Gender, social relationships and depressive disorders in adults aged 65 and over in Quebec

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Abstract

The objective of this study was to examine if social relationships have a differential association with the presence of depression in men and women aged 65 and over. Data came from a survey of a representative sample of 2670 community-dwelling older adults in Quebec. Depressive disorders were measured using DSM-IV criteria. The prevalence of depression was 17.8% for women and 7.6% for men. Men reported a greater diversity of ties but less support than women. Having a confidant and/or being engaged in a good marital relationship was negatively associated with depression in both men and women. Compared with married people in general, widowhood was associated with a considerably higher risk of depression in men than in women. Compared with non-volunteers in general, men who volunteer were at considerably lower risk of depression than women who volunteer. This exploratory study could serve as a basis for future longitudinal studies on the impact of community activities and volunteering on the incidence and remission of depression in older men and women in Canada.

Keywords: *gender, depression, social networks, volunteerism, widowhood, elderly, Quebec, older adults, conflict*

Introduction

Epidemiological studies agree that women present more depressive disorders than men, with a gender prevalence ratio between 1.5 and 2.[1-7] In Canada, the prevalence of depression varies depending on the measuring instrument and diagnostic criteria used.[8-10] According to Ostbye et al.[9] in the population aged 65 and over, the prevalence of depression (diagnosed using DSM-III-R* criteria) was 9.3% in women and 2.9% in men; of major depression was 3.4% for women and 1.5% for men, and of minor depression was 6.0% for women and 1.4% for men. Risk of depression has been associated with lack of social networks and support,[6,11,12] and differences in the social networks of men and women have been documented.[13] Thus, gender differences in depression could be at least partly explained by differences in the social relationships of men and women. Few studies have looked at the differential association between social relationships and depression in older populations, and their results are limited to some specific aspects of relationships, such as marital status or social support. According to some researchers, widowhood is associated with increased depressive symptomatology for both men and women[13] and marriage appears to be more beneficial for men's mental health.[3,5,14] However, according to another study,[15] the effect of marital status on mental health varies depending on the region or society in which the study was done. With respect to the influence of others, studies have looked mainly at the role played by offspring or friends in depression, and again, the results vary with the context of the study.[13,16] Some European studies reported that the contacts of offspring with elderly parents had a protective function,[13,17,18] while in a study conducted in the United States, the support provided by offspring was found to be important mainly if the older adults were in a situation where they needed help (i.e. poverty, poor health or widowhood).[19]

The association between social integration and depressive symptoms was reported by cross-sectional and longitudinal studies conducted in the elderly.[11,20-23] However, in these studies the differential effect of friends' support or social integration on mental health were not examined separately by gender.

Studies show that social support provided by the members of social networks is inversely associated with depression in older men,[3] and that the presence of conflictual relationships is related to depression for both women and men.[13] In other research, however, the association of conflictual relationships is stronger in women.[24] In Canada, one study examined

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the association between social relationships and the presence of psychological distress and depression in older adults[25] and showed that even though women receive more support than men, there are no gender differences in the impact of support on these.

In this study, we examined the association between depression in adults aged 65 and over and several structural aspects of social relationships such as marital status, relationships with family and friends and memberships in clubs, other groups and leisure organizations. We further contribute to the literature by examining the associations between depression and functional aspects of social relationships, such as support and conflict. Lastly, we examine if these associations differ between older men and older women.

Methods

Study population and data collection

Data used in this study came from the "Enquête sur la Santé des Aînés" (ESA), a cross-sectional survey conducted in 2005-2006 using a representative sample of French-speaking, community-dwelling adults over the age of 65 (94% of the Quebec population speaks French). A proportional sample of households was constituted according to the 16 administrative regions of Quebec and a random sampling method was used to select no more than one adult aged 65 years or over per household.[26,27] Subjects who obtained a score of less than 22 on the Mini-mental State Examination (MMSE) were excluded because they could have presented a cognitive deficit[28] that compromised the validity of their responses to the ESA questionnaire. The response rate was 66.5%. Data were collected through at-home, face-to-face interviews. Details on data collection procedures are given in a previous publication.[27] The research procedure was reviewed and approved by the Ethics Committee of the Sherbrooke Geriatric University Institute.

