Editor's key points

- The problem of suicide in residency is as real as it is understudied. In 2009 a family practice resident from the University of British Columbia (UBC) in Vancouver died by suicide, and 1 year later this study was conducted to determine the prevalence of suicidal ideation among family practice residents at UBC, as well as the rate of burnout among these residents.
- This study found high rates of psychological suffering among UBC family practice residents, specifically in the form of suicidal ideation (33.3% prevalence rate) and burnout (73.5% prevalence rate). These findings indicate that a rigorous evaluation of suicidality among Canadian family practice residents is required.
- It is important to consider that the residents in this analysis received the survey 1 year after a colleague's death by suicide, and this exposure might have increased the risk of suicide-related behaviour among residents, thus explaining the alarmingly high rate of suicidal ideation. Residents recently exposed to suicide need careful attention. The causes, such as intrinsic and extrinsic sources of psychological distress, and the effects of suicidal ideation in residency also need to be clarified in order to develop relevant programs aimed at prevention.

Suicidal ideation among family practice residents at the University of British Columbia

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Abstract

Objective To determine the prevalence of suicidal ideation and burnout among family practice residents at the University of British Columbia (UBC), and to compare the identified rates with those found in other studies.

Design Web-based survey.

Setting University of British Columbia in Vancouver.

Participants A total of 235 family practice residents from UBC.

Main outcome measures The Web-based survey included an evaluation of suicide risk with questions adapted from the Meehan Inventory, and an evaluation of burnout with the Maslach Burnout Inventory. A univariate descriptive analysis and a bivariate analysis were used to define the prevalence of suicidal ideation and burnout, as well as relationships with demographic variables.

Results In the fall of 2010, among the 109 survey respondents (46.4% response rate), the rate of suicidal ideation during family practice residency was 33.3%, the rate of suicidal ideation with a plan during residency was 18.1%, and the rate of suicide attempt during residency was 2.9%. The prevalence of burnout during residency was identified in 73.5% of respondents and was represented by a perceived lack of personal accomplishment. The identified prevalence of suicidal ideation was considerably higher than in other studies, and the identified prevalence of burnout was comparable to similar studies.

Conclusion This study identified a high rate of suicidal ideation and burnout among Canadian family medicine residents at UBC. Further research is needed to improve suicide prevention, as well as identification and support of residents in distress.

Idées suicidaires chez les résidents en pratique familiale à l'Université de la Colombie-Britannique

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Résumé

Objectif Déterminer la prévalence des idées suicidaires et de l'épuisement professionnel chez les résidents en pratique familiale à l'Université de la Colombie-Britannique (UBC), et comparer les taux obtenus avec ceux cernés dans d'autres études.

Type d'étude Sondage sur le Web.

Contexte Université de la Colombie-Britannique à Vancouver.

Participants Un groupe de 235 résidents en pratique familiale à l'UBC.

Principaux paramètres à l'étude Le sondage sur le Web incluait une évaluation du risque de suicide au moyen de questions adaptées à partir du répertoire de Meehan, ainsi qu'une évaluation de l'épuisement professionnel selon l'échelle de mesure mise au point par Maslach. Une analyse descriptive multivariée et une analyse bivariée ont servi à définir la prévalence des idées suicidaires et de l'épuisement professionnel, de même que les relations avec les variables démographiques.

Résultats À l'automne de 2010, parmi les 109 répondants au sondage (taux de réponse de 46,4 %), le taux d'idées suicidaires durant la résidence en pratique familiale se situait à 33,3 %, le taux d'idées suicidaires accompagnées d'un plan durant la résidence s'élevait à 18,1 %, et le taux de tentatives de suicide était de 2,9 %. La prévalence de l'épuisement professionnel durant la résidence s'élevait à 73,5 % chez les répondants, et était exprimée par l'absence perçue d'un sentiment d'accomplissement personnel. La prévalence mesurée des idées suicidaires était considérablement plus élevée que dans d'autres études, tandis que la prévalence identifiée de l'épuisement professionnel était comparable à celle dans des études semblables.

Conclusion Cette étude a mis en évidence un taux élevé d'idées suicidaires et d'épuisement professionnel chez les résidents canadiens en pratique familiale à l'UBC. D'autres études de recherche seront nécessaires pour améliorer la prévention du suicide, la détection des résidents en détresse et le soutien à ces résidents.

