Collaboration between family physicians and nurse clinicians

Opinions of graduates in family medicine

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Abstract

Objective To determine whether graduating family physicians are exposed to collaboration between family physicians and nurse clinicians during their training, as well as their opinions about shared care between doctors and nurse clinicians in the delivery of patient care.

Design Anonymous online survey.

Setting Two French-Canadian university family medicine residency programs.

Participants The 2010 and 2011 graduating family physicians (N=343) from the University of Montreal and Laval University in Quebec.

Main outcome measures The extent to which nurse clinicians in graduating family physicians' training milieu were involved in preventive and curative patient care activities, and graduates' opinions about nurse clinicians sharing care with physicians.

Results Of 343 graduates, 186 (54.2%) participated in the survey. Although as residents in family medicine their exposure to shared care with nurse clinicians was somewhat limited, respondents indicated that they were generally quite open to the idea of sharing care with nurse clinicians. More than 70% of respondents agreed or strongly agreed that nurse clinicians could adjust, according to protocols of clinical guidelines, the treatment of patients with diabetes, hypertension, and asthma, as well as regulate medication for pain control in terminally ill patients. By contrast, respondents were less favourable to nurse clinicians adjusting the treatment of patients with depression. More than 80% of respondents agreed or strongly agreed that nurse clinicians could initiate treatment via a medical directive for routine hormonal contraception, acne, uncomplicated cystitis, and sexually transmitted infections. Respondents' opinions on nurse clinicians initiating treatment for pharyngitis and otitis were more divided.

Conclusion Graduating family physicians are quite open to collaborating with nurse clinicians. Although they have observed some collaboration between physicians and nurses, there are areas of shared clinical activities in which they would benefit from further exposure and training.

EDITOR'S KEY POINTS

- Despite having limited exposure to the role of nurse clinicians during their training, graduating family physicians are generally open to collaborating with nurse clinicians.
- More than 70% of respondents indicated that activities involving oral communication, such as screening for risk of neglect, violence, and abuse; counseling on lifestyle habits; and discussing breast cancer screening, could be shared equally by physicians and nurse clinicians.
- Respondents were less favourable toward nurse clinicians conducting Papanicolaou tests and verifying patients' understanding of the nature of medicines prescribed. This might be attributed to their limited exposure to nurse clinicians' scope of practice and a limited understanding of nurse clinicians' role.

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La collaboration entre médecins de famille et infirmières cliniciennes

Ce qu'en pensent les nouveaux diplômés en médecine familiale

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Résumé

Objectif Déterminer ce que les nouveaux diplômés en médecine familiale ont observé de la collaboration entre médecins de famille et infirmières cliniciennes durant leur formation et vérifier ce qu'ils pensent du partage des soins entre médecins et infirmières cliniciennes.

Type d'étude Enquête anonyme par internet.

Contexte Les programmes de médecine familiale de 2 universités francophones du Canada.

Participants Les diplômés en médecine familiale de 2010 et 2011 (N = 343) de l'université de Montréal et de l'université Laval au Québec.

Principaux paramètres à l'étude La mesure dans laquelle les infirmières cliniciennes ont participé à des activités de type préventif et curatif auprès des patients dans le milieu où les nouveaux diplômés en médecine familiale ont été formés, et l'opinion de ces diplômés sur le partage des soins entre médecins et infirmières cliniciennes.

Résultats Sur les 343 diplômés, 186 (54,2%) ont participé à l'enquête. Même si les résidents en médecine familiale ont eu peu d'occasions de partager les soins avec les infirmières cliniciennes durant leur formation, ils se sont dits généralement plutôt favorables à cette façon de pratiquer. Plus de 70% d'entre eux étaient d'accord ou fortement d'accord avec l'idée que les infirmières cliniciennes puissent ajuster, conformément aux directives de pratique, les traitements de patients diabétiques, hypertendus et asthmatiques, et qu'elles puissent aussi ajuster la médication antidouleur chez les patients en phase terminale. Par contre, ils étaient moins favorables à ce qu'elles ajustent le traitement des patients déprimés. Plus de 80% des répondants étaient d'accord ou fortement d'accord avec l'idée que les infirmières cliniciennes pourraient, sous directive médicale, initier une contraception hormonale de routine, ou un traitement pour l'acné, une cystite non compliquée ou une infection à transmission sexuelle. Par ailleurs, ils avaient des opinions partagées quant à permettre à ces infirmières d'instaurer un traitement pour une pharyngite ou une otite.

