Family medicine residents' practice intentions

Theory of planned behaviour evaluation

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Abstract

Objective To assess residents' practice intentions since the introduction of the College of Family Physicians of Canada's Triple C curriculum, which focuses on graduating family physicians who will provide comprehensive care within traditional and newer models of family practice.

Design A survey based on Ajzen's theory of planned behaviour was administered on 2 occasions.

Setting McMaster University in Hamilton, Ont.

Participants Residents (n = 135) who were enrolled in the Department of Family Medicine Postgraduate Residency Program at McMaster University in July 2012 and July 2013; 54 of the 60 first-year residents who completed the survey in 2012 completed it again in 2013.

Main outcome measures The survey was modeled so as to measure the respondents' intentions to practise with a comprehensive scope; determine the degree to which their attitudes, subjective norms, and perceptions of control about comprehensive practice influence those intentions; and investigate how these relationships change as residents progress through the curriculum. The survey also queried the respondents about their intentions with respect to particular medical services that underpin comprehensive practice.

Results The responses indicate that the factors modeled by the theory of planned behaviour survey account for 60% of the variance in the residents' intentions to adopt a comprehensive scope of practice upon graduation, that there is room for curricular improvement with respect to encouraging residents to practise comprehensive care, and that targeting subjective norms about comprehensive practice might have the greatest influence on improving resident intentions.

Conclusion The theory of planned behaviour presents an effective approach to assessing curricular effects on resident practice intentions while also providing meaningful information for guiding further program evaluation efforts in the Department of Family Medicine at McMaster University.

EDITOR'S KEY POINTS

- In response to a trend among family medicine graduates to elect to narrow their scope of practice, the College of Family Physicians of Canada introduced the Triple C curriculum, with the goal of encouraging more graduates to practise comprehensive family medicine. This study aimed to assess whether the new curriculum is having the intended effect using a theory of planned behaviour evaluation model.

- Overall, the residents had modest intentions about practising comprehensive continuing care upon graduation. Subjective norms had the strongest influence on residents' intentions. Residents had strong intentions to provide care across the various life stages, but weak intentions to offer obstetric care.

- Among the subset of residents who completed the survey twice, attitudes about practising as comprehensive continuing family physicians improved significantly from the first to the second year of residency ($P = .025$). Their perception of subjective norms, however, did not change over time.

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Les intentions de pratique des résidents en médecine familiale

Une évaluation par la théorie du comportement planifié

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Résumé

Objectif Vérifier les intentions de pratique des résidents depuis la création par le Collège des médecins de famille du Canada du cursus Triple C qui vise à former des médecins de famille qui prodigueront des soins complets et ce, dans le contexte des modèles traditionnels ou nouveaux de la pratique familiale.

Type d'étude Un sondage basé sur la théorie du comportement planifié d'Ajzen a été administré en 2 occasions.

Contexte L'Université McMaster à Hamilton (Ontario).

Participants Les résidents (n = 135) qui étaient inscrits au programme de résidence en médecine familiale à l'Université McMaster en juillet 2012 et en juillet 2013 : 54 des 60 résidents de première année qui avaient répondu au sondage en 2012 y ont répondu à nouveau en 2013.

Principaux paramètres à l'étude L'enquête a été conçue de façon à évaluer les intentions des répondants d'exercer une médecine à large spectre; déterminer à quel point leurs attitudes, leurs normes subjectives et ce qu'ils pensent de leur capacité à exercer une pratique complète influencent ces intentions; et vérifier comment ces relations changent à mesure que les résidents progressent dans leur cursus. L'enquête voulait aussi connaître les intentions des répondants à propos de certains services médicaux qui font partie d'une pratique complète.

Résultats Les réponses indiquent que les facteurs identifiés par un sondage basé sur la théorie du comportement planifié représentent 60 % de la variance pour ce qui est des intentions des résidents de prodiguer un large spectre de soins après leur diplomation; qu'il y a lieu d'améliorer le cursus pour encourager les résidents à dispenser des soins complets et que c'est en ciblant leurs normes subjectives concernant une pratique complète qu'on pourrait le mieux améliorer les intentions des résidents.

Conclusion La théorie du comportement planifié est une méthode efficace pour vérifier les effets du cursus sur les intentions de pratique des résidents; elle fournit aussi de précieuses informations à ceux qui devront évaluer le programme du Département de médecine familiale de l'Université McMaster.

