

Social and Occupational Aspects Related to Persistent Low Back Pain in Women Geriatric Nursing Assistants

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33 **Abstract**

34 **Objectives:** Geriatric nursing assistants often experience low back pain, which may
35 become persistent and impair daily and occupational functioning. Social determinants
36 of health play a key role in its development. This study aimed to estimate the prevalence
37 of persistent low back pain and its associated social and working conditions among
38 women working as geriatric nursing assistants in Spain. **Methods:** Cross-sectional study
39 among women working as geriatric nursing assistants in Spain. A total of 480
40 participants were recruited through snowball sampling and completed self-reported
41 questionnaires. The outcome variable was persistent low back pain, and predictor
42 variables included sociodemographic factors and work-related conditions. Prevalence of
43 persistent low back pain and Poisson regression models were calculated. **Results:** The
44 prevalence of persistent low back pain was 44.2% (95% CI: 39.77-48.65), and was
45 associated with older age, low monthly income, living in a region with a low Human
46 Development Index, holding a permanent contract, limited work experience, absence of
47 multiple jobs, high physical demands at work, time pressure, and work-home conflict.
48 **Conclusion:** Nearly half of geriatric nursing assistants reported persistent low back pain.
49 The condition was linked to work conditions and socioeconomic factors, highlighting the
50 need for interventions addressing both physical and psychosocial stressors.

51 **Keywords:** Occupational Health, Geriatric Nursing, Nursing Assistants, Health
52 Inequalities, Persistent Low Back Pain

1. Introduction

Low back pain (LBP) is the leading cause of years lost to disability worldwide [1] and represents a significant public health problem that leads to significant limitations in daily activities and work absenteeism [2]. The global incidence rate for episodes of LBP ranges from 1.5 to 36 per 100 person-year [3]. According to a systematic review of studies conducted in 54 countries, the estimated annual prevalence of LBP is 38%, which is notably higher in wealthier nations [4]. Recurrent LBP is common, with recurrence rates ranging from 24% to 33% within one year of the initial episode [5]. Additionally, a key concern is its potential to progress into a chronic condition. Persistent low back pain (PLBP) is defined as pain lasting for three months or more from symptom onset and occurring on at least half of the days over a six-month period [6]. Globally, it is estimated that approximately 19.6% of people aged 20–59 years experience PLBP [7], while in Spain, this proportion is 14.1% [8].

Preventing the onset and persistence of disability associated with LBP requires recognition that disability is inherently linked to the social and economic contexts of people's lives [9]. In line with the framework proposed by the Comisión para Reducir las Desigualdades Sociales en Salud en España [10], certain social determinants of health may influence the onset and persistence of LBP, identifying 1) health and health-related behavioral factors that are related to 2) intermediate determinants and 3) structural determinants of health inequalities [10] (Figure 1). LBP and PLBP are associated with several of these determinants, including individual health status [11], early detection and treatment within healthcare systems [12], health-related behaviours [13] (e.g., sedentary life, substance use and poor nutritional habits), and a combination of

biological (e.g., biological age) and psychosocial factors [14] (e.g., depression or fear-avoidance beliefs). However, more distal social determinants of health have also been found to be related to PLBP. These intermediate determinants may include working conditions (high workload, job position, and physical or psychological job demands) and domestic and family responsibilities [15]. Moreover, there is an association in the general population between social class (such as education level or occupation type), socioeconomic position, social age, gender and the prevalence of LBP and PLBP [16,17]. In this sense, these axes of social inequality shape disparities in PLBP, with more disadvantaged social positions being associated with worse PLBP outcomes. Other structural determinants related to socioeconomic and political contexts may also influence LBP. For example, the Human Development Index (HDI), developed by the United Nations, assesses a country's socioeconomic achievements -such as life expectancy, education, and per capita income- and has been associated with various health outcomes [18].

