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# Psychosocial risks faced by olive workers in Spain: evaluated using the 'Mini Psychosocial Factors' questionnaire

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## ABSTRACT

**Background** Spain has the largest olive-growing area in Europe. The goal of the present research is to evaluate the psychosocial risks faced by workers in the olive groves of Jaén (the largest olive grove region of Spain).

**Method** This method consists of 15 questions that analyse a total of 12 variables (mental load, demands, health, etc). A total of 502 questionnaires were completed. The method was performed using a non-stratified (with respect to the location of the growing areas) random selection with 'Universal Transverse Mercator' coordinates on a map of Jaen extracted from Andalusia region mapping. Multiple correspondence analysis, the Burt table and descriptive statistics (with a  $\chi^2$  test) have been used to analyse the results.

**Results** The responses of all the workers are identified in detail in the Burt table. Olive grove workers, regardless of their characteristics or the type of farm, are at a medium risk level for the different psychosocial factors (around 57% on average). The low-risk level is the next most common (around 36% on average). On average, only 7% of individuals are found at the high-risk level (only intensive olive groves exceed 10% of individuals at this risk level). Using multiple correspondence analysis, a video has been created to demonstrate the relationship between all the categories of all the variables studied from various perspectives in three dimensions. The first dimension captures mainly aspects of the social working environment (relation, recognition, support, compensation, control, mental load), whereas the second dimension captures mainly work demands (rhythm, demands). The third dimension is more about physical status (weight, body mass index).

**Conclusion** The risks found will improve injury prevention and are possibly caused by mismanagement of prevention. The extreme drought conditions of the 2022/2023 agricultural season could have affected the demands faced by workers.

## INTRODUCTION

The agricultural sector in the southwest of Europe (Spain) requires a lot of labour, especially during the harvesting seasons (fruit and vegetables mainly). In this environment (bordering Africa), migrant workers account for around 40%–50% of the workforce.<sup>1</sup> High workloads, a lack of control and social support, role ambiguity, job insecurity, workplace violence and harassment, work–life imbalance, emotional demands, low wages, physical risks and difficulty in accessing medical services, etc,

## WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ The influence of climate change on the well-being of agricultural workers is well known. High workloads, lack of social support, job insecurity, work–life imbalance, low wages, etc are all affected by the new changes in the organisations (agricultural cooperatives and large farms). In Andalusia (Spain), the psychosocial risks have been studied in workers of other crops but without the influence of climatic conditions.

## WHAT THIS STUDY ADDS

⇒ This is the first study on psychosocial risks in the olive-growing sector where periods of drought can influence the demands placed on workers. Although the labour legislation is correctly laid out, its implementation is not very good.

## HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Evaluating agricultural workers allows us to know their status within the sector, helps verify the sustainable production quality seal and allows employers and administrations to develop new plans for workplace improvements.

are among the psychosocial factors that will affect workers in one way or another. For this reason, the design, organisation and management of the work require special attention,<sup>2</sup> especially in rural areas. Indeed, in agricultural enterprises, whether family-run or not, poor labour relations can generate conflict and lead to low productivity, absenteeism, delays and poor emotional states among the workers.<sup>3</sup>

It is expected that climate change will impact the working conditions experienced by workers in the primary sector. The combined effects of temperature, humidity, solar radiation and wind could lead to worse working conditions. Greater fatigue will result in less productivity. The most affected zones will be in West Africa and South Asia (a 5% loss of productivity).<sup>4</sup>

The change in environmental conditions will also affect crops. Off-season droughts and floods are expected to become more frequent. Farmers, engineers and scientists will need to adapt. New technologies, supplies and seeds that are acclimatised



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to every region of the planet will be needed; otherwise, classic cultivation areas may have to be abandoned.<sup>5</sup>

In short, adaptability to climate change is essential to produce safe and sustainable food. For this, the authorities must assist the agricultural sector via economic incentives<sup>6</sup> and new structural issues related to work organisation and psychosocial factors need to be addressed.<sup>7</sup>