POINTS DE REPÈRE DU RÉDACTEUR

- Pour contrer le fait que les médecins qui terminent leur résidence en médecine familiale tendent à réduire leur champ de pratique, le Collège des médecins de famille du Canada a créé le cursus Triple C pour inciter plus de diplômés à pratiquer une médecine familiale complète. Le but de cette étude était de vérifier, à l'aide d'une évaluation basée sur la théorie du comportement planifié, si le nouveau cursus obtient l'effet recherché.

- Dans l'ensemble, les résidents avaient des intentions modestes de prodiguer des soins complets et continus après leur diplomation. Ce sont les normes subjectives qui avaient le plus d'influence sur leurs intentions. Les résidents avaient fortement l'intention de prodiguer des soins à toutes les périodes de la vie, mais de faibles intentions d'offrir des soins en obstétrique.

- Dans le sous-groupe de résidents qui ont répondu 2 fois à l'enquête, les attitudes concernant le fait d'exercer une médecine familiale complète et continue ont augmenté de façon significative entre la première et la deuxième année de résidence ($p = ,025$). Toutefois, leur perception des normes subjectives n'avait pas changé durant cette période.

Cet article a fait l'objet d'une révision par des pairs.
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The results of a 2004 inquiry highlighted that there are serious deficiencies in the services offered by Canadian family physicians.[1] In particular, these deficiencies result, in part, from the current trend among medical graduates to elect to narrow their scope of practice; that is, to concentrate on specialized family medicine disciplines (eg, sports medicine) or to omit from their practices family medicine services they find undesirable (eg, obstetrics or palliative care). In response, a pedagogic shift for the 17 national family medicine residency programs that addresses accountability, social responsibility, patient safety, and efficiencies in educational programming has been undertaken by the College of Family Physicians of Canada, in collaboration with the Section of Teachers Council and an appointed task force, the Working Group on Postgraduate Curriculum Review. This shift focuses on graduating sufficient numbers of Canadian family physicians who can and will provide comprehensive continuing care within traditional family practices and within newer models of interprofessional practice. This new curriculum is referred to as the *Triple-C Competency-based Curriculum*. *Comprehensive continuing care* is care provided by a family practice to a defined group of patients across the life cycle and in various settings. In this view, the comprehensive family doctor is expected to provide prenatal, obstetric, child, youth, adult, elderly, and end-of-life care services, and to do so inside and outside of the office, in patients' homes, in the hospital, and often in rural and urban settings or for aboriginal populations.[2-4]

The College of Family Physicians of Canada's implementation of the Triple C curriculum has resulted in the need for family medicine residency programs to evaluate the effectiveness of the curriculum in encouraging family medicine residents to adopt a comprehensive scope of practice upon graduation. Accordingly, the Department of Family Medicine at McMaster University in Hamilton, Ont, has initiated an innovative program evaluation that takes a theory-based approach to evaluating the effects of the curriculum among its residents. Specifically, a survey tool based on the popular and well established theory of planned behaviour (TPB) was developed and administered.[5,6] The theory posits that one's intention to perform a particular behaviour is predicted by his or her attitudes toward the behaviour (ie, the degree to which performance of the behaviour is positively or negatively valued by the individual), subjective norms (ie, the individual's perception of relevant others' beliefs that he or she should or should not perform the behaviour), and perceived behavioural control (ie, the individual's perception of the ease or difficulty of performing the particular behaviour). Intention is considered to be the most proximal determinant of a person's actual performance of that behaviour.[5]

Mathematically, the theory can be expressed as follows:

$$BI = (W1)AB[(b) + (e)] + (W2)SN[(n)(m) + (m)] + (W3)PBC[(c) + (p)]$$

Within that formula, BI represents behavioural intention, AB is the attitude toward the behaviour, (b) is strength of the belief, (e) is evaluation of the outcome, SN is the subjective norm, (n) is the strength of each normative belief, (m) is the motivation to comply with the referent, PBC is the perceived behavioural control, (c) is the strength of each control belief, (p) is the perceived power of the control factor, and (W′) is an empirically derived weight or coefficient.