Points de repère du rédacteur

- Le problème du suicide durant la résidence est aussi réel que peu étudié. En 2009, une résidente en pratique familiale à l'Université de la Colombie-Britannique (UBC), à Vancouver s'est suicidée et 1 an plus tard, cette étude a été réalisée pour déterminer la prévalence des idées suicidaires chez les résidents en pratique familiale à l'UBC, de même que le taux d'épuisement professionnel dans ce même groupe.
- Cette étude a cerné des taux élevés de souffrance psychologique chez les résidents de l'UBC en pratique familiale, prenant surtout la forme d'idées suicidaires (taux de prévalence de 33,3 %) et d'épuisement professionnel (taux de prévalence de 73,5 %). Ces constatations mettent en évidence la nécessité d'évaluer rigoureusement les idées suicidaires chez les résidents canadiens en pratique familiale.
- Il importe de souligner que les résidents dans cette analyse ont reçu le sondage 1 an après le décès d'une collègue par suicide, et cette expérience pourrait avoir exacerbé le risque de comportements suicidaires dans cette population, expliquant ainsi le taux élevé et alarmant d'idées suicidaires. Les résidents récemment exposés à un suicide ont besoin d'une surveillance attentive. Il faudrait aussi clarifier les causes, comme les sources intrinsèques et extrinsèques de la détresse psychologique, afin d'élaborer des programmes appropriés visant la prévention.

The problem of suicide in residency is as real as it is understudied. It is known that physicians die by suicide at a higher rate than the general population[1,2] and that suicide is the second leading cause of death among residents.[3] The rates of mental distress in residency are elevated,[4-6] and a 2012 US study suggests that physicians practising in medical subspecialties at the front line of care, such as family medicine, harbour the highest rates of mental distress.[7] Residents in family medicine can therefore be considered a high-risk group for suicide. It is known that Canadian family medicine residents are taking their own lives, and there is a paucity of Canadian data on suicidal ideation in residency, including the field of family medicine. Because suicidal ideation is a risk factor for suicide itself,[8] knowing its prevalence among residents is crucial to understanding the magnitude of the problem and to addressing the needs of these residents. In order to prevent suicide among residents in family medicine, it is important to fully understand factors contributing to the cause of suicide, including burnout.

The primary objectives of this study were to capture the prevalence of suicidal ideation among family practice residents at the University of British Columbia (UBC) in Vancouver, to identify demographic characteristic markers significantly associated with this issue, and to raise awareness on the topic of suicide in the field of medicine. The secondary objective was to characterize the rate of burnout among these residents given its possible causal relationship with suicidal ideation.[9] The hypothesis was that suicidal ideation among Canadian family medicine residents existed, and that the rates were comparable to the ones identified in American and European studies.

Methods

Setting

In the fall of 2010—a year after a resident colleague died from suicide at UBC,* as discussed in the commentary on **page 688**—all 235 first- and second-year family practice residents of the 2009 and 2010 entry cohorts at UBC were invited via e-mail to participate in an open-source Web-based survey (hosted by the phpESP application).[10] As most family medicine residency programs in North America are designed as 2-year programs, and because enhanced skills and fellowship programs within family medicine differ considerably from program to program, only first- and second-year residents were included in this study. Recently analyzed data on the sex of residents from these entry cohorts revealed that most residents in the program were women (62.5% of residents) (UBC Faculty of Medicine, unpublished data, August 2019). The Office of Research Services of UBC granted ethics approval.

*The resident's mother approved the publication of this manuscript.

Data collection

The university's Department of Family Medicine distributed the e-mail according to the official residency mailing list, and participation was anonymous and elective. Informed consent was addressed in an introductory document, which informed participants of the process and purpose of the study, and no incentive was offered. Personal information other than demographic characteristics noted below was not collected. Participants' Internet protocol addresses were not registered by the main server. A link for the online survey was sent twice, and it was closed 1 month after distribution. The survey consisted of 3 parts: participant demographic characteristics, an evaluation of suicidal ideation, and an assessment of burnout. (To retrieve a copy of the survey, contact the corresponding author [J.L.].) The analysis of the data was performed in 2011.

Demographic characteristics. Participants' sex, age, year of residency, marital status, parental status, and level of debt were identified. In order to preserve anonymity, participants' name, training site, and ethnicity were not included in the questionnaire.

Suicidal ideation. To assess suicidal ideation, 6 questions adapted from the inventory developed by Meehan and colleagues[11] were used. The binary questions assessed past and recent suicidal ideation (while in residency), suicidal ideation with a plan for suicide, and suicide attempt. The inventory has been used with medical students and residents in previous studies.[9,12]

Burnout. To assess burnout, the Maslach Burnout Inventory[13] was used. This validated 22-item inventory is widely used among residents[5,14] and measures burnout in 3 dimensions: emotional exhaustion, depersonalization (cynicism), and personal accomplishment (professional efficacy). The identification of a high-risk state for burnout was used,[13] which was defined as an elevated score for emotional exhaustion (score of ≥27) or a low score for personal accomplishment (score of ≤33). The score for depersonalization was not included in the high-risk state analysis because a score of 10 or higher was indicative of a medium-to-high-risk state for burnout. This analysis wanted to capture true high-risk cases only, and this mildly differs from convention.[13]

Data analysis

The total number of residents as indicated by UBC in 2011 was 235, but recently obtained data revealed a total number of 224 (UBC Faculty of Medicine, unpublished data, August 2019); UBC officials were unable to contradict the original number given the uncertain status of residents on leave and off-cycle at the time. The statistical analysis was done with the original total number of residents. Statistical analysis included 2 assessments.

