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Factors Influencing Nurse Assistants' Job Satisfaction in Nursing Homes in Canada and Spain: A comparison of Two Cross Sectional Observational Studies

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Ethical Board and Ethics Approval Number: Toronto Rehabilitation Institute Research Ethics Board (#14-8125 - AE); Ethics Committee of the Official College of Nurses in Lleida (#089352) We confirm that informed consent was obtained from the staff who participated in the study and it was verbal. Ethics committees from both committees approved this consent process and investigators recorded on a log sheet that the participants had provided verbal consent.

ABSTRACT

Objectives: To assess associations between job satisfaction and supervisory support as moderated by stress.

Methods: For this cross-sectional study, data collected from 591 nursing assistants in 42 nursing homes in Canada and Spain were analyzed with mixed-effects regression.

Results: In both countries, stress related to residents' behaviors was negatively associated with job satisfaction, and, in Canada, it moderated the positive association between supervisory support and job satisfaction. Stress related to family conflict issues moderated the positive association of supervisory support and job satisfaction differently in each location: in Canada, greater stress was associated with a weaker association between supervisory support and job satisfaction; in Spain, this was also observed but only when supervisory support was sufficiently weak.

Discussion: Stress was associated with lower job satisfaction and moderated the association of supervisory support and job satisfaction, reinforcing the importance of supervisors supporting nursing assistants, especially during the COVID-19 pandemic.

Keywords: Stress; COVID-19; Job Satisfaction, Nurses; Supportive Supervisors; Nursing Assistants

Introduction

Demographic, social, and epidemiological changes, including increased life expectancy, disintegrating informal care networks, and better disease management are increasing the need for nursing homes worldwide (Hay et al., 2017). While countries differ in how they fund nursing homes, the resident profiles are largely the same and characterized by multiple comorbidities, dementia and complex health and social care needs (Eurofund, 2017). Supply and demand of nursing homes differ across countries, but all are concerned about the quality of care provided in these homes (Scheil-Adlung, 2015), and policy decision makers face common issues of workforce capacity. Globally, there is a shortage of nursing assistants in nursing homes (International Labour Organization, 2018) that is related to numerous factors, including the increasing complexity of care, the lack of resources to provide quality care (Eurofund, 2017), and the precariousness of their work (Fite-Serra et al., 2019). Addressing healthcare human resource issues in nursing homes calls for a global approach. As such, an international team of researchers, of which several of the authors are members (KM, CC and MG, AEP – are from Canada and Spain), are currently focused on developing common data metrics (Corazzini et al., 2019). WE-THRIVE (Worldwide Elements To Harmonize Research In Long-term Care Living Environments) is a consortium that aims to collaboratively advance an international nursing home research measurement infrastructure that can be used in diverse nursing homes, including low and middle income countries, for comparative research (Corazzini et al., 2019).

To advance this objective, we sought to measure and compare factors influencing job satisfaction for nursing assistants in two countries, Spain and Canada. In Spain, the majority of direct care is delivered by ‘auxiliar de enfermería’ and ‘auxiliar de geriatría’, which have similar training and job responsibilities as personal support workers or health care aides in Canada, hereafter collectively referred to as “nurse assistant”. In both countries, there are similar hierarchical structures, where