Measures

Dependent variables: depressive disorders

The respondents' depression status (including major and minor depression) was measured using the computer-based ESA-Q developed by members of the research team[27] and based on criteria in the DSM-IV.[†] The ESA-Q is similar to the Diagnostic Interview Schedule (DIS)[29] and the Composite International Diagnostic Interview (CIDI),[30] which demonstrated satisfactory reliability and validity.[29-31]

A 12-month recall period was used. Subjects were classified as major depression cases if they displayed the essential features of depression (i.e. either depressed mood or the loss of interest or pleasure in usual daily activities, and reporting at least five of the nine symptoms associated with depression) nearly every day and most of the day for at least two consecutive weeks. In addition, subjects who displayed the essential features of depression and reported between two to four of the nine associated symptoms of depression within the same time period were classified as minor depression cases. For the purpose of this study, the definition of depression did not include impairment of respondents' usual social functioning. Participants whose symptoms were related to a physical illness or treatment were not classified as cases of major or minor depression. For the purpose of this study, and in agreement with our previous research,[27] a dichotomous outcome was defined as 1 if the person fulfilled the criteria for major or minor depression and 0 if otherwise.

Independent variables: social relationships

The structural and functional characteristics of the respondents' social relationships were measured using four variables: social network, social integration, social support and conflictual relationships.

The social network was measured using two indicators: diversity of social ties and marital status.[32,33] Diversity of social ties was measured by the number of different types of relationships that participants had, including those with a partner, adult children, siblings, friends and members of a community group.[33] This variable was rated on a scale of 0 to 5 and recoded into three categories: low (0 to 2 relationships), medium (3 to 4 relationships) and high (5 relationships). Marital status was divided into four categories: with partner, separated or divorced, widowed, and never married. Social integration was measured using three questions related to participation in the community: 1) Do you regularly go to leisure, cultural or social centres? 2) Do you regularly do volunteer work? 3) Do you regularly attend religious services (at a church, synagogue, mosque or other centre of worship)?

Social support[34] was measured using three questions about the availability of a confidant to talk to about various problems, the presence of someone who could provide instrumental help and the presence of someone who could provide emotional support.

Conflictual relationships were measured using five questions, three of which concerned feeling criticized or disapproved of by adult children, siblings and/or friends.[13,24] Each was evaluated on a scale of 0 to 4. Those who answered never (0) or rarely (1) were considered not to have any conflictual relationships, while those who answered sometimes (2), often (3) or always (4) were considered to have conflictual relationships with family or friends. For the analysis, those with conflict in their relationships with adult children (2 to 4) and those without conflict in these relationships (0 to 1) were compared with those without children (the reference category).

The remaining two questions concerned conflicts in the relationship with one's partner and evaluated the frequency with which the person argued with him or her as follows: 1) How often do you argue with your partner? and 2) How often do you and your partner get on each other's nerves? Each variable was measured on a scale from 0 (never) to 5 (always) to classify frequency of quarrelling. A single variable summing the responses to these

[†] Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.

two questions was created and divided into three categories: no partner, no conflict (rarely or never) and conflicts (sometimes or more often). Again those without a spouse were taken as the reference category to examine if the presence of conflict changes the association between depression and the fact of being married.

The following risk factors for depression, as identified in the literature, were considered in the analysis due to their possible confounding role: age, gender, region of residence, family annual income and health status.

Region of residence was divided into urban, metropolitan and rural, as defined by the Institut de la statistique du Québec.[35] According to the Institute, the only metropolitan region in Quebec is the city of Montréal; an urban area is one with at least 1000 inhabitants and a population density of at least 400 inhabitants per square kilometre; and all other regions are classified as rural.

Family annual income was divided into four categories: less than $15,000, between $15,000 and $25,000, between $25,001 and $35,000, and over $35,000.

