were more likely than FRCPC-trained EPs to prescribe physical activity. Greater specialization in emergency medicine resulted in less physical activity prescription. This discrepancy could in part be explained by the emphasis family medicine places on preventative medicine. An EP’s practice setting significantly predicted an EP’s physical activity prescription habits and level of comfort prescribing physical activity. EPs practicing in community hospitals with <30,000 patient visits per year were more likely to prescribe physical activity and feel comfortable prescribing physical activity than EPs practicing in larger communities and tertiary care hospitals. A higher patient volume may influence the ED environment, and may allow for shorter interactions between EPs and their patients. Tertiary care centers also receive a higher proportion of severely injured and acutely ill patients where physical activity prescription may not be appropriate. 73.9% of EPs
surveyed stated that the ED setting did not allow sufficient time for physical activity prescription to their patients. However, evidence would suggest that counseling in the ED on other preventive health measures did not increase wait times. (Katz et al. 2013) Future work should focus on increasing EPs’ knowledge of physical activity prescription guidelines and comfort in prescribing physical activity in the ED. This includes validation of the effectiveness of existing physical activity prescription tools (Fremont et al. 2014) on patient physical activity levels that can be used in a time-sensitive ED setting.

LIMITATIONS:

The limitation of our study was the response rate at approximately 20%. This response rate is consistent with previous published reports of survey response rates among Canadian physicians. (18% to 22%) (Kennedy et al. 2008) (Green and McIntyre, 2011). We attribute our response rate of 20% to a multitude of factors including time constraints, general indifference and survey fatigue. The term comfort was used in the survey as a broad encapsulation of individual physician’s experience, familiarity and skills surrounding physical activity prescription. This survey was designed for rapid response, and therefore did not use validated items for conducting this survey; some response bias may be present. Despite these limitations, the survey provided valuable insight into physical activity prescription habits in Emergency departments.

CONCLUSION:

Health promotion and disease prevention are becoming increasingly important to aspects of primary health care. Although the ED is a major source of primary health care, physical
activity prescriptions are underutilized. In our study, many EPs reported that time is a limiting factor in prescribing physical activity and few are familiar with formal physical activity prescription guidelines. One third of EPs reported that they were not comfortable prescribing physical activity and an additional 40% are only sometimes comfortable. Since comfort surrounding physical activity prescription significantly predicted physical activity prescription rates, future studies should focus on increasing EPs’ comfort levels in prescribing physical activity while also increasing EPs’ knowledge of recommended physical activity prescribing guidelines.

TAKE HOME POINTS
1. Health promotion and disease prevention are becoming increasingly important aspects of emergency medicine.
2. Physical activity prescription is underutilized by Canadian Emergency physicians.
3. Few Canadian emergency medicine physicians are familiar with formal physical activity prescription guidelines.
4. Family medicine trained emergency physicians were significantly more likely to prescribe physical activity.
5. Future studies should focus on increasing emergency physician’s comfort in prescribing physical activity.

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