1 nurse assistants are supervised by registered nurses or, in Ontario, Canada, by a registered nurse
2 and/or registered practical nurse. In both countries there are issues related to understaffing,
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4 workload, part-time employment only, low remuneration, and low levels of health and quality of
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6 work-life for nursing assistants (Chamberlain et al., 2019; Granero-Lazaro, Blanch-Ribas, Roldan-
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8 Merino, Torralbas-Ortega, & Escayola-Maranges, 2017).
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14 In a previous systematic review of factors associated with job satisfaction among nursing assistants,
15 individual characteristics including age, ethnicity, gender, education level, specialized training, and
16 years of experience were not important predictors (Squires et al., 2015). However, organizational
17 characteristics including facility resources, stress and workload, have been identified as related to
18 job satisfaction. For instance, in another systematic review, Rajamohan et al (2019) present a
19 theoretical model that relates job satisfaction and occupational stress in nursing home settings based
20 on earlier work by Cohen-Mansfield's model of occupational stress (1995). Supportive supervisors
21 have also demonstrated a strong positive relationship to job satisfaction of nursing assistants
22 (McGilton, 2010) and their support is considered one of the most important resources for staff
23 (Escrig-Pinol, Corazzini, Blodgett, Chu, & McGilton, 2019). Perceived supervisory support refers
24 to the employees' perceptions about the degree to which their supervisor listens to their concerns,
25 keeps them informed, and are dependable (McGilton, 2010).
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43 Nursing assistants' perceptions of stress related to working with residents who have challenging
44 behaviors and families who have issues with staff have also been proposed to influence job
45 satisfaction but research in this area is scant. In one systematic review, caring for residents who
46 exhibit agitated behaviors was associated with higher burnout with staff (Costello, Walsh, Cooper,
47 & Livingston, 2019), but its' influence on job satisfaction has not been demonstrated. Nursing
48 assistants in nursing homes care for older adults, many who exhibit aggressive and/or agitated
49 behaviors, such as yelling or threatening them (Chamberlain et al., 2019), especially as their
50 dementia progresses. These resident behaviors can affect staffs' health and well-being by causing
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2 physical injuries, emotional trauma, and may also influence their job dissatisfaction (Brophy, Keith,
3 & Hurley, 2019). Conflict with the residents' families may also increase job dissatisfaction among
4 nursing assistants (Abrahamson, Anderson, Anderson, Sutor, & Pillemer, 2010) because nursing
5 assistants and families often misunderstand and under-value each other's role (Bauer,
6 Fetherstonhaugh, Tarzia, & Chenco, 2014). Previous research has identified that supervisors have a
7 key role in addressing stressful resident and family conflict issues (ie. conflicts between staff and
8 families), and their mentoring and coaching of nursing assistants is critical (Escrig-Pinol, Corazzini,
9 Blodgett, Chu, & McGilton, 2019). Most of the research to date has focused on the direct
10 association between supervisory support and job satisfaction. However, it is not clear how each type
11 of stress influences the positive association between supervisory support and job satisfaction. For
12 example, stressful emotions related to working with challenging residents and families may
13 influence the relationship between staffs' perceptions of supervisory support and job satisfaction
14 (Abrahamson et al., 2010; Escrig-Pinol, Corazzini, Blodgett, Chu, & McGilton, 2019). Following
15 this discussion, as depicted in our conceptual framework (See Figure 1), we hypothesize that for
16 nursing assistants who are experiencing higher levels of stress, the positive association between
17 supportive supervision and job satisfaction will be attenuated compared to the association among
18 those experiencing less stress. We hypothesize that stress disrupts the social context in which
19 supervisors support staff and staff perceive their job satisfaction. A better understanding of the
20 moderating relationship, including the mechanism through which supervisory support and stress
21 operate, will help to develop and target interventions to enhance job satisfaction in nursing homes
22 and ultimately influence resident care.

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51 Figure 1. A conceptual model for the association between supervisory support and job satisfaction
52 and the potential moderating influence of stress from residents' behaviors and of stress related to
53 family conflict issues.
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Our objectives were to:

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2 1. Analyze the association between staff stress related to residents' behaviors and family conflict
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4 issues and job satisfaction among nursing assistants working in nursing homes in Ontario and
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6 Catalonia. We hypothesize that more staff stress related to residents' behaviors and family conflict
7
8 issues will be associated with lower job satisfaction for nursing assistants.
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- 10
11 2. Test whether staff stress related to residents' behaviors and family conflict issues moderates the
12
13 relationship between supervisory support and job satisfaction among nurse assistants working in
14
15 LTC homes in Ontario and in Catalonia.
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18 3. Assess whether the relationships described in Objectives 1 and 2 differ by region (Ontario vs.
19
20 Catalonia).
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22 23 24 25 Design and Methods

26
27 These observational, cross-sectional data were collected in Canada from May to September 2015
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29 and in Spain from January to April 2016. The data were collected from the same self-report survey
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31 which was distributed to nursing assistants in the nursing home by trained research assistants (RAs).
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33 The English version of the survey was translated into Spanish. The cross validation procedure is
34
35 detailed elsewhere (Blanco-Blanco et al., 2017). Once approval was obtained from the Research and
36
37 Ethics Board at the participating facilities, the PIs within the different countries approached
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39 directors at each of the nursing homes to arrange meetings with the staff and to gain their approval
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41 to administer surveys to their staff. Directors then introduced the RA at team meetings during
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43 different shifts, and participants voluntarily completed the survey. Information about the study risks
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45 and benefits were included in a cover letter. Respondents consented verbally and completed the
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47 survey anonymously and returned questionnaires in sealed envelopes to ensure confidentiality.
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49 Survey completion took roughly 20-30 minutes. Remuneration was given to nurses in Canada –
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51 they received a 20 dollar gift card whilst in Spain there was no remuneration given for participating
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53 as it was not allowed.
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Ontario, Canada

These data come from a nursing home study (Escrig-Pinol, Corazzini, Blodgett, Chu, & McGilton, 2019) whereby five sites were purposively sampled from a pool of 364 nursing homes reporting on staff surveys using the Supervisory Support Scale (SSS) in 2012. The nursing homes were selected by mean SSS scores: three that were highly ranked and two that ranked low. The sites were in rural (n=3) and urban (n=2) settings, and ranged in size (80-250 beds) and ownership model (n=2 for-profit and n=3 not-for-profit). A total of 197 nursing assistants from all sites completed the survey and the response rate was 60%.