Healthcare professionals, such as nurses and nursing assistants, experience a high prevalence of LBP, with an estimated prevalence of approximately 50% [19]. Nursing assistants working in the geriatric field show similar rates of LBP in comparison to other healthcare professionals [20], but are exposed to greater physical and psychological job demands [21,22]. The social determinants of health are clearly evident in this workforce: the majority are women with low educational attainment and low income levels, and, in most cases, years of experience do not lead to substantially higher salaries [23]. Furthermore, the aging of society entails a greater demand for geriatric nursing assistants, potentially leading to a growing workforce facing suboptimal working

conditions. This scenario may result in increased absenteeism, illness, and, ultimately, increased strain on the healthcare system [24].

Despite these concerns, few studies on geriatric nursing assistants have reported the prevalence of PLBP and its associated social and occupational factors. The only available data specific to geriatric nursing assistants in nursing homes comes from Taiwan, reporting a prevalence of 8.6% [25]. In contrast, more data exist for hospital and nursing home staff, with a reported prevalence of 12.8% [19]. In these settings, LBP and PLBP have been linked to health-related factors, such as general health status or psychological conditions [26], as well as specific working and social conditions. Traditionally, these outcomes have been attributed to the physical demands of their roles; however, psychosocial factors also appear to be associated with LBP and PLBP among these workers, such as structural determinants [19,26] (e.g., gender or age) and intermediate factors [25–28] (e.g., working conditions, such as high psychological and physical demands, low job control, and low job satisfaction), as shown in Figure 1.

There is a lack of studies specifically addressing PLBP among geriatric nursing assistants and the reality of these workers in the European context. Therefore, this study aimed to estimate the prevalence of PLBP and its associated social and working conditions among women working as geriatric nursing assistants in Spain in 2022.

2. Materials and methods

2.1 Design and sample of the study

This is a cross-sectional study. The study sample included women employed as nursing assistants in public nursing homes (n=87), subsidized nursing homes (n=144), private

nursing homes (n=214), and other employment situations (n=27) in the geriatric sector in Spain in 2022. Data were collected using a computerized self-report online questionnaire administered via the REDCap program. The questionnaire covered information on sociodemographic characteristics, household characteristics, and working conditions, and the data were collected from September to November 2022. A pilot test involving five geriatric nursing assistants did not lead to substantial modifications of the evaluation protocol. This study was approved by the Research Ethics Committee of the University of Vic, Central University of Catalonia in October 2021 (number 179/2021).

The final sample consisted of 480 women working as geriatric nursing assistants, including those with permanent contracts (n=379), temporary contracts (n=97), and without formal employment contracts (n=4). Participants were recruited using the snowball technique, a non-probabilistic sampling method [29]. The questionnaire link was distributed through social media, nursing homes, and professional email networks to different associations related to geriatric care. Information posters included the following text: *"Do you work in geriatric care? We need your help! How? Answering a questionnaire from any device; How long does it last? About 20 minutes; Is it anonymous? Yes!; The research team has no relationship with the company in which you work; For what reason? We will be able to know and relate working conditions with the health problems of geriatric nursing assistants"*. Before initiating the questionnaire, all participants received project information and signed an informed consent form, confirming their voluntary participation in the study.

2.2 Variables

The outcome variable was the presence or absence of PLBP, defined through three criteria: LBP within the last 4 weeks (based on the question: "Have you had low back pain in the last 4 weeks?"), pain onset at least three months ago (based on the question "When did you first experience this low back pain?") and occurring on at least half of the days in the last six months (based on the question: How often have you experienced this low back pain in the last six months?).

The exposure variables for PLBP included the structural and intermediate determinants of health inequality. The structural determinant variables included age, nationality (Spanish nationality at birth or non-Spanish nationality at birth), and Autonomous Community of residence, classified as low or high Human Development Index (HDI). The HDI was dichotomized using the Spanish national average for 2021 (0.905) as the threshold [31], classifying Autonomous Communities as "high HDI" if above this value and "low HDI" if below [30]. The intermediate determinants were working conditions and household characteristics. Household characteristics were assessed based on the total number of household members, the presence of dependents requiring care, and monthly family income. Working conditions were assessed through several variables: weekly work hours, contract type (permanent or temporary), shift type (day, night, rotating, or split), years of geriatric caregiving experience, multiple job holding, and physical job demands (0-100). Psychosocial workload was studied using single questions derived from the Copenhagen Psychosocial Questionnaire (CoPsoQ) [31,32]. Participants answered the following questions: 1) Is task distribution irregular and does it cause work to accumulate?, 2) Do you have enough time to do your job?, 3) Are there times when you need to be present at both work and at home simultaneously?