Health status was measured using two indicators: self-perceived physical health and morbidity. Perceived physical health was evaluated with the question: In general, compared to other people your age, would you say your physical health is excellent, very good, good, fair or poor? Morbidity was measured by the number of the participant's chronic health problems (defined in the ICD-10[‡]), which was divided into four categories: 0, 1 to 2, 3 to 4, and 5 or more chronic health problems. Chronic conditions were evaluated with the following question: To your knowledge and under the advice of a doctor, do you currently have one of the following diseases: heart disease, disorders of the digestive and endocrine systems, and/or 15 other conditions.[§]

Statistical analyses

A descriptive analysis of the socio-demographic characteristics and social relationships was done separately for the male and female participants, and the differences in the distributions were examined using the chi-square test. Confounding variables associated with depression in the bivariate analyses with ($p < .25$) were considered in the subsequent multivariate analyses.[36]

Simple binary logistic regression models, done separately for men and women, were used to examine the associations between social relationships and the presence of a depressive disorder and to estimate the odds ratios (OR) with 95% confidence intervals (CI). The confounding variables were included in two blocks. The first included socio-demographic factors and the second, physical health. Staggered entry was used to assess the changes in the coefficients of the associations between depressive disorders and social relationships after adjusting first for socio-demographic variables and second for physical health.

Interaction terms of each variable of social relationships with gender were tested one-by-one in a series of logistic regression models fitted to the whole sample (men and women) and controlling for all confounders. Lastly, a final model including all significant interactions and confounders was fitted. Odds ratios were estimated with their 95% confidence intervals. All the analyses were done with SPSS version 15 for Windows.[**]

Results

For this study we used the 2670 individuals with complete data on all the variables in the analyses. The 132 individuals for whom at least one item of information was missing differed from those with complete data on marital status (more were married: 70.8%, $p < .001$) and gender (more men [58.3%] than women [41.7%]; $p < .001$). No significant difference was found for the remaining socio-demographic and health characteristics.

Table 1 shows that the female participants in our study had higher exposure to those factors commonly associated with depression:[2] they were older, had less schooling, were poorer, had more chronic health problems and were in poorer health than the male participants. They also had significantly higher prevalence of depression than men. The prevalence of depressive disorders (including major and minor depression) was 17.8% for women and 7.6% for men. For major depression, the prevalence was 5.3% for women and 2.6% for men; for minor depression, it was 12.5% for women and 5.0% for men.

As shown in Table 2, a higher proportion of men than women lived with a partner (57.2% vs. 36.6%, $p < .001$) and twice as many of the women were widowed (42.7% vs. 20.0%, $p < .001$). A high proportion of both men (87.5%) and women (89.5%) reported having friends; 86% reported having children and 90%, siblings. No significant difference with regards to the distributions of having friends, children or siblings was found between men and women. In addition, the results (Table 2) show that men reported a greater diversity of ties than did women ($p < .001$), while a greater proportion of women went to social centres ($p = .008$) and attended religious services ($p < .001$). One-third of both men and women reported being involved in volunteer work. A greater proportion of women than men reported having a confidant (88.7% vs. 85.4%, $p < .012$).

Of the married respondents, men reported fewer conflictual relationships with their spouse (70.7 vs. 79.2%, $p < .001$).

Table 3 shows the associations between depression and social relationships, first adjusting for socio-economic factors and

[‡] International Statistical Classification of Diseases and Related Health Problems, 10th Revision.

[§] high blood pressure; hypercholesterolemia; diabetes mellitus; anaemia; B12 deficiency; asthma; chronic bronchitis; liver disease; kidney disease; skin disease; eye disease; arthritis; chronic back pain; headache; schizophrenia

[**] Statistical Package for the Social Sciences: http://www.spss.com/

TABLE 1
Distribution of socio-demographic characteristics and health status in women and men aged 65 and over in Quebec (N = 2670)