Catalonia, Spain

These data come from 37 nursing homes, which were selected based on geographical spread, bed sizes, and type of nursing home (private vs. public) as above and covered the whole region of Catalonia. The sites were in rural (n=12) and urban (n=25) settings, and ranged in size (14-285 beds) and ownership model (n=22 for-profit and n=15 not-for-profit). In total, 394 nursing assistants completed the survey and the response rate was 19%.

Measures

Demographics of the staff were collected in the survey including age, years working in the nursing home, first language spoken, sex, and job titles. Nursing home size, ownership, and location were collected from the administrator of the homes.

Outcome

Job satisfaction was measured with five questions and scored on a 7-point Likert scale using the General Job Satisfaction (GJS) Scale. The GJS Scale is a 5-item measure of the degree to which the employee is satisfied and happy with the job. One of the questions in the scale is: Generally speaking, I am very satisfied with this job. The score was summated, higher scores indicating higher

1
2 job satisfaction. The scale has acceptable internal consistency reliability (Cronbach alpha ranging
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4 from .74 to .80) (Hackman & Oldham, 1975).
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8 9 *Explanatory Variables*

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12 Supervisory support was assessed using the SSS, which asks respondents about perceptions of their
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14 immediate supervisor, including the extent to which they demonstrate empathy, dependability, and
15
16 built connections with their staff. The SSS consists of two factors: Respects Uniqueness and Being
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18 Reliable. A question related to respecting uniqueness is: My supervisor tries to understand my point
19
20 of view when I speak to them. A question related to being reliable is: I can rely on my supervisor
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22 when I ask for help, for example, if things are not going well between myself and my co-workers or
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24 between myself and residents and/or their families. This scale contains 15 items ranging from 1=
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26 never to 5= always, which were summed for a total score, with higher scores indicating more
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28 supportive supervision. This scale demonstrates construct validity (McGilton, 2010). The total score
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30 of the SSS was positively correlated with the professional supportive domain of Chou's (2002)
31
32 Nursing Job Satisfaction Scale, $r = .4, p < .001$, and the SSS was negatively correlated with HCAs'
33
34 job-related stress ($r = -.215, p = .001$), demonstrating initial construct validity of the SSS. The SSS
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36 has also been translated into Spanish (Blanco-Blanco et al., 2017).
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44 Perception of stress was measured with two 4-item subscales: resident behaviors and family conflict
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46 issues, of the Stress/Burden Scale from California Homecare Workers Outcome Survey (Benjamin
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48 & Matthias, 2004): i) resident behaviors (yelling; threats; conflicts with staff; challenging
49
50 behaviors) and ii) family conflict issues (do not trust staff; critical of staff; expects too much; do not
51
52 appreciate staff work). Items were answered using a 5-point Likert scale (1= never to 5= very
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54 often, or 1= strongly disagree to 5= strongly agree). Means calculated for each subscale, where
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56 higher scores indicate more stress, were used in the analysis. Both of these subscales have
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1
2 demonstrated acceptable reliability with Cronbach alpha scores ranging from .63 to .75 (Benjamin
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4 & Matthias, 2004).
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6 7 8 Analysis

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11 Descriptive statistics summarized staff personal characteristics. Differences between locations were
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13 tested using hierarchical mixed-effects regression (logistic or linear, as appropriate), where location
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15 was treated as a fixed-effect and facility was treated as a random effect to account for similarities of
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17 respondents working in the same facility. But if a variable's distribution was skewed, two-sample
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19 Wilcoxon rank-sum tests were used instead. Mixed-effects regression was also used to estimate,
20
21 separately for each location, the associations of stress with job satisfaction, and then to estimate
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23 these associations together with the interactions of stress and supervisory support. We included
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25 these interactions as a test of whether stress moderated the association of supervisory support and
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27 job satisfaction by comparing the fit of the models with and without moderation using likelihood
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29 ratio chi-square tests.
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36 In our conceptual framework, stress is the moderator, but each interaction in our regression analysis
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38 is symmetrical, meaning the statistical analysis cannot distinguish whether stress was the moderator
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40 or supervisory support. Nevertheless, an analysis combining the results, our conceptual model, and
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42 insights from the literature potentially could. To look more closely at the observed pattern of
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44 moderation, we calculated the predictive marginal association of supervisory support with job
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46 satisfaction for a high and a low level of each sub-scale of stress (one standard deviation above or
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48 below its mean, respectively) and also the predictive marginal association of stress with job
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50 satisfaction for a high and a low level of supervisory support. Analyses were performed with Stata,
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52 version 16 (StataCorp, 2019).
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Results