Conclusion Les nouveaux médecins de famille sont plutôt favorables à une certaine collaboration médecin-infirmières cliniciennes. Même s'ils ont été témoins d'une certaine collaboration médecins-infirmières, il existe des domaines d'activité clinique partagée pour lesquels ils auraient avantage à être plus exposés et mieux formés.

POINTS DE REPÈRE DU RÉDACTEUR

- Même s'ils ont eu peu d'occasions de prendre connaissance du rôle des infirmières cliniciennes, les nouveaux médecins de famille sont généralement favorables à la collaboration avec ces infirmières.
- Plus de 70% des répondants ont indiqué que les activités comprenant une communication verbale, comme dans le dépistage de la maltraitance, de la violence et des sévices, les conseils sur les habitudes de vie et les discussions relatives au dépistage du cancer du sein, pourraient être également partagées entre médecins et infirmières cliniciennes.
- Les répondants étaient moins favorables à l'idée que les infirmières praticiennes effectuent les tests de Papanicolaou et qu'elles vérifient que les patients comprennent la nature des médicaments prescrits. Cela pourrait être attribuable au fait qu'ils ont eu peu d'occasions d'approfondir leurs connaissances sur le champ de pratique et le rôle de ces infirmières.

Cet article a fait l'objet d'une révision par des pairs.
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Industrialized countries are constantly undergoing reforms to strengthen their health care systems in order to cope with emerging pressures, increase access to care, and improve the quality of care delivered.[1-4] Primary care lies at the heart of these reforms, as it has been shown to improve health indicators when its organization is well developed.[5-7]

In Quebec, health reports have specifically outlined the need to improve the organization of primary care[8] and the optimization of the roles of professionals involved in patient care. As a result, the Clair Commission recommended the establishment of family medicine groups across Quebec. These groups, which consist of teams of 6 to 10 physicians, are anchored on collaboration with nurse clinicians. They are designed to improve accessibility and continuity of care.[8,9]

In 2002, the National Assembly of Québec passed an act helping with the definition of the roles of the health professionals in an interdisciplinary team. The purpose of the act was to improve the efficiency and autonomy of each individual represented in the health care team.[10] Following the adoption of the bill in 2002, nurse clinicians could participate in activities hitherto reserved for physicians. This law, coupled with the desire to organize primary care optimally, sets up what is important and necessary to bring about change in patient care delivery.

In recognition of the need to prepare future physicians to practise in interdisciplinary health teams, the Association of Faculties of Medicine of Canada recently identified interprofessional collaboration as an educational competence in its medical education curriculum.[11] It is not alone, as the College of Family Physicians of Canada and the Royal College of Physicians and Surgeons of Canada have also identified interprofessional collaboration as an essential competence to be developed in physicians.[12,13]

With regard to interprofessional collaboration, physician-nurse collaboration as a factor in improving health care delivery has been well documented. It is considered to be effective in increasing access to health care, improving patient care, maximizing the use of limited human health resources, and enhancing patient and health professional satisfaction.[14-17]

In Quebec, there are multiple cadres of nurses, such as registered nurses, nurse clinicians, and, only recently, nurse practitioners. The Ordre des infirmières et infirmiers du Québec requires registered nurses to have a 3-year college diploma in nursing and nurse clinicians to have a university degree in nursing or a college diploma in nursing followed by 2 years in university. There are currently more than 18 000 nurse clinicians in Quebec, one-quarter of whom practice in primary care settings.[18] In addition to conducting basic nursing activities, nurse clinicians are actively involved in the management of patients with complex health problems and coordination of patients' care between primary care physicians and other health care professionals, institutions, or community organizations.

There have been various studies highlighting the challenges in implementing interprofessional collaboration between physicians and nurses,[14,19-22] some of which are the ambiguity of roles, limited understanding of nurses' scope of practice, and a varying degree of willingness to collaborate on the part of physicians. In Clarin's review of barriers and strategies to the implementation of effective collaboration between physicians and nurse practitioners,[19] most of the strategies proffered were related to educating physicians and providing exposure to the role of nurses during training.