(Overlapping personal and work obligations), 4) Do you feel that your job takes up so much time that it interferes with your household or family tasks?, 5) At your job, do you have to deal with other people's personal problems?, 6) Do you have to work very fast?, 7) Do you have a lot of influence over decisions that affect your work?, 8) Do you have influence over how you do your job?, 9) Is your job emotionally exhausting overall? and 10) "Is the pace of work high throughout the day?". Responses were recorded using a Likert scale ranging from 0 (always) to 4 (never). Responses were then classified into three categories: never or only once, sometimes and many times, or always.

Risk factors were categorized based on the sample distribution to ensure interpretability and balanced group sizes in the analysis. This approach was applied to variables such as household members, monthly family income, and caregiver experience, using thresholds selected to enhance interpretability and allow meaningful comparisons. Physical job demands were classified into tertiles following the natural distribution of responses. For all categorical variables, the reference category was assigned to the most favourable condition. The specific reference categories for each variable are explicitly indicated in Table 3, where they correspond to the values set at 1.00 in the regression models.

2.3 Data Analysis

The dataset was analysed using STATA 18 software. The prevalence of PLBP was calculated for the entire sample and for each exposure variable. Subsequently, to analyse the association between LPBP and the independent variables, Poisson regression models with robust variance [33] were estimated, obtaining Prevalence

Ratios (PR) along with their corresponding 95% confidence intervals (CI). This method intrinsically provides an indicator of the statistical association.

3. Results

The final sample comprised 480 women representing all autonomous communities in Spain. A total of 53.5% reported a monthly family income of less than 2500 euros. Concerning psychosocial workload, 68,8% had to work very fast many times or always, and 7,6% believed there was a high pace of work throughout the day many times or always. Furthermore, 79,4% felt that their jobs were emotionally exhausting many times or always (Table 1).

The prevalence of PLBP among geriatric nursing assistants was 44.2% (95% CI, 39.8-48.7). Table 2 shows the prevalence of PLBP for each independent variable. Regarding structural determinants, a higher prevalence was observed among women aged 46 to 65 years compared to younger adults aged 18 to 45 years (51.7% CI95%, 45.3-57.9 and 36.7% CI95% 30.8-43). At the level of intermediate determinants related to working conditions, women with high physical demands at work had a higher prevalence of PLBP (52.3% CI95% 44.4-60) compared to the middle tertile (50.3% CI95% 42.6-58%) and the lower tertile (30.5% CI95% 23.9-38). Also, women who never or only once had enough time to perform their job had a higher prevalence of PLBP (54,78% CI95% 46.2-62.4) compared to women who had enough time many times or always (35.53% CI95% 28.31-43.46).

Table 3 shows the results of the crude and adjusted Poisson regression models with robust variance, showing the prevalence ratios and their 95% confidence intervals. The

factors associated with PLBP were being older [being in the age group of 46-65 years compared to 18-45; $PRa=1.70$ ($CI_{95\%}:1.38-2.09$)], living in an Autonomous Community with an HDI below the Spanish average [$PRa=1.26$ ($CI_{95\%}:1.04-1.53$)], having lower monthly family income [$PRa=1.22$ ($CI_{95\%}:1.00-1.50$)], having a permanent contract [$PRa=1.46$ ($CI_{95\%}:1.11-1.93$)], limited work experience [$PRa=1.32$ ($95\%CI:1.07-1.62$)], absence of other paid jobs [$PRa=1.77$ ($CI_{95\%}:1.12-2.80$)], having high physical job demands [$PRa=1.54$ ($95\%CI:1.18-2.02$)], or medium [$PRa=1.44$ ($95\%CI:1.09-1.89$)], not having enough time to perform their job [$PRa=1.40$ ($95\%CI:1.09-1.79$)] and facing work-home conflict [$PRa=1.31$ ($95\%CI:1.04-1.65$)].