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2 Demographics for the 591 nursing assistants in the 42 nursing homes in both countries and
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4 summary statistics of the study variables are summarized in Table 1 and Table 2, respectively.
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6 Many characteristics of nursing assistants working in Catalonia were similar to those working in
7
8 Ontario. The median age of nursing assistants was 45 years and the majority were female (93%)
9
10 who had worked on average for nine years in the nursing home. Compared to those in Ontario,
11
12 nursing assistants in Catalonia were more likely to be in full-time employment (81% vs 61%, p
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14 $<.001$), were responsible for a greater median number of residents (25 vs 10, $p<.0001$), perceived
15
16 less supervisory support (49 vs 56, $p<.0001$), and reported less stress related to behaviors of
17
18 residents (18 vs 23, $p<.003$).
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25 Estimates of the direct associations between stress and job satisfaction appear in Table 3. In
26
27 Catalonia, staff stress related to residents' behaviors and family conflict issues were each negatively
28
29 associated with job satisfaction of nursing assistants ($p<.05$ and $p<.001$, respectively). In Ontario,
30
31 stress related to residents' behaviors was negatively associated with job satisfaction of nursing
32
33 assistants ($p<.05$). Although stress related to family conflict issues was not associated with
34
35 job satisfaction when the interactions with supervisory support were ignored (columns of Table 3
36
37 labeled "Association with job satisfaction"), there was statistical evidence that stress related
38
39 to family conflict issues had both a direct effect on job satisfaction and a moderating effect on
40
41 the association of supervisory support and job satisfaction when interactions of stress and
42
43 supervisory support were included in the model (columns of Table 3 labeled "Association with job
44
45 satisfaction moderated by stress"). A table with the correlations among all measures related to
46
47 nursing assistants working in facilities in Catalonia or Ontario is found in a supplemental file (Table
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57 Stress moderated the association of supervisory support with job satisfaction of nursing assistants
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59 (Table 3). In each location, including the interactions of supervisory support by stress improved the
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1
2 fit of the model compared to a model of direct effects only (Table 3). The interaction of supervisory
3 support by stress related to residents' behaviors was negative in Ontario ($p < .01$), but
4 indistinguishable from zero in Catalonia ($p = .11$). The interaction of supervisory support by stress
5 related to family conflict issues was negative in Ontario ($p < .05$) but positive in Catalonia ($p < .05$).
6
7 The patterns of moderation using predictive margins calculated at a high and a low level of each
8 sub-scale of stress are provided in Table 4. In Ontario, higher levels of either type of stress
9 attenuated the association of supervisory support with job satisfaction (Figure 2, Table 4). In
10 Catalonia, this was true for staff stress related to behaviors of residents (Table 4), but not for stress
11 related to family conflict issues (Table 3). In this case, supervisory support moderated the
12 association of stress related to family conflict issues and job satisfaction, i.e., when perceptions of
13 supervisory support were low, the stress related to family conflict issues was negatively associated
14 with job satisfaction ($p < .01$, Table 4), but when perceptions of supervisory support were high, the
15 association was much reduced (to statistical non-significance). Figure 2 presents the pattern of
16 moderation by stress of the association of supervisory support and job satisfaction.
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36 Discussion and Implications