Variables	Men (n = 1073) %	Women (n = 1597) %	*p* (χ2)
Age (years)			< .001
65-69	33.7	28.8	
70-74	29.2	24.9	
75-79	21.5	21.5	
80-84	12.6	18.0	
85+	3.0	6.7	
Schooling			< .001
Elementary or less	65.6	68.6	
Secondary	16.1	20.0	
Post-secondary and college	18.3	11.3	
Income			< .001
< $15,000	9.1	22.6	
$15,000-$25,000	18.8	28.3	
$25,001-$35,000	21.5	25.1	
> $35,000	50.6	24.1	
Area			.11
Urban	15.5	17.3	
Metropolitan	43.6	45.6	
Rural	40.9	37.0	
Chronic health problems (#)			< .001
0	10.2	6.1	
1-2	35.3	31.0	
3-4	33.2	34.4	
5 or more	21.2	28.6	
Perceived physical health			.004
Excellent	22.4	17.1	
Very good	33.8	34.6	
Good	30.3	31.1	
Fair	11.9	15.0	
Poor	1.6	2.2	
Depression			< .001
Major	2.6	5.3	
Minor	5.0	12.5	
Combined	7.6	17.8	

Abbreviations: χ2, chi-square test; <, less then; n, sample size; N, overall sample size; %, percent; *p*, p-value.

second adjusting for physical health. Being widowed, going less to social centres, and not volunteering were significantly associated with the probability of presenting a depressive disorder in older men but not in women. Lack of instrumental support lost significance in the fully adjusted model (OR = 2.33; 95%CI 0.99, 5.46). While our results show that men involved in volunteer work had lower frequency of depressive disorders, this association was not significant in women. No statistically significant associations were found between depressive disorders and diversity of ties or attending religious services in either men or women.

With regards to social support, lack of instrumental support[††] in men and lack of emotional support in women were associated with increased likelihood of presenting a depressive disorder. Unavailability of a confidant was associated with depression in both men and women.

Finally, the presence of conflictual relationships with friends, offspring and siblings was not associated with depression in men or women while nonconflictual relationships with one's partner was associated with decreased probability of reporting a depressive disorder in both men and women (Table 3). Nevertheless, among men marriage was associated with less depression, even in the presence of marital conflict. Among women marriage was associated with low likelihood of depression only when there was no conflict in the marital relationship.

Controlling for health indicators did not substantially change the odds ratios except for the attenuation of the association between lack of instrumental support and depression in men and lack of emotional support and depression in women (Table 3).

Introduction of multiplicative terms to test for gender interactions revealed two differential and significant associations: between marital status and depression and between volunteering and depression (Table 4). Widowhood is more strongly associated with depression in men than in women: a widowed man is 2.85 times more likely to be depressed than a married man, while a widowed woman is only 1.35 times (3.34/2.47) more likely to be depressed than a married woman. Differential effects of separation/divorce and of never-married status are much smaller.

Volunteering may be more beneficial to men (odds ratio for depression 0.43 compared to non-volunteers) than to women (odds ratio = 0.89).

[††] Instrumental support: presence of someone who could provide practical help.

TABLE 2
Distribution of social relationships in women and men aged 65 and over in Quebec (N = 2670)

Variables	Men (n = 1073) %	Women (n = 1597) %	*p* ($\chi 2$)
Social Networks			
Marital status			< .001
With partner	57.2	36.6	
Separated or divorced	15.5	12.0	
Widowed	20.0	42.7	
Never married	7.4	8.8	
Children			.89
Yes	86.4	86.6	
No	13.6	13.4	
Siblings			.49
Yes	91.0	90.2	
No	9.0	9.8	
Friends			.10
Yes	87.5	89.5	
No	12.5	10.5	
Diversity of ties			< .001
Low (0-2 relationships)	13.5	18.0	
Medium (3-4 relationships)	64.1	72.6	
High (5 relationships)	22.3	9.4	
Social integration			
Visit social centres			.008
Yes	39.5	44.6	
No	60.5	55.4	
Volunteering			.27
Yes	34.5	32.4	
No	65.5	67.6	
Attending religious services			< .001
Yes	44.4	55.5	
No	55.6	44.5	

Discussion

The objective of this study was to examine if social relationships were associated with the probability of presenting a depressive disorder in women and men aged 65 and over. Our results showed that marital status, being socially active and doing volunteer work were strongly inversely associated with the presence of depression only in older men. Women were more depressed than men generally, except widowers.