Musculoskeletal disorders (MSDs) are closely related to psychosocial aspects such as stress, safety, well-being and working hours.<sup>8</sup> MSDs are exacerbated by a lack of social support (greater general pain: lumbar, cervical and shoulder), a lack of work control (joint pain in the elbows, hips and knees), dissatisfaction (pain in the arms, related to more than 10 years of agricultural experience), reconciling family life (damage to the lower trunk) and an inadequate social environment (bullying: musculoskeletal damage and stress).<sup>9</sup> When MSDs are chronic and stress is prolonged over time, it affects the endocrine system, making it difficult for the body to repair the musculoskeletal system, which will tend to become inflamed and cause pain, making it hard to return to work. However, inclusive health policies facilitate a successful return to work. Other factors that affect low back pain are long working hours, age and psychosocial aspects (stress, insomnia and discomfort), with older and younger people being more likely to suffer this type of injury, along with women and foreign workers. Workers need to be made aware of these risks to reduce this type of injury.<sup>10</sup>

The majority of immigrant agricultural workers in Spain, regardless of gender or occupation, are affected by low back pain, skin conditions, and stomach, respiratory and mental diseases.<sup>11</sup> However, in the olive-sector workplace, the occupational risk prevention plan (ORP) is in operation, whether through an internal company or not. This plan provides workers with ORP training and annual medical check-ups. Moreover, an employment contract, healthcare, unemployment benefits and access to trade unions are provided.<sup>12</sup> One of the main reasons why this study is justified is to improve the image of agricultural productions in southern Spain, a sector which is associated with a large number of immigrant workers.

The olive grove in Spain (mainly in Andalusian) is an environmental, cultural, territorial and gastronomic heritage, with a deep historical imprint (since the Phoenicians). It is vital for a large part of the Iberian fauna, as well as being a natural barrier against soil erosion and, therefore, against desertification. Olive oil is one of the healthiest vegetable fats (monounsaturated and polyunsaturated fatty acids). Olive wood is highly valued in woodworking. It is an excellent fuel and charcoal base.<sup>13</sup>

This research aims to detail the psychosocial status of olive-grove workers in the province of Jaén (Spain), differentiating by sex and other descriptive parameters present in the workers' environment, to improve injury prevention. To assess the psychosocial risks faced by these workers, the mini psychosocial factors (MPFs) method was employed. Additionally, it aims to relate the effect of drought on some psychosocial variables (mobbing, relations, health, recognition, autonomy, emotional, support, compensation, control, demands, mental load and rhythm) and the workers' environment (mainly sex, age, body mass index (BMI) and origin).

## METHODS

### Study settings and participants

In Spain, around 2.5 million hectares are dedicated to olive cultivation. Most of these are in Andalusia (60.80%), which is equivalent to 1.5 million hectares. Within this autonomous

community, Jaén is the province with the largest surface area of olive groves, representing 23.12% of the Spanish total (578 000 ha) and 38.53% of the Andalusian olive-growing area.<sup>14</sup>

Olive-growing can be carried out conventionally, ecologically or as integrated production (with or without irrigation). Likewise, the tasks carried out may vary depending on the cultivation system used (mechanised, mixed and manual harvesting).<sup>15</sup>

To carry out the cultivation operations (planting, soil management, pruning, phytosanitary treatments and fertilisation), specific tools and equipment, such as tractors, brush cutters, chainsaws, scissors, espectugadores (axe-type adzes), woodchippers, fertilisers, atomisers, vibrators and blowers are required.

In this agricultural activity, the workforce is divided into two types: family and salaried. Workers can be 'self-employed' or 'employed' (working year-round or only for 3 months during harvesting, pruning and applying treatments). In addition, employees might concentrate exclusively on harvesting tasks.<sup>15</sup> Around 60% of the workforce in traditional olive-growing enterprises are family members. In addition, around 40% (total olive grove workers) are in the organic sector.<sup>16</sup>

For the method selection, a decision matrix was used,<sup>17</sup> which scored for each method's speed of application, the variables it studied, its statistical reliability and ease, its applicability to agriculture and its licence costs. Scores from 1 to 4 were assigned to the methods studied (there were four validated in Spain), opting for the one that obtained the highest score. The final choice was the MPF method, which proved to be more suitable in terms of its speed of application and the variables studied, compared with the other methods.<sup>18</sup>