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38 In this study, we examined the relationship between job satisfaction and stress related to behaviors
39 of residents and family conflict issues as well as how these stresses influenced the association
40 between supportive supervision and job satisfaction. Similar findings in both countries found that
41 stress related to residents' behaviors was negatively associated with job satisfaction. In Canada, it
42 also moderated the positive association between supervisory support and job satisfaction as
43 expected. Stress related to family conflict issues was negatively associated with job satisfaction in
44 Catalonia and less strongly in Ontario. The moderating influence also differed between the
45 countries. In Ontario, stress related to family conflict issues and residents' behaviors moderated the
46 positive association of supervisory support and job satisfaction such that greater stress was
47 associated with a weaker association between supervisory support and job satisfaction; in Catalonia,
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2 this was observed for stress related to family conflict issues but only when supervisory support was
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4 sufficiently weak (see Figure 2 and Table 4). Implications of these findings have gained even
5
6 greater relevance in the context of the recent COVID-19 pandemic with the aggravation of systemic
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8 issues in both Canadian and Spanish nursing homes, potentially adding to the stress experienced by
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10 staff working in these homes.
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16 In both Ontario and Catalonia, stress related to behaviors of residents, such as yelling, was
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18 associated with lower job satisfaction. Resident to staff aggression in nursing homes is common,
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20 particularly during morning care, which is provided by nurse assistants (Lachs et al., 2013). These
21
22 findings substantiate previous qualitative research that found perceptions of stress from working
23
24 with residents who exhibit aggressive behaviors was related to job dissatisfaction (Brophy et al.,
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26 2019). As reported by Chamberlain et al. (2019), nurse assistants are under stress brought on by a
27
28 rapidly shifting and more complex resident population, often with dementia, and minimal resources
29
30 to care for them. During this COVID-19 pandemic, nursing assistants' stress may be increased as
31
32 residents require isolation, which may have negative consequences such as delirium and behavioral
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34 issues (Tan & Seetharaman, 2020), as well as concerns about inadequate resources such as personal
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36 protective equipment which will impact the health of staff and subsequently the residents.
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43 In terms of differences between countries, stress related to family conflict issues was negatively
44
45 associated with job satisfaction among nurse assistants in Catalonia, but this association
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47 was weaker in Ontario. Explanations for this finding are speculative, but the level of family
48
49 involvement, and hence potential conflicts, are impacted by contextual factors. In Canada, nursing
50
51 assistants are not expected to deal with family conflicts as this is the role of the nurse supervisors
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53 who are called to investigate and document families' complaints (Escrig-Pinol, Hempinstall, &
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55 McGilton, 2019), and therefore family conflicts may not influence nursing assistants' job
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57 satisfaction as it likely does in Catalonia. While in most Mediterranean countries, families
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2 experience guilt sending their relatives to nursing homes because they consider institutionalization a
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4 failing in their duty of care, much like those in other countries, the difference is that nursing
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6 assistants are expected to manage the family conflicts in Catalonia (Rodríguez-Martín, Martínez-
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8 Andrés, Cervera-Monteagudo, Notario-Pacheco, & Martínez-Vizcaíno, 2014), which influences
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10 their job satisfaction.
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16 A unique contribution of the study was to examine the moderating influence of stress from
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18 residents' behaviors and family conflict issues on the relationship between supervisory support and
19
20 job satisfaction. Consistent with our expectations, higher levels of stress related to behaviors of
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22 residents were not only directly associated with job dissatisfaction, but also moderated the
23
24 association of supervisory support and job satisfaction. In Ontario, stress moderated the association
25
26 of supervisory support and job satisfaction similarly for each type of stress. For both stress related
27
28 to family conflict and to residents' behaviors, the pattern was consistent with the idea that stress
29
30 diminished NAs' appreciation of how supportive supervisors contribute to their job satisfaction. In
31
32 Catalonia, the pattern of moderation by stress related to residents' behaviors was much the same,
33
34 but weaker and not statistically significant. The pattern of moderation by stress related to family
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36 conflict issues in Catalonia was also consistent with this idea of diminished appreciation when
37
38 supervisory support was low, but when supervisory support was high, stress had very little
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40 influence on the association of supervisory support and job satisfaction. Results from nursing
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42 assistants in Ontario, which can also be applied to staff in Catalonia, reinforce the importance that
43
44 supervisors instill practices that encourage nursing assistants to minimize and reframe challenging
45
46 behaviors (Brophy et al., 2019; Escrig-Pinol, Corazzini, Blodgett, Chu, & McGilton, 2019),
47
48 especially because altercations between staff and residents in nursing homes are increasing
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50 (Chamberlain et al., 2019). Perceptions of caring for persons with responsive behaviors are vital, so
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52 rather than focusing on the behavior as related to the pathology of dementia, supervisors need to
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54 mentor staff to appreciate that many aggressive behaviors of residents are responsive behaviors,
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2 responding to an unmet need or a situation, such as loneliness related to being in isolation, or pain
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4 (Dupuis, Wiersma, & Loiselle, 2012). It is plausible that if supervisors can teach nursing assistants
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6 to prevent these behaviors and respond accordingly to their unmet needs, a reduction in the