First, a univariate descriptive analysis was performed. Frequency of suicidal ideation and prevalence of burnout were evaluated. Confidence intervals were identified for frequency of suicidal ideation, and means and standard deviations were highlighted for burnout scale variables. The second analysis was bivariate, aiming at defining the relationship between demographic variables and suicidal ideation, as well as burnout, during residency. Cross-tabulations and χ^2 measurements were used to define these relationships.

Results

The survey's overall response rate was 46.4% (109 out of 235 family medicine residents), and 71.6% (78 out of 109) of respondents were women. Out of the 109 respondents, 105 of them answered the questions on suicide, with the exception of the question on lifetime suicide attempt, which had 104 respondents. Ninety-eight individuals responded to the questions on burnout. The analysis is based on 109 cases. **Table 1** presents respondents' demographic characteristics.

Table 1. Participant demographic characteristics

DEMOGRAPHIC CHARACTERISTICS	RESPONDENTS,*† %
Sex	
• Male	28.4
• Female	71.6
Age, y	
• 18-24	2.8
• 25-29	67.0
• 30-34	23.9
• 35-39	3.7
• ≥40	2.8
Year of training	
• First-year resident	55.0
• Second-year resident	45.0
Marital status	
• Single	50.5
• Common law	18.3
• Married	31.2
Children	
• No	87.0
• Yes	13.0
Level of debt, $	
• < 50 000	38.9
• 50 000-150 000	30.6
• > 150 000	30.6

*These data are based on 109 survey respondents; of these 109 respondents, 105 answered the questions on suicide and 98 answered the questions on burnout.
†Not all percentages add to 100% owing to rounding.

Suicidal ideation

Among the 105 respondents who answered the questions on suicidal ideation, 35 (33.3%) admitted to experiencing suicidal ideation during residency, 19 (18.1%) disclosed having had a plan on how to take their own life during residency, and 3 (2.9%) had attempted suicide during residency.

The lifetime frequency rates for the same questions respectively were 43.8% for suicidal ideation, 26.7% for suicidal ideation with a plan, and 2.9% for suicide attempt (**Table 2**). The bivariate analysis of these results with the demographic variables failed to identify statistical significance.

Burnout

The prevalence of a high-risk state for burnout was identified in 73.5% (72 out of 98) of respondents. The mean scores for emotional exhaustion, personal accomplishment, and depersonalization were 19.38 (95% CI 17.45 to 21.31), 29.58 (95% CI 28.25 to 30.91), and 8.16 (95% CI 7.03 to 9.28), respectively. The mean score for emotional exhaustion was below the threshold for the high-risk category, while the mean personal accomplishment score fell in the high-risk category. The mean score for depersonalization fell below the medium-to-high-risk category. This indicates that burnout was mostly represented by a sense of perceived lack of personal accomplishment. The bivariate analysis of these results with the demographic variables failed to identify statistical significance.

Discussion

A family practice resident from UBC died of suicide in 2009.[10] This study was conducted 1 year later, revealing high rates of suicidal ideation and mental distress in the form of a high-risk state for burnout among UBC family practice residents. While the topic of burnout among Canadian residents has been evaluated in recent years,[15-21] a recent review of the literature reveals an ongoing paucity of data on suicidal ideation among Canadian family practice residents, with only 1 study[20] evaluating this problem. In light of this reality, the decision was made to submit the manuscript for publication this year.