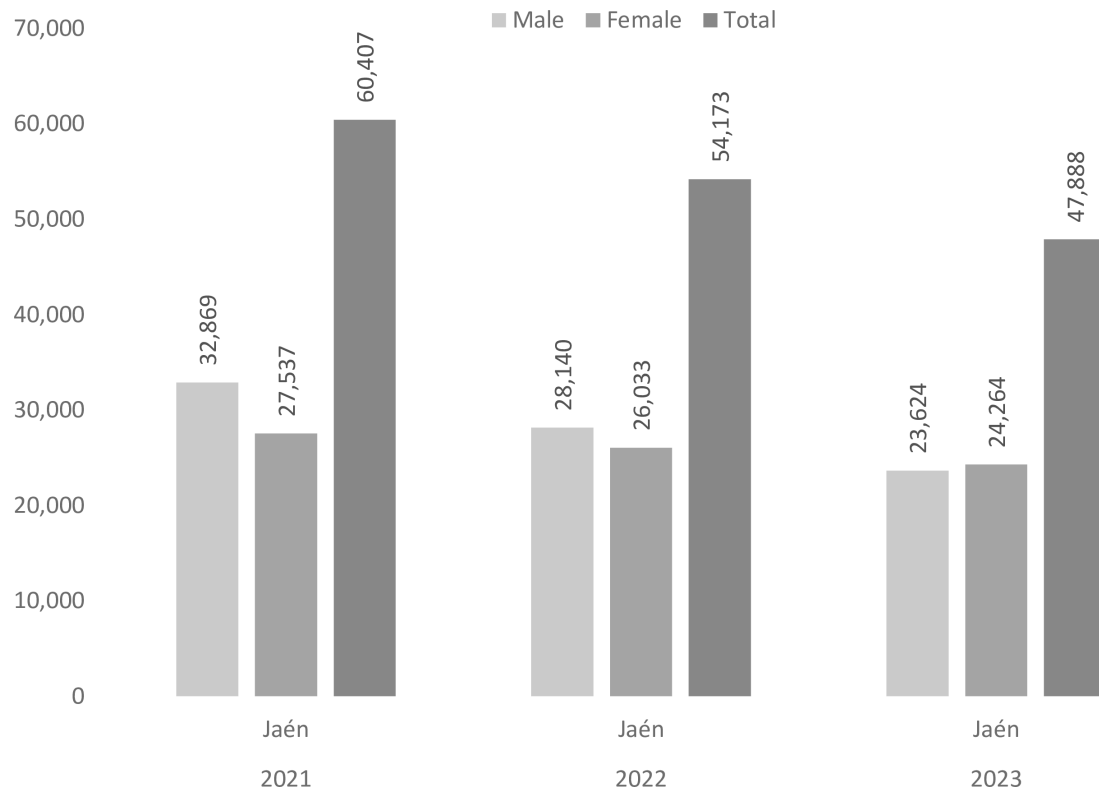
MPF is a rapid method comprising 15 questions scored from 1 to 10. It assesses 12 psychosocial worker variables. It was scientifically validated in Spain using Karasek's demand-control framework.<sup>18</sup> The number next to the response chosen represents a quantitative score for assessing the twelve variables (qualitative-quantitative). To facilitate this assessment, an Excel sheet provided by the method's authors has been made available to collate the scores. These are calculated according to the scale for each parameter. Each variable (of the 12 described) has an associated value (category) high (H), medium (M) or low (L) depending on the risk (online supplemental appendix 1–3).

### Data collection

The total number of agricultural workers in Jaén and the data for the last three agricultural seasons are shown in figure 1. A total of 54 173 workers were considered.

Approximately 2000 interviews were conducted in the field, obtaining a response rate of 25.10%, which is equivalent to 502 completed questionnaires. The degree of accuracy is equivalent to 4.36% (online supplemental appendix 2–3).

The data acquisition phase for the province of Jaén (Spain) was carried out from 27th January to second June 2023. The method to select the olive farms was performed using non-stratified (with respect to the location of the growing areas) random selection with UTM (Universal Transverse Mercator) coordinates on a map of Jaén taken from Andalusia region mapping.<sup>19</sup> These olive farms belong to individual farmers (with salaried workers) integrated into agricultural cooperatives. Following the selection, site visits were conducted, and farm owners were approached to seek permission for their workers to participate in a questionnaire survey. If permission was granted, a return date was scheduled and questionnaires were distributed to each worker. All the workers had labour contracts. The employer also acts as a worker. To recruit participants, workers were previously



**Figure 1** Special agrarian system affiliates (employees) by sex (Jaén-Spain). Average annual data accumulated up to September 2021/2022/2023.<sup>39</sup>

informed of the research purpose, the identity of those in charge, the subsequent use of the data and the confidentiality and privacy rules. The evaluators are people trained in occupational health and safety. They were previously prepared to address possible cultural, ethical and social differences.

A coding scheme was drawn up of the qualitative variables for the workers and their environment (table 1), as well as for the questionnaire answers (online supplemental appendix 1–3).

