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Influence of parental education on Honduran medical students' labour perspectives: rural work and emigration

Lysien I. Zambrano, MD
Department of Morphological Sciences, Faculty of Medical Sciences, Universidad Nacional Autónoma de Honduras, Tegucigalpa, Honduras

Reneé Pereyra-Elías, MD
School of Medicine, Universidad Peruana de Ciencias Aplicadas, Lima, Peru

Selvin Z. Reyes-García, MD
Department of Morphological Sciences, Faculty of Medical Sciences, Universidad Nacional Autónoma de Honduras, Tegucigalpa, Honduras

Itzel Fuentes, MD
Department of Obstetrics and Gynecology, Hospital Escuela Universitario, Tegucigalpa, Honduras

Percy Mayta-Tristán, MD, MSc
School of Medicine, Universidad Peruana de Ciencias Aplicadas, Lima, Peru

Correspondence to: Percy Mayta-Tristán; percy.mayta@upc.edu.pe

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Introduction: We sought to evaluate the intentions of Honduran medical students to emigrate or to work in a rural setting, and their association with parental education.

Methods: We performed a cross-sectional, analytic study at a Honduran medical school. Student participants completed a structured questionnaire, which assessed their intentions to emigrate or work in a rural setting after finishing medical school and the highest level of education achieved by their parents. We calculated crude and adjusted prevalence ratios with their respective 95% confidence intervals.

Results: Of 868 surveys distributed, 564 were completed. The mean age of the participants was 21 (standard deviation 3) years, and 62.2% were female. Of the respondents, 16.6% intended to emigrate to work and 11.2% intended to work in a rural setting. Higher paternal education (i.e., technical, university and postgraduate training) was associated with a higher rate of intention to emigrate. Students whose fathers underwent postgraduate education were less likely to intend to work in a rural setting. For maternal education, only the postgraduate level was associated with the outcomes in some of the tested models.

Conclusion: The frequency of students intending to emigrate was relatively low. However, the frequency of students being willing to work in rural settings was also low. Students whose parents had higher levels of education were more likely to intend to work abroad and less likely to intend to work in a rural area. These factors should be considered in medical schools' selection processes to improve retention and ensure adequate distribution of physicians.

Introduction : Nous avons voulu évaluer les intentions d'étudiants en médecine honduriens d'émigrer ou de travailler en milieu rural et le rapport entre leurs intentions et le degré de scolarité de leurs parents.

Méthodes : Nous avons effectué une étude analytique transversale dans une faculté de médecine du Honduras. Les étudiants participants ont répondu à un questionnaire structuré qui évaluait leurs intentions d'émigrer ou de travailler en milieu rural à la fin de leurs études de médecine et le plus haut degré de scolarité atteint par leurs parents. Nous avons calculé les rapports de prévalence brute et ajustée, ainsi que leurs intervalles de confiance de 95 % respectifs.

Résultats : Sur les 868 questionnaires distribués, 564 ont été remplis. L'âge moyen des participants était de 21 ans (écart-type 3 ans) et 62,2 % étaient de sexe féminin. Parmi les répondants, 16,6 % avaient l'intention d'émigrer pour travailler et 11,2 % avaient l'intention de travailler en milieu rural. Un niveau de scolarité paternel plus élevé (c'est-à-dire, formation technique, universitaire ou études supérieures) était associé à un taux plus élevé d'intention d'émigrer. Les étudiants dont les pères avaient

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fait des études supérieures étaient moins susceptibles d'avoir l'intention de travailler en milieu rural. En ce qui concerne l'éducation maternelle, seules les études supérieures ont été associées aux résultats pour certains modèles testés.

Conclusion : Le nombre d'étudiants ayant l'intention d'émigrer était relativement bas. Toutefois, le nombre d'étudiants acceptant de travailler en milieu rural était également bas. Les étudiants dont les parents avaient un niveau de scolarité plus élevé étaient plus susceptibles d'avoir l'intention de travailler à l'étranger et moins susceptibles d'avoir l'intention de travailler en milieu rural. Ces facteurs doivent entrer en ligne de compte lors du processus de sélection des étudiants admis dans les facultés de médecine pour améliorer la rétention et la distribution adéquate des effectifs médicaux.