The TPB was developed to inform organizational management, but its application has extended across a number of contexts including psychology, advertising, and health care. For example, if a health care practitioner would like to determine the likelihood that members of an overweight patient population will adhere to a prescribed exercise and diet regimen, he or she would develop a TPB survey that asked the members of the population about the degree to which they believed exercise and a healthy diet to be a good thing (attitudes), their family members' values regarding healthy diet and exercise (subjective norms), and the degree to which they felt confident or in control to adhere to a certain regimen (perceived behavioural control). In this way the practitioner is able to determine the relationship between the scores associated with each factor and the population's overall intention to perform. In the case of the Triple C curriculum evaluation in the Department of Family Medicine at McMaster University, the TPB was used as the guiding framework to develop a survey that captured the breadth of defined intention-determining factors that would predict residents' intentions to adopt a comprehensive scope of practice. Further, in addition to querying the residents about comprehensive practice, survey questions also addressed the particular care services that constitute family medicine (obstetrics, prenatal care, care of youth and children, care of adults, care of the elderly, palliative care) and the various settings in which a comprehensive family physician is expected to practise (home, office, hospital, emergency department).

This TPB survey tool will be beneficial to the evaluation of the Triple C curriculum in 4 distinct ways. First, it will provide an indication of McMaster family medicine residents' intentions to practise as Triple C physicians upon graduating. Second, by administering the survey at set intervals throughout the residency program, we are afforded information on how curricular experiences influence these intentions. Third, analysis of the survey results will highlight the attitudinal, normative, and perceived control factors associated with the residency program that might be more or less responsible for generating negative or positive intentions about comprehensive practice. Last, the survey will indicate

any services or practice settings that are particularly detrimental to intentions to practise comprehensive family medicine. The information generated through the administration of this survey will be instrumental in guiding improvements to the content and delivery of the curriculum at McMaster University, and will serve as an indicator of the utility of the TPB approach to similar program evaluation efforts at other institutions. Substantial evidence points to a link between comprehensive continuing care and better community health outcomes.[7] Through the provision of a methodology for uncovering and understanding the factors that make certain practices and contexts more appealing to the resident practitioner, education efforts can be implemented that help manage the social responsibility that this evidence imbues.

METHODS

Participants

This evaluation surveyed residents who were enrolled in the Department of Family Medicine Postgraduate Residency Program at McMaster University in July 2012. The evaluation was readministered in July 2013 to second-year residents who had completed the initial survey in their first year of residency in July 2012. All participants provided informed consent according to the guidelines set out by the Hamilton Integrated Research Ethics Board.

Questionnaire

All measures for the survey were consistent with the TPB framework and were developed as recommended by Ajzen.[8] First, we specified a definition of comprehensive family medicine practice that was derived by the research team from literature that supports the Triple C curricular reform.[2-4] This definition was as follows:

> A comprehensive family physician offers continuing care to a defined group of patients across the life cycle and in a variety of settings. This means practising obstetrics, prenatal care, care for youth and children, care of adults, care of the elderly, and palliative care in the home, office, emergency room, and hospital environments.

Using this definition, the survey posed questions to the residents regarding their intentions, attitudes, subjective norms, and perceived behavioural control regarding the practice of comprehensive continuing care (**Table 1**). Respondents provided their answers to these questions using a 7-point Likert scale; higher scores indicated more positive responses.

Second, the survey also posed independent questions to the residents about their intentions, attitudes, subjective norms, and perceived behavioural control regarding the particular subdisciplines, life stages, and practice settings that constitute comprehensive family practice (**Table 2**).

Statistical analysis

Linear regression analysis was used to predict residents' intentions to practise comprehensive continuing care. Intention was the dependent variable, and the constructs of attitude, subjective norms, and perceived behavioural control were entered as independent variables. Stepwise regression analyses were used to examine the care services that constitute comprehensive family practice, the life stages that constitute continuing family practice, and the various settings where a Triple C family physician is expected to practise. Separate equations were run for attitudes, subjective norms, perceived behavioural control, and intentions. Finally, to determine whether there were any significant changes in residents' intentions to practise comprehensive care, repeated-measures ANOVA (analysis of variance) was used to examine changes in attitudes, subjective norms, perceived behavioural control, and intentions among the residents who participated at both data collection points. Significance was set at $P<.05$ for all analyses.

RESULTS

A total of 135 residents (60 first-year residents; 72 second-year residents; and 3 third-year residents) completed the survey in July 2012. The survey invitation was circulated to 218 residents, so this sample represents a 62% response rate. The evaluation was readministered in July 2013 to second-year residents who had completed the initial survey in their first year of residency in July 2012, of whom 54 of 60 (90%) completed assessments at both time points.