Our study did not find any association between relationships with adult children, siblings and friends and depression in older men and women in Quebec. This result is different from those reported in some studies that showed that offspring were salient for older adults' mental health,[17,18,37] or others that reported the beneficial effect of friends on older adults' well-being.[12,13,16] In the United States, Silverstein et al. showed that support from adult children was important for older adults only if they were in a situation where they needed help (in poor health or widowed). However, we could not compare our results with those reported in these studies because they did not examine gender differences.

To reiterate, according to our results offspring do not seem to play an important role in depression among adults over 65 years old in Quebec. Maybe the social life of elderly Canadians does not revolve around their children or other family members, contrary to what has been reported in other countries where similar studies were done.[17-19] It would be interesting to study ethnic differences in Quebec and to compare these results with the results of our study.

Our results suggest that some social integration activities, such as going to community social centres and, to an even greater extent, being involved in volunteer work, are associated with less depression in men but not in women. However, no association was found between attending religious services and the presence of a depressive disorder in either men or women. This suggests that attendance at a religious centre, in spite of increasing the opportunities for social interaction, does not play a key role in depression in older adults in Quebec, unlike other types of group activities.

According to Canadian data published by the 2007 Canada Survey of Giving, Volunteering and Participating,[38] 36% of older adults are involved in volunteerism, defined as unpaid, freely chosen activities within an organization.

The benefits of volunteerism for depression are supported by the results of various studies.[21,22,39] According to other research,[23,40] volunteerism could be conducive to mental health through social integration, use of one's skills and reinforcement of the feeling of being useful. However, our study is cross-sectional and it is also possible that depressed people are unable to volunteer.

In addition, our results showed that gender differences in depression were very large among those engaged in volunteering. In fact, volunteerism was not related to depression in women but was strongly associated with reduced depression in

TABLE 2 (*continued*)
Distribution of social relationships in women and men aged 65 and over in Quebec (N = 2670)

Variables	Men (n = 1073) %	Women (n = 1597) %	*p* (χ2)
Social support			
Presence of a confidant			.012
Yes	85.4	88.7	
No	14.6	11.3	
Instrumental support			.97
Yes	95.9	95.9	
No	4.1	4.1	
Emotional support			.35
Yes	95.2	96.0	
No	4.8	4.0	
Conflictual relationships			
Children			.08
No conflicts	66.1	62.6	
Conflicts	20.3	24.0	
No children	13.6	13.4	
Siblings			.44
No conflicts	73.6	71.3	
Conflicts	17.1	18.7	
No siblings	9.4	10.0	
Friends			.20
No conflicts	71.6	74.2	
Conflicts	15.7	15.2	
No friends	12.7	10.6	
Partner			< .001
No conflicts	16.8	7.6	
Conflicts	40.4	29.0	
No partner	42.8	63.4	

Abbreviations: χ2, chi-square test; <, less then; n, sample size; N, overall sample size; %, percent; *p*, p-value.

men. We could suggest two not exclusive explanations. First, in this cohort of older adults, regardless of whether or not they had worked outside the home, women maintained their role as homemakers as they aged whereas for men, who had lost their role as active workers upon retirement, volunteerism gave them the opportunity to continue being productive. Second, the number and nature of volunteer activities seem to differ for men and women. The 2007 Canada Survey of Giving, Volunteering and Participating[38] showed that women devoted more time to volunteer work than men, but that men devoted more time to volunteering in physical activities.

Also, since volunteering usually stems from a sense of community, it could be important to determine if the benefits of volunteering for mental health depend on the duration and history of volunteering. Further studies could document other aspects of volunteer activities (the nature and intensity, etc.) to identify if specific aspects could play a protective role in depression in older adults.

The lack of a confidant was positively related to depression in both men and women. Since associations with depression and lack of instrumental support in men and lack of emotional support in women were attenuated after adjusting for health status, we tested for the presence of interactions between both types of social support and physical health, to verify if social support was only effective among those with poor health as it has been previously reported for mild depression (analysis and results of these tests are not shown).[41] However, these interactions were not significant in men or women.