INTRODUCTION

The current shortage and maldistribution of human resources for health constitutes a global problem and particularly affects developing countries.[1,2] This situation involves the well-documented occurrence of constant emigration of physicians (mostly from developing to developed nations)[3,4] and the unwillingness of physicians to work in rural and deprived settings in their countries of origin.[5,6] Thus, developing countries struggling to improve the health of their populations find themselves further from this goal.[7]

Several factors have been recognized that are associated with the intention of physicians and medical students to emigrate. Opportunities for further training and better labour and socioeconomic conditions are the main reasons physicians decide to emigrate.[8–10] In studies assessing the effect of having a rural background,[5,11] the variables that prevent physicians from working in a rural setting follow a similar pattern.[6,12]

Other research has indicated that family characteristics may influence the choice of remaining in the country of origin or working in a rural area. Studies have shown that students who do not have family members working in medicine and have less-educated parents are more likely to work in a rural area.[13,14] However, some findings are inconsistent.[15]

The Americas have also been affected by this human resources crisis,[1,3,16] and recent studies have reported high levels of intention to emigrate[17–19] and reluctance to work in rural areas.[17] However, data are lacking on the situation with the Honduran health workforce.[2,17]

The aim of the present study was to evaluate the intentions of Honduran medical students to emigrate or to work in a rural setting and their association with parental education.

METHODS

Study design and population

In 2008, only one medical school in Honduras, the Universidad Nacional Autónoma de Honduras (UNAH), had students in all years of training (from first to eighth year, according to the local curricula). The campus is located in Tegucigalpa, the capital of the country.

We conducted a cross-sectional, analytic study. During the first trimester of 2009, a convenience sample of medical students from the UNAH was invited to complete a survey. We excluded students in their seventh and eighth years because their corresponding internships and rural service activities take place in too many different health facilities across the country.

The authorities of the UNAH approved the study. Study participants gave verbal informed consent before their voluntary participation; Honduran law does not require written consent for observational studies. The provided data were anonymous and treated with complete confidentiality.

Survey

We used a questionnaire tested in a previous pilot study.[17] This self-administered survey assessed sociodemographic and migration information, academic factors, the presence of physicians in the family, parental influence on career choice, parental level of education, and variables regarding the labour perspectives of the participants. The students were located at their classrooms on the Tegucigalpa campus by members of the research team. They were consequently told about the objectives of the study and given the survey. The mean time taken to complete the survey was 15 (standard deviation [SD] 5) minutes.

Main variables

The students were asked direct questions about their intentions regarding emigration and working in a rural setting, framed 5 years after finishing medical school.

To evaluate parental education, the students were asked to specify the highest level of education reached by their mothers and fathers (i.e., high school or less, technical institute [non-university], university or postgraduate studies).

Statistical analysis

A database was generated in Microsoft Excel and then exported to Stata 11.0. We excluded surveys in which answers for the main variables were missing.

Categorical variables were described using relative and absolute frequencies, and numerical variables were described with their means and SDs. We performed a bivariate analysis using the χ^2 and Student *t* tests for categorical and numerical variables, respectively. We used Poisson regression with a robust error variance to evaluate factors associated with intentions to work abroad and in a rural setting at a multivariate level. We calculated crude and adjusted prevalence ratios with their corresponding 95% confidence intervals (CIs). Different models were tested. We considered $p < 0.05$ to be significant.

RESULTS

Of the 1346 UNAH students in their first to sixth years, 478 (35.5%) were not located. Of the 868 students who received the survey, 249 declined to take part in the study or returned the survey blank, and 55 did not complete the main variables. Of the 1346 eligible students, a total of 564 (41.9%) completed surveys that could be included in the analysis.

Participants' characteristics and labour perspectives

The mean age of the participants was 21 (SD 3) years, and 62.2% were female. Most of the students (95.4%) were single and did not have children (95.5%). Half of the participants (49.5%) migrated to Tegucigalpa for medical school. The characteristics of respondents are detailed in Table 1.

Of the respondents, 16.6% intended to emigrate to work and 11.2% intended to work in a rural setting. Figure 1 shows the frequencies of responses, by parental education.