4. Discussion

The findings of this study indicate that women working as geriatric nursing assistants in Spain experienced unfavourable working conditions, and nearly half of the participants (44.2%) reported persistent low back pain (PLBP). The prevalence of PLBP has been found to be associated with social and occupational factors, which are inherent to the characteristics of geriatric caregiving job. Among these factors, we highlight age, adverse socioeconomic and residential contexts, employment characteristics, physical workload and psychosocial workload.

Before discussing the results, it is necessary to highlight certain limitations of this study. The main limitation is the snowball sampling method used, which, while effective for reaching populations with restricted access, may introduce bias in prevalence estimates [34] and is not conducive to responses from migrant individuals [35]. This may have led to an underrepresentation of migrant workers and an overrepresentation of responses from nursing assistants with PLBP and unfavourable working conditions, those with

greater access to electronic devices, or those with a strong sense of belonging to the area surveyed. The use of informative questions from the CoPsoQ rather than the full questionnaire could be considered a limitation if the aim had been to estimate underlying latent construct. However, our objective was to use pre-designed expert-validated questions relevant to the study's aims, ensuring strong content-based and process validity evidence [36,37]. Another limitation of this study is that the sample consisted exclusively of female geriatric nursing assistants. Therefore, the findings may not be generalizable to male nursing assistants, whose working conditions and health risks may differ. However, as this occupation is highly feminized, the results are applicable to the majority of workers in this sector. Finally, it is important to consider that geriatric nursing assistants are the lowest paid [38], with the least education and training (less than six months), and the least socially valued [39] of all care employments in nursing homes. The precarious nature of this job and its unfavourable conditions make it challenging to identify variability that could explain the underlying cause, as the primary factor may simply be the common occupational environment [40].

In our study, most of the nursing assistants experienced high psychosocial strain. Among nursing assistants, 68.8% reported having to work very fast many times or always, while 74.6% experienced a high work pace throughout the day with the same frequency. Additionally, 79.4% reported feeling emotionally exhausted from work many times or always, and 52.5% stated they never or only once had influence over work decisions. We found a PLBP prevalence of 44.2% among women working as geriatric nursing assistants in Spain. This prevalence is higher than that of hospital staff (12.8%) [19], geriatric nurses (26.8%) [41], and family caregivers of cancer patients (28.3%) [42] but

lower than that of caregivers of post-stroke patients (64.7%) [43]. In the context of geriatric nursing assistants, available data indicate a prevalence of 8.6% in Taiwan [25]. This substantial difference relative to our findings is also reported in global low back pain prevalence, which shows East Asia within the lowest tertile of global low back pain prevalence, and Europe ranks among the highest tertile [44]. This discrepancy may be attributed to a number of health-related factors (such as differences in obesity rates or nutritional habits) and psychological and cultural aspects (such as variations in coping strategies and perceptions related to low back pain) [45]. In contrast, this study provides insights into the Spanish cultural context, offering a much-needed understanding of this group in Spain.

Most of the factors associated with PLBP in geriatric nursing assistants are related to working conditions. However, there are also some structural and intermediate social determinants of health associated with this condition, including age, income, and the socioeconomic status of the place of residence. Increased age was consistently associated with a higher risk of PLBP, which has also been observed in the general population [46]. This association can be understood in biological terms, as degenerative changes in tissue may predispose individuals to developing pain [47], and in social terms, prolonged exposure to adverse social determinants could exacerbate pain severity and frequency [16]. Furthermore, socioeconomic context (both the family income and the Human Development Index (HDI) of the autonomous communities where nursing assistants reside) exerts a significant influence, in accordance with the findings of other international studies [48].