While there have been studies measuring and evaluating the teaching of interprofessional collaboration, to our knowledge, no study has been conducted to assess the degree of exposure and attitudes of residents in family medicine toward the collaboration between physicians and nurse clinicians. Therefore, this paper aims to answer the following research questions: During their residency training, are graduating family physicians exposed to collaboration between physicians and nurse clinicians? What are their opinions about a greater level of shared care between doctors and nurses?

METHODS

Our data were obtained from a survey aimed at documenting the extent to which prevention and interdisciplinary collaboration are valued in the training of family physicians. The study was conducted using an anonymous online survey administered at the end of residency training to all the 2010 and 2011 graduating family physicians at 2 Canadian universities (University of Montreal and Laval University). Graduates initially received a cover letter by e-mail that included the instructions to access a website. Three follow-up e-mail attempts were made after the initial e-mail of the questionnaire was sent. Use of an independent secure Web link to record the identity of respondents completing the survey enabled the follow-up of nonrespondents while ensuring anonymity.

The questionnaire asked graduating family physicians about their exposure to collaboration between physicians and nurse clinicians during their family residency training, as well as their opinions about shared care between physicians and nurses in the delivery of patient care. More specifically, on a 4-point scale ranging from very often to never, graduates were asked to indicate the extent to which nurse clinicians in their training milieu were involved in patient care activities related to risk assessment, screening, counseling, and treatment (9 items). Role sharing between physicians

and nurse clinicians was measured using 2 questions. One question referred to graduates' opinions about who should perform selected patient care activities (11 items): 3 answer categories were provided, ranging from solely physicians to solely nurse clinicians. The other question asked whether nurse clinicians should be allowed, via a medical directive by physicians, to adjust treatment for conditions such as diabetes and hypertension and to initiate treatment of conditions such as uncomplicated cystitis and acne. For each of the 11 conditions studied, 4 answer categories were provided, ranging from strongly agree to strongly disagree. All questions were pretested qualitatively in a sample of senior medical students and residents to assess their validity. Questions were revised as needed until they were clear and well understood by respondents (the survey instrument can be obtained from the corresponding author, B.M.).

The study was approved by the University of Montreal Research Ethics Committee.

RESULTS

Of the 343 graduating family physicians contacted, 186 completed the survey, resulting in a response rate of 54.2%. As shown in **Table 1**, women were more likely to participate in the study than men. Given that they yielded similar results, the 2010 and 2011 surveys were merged and we analyzed the data using SPSS software.

Most graduates reported having very often or often observed nurse clinicians participating in joint monitoring of patients with chronic diseases (75.1%), counseling patients on lifestyle habits (75.3%), and adjusting treatment based on a medical directive (50.6%) during their family medicine training (**Table 2**). For other clinical activities surveyed, the trend was reversed. Most graduates reported rarely or never having observed nurse clinicians initiating treatment based on a medical directive (68.8%), identifying potential situations of violence (65.1%), identifying adults at risk of depression (68.7%), evaluating the risk of falls in the elderly (78.1%), and conducting Papanicolaou tests (82.8%) and sexually transmitted infections screening (86.0%).

With regard to respondents' opinions about shared care (**Table 3**), between 63.2% and 80.7% of them indicated that responsibility could be shared equally by physicians and nurse clinicians for the following activities: screening patients for risk of neglect, violence, or sexual abuse; counseling patients on lifestyle habits; sensitizing women on the importance of having a

Table 1. Population size, number of respondents, and response rate for each cohort

COHORT	POPULATION SIZE, N	RESPONDENTS, N	RESPONSE RATE, %
2010			
• Women	117	67	57.3
• Men	44	14	31.8
• Total	161	81	50.3
2011			
• Women	128	86	67.2
• Men	54	19	35.2
• Total	182	105	57.7
Total	343	186	54.2

Table 2. Percentage of respondents who reported how often they observed nurse clinicians perform various clinical activities during their residency training: *N = 169.*