Finally, our results show that conflict in the relationships with offspring and siblings do not seem to have any effect on depression. Non-conflictual relationships with a partner seem to be associated with a low probability of depression in both men and women. This fits with the findings of Antonucci et al. that negative social relations are associated with depression for both older women and men.[13]

Limitations

The limitations of this study include the fact that it is cross-sectional, which limits our ability to establish a chronological link between social relationships and depression. Some associations may be inverse, e.g. the presence of depression may lead to poor perceived health, less volunteering, less social integration and to more conflicts with the partner.

The ESA survey response rate of 66.5% is similar to that of other Canadian health surveys of older adults.[42] This could result in a selection bias and under-evaluation of depression since those who did not participate in the study could be the oldest or more cognitively impaired elderly people, as has been shown in other studies.[43] As no information was available on non-respondents to the ESA study, assessment of this selection bias was not possible. In addition, all potential participants with a score of less than 22 on the MMSE were excluded from the study. Therefore, the results can be generalized only to the older adult population with good cognitive functions and not living in the remote Northern areas of Quebec (Côte Nord, Gaspé Peninsula, Magdalen Islands, Saguenay-Lac-Saint-Jean and Abitibi-Témiscaminque).

Despite these limitations, the study used a large representative sample of community-dwelling older adults in Quebec. In

TABLE 3
Odds ratios for depressive disorders by social relationships and gender in women and men aged 65 and over in Quebec (N = 2670)

	Men (n = 1073)		Women (n = 1597)	
	OR[a](95% CI)	OR[b] (95% CI)	OR[a] (95% CI)	OR[b](95% CI)
Marital status				
With partner	1	1	1	1
Separated or divorced	1.28 (0.62, 2.65)	1.26 (0.61, 2.60)	1.43 (0.90, 2.25)	1.52 (0.95, 2.43)
Widowed	3.00 (1.62, 5.53)	2.97 (1.60, 5.51)	1.28 (0.90, 1.82)	1.35 (0.95, 1.93)
Never married	1.38 (0.54, 3.51)	1.39 (0.55, 3.53)	1.11 (0.65, 1.87)	1.22 (0.72, 2.09)
Children				
Yes	1	1	1	1
No	0.80 (0.39, 1.62)	0.77 (0.38, 1.57)	1.24 (0.85, 1.81)	1.24 (0.84, 1.81)
Siblings				
Yes	1	1	1	1
No	0.84 (0.35, 1.99)	0.78 (0.33, 1.86)	1.31 (0.85, 2.02)	1.26 (0.81, 1.95)
Friends				
Yes	1	1	1	1
No	0.75 (0.36, 1.58)	0.75 (0.36, 1.58)	0.96 (0.62, 1.48)	0.85 (0.55, 1.33)
Diversity of ties				
Low	1.27 (0.58, 2.78)	1.18 (0.54, 2.59)	1.78 (1.00, 3.14)	1.60 (0.90, 2.85)
Medium	0.72 (0.41, 1.26)	0.68 (0.39, 1.20)	1.39 (0.85, 2.25)	1.37 (0.84, 2.23)
High	1	1	1	1
Social integration				
Social centres				
Yes	1	1	1	1
No	1.74 (1.05, 2.87)	1.69 (1.02, 2.80)	1.04 (0.80, 1.36)	0.92 (0.70, 1.21)
Volunteering				
Yes	1	1	1	1
No	2.43 (1.35, 4.36)	2.33 (1.29, 4.20)	1.24 (0.93, 1.65)	1.09 (0.81, 1.46)
Attending religious services				
Yes	1	1	1	1
No	0.91 (0.56, 1.47)	0.92 (0.60, 1.48)	1.18 (0.91, 1.55)	1.12 (0.85, 1.47)
Social support				
Presence of a confidant				
Yes	1	1	1	1
No	1.87 (1.10, 3.17)	1.88 (1.11, 3.21)	1.73 (1.20, 2.49)	1.56 (1.08, 2.26)
Instrumental support				
Yes	1	1	1	1
No	2.42 (1.04, 5.63)	2.33 (0.99, 5.46)	1.55 (0.89, 2.70)	1.32 (0.74, 2.32)
Emotional support				
Yes	1	1	1	1
No	1.28 (0.53, 3.10)	1.23 (0.51, 2.98)	1.80 (1.05, 3.10)	1.55 (0.89, 2.69)