In terms of suicidal ideation for Canadian family practice residents, the Resident Doctors of Canada *2018 National Resident Survey* is the only other study[20] that provided a prevalence rate, which was 12.8%. This study's overall response rate was 8.3% (833 respondents), and it analyzed results from 197 Canadian family practice residents (those in enhanced skills programs included; no mention of faculties). However, it is unclear how many family practice residents from UBC

Table 2. Lifetime and during-residency suicide risk (N = 105): *Frequency rates of suicidal ideation, suicidal ideation with a plan, and suicide attempts.*

VARIABLE	N (%)	95% CI
Suicidal ideation		
Lifetime		
• Yes	46 (43.8)	34.3 to 53.3
• No	59 (56.2)	
During residency		
• Yes	35 (33.3)	24.3 to 42.3
• No	70 (66.7)	
Suicidal ideation with a plan		
Lifetime		
• Yes	28 (26.7)	18.2 to 35.2
• No	77 (73.3)	
During residency		
• Yes	19 (18.1)	10.7 to 25.5
• No	86 (81.9)	
Suicide attempt		
Lifetime*		
• Yes	3 (2.9)	-0.3 to 6.1
• No	101 (97.1)	
During residency		
• Yes	3 (2.9)	-0.3 to 6.1
• No	102 (97.1)	

*N = 104 for lifetime suicide attempts.

participated in that study and what the rate was for suicidal ideation in residency. As for suicidal ideation among Canadian residents of all programs, 3 recent surveys provided pooled prevalence rates of 6.7% to 15.9%.[12,20,21] Unfortunately, both national surveys had low response rates (8.3% and 8.5%) and underrepresentation of some provinces and territories.[20,21]

Regarding the international data, a study[22] evaluating suicidal ideation among all medical residents of all programs in a European country revealed a rate of 12% in 2008, and another similar study[23] assessing suicidal ideation among postgraduate interns in their first year yielded a rate of 14%. The presence of a family medicine program in the former study is uncertain and the general postgraduate program of the latter study appears different from the Canadian family medicine program. A systematic review[24] assessing suicidal ideation among international medical students revealed a rate of 11.1%, but no Canadian study was included in the analysis. The 33.3% prevalence rate of suicidal ideation found in this study is alarmingly higher than the rates found in the literature and warrants further evaluation. It is worth considering that the residents in this analysis received the survey 1 year after a senior colleague's death by suicide. Increased risk of suicide-related behaviour following suicide death exposure exists,[25] and this might provide an explanation for the high rates that were identified in this study. No other study of prevalence mentions recent suicide exposure.

As for burnout, this analysis found an elevated prevalence of high-risk state at 73.5%. The identified rate is likely lower than the true rate given the exclusion of depersonalization, but it is similar to the one identified in a study[15] among UBC family practice residents, which identified a similar mean low score for personal accomplishment and defined *burnout* according to convention. Other Canadian studies[16-19,21] assessing burnout in various residency programs have yielded lower rates (21% to 50%), but also each used different instruments to measure burnout, which makes interpretation of the variability challenging. A systematic review[26] of international studies revealed rates of burnout in residency ranging from 27% to 75%, the lowest rate being from an evaluation[27] of an American family medicine program. Questions remain as to why such high rates of psychological distress were found in this analysis, and why residents experienced a sense of perceived lack of personal accomplishment. To our knowledge, the effect of suicide exposure on burnout has not been studied.

Limitations

This study has limitations. First, the small sample size has limited the ability to show associations between demographic characteristics and the rates of suicidal ideation and burnout. Also, a present-day interpretation of the results might lack external validity because the questionnaire was completed several years ago, and the population studied then is necessarily different in some ways from the population of today. For example, the respondents were exposed to the suicide of a peer, and residents nowadays are better educated on the topic of psychological distress. Also, the scales used for burnout and suicidal ideation were modified in terms of the duration of symptoms to reflect all of residency, which is different from convention.[11,13] Further, the exclusion of depersonalization in the evaluation of burnout could have undercalculated the true rate. As this analysis differs from convention, a rate comparison needs to be done with careful attention to the subscale means. Finally, a barrier to participation might have been the technical difficulties encountered by the respondents while using the Web-based survey, as a total of 527 attempts were made to answer the survey.

Conclusion

This study found high rates of psychological suffering among UBC family practice residents in 2010, most specifically in the form of suicidal ideation and burnout. The results of this study have profound clinical significance. A rigorous evaluation of suicidality among Canadian

family practice residents needs to be done to complement this evaluation, which discovered alarming rates. An evaluation of suicidal ideation in various Canadian residency programs, as well as a cohort study evaluating rates of suicidal ideation over time, would provide valuable information, as would a systematic tracking of suicide rates.[28] Residents recently exposed to suicide need careful attention. The causes, such as intrinsic and extrinsic sources of psychological distress, and effects of suicidal ideation in residency also need to be clarified in order to develop relevant programs aimed at prevention. Examples of successful programs are the UBC family practice Resident Resilience Subcommittee and the UBC Resident Wellness Office, which were both established following the death of the above-mentioned resident. It is imperative to remain aware of the existence of suicidal ideation among trainees, and for all physicians to continue working at ending the stigma around mental health and suicidal ideation.

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Contributors

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

Competing interests

None declared

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