CLINICAL ACTIVITIES	HOW OFTEN RESPONDENTS OBSERVED NURSE CLINICIANS PERFORMING VARIOUS CLINICAL ACTIVITIES, %*			
	VERY OFTEN	OFTEN	RARELY	NEVER
Joint monitoring of patients with chronic diseases (eg, hypertension, diabetes, schizophrenia)	54.4	20.7	9.5	15.4
Counseling patients on lifestyle habits	40.6	34.7	14.7	10.0
Adjusting treatment (eg, hypertension, anticoagulation) based on a medical directive	26.5	24.1	17.1	32.4
Initiating treatment (eg, regular hormonal contraception, treatment of asymptomatic STIs) based on a medical directive	12.9	18.2	22.9	45.9
Identifying potential situations of violence	7.1	27.8	43.2	21.9
Identifying adults at risk of depression	5.3	26.0	43.8	24.9
Assessing the risk of falls among the elderly	5.3	16.6	45.0	33.1
Conducting Papanicolaou tests	4.1	13.0	20.1	62.7
Conducting STI testing	4.0	9.0	13.0	73.0

STI—sexually transmitted infection.
*Some percentages do not add to 100% owing to rounding.

Table 3. Percentage of respondents who attribute the responsibilities of various clinical activities to physicians and nurse clinicians: *N* = 170.

	RESPONDENTS' ATTRIBUTION OF RESPONSIBILITIES, %*		
CLINICAL ACTIVITIES	SOLELY PHYSICIAN	EQUALLY SHARED	SOLELY NURSE CLINICIAN
Screening for risk of neglect, violence, or sexual abuse in all age groups	5.8	80.7	13.5
Counseling patients on lifestyle habits	3.5	79.4	17.1
Discussing the importance of biennial mammography screening for breast cancer (women aged 50-69 y)	7.6	76.6	15.8
Verifying patients' motivation to comply with management plans	23.6	70.0	6.5
Informing patients of community and professional resources that might be useful	1.8	69.6	28.6
Assessing the risk of falls among elderly	11.1	68.4	20.5
Identifying patients with depression	34.5	63.2	2.3
Discussing colorectal cancer screening with patients aged ≥ 50 y	42.1	52.0	5.8
Conducting Papanicolaou tests	40.3	48.0	11.7
Verifying patients' understanding of the nature of tests and medications prescribed	59.4	37.6	2.9
Administering vaccines when required	0.6	10.0	89.4

*Some percentages do not add to 100% owing to rounding.

mammogram for breast cancer screening every 2 years; ascertaining the motivation of patients to comply with their management plans; informing patients of community or professional resources that might be useful; assessing the risk of falls in the elderly; and identifying patients with depression.

However, responses differed regarding colorectal and cervical cancer screening. While about half of graduates attributed the task of discussing colorectal cancer screening and conducting Pap tests to either nurse clinicians or physicians, the other half believed that those roles were more appropriate for (or should be carried out solely by) physicians. Finally, most respondents believed that it behooved doctors to ascertain that patients understood the nature of tests and medicines prescribed, while the administration of vaccines when required was more the prerogative of nurse clinicians.

More than 70% of respondents agreed or strongly agreed that nurse clinicians could adjust, based on documented clinical guidelines, the treatment of patients with diabetes, hypertension, and asthma, as well as regulate medication for pain control in terminally ill patients (**Table 4**). By contrast, graduates were less favourable to nurse clinicians adjusting the treatment of patients with depression. More than 80% of respondents agreed or strongly agreed with nurse clinicians initiating treatment via a medical directive for routine hormonal contraception, acne, uncomplicated cystitis, and sexually transmitted infections. Opinions were more divided on medical directives for the treatment of pharyngitis and otitis.

DISCUSSION

Our results show that nurse clinicians working in family medicine residency training settings seem to be more involved in activities directly related to their specialized role, such as in the monitoring of patients with chronic diseases, providing lifestyle counseling, and adjusting treatment. The fact that graduating family physicians are trained to refer patients to nurse clinicians for these activities is a plausible explanation. However, other activities within nurse clinicians' scope of practice such

Table 4. Percentage of respondents who agreed that nurse clinicians could adjust treatment, according to protocols based on clinical guidelines, for patients with various chronic conditions: *N* = 170.

	RESPONDENTS, %*			
CHRONIC ILLNESS	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
Diabetes	38.8	45.3	9.4	6.5
Hypertension	38.2	44.7	11.2	5.9
Asthma	33.5	48.8	12.9	4.7
Pain control in terminally ill patients	29.4	42.9	22.9	4.7
Depression	15.3	27.6	44.7	12.4

*Some percentages do not add to 100% owing to rounding.

as identifying risk of falls, screening for violence, and assessing for depression were often not carried out by them. It could be said that opportunities for conducting these activities occur less frequently in daily practice, but these screening activities should be part of periodic health examinations conducted routinely in family practice. Thus, it could be that graduating physicians are unaware of nurse clinicians conducting periodic health examinations either because they are conducted by the residents themselves to facilitate their learning or because they have not been exposed to nurse clinicians' role in them.