Overall, descriptive statistics associated with the first survey iteration (n = 135) revealed that the residents had modest intentions about practising as Triple C physicians upon graduation (mean [SD] score of 4.77 [1.66] out of 7). Similarly, mean (SD) scores were also relatively moderate for residents' attitudes (5.25 [1.04]), subjective norms (4.66 [1.08]), and perceived behavioural control (4.19 [1.45]) related to practising comprehensive care.

The regression analysis revealed that the TPB model was successful in predicting 60% of the variance (adjusted $R^2=0.596$) in intentions. Specifically, the results indicate that attitudes ($\beta=0.29$, $P=.002$), subjective norms ($\beta=0.56$, $P<.001$), and perceived behavioural control ($\beta=0.21$, $P=.038$) are all significant predictors of residents' intentions to adopt a comprehensive scope of practice upon graduation. The β scores presented here represent the strength of the relationship between the

Table 1. The portion of the survey assessing residents' intentions to practise comprehensive continuing care upon graduation

STATEMENTS AND QUESTIONS	RESPONSE SCALE (1 TO 7)
Attitudes	
• For me, being "a comprehensive family physician" will be ...	Not enjoyable to enjoyable
• For me, being "a comprehensive family physician" will be ...	Unburdensome to burdensome
• For me, being "a comprehensive family physician" will be ...	Unimportant to important
• For me, being "a comprehensive family physician" will be ...	Uninteresting to interesting
• For me, being "a comprehensive family physician" will be ...	Unrewarding to rewarding
• For me, being "a comprehensive family physician" will be ...	Bad to good
Perceived behavioural control	
• How confident are you that you will be "a comprehensive family physician"?	Unconfident to confident
• For me, becoming "a comprehensive family physician" will be ...	Difficult to easy
• If I wanted to, I could easily become "a comprehensive family physician"	Disagree to agree
• The current Canadian health care system enables me to become "a comprehensive family physician"	Disagree to agree
• I am confident that I can become "a comprehensive family physician" within the current Canadian health care system	Disagree to agree
• How much control do you believe you have in becoming "a comprehensive family physician"?	Lack of control to complete control
• It is completely up to me whether or not I will become "a comprehensive family physician"	Disagree to agree
• It is beyond my control whether or not I will become "a comprehensive family physician"	Disagree to agree
Subjective norms	
• My family and friends think that it is important that I become "a comprehensive family physician"	Disagree to agree
• My peer group thinks that it is important that I become "a comprehensive family physician"	Disagree to agree
• My [former] supervisor(s) think that it is important that I become "a comprehensive family physician"	Disagree to agree
Intentions	
• It is my intention to become "a comprehensive family physician"	Disagree to agree
• My primary goal is to become "a comprehensive family physician"	Disagree to agree
• I am working toward becoming "a comprehensive family physician"	Disagree to agree

residents' attitudes, subjective norms, and perceived behavioural control and their intentions. Specifically, this measure refers to how many SDs the dependent variable will change for every SD increase in an independent variable. For instance, there is an increase of 0.29 SD in intention for every increase of 1 SD for attitudes. These results indicate that subjective norms have the strongest influence on McMaster University family medicine residents' intentions to adopt a comprehensive scope of practice upon graduation.

The survey also examined the care services, life stages, and practice settings that constitute comprehensive family practice (**Table 3**). This examination revealed that residents have strong intentions to offer services concerned with youth and child, elderly, prenatal, and adult health care (means ranging from 6.11 to 6.55). Similarly, the mean scores related to perceptions of control and subjective norms among these services were high (means ranging from 5.61 to 6.42); however, the reported attitudes about these 4 services appear to be markedly lower (means ranging from 4.99 to 5.44). The most concerning results are those that indicate that the residents have weak or ambivalent intentions regarding the future practice of obstetrics (mean [SD] = 3.31 [1.8]).