There were no significant effects of sex, age, medical school year, and marital and parental status on intentions to emigrate or work in a rural setting. Students who did not migrate to Tegucigalpa to attend medical school were more likely to intend to emigrate. Having parents with an education level of high school or less was associated with a lower rate of intention to emigrate and a higher rate of intention to work in a rural area. Table 1 shows a detailed bivariate analysis addressing factors associated with the intention to emigrate or work in a rural setting.

Associated factors

In a multivariate analysis, higher paternal education was associated with a higher rate of intention to emigrate in all the models tested. The full models, including all variables, showed that technical (adjusted prevalence ratio 2.53 [95% CI 1.16–5.55]), university (adjusted prevalence ratio 2.39 [95% CI 1.08–5.30]) and postgraduate education (adjusted prevalence ratio 2.78 [95% CI 1.13–6.87]) remained associated with the intention to emigrate. However, for maternal education, only postgraduate-level education was associated with an increased intention to emigrate with adjustment for sex, age, year of study (adjusted prevalence ratio 2.24 [95% CI 1.27–3.96]) and for potential family influence on career choice (adjusted prevalence ratio 2.16 [95% CI 1.22–3.80]). Results for all models are summarized in Table 2.

Additionally, students whose fathers underwent postgraduate training were less likely to intend to work in a rural setting in the full model (adjusted prevalence ratio 0.13 [95% CI 0.03–0.55]). This association was significant for postgraduate maternal education in models adjusted for migration to attend medical school and English-language proficiency (adjusted prevalence ratio 0.20 [95% CI 0.05–0.87]) and family influence on career choice (adjusted prevalence ratio 0.21 [95% CI 0.05–0.85]) (Table 3).

DISCUSSION

Of the Honduran medical students in our study, 16.6% intended to work abroad. This frequency is relatively low compared with the emigration intentions reported worldwide,[9,10,14,15,20–23] which are as high as 95%.[23] It is also low when compared with similar studies in the region[18,19] and with the sample

of Latin American students evaluated in 2008 by Mayta-Tristán and colleagues.[17] This study also included a subgroup of Honduran students and found an emigration intention of 26.5%.[17] However, Honduras has not been recognized as an important source country of medical personnel,[3] which suggests there is likely no strong "emigration culture" motivating students to leave the country.

These inconsistent findings may be explained by an error produced by the small sample of Honduran students included in the study by Mayta-Tristán and colleagues.[17] Nevertheless, the proportion of medical students in our study who intend to emigrate is lower than the proportion reported in most previous studies. Consequently, it is reasonable to presume that Honduran physicians in training believe that their country can offer the academic and personal opportunities that have been identified to influence physician retention.[8–10,12,17–24]

In the current study, only 11.2% of the participants intended to work in a rural area, which is substantially less than the proportion of medical

Table 1: Characteristics of participants, *n* = 564*

Characteristic	No. (%) Total	Intention to emigrate	Intention to work in a rural setting
Sex, *n* = 561			
Female	349 (62.2)	53 (15.2)	39 (11.2)
Male	212 (37.8)	40 (18.9)	24 (11.3)
Year of medical school			
First	159 (28.2)	22 (13.8)	10 (6.3)
Second	106 (18.8)	18 (17.0)	11 (10.4)
Third	92 (16.3)	22 (23.9)	14 (15.2)
Fourth	83 (14.7)	14 (16.9)	12 (14.5)
Fifth	63 (11.2)	7 (11.1)	11 (17.5)
Sixth	61 (10.8)	10 (16.4)	5 (8.2)
Migrated for medical school, *n* = 561			
No	283 (50.4)	56 (19.8)†	33 (11.7)
Yes	278 (49.5)	37 (13.3)	29 (10.4)
English proficiency			
None	142 (25.2)	15 (10.6)†	17 (12.0)
Basic	175 (31.0)	27 (15.6)	22 (12.6)
Intermediate	149 (26.4)	26 (17.4)	16 (10.7)
Advanced	98 (17.4)	25 (25.5)	8 (8.2)
Physicians in the family			
None	265 (47.0)	33 (12.5)†	32 (12.1)
Parents, grandparents, siblings	74 (13.1)	16 (21.6)	9 (12.2)
Other relatives	225 (39.9)	44 (19.6)	22 (9.8)
Parental influence on career choice			
No	464 (82.3)	75 (16.2)	50 (10.8)
Yes	100 (17.7)	18 (18.0)	13 (13.0)
Maternal education			
≤ High school	179 (31.7)	21 (11.7)†	26 (14.6)†
Technical institute	118 (20.9)	20 (17.0)	16 (13.6)
University	200 (35.5)	34 (17.0)	19 (9.5)
Postgraduate	67 (11.9)	18 (27.7)	2 (3.0)
Paternal education			
≤ High school	141 (25.0)	9 (6.4)†	24 (17.0)†
Technical institute	106 (18.8)	20 (18.9)	14 (13.2)
University	222 (39.4)	40 (18.0)	23 (10.4)
Postgraduate	95 (16.8)	24 (25.3)	2 (2.1)