Our results suggest that despite a somewhat limited exposure to the role of nurse clinicians during their training, graduating family physicians are generally open to collaborating with nurse clinicians. They appeared at ease with the idea, particularly in relation to activities involving oral communication, such as screening for risk of neglect, violence, and abuse; counseling on lifestyle habits; and discussing breast cancer screening. However, they were somewhat less favourable to nurse clinicians conducting Pap tests. This could be attributed to their reported limited exposure to nurse clinicians' scope of practice or to a limited knowledge of nurse clinicians' ability to conduct Pap tests. It is interesting to note that respondents were in favour of nurse clinicians adjusting and even initiating certain medications, but did not think nurse clinicians should be responsible for verifying patients' understanding of the nature of medicines prescribed. This might be owing to a limited understanding of nurse clinicians' knowledge about medications. It could also be because a proportion of respondents ascribed that role to the prescriber or the pharmacist.

Also noteworthy is the fact that although a quarter of our respondents reported not having observed nurse clinicians counseling patients on lifestyle habits, almost all agreed that nurse clinicians have a role in it. This raises the question of whether the limited exposure is owing to a lack of understanding of nurse clinicians' role or as a result of other factors prevalent in their training environment that made it difficult to observe nurse clinicians in practice (eg, limited nursing staff [as observed in practices where 2 nurse clinicians work with 10 to 12 physicians] or other organizational or administrative issues).[9,21]

With collaboration between nurses and physicians, the emphasis is not on drawing strict boundary lines but on ensuring a more rounded approach to the delivery of care.[15,23] Thus, more than a quarter of respondents attributing activities such as informing patients about professional services available in the community and assessing the elderly for risk of falls solely to nurse clinicians raises some concern. The possible danger is the development of gaps in primary care delivery in situations where the nurse clinician is unavailable when the physician sees the patient. As much as possible, activities such as these should be mastered by both professionals: physicians and nurse clinicians.[23]

Graduating family physicians appeared generally open to nurse clinicians' role in initiating and adjusting treatment of selected conditions. The fact that more than half of respondents disagreed with nurse clinicians adjusting treatment for depression is not surprising owing to the complexity surrounding its management (**Table 4**).[24,25] This complexity makes it difficult to develop clearly defined algorithms and medical directives for adjusting medications. The divided opinion regarding initiating treatment of otitis could also have a similar explanation given that its diagnosis requires a skilled clinical assessment of the affected ear. This might be more the jurisdiction of the nurse practitioner whose training involves more practice hours. Surprising, however, is the fact that two-fifths of respondents disagreed with nurse clinicians initiating treatment of pharyngitis (**Table 5**). This can hardly be explained by the nature of the condition, which is easily diagnosed and has well outlined management guidelines. Perhaps it points instead to respondents' knowledge gap regarding nurse clinicians' scope of practice. Such knowledge gaps have been demonstrated in literature and reiterate the need for further training on and exposure to nurse clinicians' scope of practice.[26,27]

Interprofessional education defined as "two or more professions learning about, from and with each other to improve collaboration and health outcomes" has documented positive outcomes in changing attitudes and enhancing knowledge and skills for collaborative practice.[28-33] It could help better prepare graduating family physicians for interprofessional collaboration by

Table 5. Percentage of respondents who agreed that nurse clinicians can initiate treatment, according to a medical directive, for patients with various chronic conditions: *N* = 170.

	RESPONDENTS, %*			
CHRONIC ILLNESS	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
Routine hormonal contraception	55.3	36.5	6.5	1.8
Acne (topical treatment)	52.1	33.1	10.1	4.7
Uncomplicated cystitis	50.0	36.5	10.0	3.5
Sexually transmitted infections	45.0	36.1	14.8	4.1
Pharyngitis	26.5	32.4	34.1	7.1
Otitis	22.4	28.8	38.2	10.6

*Some percentages do not add to 100% owing to rounding.

providing a better understanding of nurse clinicians' role and scope of practice. Studies show that interprofessional education that combines didactic and clinical encounters and is conducted in settings that reflect the learner's future practice is more effective.[30,33] In this regard, it is important that faculty members in family medicine residency training settings are provided with opportunities for professional development to facilitate their role in interprofessional education and role modeling. The fact that health care systems are constantly evolving make it necessary for physicians and other health professionals to remain flexible and open to taking up new roles.