The stepwise regression analyses that were used to examine the relationship between the residents' specific intentions, attitudes, subjective norms, and perceived behavioural control concerning each of the care services and practice settings and their respective overall intentions, attitudes, subjective norms, and perceived behavioural control about comprehensive family practice revealed less compelling results. Indeed, only the residents' intentions to practise obstetrics ($\beta = 0.36$, $P < .006$, adjusted $R^2 = 0.014$) and to practise in office-based settings ($\beta = 0.28$, $P = .028$, adjusted $R^2 = 0.018$) were significantly predictive of

Table 2. The portion of the survey that assessed residents' intentions to practise obstetrics upon graduation: *This portion of the survey was repeated for each of the services, life stages, and practice contexts that constitute the comprehensive practice of family medicine, including prenatal care, care of youth and children, care of adults, care of the elderly, palliative care, and care within the home, office, hospital, and emergency department.*

STATEMENTS	RESPONSE SCALE (1 TO 7)
I think it is important for the family doctor to practise obstetrics	Agree to disagree
I will be well remunerated for practising obstetrics as part of comprehensive care	Agree to disagree
Practicing obstetrics as part of comprehensive care will be burdensome with respect to maintaining work-life balance	Agree to disagree
I am confident in my ability to practise obstetrics	Agree to disagree
It is possible to have a successful family practice in which the doctor practises obstetrics	Agree to disagree
The resources needed to practise obstetrics in a family practice are readily available	Agree to disagree
The opportunities needed to practise obstetrics in a family practice are readily available	Agree to disagree
I have the requisite skills to practise obstetrics as part of my family practice	Agree to disagree
My current medical peers (ie, classmates, fellow residents) think it is important to practise obstetrics	Agree to disagree
My current medical leaders (ie, teachers, supervisors, preceptors) think it is important for me to practise obstetrics	Agree to disagree
I intend to practise obstetrics	Agree to disagree

their overall intentions to practise as comprehensive family physicians. However, these models account for only 14% and 18% of the variance in the residents' responses, respectively. This suggests that intentions about obstetrics and office-based care have limited predictive value with respect to overall intentions concerning comprehensive practice.

The iterative nature of the surveys also allowed for examination of the way in which attitudes, subjective norms, perceived behavioural control, and intentions changed for 54 residents as they progressed through the curriculum (**Table 4**). Review of the baseline means (SDs) for this sample subset (n = 54) reveals that this group is similar to the overall sample of residents (n = 135). Results from the repeated-measures ANOVA indicate that these residents' attitudes about practising as comprehensive continuing family physicians improved significantly from their first (5.28 [0.99]) to their second (5.72 [1.16]) year ($F_{1,53}=5.32$, $P=.025$). The comparisons also suggest slight improvements in these residents' intentions to practise comprehensive continuing care; however, this improvement did not reach conventional levels of statistical significance ($P=.07$). There were no significant changes to these residents' subjective norms or perceived behavioural control.

DISCUSSION

The data derived from this TPB survey reveal some salient points about the intentions of family medicine residents at McMaster University with respect to practising comprehensive continuing care upon graduation. In particular, review of the evaluation outcomes indicates that these residents have merely modest positive attitudes, subjective norms, perceived behavioural control, and intentions about comprehensive continuing care, and that their attitudes (and, to some degree, their intentions) in this regard improve as they progress through the Triple C curriculum. Further, the evaluation reveals that subjective norms have the strongest influence on our residents' comprehensive continuing care intentions; yet, their perception of these norms does not change over time. Last, there is insufficient evidence to identify one particular care service, life stage, or practice setting that is overwhelmingly responsible for the less-than-ideal resident intentions regarding comprehensive continuing care. Taken together, these findings serve as the foundation for future program evaluation efforts and for recommendations that might serve to improve the delivery and effects of the Triple C curriculum. For instance, this investigation provides particular confidence that focusing curricular efforts on changing residents' attitudes, perceived behavioural control, and subjective norms will bring about improvements in their intentions to practise comprehensive family medicine. Of particular importance, the strong explanatory nature of the developed survey, as supported by the high coefficient of determination scores, highlights that this confidence might be shared by other institutions conducting similar curricular evaluations.