### Statistical analysis

Multiple correspondence analysis (MCA) and descriptive statistical (with a  $\chi^2$  test and Burt table) analysis were performed using SPSS V.29 and XLSTAT2019 software, respectively. Binary and multinomial logistic regression was discarded because of the equation's non-significant components.

### Patient and public involvement

Patients or the public were not involved in the design, execution, reporting or dissemination plans of our research.

### RESULTS

As a summary of the Burt table (online supplemental appendix 3–3), table 2 shows the mode and frequencies for all the categories of each variable.

Olive grove workers, regardless of their characteristics or the type of farm, are at a medium risk level for the different psychosocial factors (around 57% on average). The low-risk level is the next most common (around 36% on average). At the high-risk level, on average, only 7% of individuals are found (only intensive olive groves exceed 10% of individuals at this risk level; table 2; online supplemental appendix 3–3).

Also, MCA has been used. For the model as a whole, the average variance explained is 16.114% (by dimension), the cumulative variance is 48.341% with a mean Cronbach's  $\alpha$

coefficient of 0.740 and a mean eigenvalue of 3.384. Therefore, the model can be considered reliable. Table 3 shows the discrimination values for each variable (the closer to 1, the more weight the value has in the dimension) with respect to each of the three model dimensions.

The first dimension captures mainly aspects of the social working environment (relation, recognition, support, compensation, control, mental load), whereas the second dimension captures mainly work demands (rhythm, demands). The third dimension is obviously more about physical status (weight, BMI). As one can see, the leading variable in the explanatory variables ranking for the variance of the homogeniser model ('mean' column in table 3) is 'rhythm' (0.336) since it presents the highest discrimination, followed in descending order of explanation by the variables 'compensation' (0.335), control (0.301), 'relations' (0.276), 'recognition' (0.274) and 'demands' (0.237). Although, in general, the average discriminations are small for the different qualitative variables of the individual, the following stand out: 'weight' (0.236) and 'BMI' (0.181). Graphically, it is easier to see the relationships between the 65 categories studied (figure 2).

One can observe that, with the inclusion of a third axis, the proximity relationship between categories does not vary much with respect to the two-dimensional graph, except for the greater distance of 'O6' in cluster 2, which, together with its low discrimination in the three dimensions (table 3) and infrequency (table 2), would make its relationship to this cluster's psychosocial categories irrelevant.

Cluster 1 includes three categories related to psychosocial risks: Mob-L (69.92%), Mob-H (3.98%) and Dem-M (87.25%). The mobbing variable has low discrimination values (table 3) which, together with the low frequency of the Mob-H category, would make it irrelevant in its relationships with other categories. This leaves only the 'Dem-M' category in its relationships

**Table 1** Qualitative variables of the workers and their environment

Variable	Categories	Coding
Age	<25 years	T1
	Between 25 and 40 years	T2
	>40 years	T3
Body mass index (BMI=weight/height <sup>2</sup> )	From 17.00 to 18.49 (kg/m <sup>2</sup> )—low weight	W0
	From 18.50 to 24.99 (kg/m <sup>2</sup> )—normal weight	W1
	From 25.00 to 29.99 (kg/m <sup>2</sup> )—overweight	W2
	From 30.00 to 34.99 (kg/m <sup>2</sup> )—chronic overweight	W3
	From 35.00 to 39.99 (kg/m <sup>2</sup> )—premorbid obesity	W4
Crop area	<5 ha	S1
	Between 5 and 10 ha	S2
	>10 ha	S3
Cultivation system	Traditional mountain olive grove	O1
	Traditional olive grove with slopes <20%	O2
	Traditional olive grove without slopes	O3
	Intensive olive grove	O4
	Super Intensive olive grove	O5
	Organic olive grove (Traditional)	O6
Height	<1.60 m	A1
	Between 1.60 and 1.70 m	A2
	>1.70 m	A3
Irrigation system	Dryland	R0
	Irrigation	R1
Origin	African	Afr
	Spanish	Spa
	Eastern European	EurE
	Hispanic American	His
Sex	Male	ML
	Female	F
Weight	<70 kg	P1
	Between 70 and 80 kg	P2
	>80 kg	P3

with the environmental variables that most discriminate in the model's three dimensions (cultivation system 'O', height 'A', weight 'P' and BMI 'W'). BMI is a consequence of height and weight. Furthermore, 'O6' would be in another cluster. The 'cultivation system' (except O6) and 'BMI' could be considered relevant.