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8 residents' responsive behaviors can influence their job satisfaction and improve quality of care
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10 (Lachs et al., 2013). The implications of these findings have gained even greater relevance in the
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12 context of the COVID-19 pandemic as isolation procedures and families not being able to visit may
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14 lead to more responsive behaviors of residents, which may require additional support from
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16 supervisors to mitigate the nursing assistants' stress.
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22 Consistent with our expectations, the pattern was also observed in Ontario for staff stress related to
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24 family conflict issues, emphasizing the importance of fostering effective, less stressful work
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26 situations, where supervisors work with nurse assistants and guide them to build partnerships with
27
28 families to address their concerns in an attempt to reduce family conflicts (Abrahamson et al.,
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30 2010). In Catalonia, supervisory support attenuated the negative association of stress related to
31
32 family conflict issues with job satisfaction. These results for nursing assistants in Catalonia suggest
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34 that supportive supervisors may be one way to mitigate the potential impact of family conflicts by
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36 supporting nursing assistants when they experience lack of trust or families who do not appreciate
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38 them. This result emphasizes the importance of interpersonal relationships between nursing
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40 assistants and supervisors in fostering less stressful work situations.
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48 While our study focused on family and resident stress, there are multiple stressors on nursing
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50 assistants that should be explored in future work. One involves the precariousness of their work.
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52 For example, in this study, nursing assistants working in Ontario had more part time positions,
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54 while nursing assistants in Catalonia had more full-time positions which are, nevertheless, often
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56 insecure temporary contracts (Baranda, 2017). Both situations can leave staff in precarious
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58 situations with limited or no benefits and punitive measures with regards to sick time, especially in
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1 Spain (Llop-Girones, Tarafa, & Benach, 2015). Providing part-time positions and underpayment of
2 staff are both major stressors for staff which leads many of them to work in more than one nursing
3 home in order to garner a living income. It is has been suggested that this staffing practice may have
4 aided in the spread of COVID-19 in multiple homes.
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13 Second, another stress is the high workload and inadequate staffing levels in both countries
14 (Chamberlain et al., 2019; Granero-Lazaro et al., 2017). Staffing levels have not changed in
15 response to the cognitive, emotional, functional, nutritional, and social needs associated with
16 residents who require care in nursing homes (Eurofund, 2017). Nursing assistants in Ontario in our
17 study worked with a median of 10 residents per shift, and similar workloads have reported
18 elsewhere (Chamberlain et al., 2019; Escrig-Pinol, Corazzini, Blodgett, Chu, & McGilton, 2019). In
19 Catalonia, nursing assistants reported working with 25 residents per shift, which is consistent with
20 reports that staffing levels in nursing homes continue to be a concern globally with Spain being
21 identified as the second worst country in Europe in terms of staff to resident ratios (OECD/EU,
22 2016). To compensate for these staffing levels, family members have provided social care in
23 nursing homes (Bauer et al., 2014), but since COVID-19, families have been denied access, which
24 has intensified staffs' workload, illuminating the staffing crisis. These staffing levels, especially in
25 Spain, makes monitoring residents for COVID-19 symptoms difficult (Mouzo & Blanchar, 2020)
26 and undermines the staffs' ability to keep residents physically distant, which may exacerbate
27 behaviors in residents with dementia impacting the stress of staff. Most recently a report on global
28 challenges on the pandemic was published citing the lack of staff in the system required to face the
29 pandemic (Catton, 2020), and this is an extra concern that is compounded for nursing home, which
30 are often the last choice of workplace for nurses. Constant difficulties with staff retention related to
31 stress and workload make the education and reinforcement of infection prevention measures a
32 challenge. Recruitment of staff following this pandemic will be a major global challenge going
33 forward (McGilton et al, 2020).
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4 Some limitations must be considered when interpreting the results. The sampling strategy limits the
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6 generalizability of the findings; however, interactions tend to be immune to sampling variation
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8 methods. Also, there were very low response rates from Catalonian staff. Research conducted in
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10 nursing homes is a new phenomenon in Catalonia and staff were hesitant to participate in the study,
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12 despite assurances of confidentiality. Another limitation was that we were not able to collect
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14 information about the residents in the LTC settings. Finally, it was a cross-sectional study and,
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16 therefore, temporal relationships cannot be established.
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23 In summary, stress related to behaviors of residents moderates the relationship between supervisory
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25 support and job satisfaction in both Catalonia and Ontario. Supervisors have a role in shaping the
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27 work environment and the stress staff endure in these environments, but additional resources are
28
29 required to improve working conditions in nursing homes. Future research should build on findings
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31 from other industries to both enhance supervisory skills in helping workers address worker job-
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33 related stresses and to test interventions to reduce systemic barriers faced by direct care workers and
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35 the people they care for. Further international research is required to understand if and how the
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37 ‘supportive supervisor’ is a useful WE-THRIVE metric for improving work conditions of staff and
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39 quality of care for residents in nursing homes.
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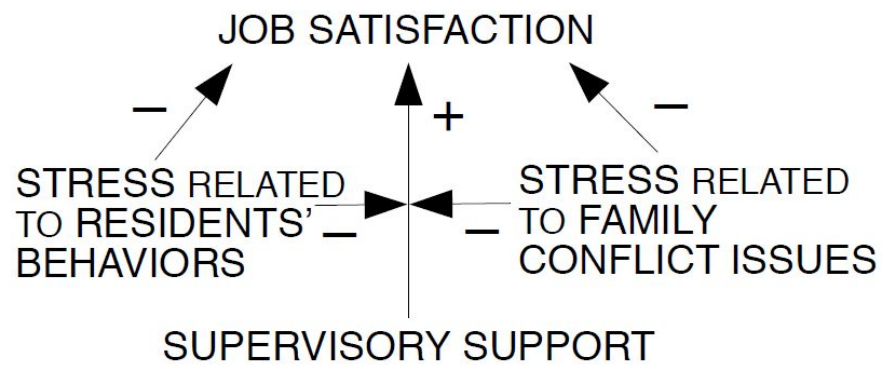
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For Peer Review