We found that PLBP was associated with two key work-related factors: physical workload and psychosocial workload. Regarding physical workload, there was an association between LBP and the level of physical demands placed on nursing assistants. Consequently, nursing home nursing assistants experience a higher prevalence of PLBP than nursing assistants in other sectors with less physical workload, such as psychiatric or paediatric care [49]. Concerning psychosocial workload, the critical issues were lack of time and difficulties balancing work and home responsibilities. On one hand, the lack of sufficient time can be attributed to stressors such as organizational factors (unexpectedly increasing workload, frequent interruptions, and insufficient staffing) and non-organizational factors (low wages, lack of recognition, limited input in important decisions, and disrespect from families and other healthcare professionals) [50,51]. On the other hand, the need to be present in both domestic and professional environments is particularly pronounced among nursing assistants who provide care for household members. This was reflected in our results: 57.8% of nursing assistants without household members in care reported never or almost never experiencing this necessity, in comparison to only 22% of those who had two or more household members in care. This aligns with the concept of time-poverty caused by unpaid domestic and care work, associated with gender inequalities, and can lead to poor job satisfaction, short sleep duration, poor sleep quality, low levels of physical activity, and poor physical and mental health [52,53].

In addition, certain employment characteristics were also associated with PLBP. Nursing assistants with less experience, permanent contracts, or working exclusively in this job are more likely to experience PLBP. While these factors may appear protective, the

opposite trend was observed for those with more experience, temporary contracts, and holding multiple jobs. However, to interpret these findings accurately, it is necessary to consider the specific characteristics and working conditions associated with this profession, as well as their alignment or divergence from previous research. For example, less experience among novice nursing staff leads to higher levels of low back pain because of the stress they experience in the early years of their careers and difficulties in managing healthy behaviours [54]. This phenomenon may also be observed among geriatric nursing assistants in the same sector. In contrast, workers in permanent yet insecure positions with minimal prospects for salary growth over time may experience adverse health effects [55] and perceive their jobs as more stressful and exhausting [56] than those with temporary contracts. Finally, while holding multiple jobs is generally associated with poorer physical and mental health, having an additional job alongside the main job can lead to better overall health [57].

The number of individuals and household members in care, shift type, and working hours did not correlate with PLBP prevalence. Similarly, nationality was not associated with PLBP. It is important to note that most nursing assistants who participated in the study had Spanish nationality from birth (89.9%). Apart from the limitations of the snowball technique, there is a lack of questions regarding individual and family migration status, which could have yielded valuable insights.

This study provides novel insights into PLBP among geriatric nursing assistants, a population often overlooked in occupational health research. Unlike previous studies focusing on general healthcare workers, this research specifically examines the unique working conditions and socioeconomic context of geriatric nursing assistants in Spain.

By integrating social determinants of health, including regional socioeconomic disparities measured through the Human Development Index (HDI), this study offers a broader perspective on the multifactorial nature of PLBP.

In addition to its epidemiological relevance, this study has important practical implications for workplace interventions and occupational health policies. Interventions addressing PLBP among geriatric nursing assistants have traditionally focused on individual-level factors, such as physical conditioning or postural education [58–60]. However, our findings highlight the need to also target broader social determinants of health (Figure 1). At the structural level, we observed that workers in regions with a lower HDI and those with lower incomes had a higher prevalence of PLBP, emphasizing the importance of labour policies that promote fair wages and job stability. Without these structural changes, other axes of inequalities and intermediate determinants cannot be effectively addressed. For example, the privatization of the long-term care sector contributes to precarious employment conditions and poorer health outcomes among geriatric nursing assistants [61]. Therefore, the solution must also involve improving labour policies, which could enhance the social prestige of the profession and influence axes of social inequality such as gender perceptions and social class disparities. Similarly, intermediate determinants—such as high physical demands, lack of time to perform tasks, and work-home conflict—highlight the need for interventions that prioritize participatory ergonomics, optimized task distribution, and flexible work arrangements. Expanding interventions beyond the individual level to address these broader determinants is essential for achieving sustainable improvements in workers' health and working conditions across different healthcare systems.