*Unless stated otherwise.
†$p < 0.05$

students who intend to work in rural settings in Ethiopia (29.5%)[15] and Ghana (57.5%).[14] However, the findings of Feldman and colleagues[13] in Canada are similar to ours. Our results are also consistent with the Hungarian situation, where the vast majority of the students are willing to work in the capital or a large city.[25] This pattern in Honduras may favour the maldistribution of physicians throughout the territory, especially considering that 51% of the population live in a rural setting.[26]

We found that the students who intend to emigrate are more likely to have more educated parents than those who want to stay in Honduras. For paternal education, the association was present in all the models tested and its magnitude increased with the level of education. However, for maternal education, the association was only present in some models for postgraduate training. These results are inconsistent with previous findings, which did not find any association between intention to emigrate and parental level of education.[14,15] However, these other studies did not categorize level of education as we did, which may contribute to the discrepancy.

Regarding the willingness to work in a rural setting, students whose parents (especially the father) underwent postgraduate studies were less likely to consider this option. Previous reports from Canada and Ghana (high- and low-income countries, respectively) also showed that students with less-educated parents tend to choose rural medicine more than urban medicine or a specialty other than family medicine.[13,14] However, to our knowledge, the current study is the first to confirm this issue in Latin America.

Our results form the impression that having educated parents make students more willing to go abroad and less willing to work in a rural area. This may be due to an expectations-fulfilling mindset related to perceptions about certain types of training and careers being more prestigious. Moreover, the father's education was more strongly associated with the outcomes. This may be partly explained by the