## DISCUSSION

About 45% of the workers assessed were immigrants (table 2) of diverse nationalities (Moroccan, Algerian, Senegalese, Lithuanian, Romanian, Ecuadorian, etc). Half (50%) of these workers were African, 38% from Eastern Europe and the rest Hispanic Americans (12%). Such diversity of nationalities is often associated with vulnerable groups.<sup>20</sup> These percentages coincide with those of similar studies carried out on fruit and vegetable workers<sup>21 22</sup> 200 km from our study area.

The Burt table (online supplemental appendix 3–3) shows that the majority of Spanish workers (167 out of 277 workers) are in the T3 range (>40 years). This indicates the ageing of the local population and that the immigrant population has occupied this gap in the primary sector; however, this age problem also occurs in the other nationalities. The causes can be a fall in the birth rate and/or the depopulation of rural areas by the children of agricultural workers due to a lack of motivation and

social status.<sup>23</sup> It is important to focus on improving wages and providing decent employment contracts to avoid precariousness and a lack of interest in working in rural areas.<sup>24</sup>

Another aspect to highlight in this study is that most workers are male. Only 15% of workers in this study are women (table 2). Factors that could explain this<sup>22</sup> include family reconciliation activities and that the main occupation of women is in the olive-handling sector (agri-food industry); however, this would be more for sociocultural reasons than because of gender equality legislation.<sup>25</sup> The development of family reconciliation programmes (time flexibility, teleworking, reduced working hours, psychological support and open communication within the company) would especially help women balance their professional and personal lives.<sup>26</sup>

A very important datum is excess weight (W2, W3, W4; table 2 and figure 1), which presents in almost 67% of the workers; this coincides with other related studies on olive-growing in Jaén.<sup>27</sup> It shows that excess weight causes both musculoskeletal and psychosocial disorders. Workers who are in good physical condition, with no excess weight, have improved feelings of well-being, making it easier for them to deal with the workday.<sup>28</sup> In addition, promoting health programmes based on healthy lifestyles (nutrition and fitness) would help reduce eating, cardiovascular and psychological disorders.<sup>29</sup>

The psychosocial factor 'demands' refers to all the psychological demands that the work entails including the amount of work, the time available and interferences faced in carrying out the work, such as interruptions and external dependencies (online supplemental appendix 1–3). This said, the 2022/2023 olive harvest season in Spain (south-west Europe) experienced one of the most severe water deficits in history (drought; figure 3). This has led to a drastic reduction in olive production. Reduced production implies less labour required for the harvesting and processing of olives. Fewer workdays result in fewer economic resources (less prosperity and fewer job demands) for agricultural workers in the sector, and it even affects the prices of olive oil (less supply and higher prices for consumers). Prosperity and 'job demands' (online supplemental appendix 1–3) are among other things, fundamental pillars of the psychosocial conditions of workers,<sup>2</sup> so environmental factors are directly related to them.<sup>45</sup> In our study (table 2), about 90% of workers have Dem-M, while 54.98% have MeL-L and the rest MeL-M (there is no MeL-H). The decrease in workload during the 2022/2023 season could explain the low mental load in relation to task demands. The skills and abilities of workers do not fit well with the demands of the 2022/2023 agricultural season. These facts are also supported by the decrease in salaried workers (figure 1) in the province of Jaén for three consecutive years. In addition, this coincides with a severe drought in southwestern Europe (as already mentioned).

The study results (the predominant average psychosocial risk, except mobbing) suggest the importance of improving medium/long-term preventive measures to reduce the risks of psychosocial disorders in workers in this sector. This will improve injury prevention. One of the many improvement actions that could be carried out would be to implement sector-specific preventive surveillance and control systems that ensure the physical and mental health of workers in relation to the diseases they suffer or may suffer from,<sup>30</sup> together with continuing the periodic assessments that are already conducted.<sup>31</sup> In addition, integration and social support actions,<sup>32</sup> regularisation of personnel when appropriate,<sup>9</sup> providing food assistance<sup>33</sup> and maintaining