1
2 Figure 1. A conceptual model for the association of supervisory support and job satisfaction and
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4 potential moderating influence of stress related to residents' behaviors and of stress related to
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6 family conflict issues.
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Review

Figure 2. Interaction diagrams based on mixed-effects regressions of the association of supervisory support and job satisfaction, as moderated by stress.

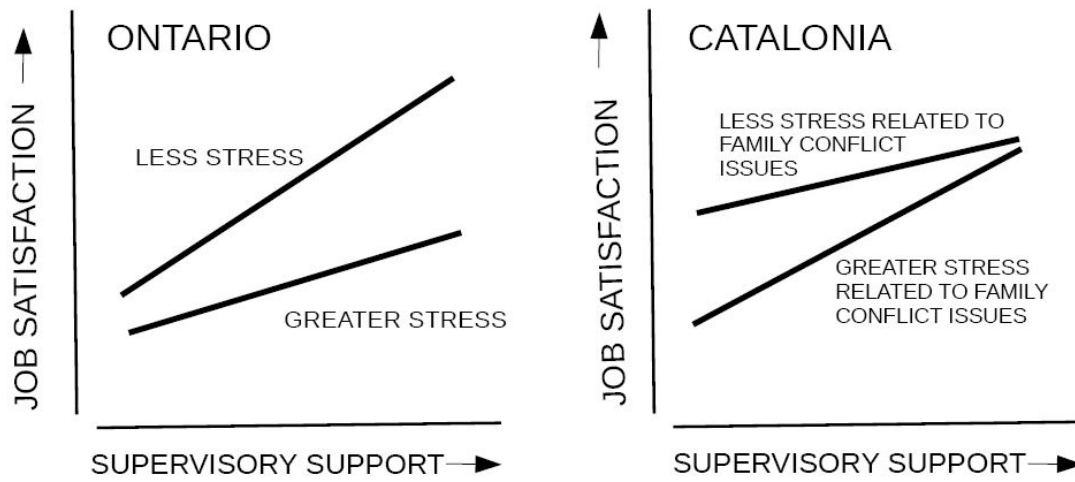


Table 1: Personal characteristics of respondent nursing assistants working in Catalonia or Ontario.

| | Count (%), unless otherwise noted | |
|--|-----------------------------------|-----------------|
| | Catalonia (n=394) | Ontario (n=197) |
| Sex, female | 361 (92%) | 185 (94%) |
| Age [quartiles] | [32, 44, 53] | [38, 46, 52] |
| First spoken language | | |
| Spanish | 212 (55%) | .. |
| Catalan | 132 (34%) | .. |
| Catalan-Spanish | 16 (4%) | .. |
| Other | 34 (7%) | .. |
| English | .. | 139 (72%) |
| Job Title | | |
| Auxiliar de Enfermeria | 207 (53%) | .. |
| Auxiliar de Geriatria | 172 (44%) | .. |
| Otro | 9 (2%) | .. |
| Personal Support Worker | .. | 171 (87%) |
| Health Care Aide | .. | 13 (7%) |
| Other | .. | 13 (7%) |
| Currently working | | |
| Full time | 316 (81%) | 120 (61%) |
| Part time | 61 (16%) | 73 (37%) |
| Casual | 13 (4%) | 4 (2%) |
| Years worked in Long-Term Care [quartiles] | [4, 9, 13] | [3, 8, 12] |
| Number Residents responsible for [quartiles] | [15, 25, 35] | [9, 10, 15] |

Table 2: Descriptive statistics for measures of stress related to behaviors of residents' behaviors, stress related to family conflict issues, supervisory support, and job satisfaction of nursing assistants working in facilities in Catalonia or Ontario.

| | Catalonia (n=394) | | | Ontario (n=197) | | |
|------------------------|-------------------|--------------------|--------------------|-----------------|--------------------|--------------------|
| | Mean | Standard deviation | Observed min - max | Mean | Standard deviation | Observed min - max |
| Stress related to | | | | | | |
| Residents' behaviors | 18 | 5 | 7 - 35 | 23 | 6 | 10 - 40 |
| Family conflict issues | 10 | 3 | 4 - 18 | 10 | 4 | 4 - 20 |
| Supervisory Support | 49 | 14 | 15 - 75 | 56 | 15 | 15 - 75 |
| Job Satisfaction | 24 | 5 | 6 - 35 | 25 | 5 | 11 - 35 |

Table 3: Hierarchical mixed-effects regression results testing direct effects on job satisfaction and whether association with job satisfaction was moderated by stress.