Limitations

Our study provides insight to the graduating family physicians' exposure to collaboration between physicians and nurse clinicians during their residency training. Currently in Quebec, family medicine residency training is being conducted in a variety of locations: hospital-affiliated teaching units, local community health centres, and family medicine groups. Thus, our results could have been influenced by the varying degree of availability of nurse clinicians at these sites. It would therefore be interesting to note to what extent the results would differ if all training units were family medicine groups.

Conclusion

Graduating family physicians appear ready to collaborate with nurse clinicians. They have had some exposure to such collaboration and have a fair knowledge of nurse clinicians' scope of practice. However, there are areas of shared clinical activities in which they would benefit from further exposure and training.

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Contributors

All authors contributed to the concept and design of the study; data analysis and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

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References

1. Howell B. Restructuring primary health care markets in New Zealand: from welfare benefits to insurance markets. *Aust New Zealand Health Policy* 2005;2:20.
2. Romanow RJ. *Building on values. The future of health care in Canada—final report.* Saskatoon, SK: Commission on the Future of Health Care in Canada; 2002. Available from: **www.cbc.ca/healthcare/final_report.pdf.** Accessed 2014 Jul 9.
3. Australian Department of Health and Ageing. *Primary health care reform in Australia. Report to support Australia's first national primary health care strategy.* Canberra, Aust: Australian Government; 2009. Available from: **www.yourhealth.gov.au/internet/yourhealth/publishing.nsf/Content/nphc-draftreportsupp-toc/$FILE/NPHC-supp.pdf**. Accessed 2014 Jul 9.
4. Department of Health. *Equity and excellence: liberating the NHS.* London, UK: Stationery Office Ltd; 2010. Available from: **www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_117794.pdf**. Accessed 2014 Jul 8.
5. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Q* 2005;83(3):457-502.
6. World Health Organization. *The world health report 2008. Primary health care. Now more than ever.* Geneva, Switz: World Health Organization; 2008. Available from: **www.who.int/whr/2008/whr08_en.pdf.** Accessed 2014 Jul 9.
7. Forrest CB, Whelan EM. Primary care safety-net delivery sites in the United States: a comparison of community health centers, hospital outpatient departments, and physicians' offices. *JAMA* 2000;284(16):2077-83.
8. Commission d'étude sur les services de santé et les services sociaux. *Emerging solutions. Report and recommendations.* Quebec city, QC: Government of Quebec; 2000.
9. D'Amour D, Goudreau J, Hudon E, Beaulieu MD, Lamothe L, Jobin G, et al. Development of nursing practice in family medicine groups [article in French]. *Perspect Infirm* 2008;5(7):4-11.
10. Government of Quebec. *Bill 90. An act to amend the professional code and other legislative provisions as regards the health sector.* Quebec city, QC: Government of Quebec; 2002.
11. Association of Faculties of Medicine of Canada. *The future of medical education in Canada (FMEC): a collective vision for MD education.* Ottawa, ON: Health Canada; 2010.
12. Tannenbaum D, Konkin J, Parsons E, Saucier D, Shaw L, Walsh A, et al. *Triple C competency-based curriculum. Report of the Working Group on Postgraduate Curriculum Review—part 1.* Mississauga, ON: College of Family Physicians of Canada; 2011. Available from: **www.cfpc.ca/uploadedFiles/Education/_PDFs/WGCR_TripleC_Report_English_Final_18Mar11.pdf**. Accessed 2014 Jul 9.
13. Frank JR, editor. *The CanMEDS 2005 physician competency framework. Better standards, better physicians, better care.* Ottawa, ON: Royal College of Physicians and Surgeons of Canada; 2005. Available from: **www.royalcollege.ca/portal/page/portal/rc/common/documents/canmeds/resources/publications/framework_full_e.pdf**. Accessed 2014 Jul 9.