TABLE 3 (*continued*)
Odds ratios for depressive disorders by social relationships and gender in women and men aged 65 and over in Quebec (N = 2670)

	Men (n = 1073)		Women (n = 1597)	
	OR[a](95% CI)	OR[b] (95% CI)	OR[a] (95% CI)	OR[b](95% CI)
Conflictual relationships				
Children				
No children	1	1	1	1
No conflicts	1.11 (0.53, 2.29)	1.13 (0.55, 2.34)	0.68 (0.46, 1.00)	0.70 (0.47, 1.04)
Conflicts	1.83 (0.83, 4.06)	1.81 (0.82, 4.01)	1.17 (0.77, 1.79)	1.11 (0.72, 1.72)
Siblings				
No siblings	1	1	1	1
No conflicts	1.08 (0.44, 2.63)	1.15 (0.50, 2.84)	0.67 (0.43, 1.04)	0.70 (0.45, 1.10)
Conflicts	1.36 (0.50, 3.70)	1.41 (0.52, 3.85)	1.07 (0.65, 1.76)	1.10 (0.66, 1.83)
Friends				
No friends	1	1	1	1
No conflicts	1.00 (0.47, 2.15)	1.00 (0.47, 2.14)	1.04 (0.66, 1.62)	1.18 (0.75, 1.86)
Conflicts	1.58 (0.65, 3.81)	1.61 (0.66, 3.89)	1.04 (0.60, 1.79)	1.16 (0.67, 2.01)
Partner				
No partner	1	1	1	1
No conflicts	0.35 (0.15, 0.81)	0.36 (0.15, 0.83)	0.45 (0.24, 0.85)	0.44 (0.23, 0.83)
Conflicts	0.58 (0.33, 1.01)	0.59 (0.34, 1.02)	0.88 (0.63, 1.23)	0.82 (0.58, 1.15)

Abbreviations: CI, confidence interval; n, sample size; N, overall sample size; OR, odds ratio.

[a] adjusted for age, income and type of region

[b] adjusted for age, income, type of region, number of chronic health problems and perceived physical health

TABLE 4
Odds ratio for depression in women and men aged 65 and over in Quebec: interactions between marital status and gender, and volunteering and gender

		OR (95% CI)[a]
Marital status		
Married	Men	1
	Women	2.47 (1.60, 3.83)
Separated/ divorced	Men	1.15 (0.59, 2.24)
	Women	3.68 (1.44, 9.40)
Widowed	Men	2.85 (1.64, 4.96)
	Women	3.34 (1.48, 7.57)
Never married	Men	1.66 (0.68, 4.02)
	Women	2.94 (0.98, 8.80)
Volunteering		
No	Men	1
	Women	2.47 (1.60, 3.83)
Yes	Men	0.43 (0.24, 0.77)
	Women	2.20 (1.01, 4.77)

Abbreviations: CI, confidence interval; OR, odds ratio; *p*, p-value.

[a] adjusted for age, income, type of region, number of chronic health problems and perceived physical health

Lemeshow-Hosmer goodness of fit statistic $p = .24$

addition, depression was measured using recognized diagnostic clinical criteria, unlike some other studies that used psychological distress measures. The study contributes to the scarce literature on the effects of social relationships, social support, and conflict on depression in older men and women.

Conclusion

Our results suggest that some specific aspects of social relationships could play a role in depression in older men and women in Quebec. The availability of a confidant and the absence of conflict with one's partner appear to be the specific aspects of social relationships most strongly associated with lack of depression. In addition, gender differential associations between marital status and depression and between social activities and depression were observed. Other longitudinal studies on the effect of volunteerism are needed to learn more about its effect on the incidence and remission of depressive disorders in older men and women.

Furthermore, the absence in this cross-sectional study of associations between networks of family and friends and the presence of depression in older adults does not exclude the possibility that these relationships could be important for some subgroups of older adults with specific needs. These subgroups could include individuals with functional disabilities or some ethnic groups. Therefore, it would be interesting to conduct research on the role of offspring and other family and friends in depression among the elderly population according to ethnicity.

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