| | Unstandardized beta (95% confidence interval) | | | |
|---|---|---|-----------------------------------|---|
| | Catalonia (n=394) | | Ontario (n=197) | |
| | Association with job satisfaction | Association with job satisfaction moderated by stress | Association with job satisfaction | Association with job satisfaction moderated by stress |
| Stress related to | | | | |
| Residents' behaviors | -0.1 * (-0.2, -0.01) | 0.2 (-0.2, 0.5) | -0.1 * (-0.2, -0.03) | 0.5 * (0.1, 0.9) |
| Family conflict issues | -0.3 *** (-0.5, -0.2) | -0.9 *** (-1.4, -0.4) | 0.1 (-0.1, 0.3) | 0.8 * (-0.1, 1.4) |
| Supervisory support | 0.1 *** (0.1, 0.2) | 0.1 (-0.02, 0.25) | 0.2 *** (0.1, 0.2) | 0.5 *** (0.3, 0.7) |
| Supervisory support by Stress related to residents' behaviors | .. | -0.006 (-0.013, 0.001) | .. | -0.011 ** (-0.02, -0.004) |
| Supervisory support by Stress related to family conflict issues | .. | 0.012 * (0.002, 0.021) | .. | -0.010 * (-0.02, 0.00002) |
| | | | | |
| Constant | 24 (21, 26) | 24 (17, 31) | 18 (14, 22) | -5 (-17, 8) |
| | | | | |
| Random-effect parameters | | | | |
| Variance among facilities | 4 (2, 9) | 5 (2, 9) | 0.1 (0, 137) | 0.1 (0, 2390) |
| Variance among respondents within facilities | 18 (16, 21) | 18 (16, 21) | 21 (17, 26) | 20 (16, 24) |
| | | | | |
| Log likelihood | -1154 | -1151 | -579 | -572 |
| LR Chi-square, df = 2 | .. | 6.22 * | .. | 13.85 *** |

Footnote: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; LR Chi-square = Likelihood ratio chi-square test, with two degrees of freedom, testing whether model with moderation & direct effects better fit the data than direct effects only.

Table 4: Predictive marginal associations with job satisfaction calculated either one SD above or below the moderating variable's mean.

| Measure associated with job satisfaction | Predictive marginal associations with job satisfaction of nursing assistants either one SD above or below the moderating variable's mean (95% confidence interval) | | | |
|--|--|-------------------------|--|--------------------------|
| | Catalonia (n=394) | | Ontario (n=197) | |
| | Stress related to behaviors of residents | | Stress related to behaviors of residents | |
| | at mean – 1 SD | at mean + 1 SD | at mean – 1 SD | at mean + 1 SD |
| Supervisory support | 0.16 *** (0.11, 0.20) | 0.10 *** (0.05, 0.15) | 0.23 *** (0.17, 0.30) | 0.10 *** (0.04, 0.16) |
| | Stress related to family conflict issues | | Stress related to family conflict issues | |
| | at mean – 1 SD | at mean + 1 SD | at mean – 1 SD | at mean + 1 SD |
| Supervisory support | 0.10 *** (0.05, 0.14) | 0.17 *** (0.12, 0.21) | 0.21 *** (0.15, 0.28) | 0.13 *** (0.08, 0.18) |
| | Supervisory support | | Supervisory support | |
| | at mean – 1 SD | at mean + 1 SD | at mean – 1 SD | at mean + 1 SD |
| Stress related to behaviors of residents | -0.04 (-0.18, 0.10) | -0.20 ** (-0.34, -0.05) | 0.07 (-0.09, 0.23) | -0.26 *** (-0.40, -0.12) |
| Stress related to family conflict issues | -0.48 *** (-0.68, -0.27) | -0.15 (-0.35, 0.05) | 0.34 ** (0.10, 0.59) | 0.03 (-0.18, 0.23) |

Footnote: SD = Standard deviation; ** p < 0.01; *** p < 0.001

Supplemental File: Table 1: Pairwise Pearson correlation coefficients for measures of stress related to residents' behaviors, stress related to family conflict issues, supervisory support, and job satisfaction of nursing assistants working in facilities in Catalonia or Ontario.

| Catalonia (n=394) above the diagonal, Ontario (n=197) below the diagonal | Stress related to Residents' behaviors | Stress related to Family conflict issues | Supervisory Support | Job Satisfaction |
|---|--|--|------------------------|------------------|
| Stress related to Residents' behaviors | | 0.39 | -0.18 | -0.22 |
| Stress related to Family conflict issues | 0.19 | | -0.15 | -0.24 |
| Supervisory Support | -0.24 | -0.09 | | 0.40 |
| Job Satisfaction | -0.23 | -0.03 | 0.47 | |