5. Conclusion

The findings of this study reveal a concerning prevalence of PLBP among geriatric nursing assistants in Spain, with 44.2% of participants affected. Key factors associated with PLBP include age, socioeconomic status, and unfavourable working conditions, characterized by high physical demands and psychosocial stressors. Most participants reported working at a fast pace and experiencing emotional exhaustion, underscoring the significant psychosocial strain inherent in their roles. Given these challenges, it is essential to implement comprehensive interventions targeting both the physical and emotional burdens faced by nursing assistants. Addressing these issues through organizational reforms and structural improvements will be crucial for enhancing workers' wellbeing and ensuring high-quality care for the elderly population.

6. Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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542 **Captions for Tables**

543 **Table 1.** Sample characteristics based on social factors and working conditions

544 **Table 2.** Prevalence of social factors and working conditions related to persistent low
545 back pain

546 **Table 3.** Crude and adjusted prevalence ratios of persistent low back pain according to
547 associated variables

Table 1. Sample characteristics based on social factors and working conditions

		N (%)
Age	18-45 years	240 (50.0%)
	46-65 years	240 (50.0%)
HDI by Autonomous Communities	Above average	281 (58.5%)
	Below average	199 (41.5%)
Nationality	Spanish at birth	431 (89.8%)
	Non-Spanish at birth	49 (10.2%)
Household members	1 or 2	226 (47.1%)
	3 or more	254 (52.9%)
Household members in care	0	251 (52.3%)
	1	129 (26.9%)
	2 or more	100 (20.8%)
Monthly family income	<2500	257 (53.5%)
	>2500	223 (46.5%)
Weekly work hours	40 or less	349 (72.7%)
	41 or more	131 (27.3%)
Permanent contract	Yes	379 (79%)
	No	101 (21%)
Shift type	Day	226 (47.1%)
	Night	43 (9.0%)
	Rotating	179 (37.3%)
	Split	32 (6.7%)
Caregiver experience	0-10 years	249 (51.9%)
	>10 years	231 (48.1%)
Multiple job holder	No	437 (91.0%)
	Yes	43 (9.0%)
Physical job demands	Lower tercile	164 (34.2%)
	Middle tercile	161 (33.5%)
	Upper tercile	155 (32.3%)
Irregular work task distribution	Never or only once	160 (33.3%)
	Sometimes	152 (31.7%)
	Many times or always	168 (35.0%)
Enough time to perform job	Many times or always	152 (31.7%)
	Sometimes	171 (35.6%)
	Never or only once	157 (32.7%)
Work-Home conflict	Never or only once	213 (44.4%)
	Sometimes	138 (28.7%)
	Many times or always	129 (26.9%)
Job interference with household tasks	Never or only once	181 (37.7%)
	Sometimes	108 (22.5%)
	Many times or always	191 (39.8%)
Dealing with others' personal problems	Never or only once	188 (39.2%)
	Sometimes	108 (22.5%)
	Many times or always	184 (38.3%)
Required to work very fast	Never or only once	67 (14.0%)
	Sometimes	83 (17.3%)
	Many times or always	330 (68.8%)
Influence on work decisions	Never or only once	251 (52.3%)
	Sometimes	123 (25.6%)
	Many times or always	106 (22.1%)
Influence on work methodology	Never or only once	181 (37.7%)
	Sometimes	149 (31.0%)
	Many times or always	150 (31.2%)
Emotional exhaustion from work	Never or only once	31 (6.5%)
	Sometimes	68 (14.2%)
	Many times or always	381 (79.4%)
High work pace throughout the day	Never or only once	50 (10.4%)
	Sometimes	72 (15.0%)
	Many times or always	358 (74.6%)

Note: N = Number of participants; HDI = Human Development Index

Table 2. Prevalence of social factors and working conditions related to persistent low back pain