14. Akeroyd J, Oandasan I, Alsaffar A, Whitehead C, Lingard L. Perceptions of the role of the registered nurse in an urban interprofessional academic family practice setting. *Nurs Leadersh* (Tor Ont) 2009;22(2):73-84.
15. Way D, Jones L, Baskerville B, Busing N. Primary health care services provided by nurse practitioners and family physicians in shared practice. *CMAJ* 2001;165(9):1210-4.
16. Oandasan I, Baker GR, Barker K, Bosco C, D'Amour D, Jones L, et al. *Teamwork in healthcare: promoting effective teamwork in healthcare in Canada*. Ottawa, ON: Canadian Health Services Research Foundation; 2006.
17. Canadian Health Services Research Foundation. Interdisciplinary teams in primary healthcare can effectively manage chronic illnesses. *Evid Boost Qual* 2005;9. Available from: **www.cfhi-fcass.ca/migrated/pdf/mythbusters/boost3_e.pdf**. Accessed 2014 Jul 9.
18. Ordre des infirmières et infirmiers du Québec [website]. *Clinical nurse.* Westmount, QC: Ordre des infirmières et infirmiers du Québec; 2011. Available from: **www.oiiq.org/admission-a-la-profession/la-profession/infirmiere-clinicienne**. Accessed 2014 Jul 9.
19. Clarin OA. Strategies to overcome barriers to effective nurse practitioner and physician collaboration. *J Nurse Pract* 2007;3(8):538-48.
20. Wilson K, Coulon L, Hillege S, Swann W. Nurse practitioners' experiences of working collaboratively with general practitioners and allied health professionals in New South Wales, Australia. *Aust J Adv Nurs* 2005;23(2):22-7.
21. Sangster-Gormley E, Martin-Misener R, Downe-Wamboldt B, DiCenso A. Factors affecting nurse practitioner role implementation in Canadian practice settings: an integrative review. *J Adv Nurs* 2011;67(6):1178-90. Epub 2011 Jan 24.
22. Rashid C. Benefits and limitations of nurses taking on aspects of the clinical role of doctors in primary care: integrative literature review. *J Adv Nurs* 2010;66(8):1658-70.
23. College of Family Physicians of Canada, Canadian Nurses Association. *CFPC-CNA vision statement on inter-professional care.* Mississauga, ON: College of Family Physicians of Canada; 2007.
24. Barley EA, Murray J, Walters P, Tylee A. Managing depression in primary care: a meta-synthesis of qualitative and quantitative research from the UK to identify barriers and facilitators. *BMC Fam Pract* 2011;12:47.
25. Fuentes LA. Depression in primary care: the evidence supporting the need for system change. *Internet J Adv Nurs Pract* 2009;10(2).
26. Allard M, Frego A, Katz A, Halas G. Exploring the role of RNs in family practice residency training programs. *Can Nurse* 2010;106(3):20-4.
27. Leipzig RM, Hyer K, Ek K, Wallenstein S, Vezina ML, Fairchild S, et al. Attitudes toward working on interdisciplinary healthcare teams: a comparison by discipline. *J Am Geriatr Soc* 2002;50(6):1141-8.
28. Barnsteiner JH, Disch JM, Hall L, Mayer D, Moore SM. Promoting interprofessional education. *Nurs Outlook* 2007;55(3):144-50.
29. Garcia-Huidobro D, Skewes S, Barros X, Pizarro C, Gawinski BA. Learning together to work together: interprofessional education for students in a primary care setting in Chile. *Fam Med* 2013;45(4):272-5.
30. Remington TL, Foulk MA, Williams BC. Evaluation of evidence for interprofessional education. *Am J Pharm Educ* 2006;70(3):66.
31. Lapkin S, Levett-Jones T, Gilligan C. A systematic review of the effectiveness of interprofessional education in health professional programs. *Nurse Educ Today* 2013;33(2):90-102. Epub 2011 Dec 22.
32. Sakai DH, Marshall S, Kasuya RT, Wong L, Deutsch M, Guerriro M, et al. Interprofessional education: future nurses and physicians learning together. *Hawaii J Med Public Health* 2012;71(6):168-71.
33. Hammick M, Freeth D, Koppel I, Reeves S, Barr H. A best evidence systematic review of interprofessional education: BEME guide no.9. *Med Teach* 2007;29(8):735-51.