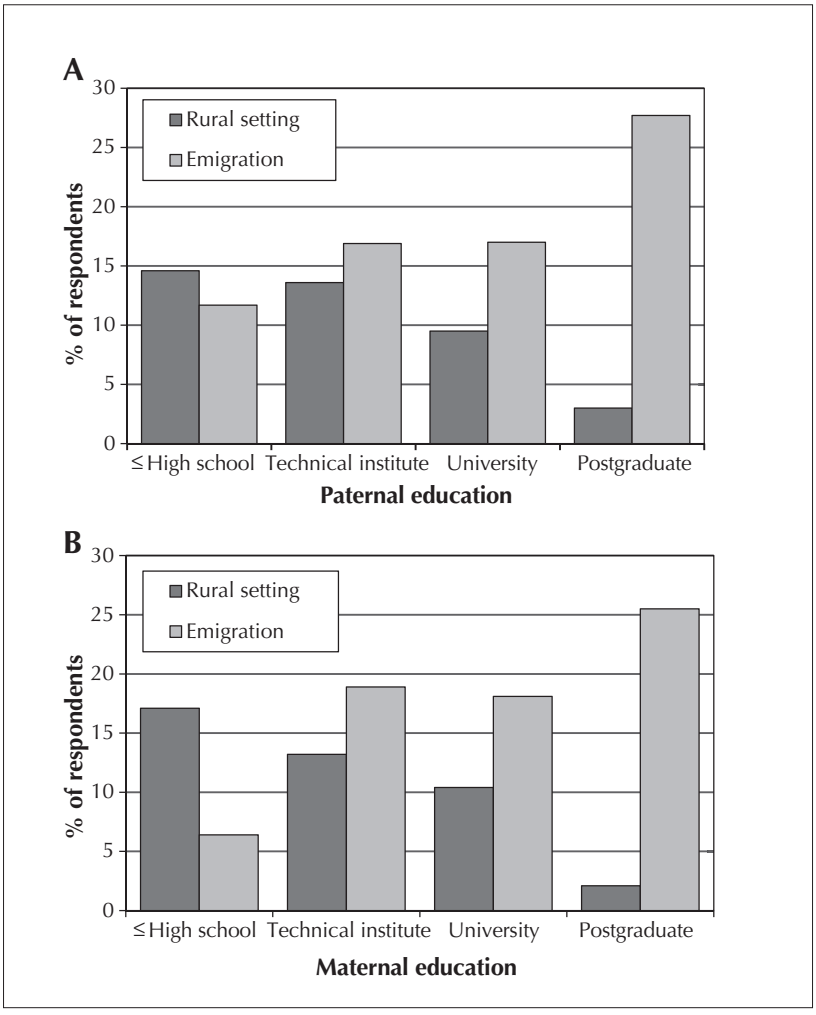


Fig. 1. Percentage of respondents (n = 564) who reported the intention to emigrate or to work in a rural setting, by paternal (A) and maternal (B) education.

Table 2: Parental education associated with intention to emigrate

	Education level; prevalence ratio (95% CI)*		
Variable	Technical institute	University	Postgraduate
Paternal			
Crude	2.96 (1.40–6.23)‡‡	2.84 (1.42–5.67)‡‡	4.00 (1.95–8.23)‡‡
Model 1†	2.94 (1.40–6.18)‡‡	2.69 (1.34–5.40)‡‡	3.82 (1.84–7.92)‡‡
Model 2‡	2.67 (1.25–5.68)‡‡	2.41 (1.16–5.00)‡‡	3.06 (1.40–6.70)‡‡
Model 3§	2.81 (1.33–5.95)‡‡	2.70 (1.34–5.42)‡‡	3.74 (1.82–7.70)‡‡
Model 4¶	2.54 (1.19–5.41)‡‡	2.20 (1.06–4.57)‡‡	2.79 (1.28–6.10)‡‡
Model 5**	2.85 (1.30–6.23)‡‡	2.65 (1.22–5.78)‡‡	3.62 (1.51–8.64)‡‡
Model 6††	2.53 (1.16–5.55)‡‡	2.39 (1.08–5.30)‡‡	2.78 (1.13–6.87)‡‡
Maternal			
Crude	1.44 (0.82–2.55)	1.45 (0.87–2.40)	2.36 (1.35–4.14)‡‡
Model 1†	1.39 (0.80–2.44)	1.36 (0.81–2.29)	2.24 (1.27–3.96)‡‡
Model 2‡	1.30 (0.73–2.32)	1.19 (0.70–2.04)	1.77 (0.97–3.23)
Model 3§	1.35 (0.76–2.42)	1.34 (0.81–2.23)	2.16 (1.22–3.80)‡‡
Model 4¶	1.20 (0.67–2.13)	1.06 (0.62–1.81)	1.57 (0.86–2.85)
Model 5**	1.19 (0.67–2.12)	1.02 (0.58–1.80)	1.35 (0.67–2.75)
Model 6††	1.08 (0.60–1.92)	0.87 (0.49–1.54)	1.14 (0.56–2.30)

CI = confidence interval.
*Comparison made using high school as the reference.
†Adjusted for sex, age and year of study.
‡Adjusted for migration to attend medical school and English-language proficiency.
§Adjusted for parental influence on the decision to study medicine and having close relatives who are physicians.
¶Adjusted for models 1, 2 and 3.
**Adjusted for maternal and paternal education, respectively.
††Adjusted for models 4 and 5.
‡‡$p < 0.05$.