		N	% (CI 95%)
Age	18-45 years	240	36,67 (30,79-42,96)
	46-65 years	240	51,67 (45,34-57,94)
HDI by Autonomous Communities	Above average	281	40,21 (34,62-46,07)
	Below average	199	49,75 (42,83-56,67)
Nationality	Spanish at birth	431	42,69 (38,09-47,42)
	non-Spanish at birth	49	57,14 (43,06-70,16)
Household members	1 o 2	226	46,02 (39,61-52,56)
	3 or more	254	42,52 (36,57-48,7)
Household members in care	0	251	45,82 (39,73-52,03)
	1	129	40,31 (32,19-49)
	2 or more	100	45 (35,53-54,84)
Monthly family income	<2500	257	49,42 (43,33-55,52)
	>2500	223	38,12 (31,96-44,68)
Weekly work hours	40 or less	349	43,55 (38,43-48,82)
	41 or more	131	45,8 (37,45-54,39)
Permanent contract	Yes	379	46,44 (41,46-51,49)
	No	101	35,64 (26,91-45,45)
Shift type	Day	226	42,92 (36,61-49,47)
	Night	43	48,84 (34,39-63,48)
	Rotating	179	43,58 (36,48-50,94)
	Split	32	50 (33,3-66,7)
Caregiver experience	0-10 years	249	45,78 (39,68-52,02)
	>10 years	231	42,42 (36,19-48,91)
Multiple job holder	No	437	45,77 (41,13-50,47)
	Yes	43	27,91 (16,56-43,02)
Physical job demands	Lower tercile	164	30,49 (23,91-37,97)
	Middle tercile	161	50,31 (42,62-57,98)
	Upper tercile	155	52,26 (44,38-60,02)
Irregular work task distribution	Never or only once	160	37.5 (30.33-45.27)
	Sometimes	152	42.76 (35.12-50.77)
	Many times or always	168	51.79 (44.23-59.26)
Enough time to perform job	Many times or always	152	35.53 (28.31-43.46)
	Sometimes	171	42.11 (34.91-49.65)
	Never or only once	157	54.78 (46.92-62.4)
Work-Home conflict	Never or only once	213	38.97 (32.63-45.7)
	Sometimes	138	44.93 (36.82-53.31)
	Many times or always	129	51.94 (43.32-60.44)
Job interference with household tasks	Never or only once	181	37.02 (30.28-44.3)
	Sometimes	108	50 (40.66-59.34)
	Many times or always	191	47.64 (40.64-54.74)
Dealing with others' personal problems	Never or only once	188	39.89 (33.12-47.07)
	Sometimes	108	46.3 (37.11-55.74)
	Many times or always	184	47.28 (40.16-54.52)
Required to work very fast	Never or only once	67	37.31 (26.6-49.44)
	Sometimes	83	39.76 (29.81-50.63)
	Many times or always	330	46.67 (41.33-52.08)
Influence on work decisions	Never or only once	251	44.22 (38.18-50.44)
	Sometimes	123	45.53 (36.93-54.4)
	Many times or always	106	42.45 (33.4-52.05)
Influence on work methodology	Never or only once	181	44.2 (37.12-51.52)
	Sometimes	149	43.62 (35.87-51.7)
	Many times or always	150	44.67 (36.89-52.71)
Emotional exhaustion from work	Never or only once	31	25.81 (13.44-43.79)
	Sometimes	68	42.65 (31.47-54.63)
	Many times or always	381	45.93 (40.97-50.97)
High work pace throughout the day	Never or only once	50	32 (20.6-46.06)
	Sometimes	72	34.72 (24.64-46.38)
	Many times or always	358	47.77 (42.62-52.96)

Note: N = Number of participants; CI = Confidence Interval; HDI = Human Development Index

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Table 3. Crude and adjusted prevalence ratios of persistent low back pain according to associated variables