There are 2 findings from the data set that are particularly noteworthy. First, the results presented here suggest that the Department of Family Medicine at McMaster University, and perhaps family medicine departments elsewhere, would do well to explore how common members of the resident social network

Table 3. Residents' mean (SD) responses to the survey questions concerned with the subdomains, life stages, and practice contexts associated with the practice of comprehensive continuing care: *Items were scored on a 7-point Likert scale; higher scores indicate a more positive response.*

TYPE OR LOCATION OF CARE	MEAN (SD) ATTITUDES	MEAN (SD) SUBJECTIVE NORMS	MEAN (SD) PERCEIVED BEHAVIOURAL CONTROL	MEAN (SD) INTENTIONS
Obstetrics	4.95 (1.6)	3.86 (1.4)	4.29 (1.5)	3.13 (1.8)
Prenatal care	4.99 (2.3)	5.71 (1.4)	5.79 (1.4)	6.11 (1.5)
Youth and child care	5.18 (2.3)	6.03 (1.4)	5.68 (1.4)	6.30 (1.3)
Care of adults	5.22 (2.4)	6.42 (1.3)	6.08 (1.4)	6.55 (1.3)
Care of the elderly	5.44 (2.0)	5.97 (1.4)	5.61 (1.5)	6.29 (1.3)
Palliative care	5.01 (1.6)	4.67 (1.4)	5.15 (1.3)	4.81 (1.6)
Hospital	5.06 (1.4)	4.38 (1.4)	4.76 (1.5)	4.80 (1.6)
Office	4.76 (1.7)	4.30 (1.4)	4.82 (1.6)	4.07 (2.1)
Home	5.23 (1.6)	4.97 (1.3)	4.96 (1.5)	5.25 (1.6)
Emergency department	4.85 (1.6)	4.23 (1.5)	4.79 (1.4)	4.43 (1.9)

Table 4. Baseline and follow-up comparison of the mean (SD) responses of a subset (n = 54) of residents who completed the survey during both their first and second years of residency: *Items were scored on a 7-point Likert scale; higher scores indicate a more positive response.*

DETERMINANTS OF BEHAVIOUR	MEAN (SD) BASELINE	MEAN (SD) FOLLOW-UP	TEST OF DIFFERENCES
Attitudes	5.28 (0.99)	5.72 (1.16)	$F_{1,53} = 5.32$, $P = .025$
Subjective norms	4.08 (1.43)	4.15 (1.37)	$F_{1,53} = 0.13$, $P = .724$
Perceived behavioural control	4.48 (1.38)	4.54 (1.22)	$F_{1,53} = 0.13$, $P = .716$
Intentions	4.58 (1.85)	5.00 (1.64)	$F_{1,53} = 3.55$, $P = .065$

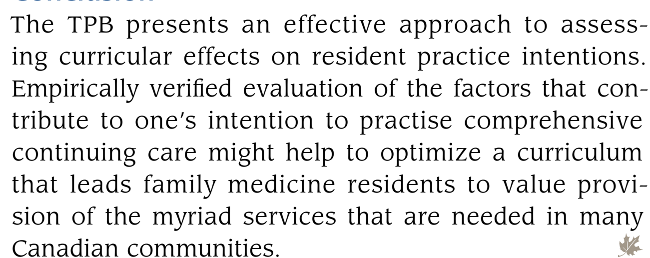
(preceptors, peers, family, etc) could be engaged to leverage the profound effect that subjective norms have on residents' comprehensive continuing care intentions. This means that the community of practice that surrounds resident education should develop and communicate a common understanding of the value of comprehensive family practice. Second, the lack of any compelling relationship between any one care service or practice setting and overall intentions to practise comprehensively suggests that less-than-ideal intentions to practise in this manner might be a function of the overall definition of comprehensive care rather than any of its particular subcomponents. That is, consideration should be given to how the Triple C perspective integrates into residents' understanding of newer, team-based models of care wherein health care responsibilities are distributed across a family health team composed of several different practitioners. In this regard, program evaluators at McMaster might do well to explore which features of the Triple C curriculum lead to improvement in their residents' attitudes about comprehensive practice.

Limitations

We recognize that the findings presented here are not without their limitations. Most notably, at this point the analysis is limited to residents' self-report of intentions. The most meaningful understanding will be achieved when reported intentions can be compared against actual future practice. Thus, in order to generate the most robust data set, we must contact the residents once they are established as practitioners so as to appraise their practice behaviour. Although it might be difficult to generalize these results exclusively focusing on intention, it is our hope that other postgraduate family medicine programs might see how this approach to program evaluation can be beneficial to understanding the locus of curricular effects.

Conclusion

The TPB presents an effective approach to assessing curricular effects on resident practice intentions. Empirically verified evaluation of the factors that contribute to one's intention to practise comprehensive continuing care might help to optimize a curriculum that leads family medicine residents to value provision of the myriad services that are needed in many Canadian communities.



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Contributors
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Competing interests
None declared

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