Table 3: Parental education associated with intention to work in a rural setting

	Education level; prevalence ratio (95% CI)*		
Variable	Technical institute	University	Postgraduate
Paternal			
Crude	0.77 (0.41–1.42)	0.60 (0.36–1.03)	0.12 (0.03–0.51)‡‡
Model 1†	0.89 (0.48–1.63)	0.68 (0.39–1.18)	0.14 (0.03–0.60)‡‡
Model 2‡	0.73 (0.40–1.33)	0.55 (0.31–0.97)‡‡	0.10 (0.02–0.47)‡‡
Model 3§	0.79 (0.43–1.43)	0.61 (0.36–1.03)	0.12 (0.03–0.51)‡‡
Model 4¶	0.87 (0.48–1.58)	0.62 (0.35–1.10)	0.12 (0.03–0.55)‡‡
Model 5**	0.82 (0.45–1.51)	0.69 (0.39–1.21)	0.15 (0.04–0.58)‡‡
Model 6††	0.90 (0.50–1.61)	0.65 (0.39–1.19)	0.13 (0.03–0.55)‡‡
Maternal			
Crude	0.93 (0.52–1.65)	0.65 (0.37–1.13)	0.20 (0.05–0.84)‡‡
Model 1†	1.06 (0.60–1.90)	0.77 (0.44–1.37)	0.25 (0.06–1.05)
Model 2‡	0.94 (0.53–1.65)	0.65 (0.36–1.17)	0.20 (0.05–0.87)‡‡
Model 3§	0.94 (0.53–1.68)	0.65 (0.38–1.14)	0.21 (0.05–0.85)‡‡
Model 4¶	1.10 (0.61–1.97)	0.78 (0.43–1.42)	0.25 (0.06–1.09)
Model 5**	1.17 (0.65–2.12)	0.97 (0.54–1.75)	0.38 (0.94–1.55)
Model 6††	1.40 (0.76–2.57)	1.12 (0.62–2.04)	0.27 (0.11–1.88)

CI = confidence interval.
*Comparison made using high school as the reference.
†Adjusted for sex, age and year of study.
‡Adjusted for migration to attend medical school and English-language proficiency.
§Adjusted for parental influence on the decision to study medicine and having close relatives who are physicians.
¶Adjusted for models 1, 2 and 3.
**Adjusted for maternal education.
††Adjusted for models 4 and 5.
‡‡$p < 0.05$.

more significant role fathers may play in academic or professional aspects of their children's lives.[27]

Researchers have previously proposed that some factors associated with intention to work in a rural area be taken into consideration for the selection processes of medical schools.[18] Having a rural background is one of the most well-known factors, such as having rural parents and being born, raised or trained in a rural or deprived area.[5,11,12,15,28] Likewise, parental education could be considered as a factor when selecting applicants for medical school. Students who are more likely to work in a rural area and/or are less likely to emigrate could be selected to improve the retention rates of physicians and to encourage distribution of physicians that would serve rural and underserved territories.

In Honduras and other countries (both developing and developed countries), a progressively higher level of education will possibly create generations of more educated parents, potentially worsening the maldistribution of human resources. The strategies and policies that are known to be effective should be taken into account to avoid the crystallization of this trend. Better opportunities for postgraduate training and enhanced labour conditions have been proven to increase retention rates.[22] And human resources have been increased in rural settings through the creation of rural medical schools and through efforts to enhance the importance of rural background in future physicians.[11,13,14,29] It is crucial that action be taken in this respect, given that countries in which these strategies have not been strongly and effectively developed may experience a deeper human resources shortage and resulting health crisis.[30]

Limitations

The present study has some limitations. We measured only the intentions and perspectives of medical students, and did not assess whether students actually went abroad or to a rural area. The cross-sectional design of the study does not permit finding causal relations, but only associated factors. Finally, a convenience sample could lead to skewed results because it does not fully represent the population of Honduran medical students. However, the study sample is a close approximation given that, for 2008, UNAH students comprised more than 80% of the country's medical students from all years of training.

CONCLUSION

Of the Honduran medical students in our study, one out of 6 intended to emigrate to work after finishing medical school. Only one out of 9 were willing to work in a rural setting inside the country. Students whose parents had a higher level of education were more likely to intend to emigrate or work in a nonrural setting in Honduras. Parental education should be considered in medical schools' selection processes to improve physician retention and ensure adequate distribution of physicians in rural and underserved areas.

Competing interests: None declared.

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Pour vous abonner au serveur de liste francophone, MedRurale, veuillez envoyer un courriel à l'adresse suivante : **lamarche@comnet.ca**.

Donner votre nom au complet et votre adresse de courriel. Si vous ajoutez aussi une courte biographie, elle pourra être affichée sur la liste en guise de présentation. Vous pouvez aussi accéder aux archives de MedRurale et à un formulaire d'inscription au serveur de liste anglophone sur la page d'accueil du site de la SCMR, **srpc.ca**.