		PR	Crude 95% CI	PRa	Adjusted 95% CI
Age	18-45 years	1,00		1,00	
	46-65 years	1,41	[1.15 - 1.73]	1,70	[1.38 - 2.09]
HDI Autonomous Communities	Above average	1,00		1,00	
	Below average	1,24	[1.01 - 1.51]	1,26	[1.04 - 1.53]
Nationality	Spanish at birth	1,00			
	non-Spanish at birth	1,34	[1.03 - 1.75]		
Household members	1 or 2	1,00			
	3 or more	0,92	[0.76 - 1.13]		
Household members in care	0	1,00			
	1	0,88	[0.69 - 1.13]		
	2 or more	0,98	[0.76 - 1.27]		
Monthly family income	<2500	1,30	[1.05 - 1.60]	1,22	[1,00 - 1.50]
	>2500	1,00		1,00	
Weekly work hours	40 or less	1,00			
	41 or more	1,05	[0.84 - 1.31]		
Permanent contract	Yes	1,30	[1.00 - 1.73]	1,46	[1.11 - 1.93]
	No	1,00		1,00	
Shift type	Day	1,00			
	Night	1,14	[0.81 - 1.60]		
	Rotating	1,02	[0.81 - 1.27]		
	Split	1,16	[0.80 - 1.70]		
Caregiver experience	0-10 years	1,07	[0.88 - 1.32]	1,32	[1.07 - 1.62]
	>10 years	1,00		1,00	
Multiple job holder	Yes	1,00		1,00	
	No	1,63	[1.00 - 2.68]	1,77	[1.12 - 2.80]
Physical job demands	Lower tercile	1,00		1,00	
	Middle tercile	1,65	[1.25 - 2.18]	1,44	[1.09 - 1.89]
	Upper tercile	1,71	[1.30 - 2.26]	1,54	[1.18 - 2.02]
Irregular work task distribution	Never or only once	1,00			
	Sometimes	1,14	[0.87 - 1.50]		
	Many times or always	1,38	[1.08 - 1.77]		
Enough time to perform job	Many times or always	1,00		1,00	
	Sometimes	1,19	[0.90 - 1.56]	1,16	[0.89 - 1.50]
	Never or only once	1,54	[1.19 - 1.99]	1,40	[1.09 - 1.79]
Work-Home conflict	Never or only once	1,00		1,00	
	Sometimes	1,15	[0.90 - 1.48]	1,16	[0.91 - 1.47]
	Many times or always	1,33	[1.05 - 1.69]	1,31	[1.04 - 1.65]
Job interference with household tasks	Never or only once	1,00			
	Sometimes	1,35	[1.03 - 1.77]		
	Many times or always	1,29	[1.01 - 1.64]		
Dealing with others' personal	Never or only once	1,00			
	Sometimes	1,16	[0.89 - 1.52]		
	Many times or always	1,19	[0.94 - 1.50]		
Required to work very fast	Never or only once	1,00			
	Sometimes	1,07	[0.71 - 1.60]		
	Many times or always	1,25	[0.90 - 1.74]		
Influence on work decisions	Never or only once	1,00			
	Sometimes	1,03	[0.81 - 1.31]		
	Many times or always	0,96	[0.74 - 1.25]		
Influence on work methodology	Never or only once	1,00			
	Sometimes	0,99	[0.77 - 1.26]		
	Many times or always	1,01	[0.79 - 1.29]		
Emotional exhaustion from work	Never or only once	1,00			
	Sometimes	1,65	[0.86 - 3.19]		
	Many times or always	1,78	[0.97 - 3.27]		
High work pace throughout the day	Never or only once	1,00			
	Sometimes	1,09	[0.65 - 1.81]		
	Many times or always	1,49	[0.98 - 2.27]		

Note: PR = Prevalence Ratio; PRa = Adjusted Prevalence Ratio; CI = Confidence Interval; HDI = Human Development Index

*The first number of each variable is the reference category

Figure Legend

Figure 1: Framework of determinants and social determinants of persistent low back pain.

Adapted from: Comisión para Reducir las Desigualdades Sociales en Salud en España [10]