**Table 2** Frequency and mode for the different qualitative variable categories

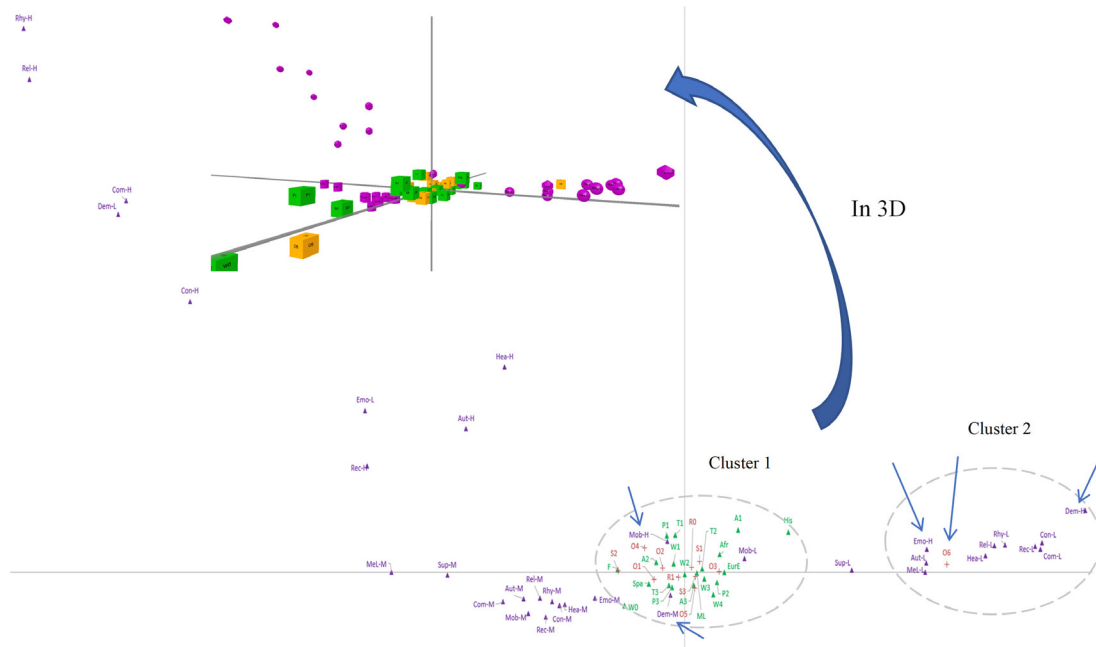
Variable	Category	Frequency	%	Variable	Category	Frequency	%
Sex*	F	77	15.34	Mobbing*	Mob-H	20	3.98
	ML†	425	84.66		Mob-L†	351	69.92
Age*	T1	52	10.36	Relations*	Mob-M	131	26.10
	T2†	232	46.22		Rel-H	8	1.59
	T3	218	43.43		Rel-L	169	33.67
Height*	A1	44	8.76	Health*	Rel-M†	325	64.74
	A2	171	34.06		Hea-H	38	7.57
	A3†	287	57.17		Hea-L	149	29.68
Weight*	P1	130	25.90	Recognition*	Hea-M†	315	62.75
	P2	157	31.27		Rec-H	69	13.75
	P3†	215	42.83		Rec-L	168	33.47
BMI*	W0	2	0.40	Autonomy*	Rec-M†	265	52.79
	W1	164	32.67		Aut-H	35	6.97
	W2†	236	47.01		Aut-L	206	41.04
	W3	87	17.33	Aut-M†	261	51.99	
	W4	13	2.59	Emotional*	Emo-H	156	31.08
Crop area*	S1	108	21.51		Emo-L	29	5.78
	S2	75	14.94	Emo-M†	317	63.15	
	S3†	319	63.55	Support*	Sup-L†	295	58.76
Irrigation system	R0	242	48.21		Sup-M	207	41.24
	R1†	260	51.79	Compensation*	Com-H	13	2.59
Cultivation system*	O1	138	27.49		Com-L	179	35.66
	O2	148	29.48		Com-M†	310	61.75
	O3†	186	37.05	Control*	Con-H	24	4.78
	O4	13	2.59		Con-L	149	29.68
	O5	11	2.19		Con-M†	329	65.54
	Origin*	O6	6	1.20	Demands*	Dem-H	44
Afr		113	22.51	Dem-L		20	3.98
EurE		86	17.13	Dem-M†		438	87.25
His		26	5.18	Mental load*	MeL-L†	276	54.98
Spat	277	55.18	MeL-M		226	45.02	
Rhythm*	Rhy-H	10	1.99				
	Rhy-L	159	31.67				
	Rhy-M†	333	66.33				

\*  $\chi^2$  test ( $p < 0.05$ ).  
† Mode.  
BMI, body mass index.

**Table 3** Discrimination values of the variables with respect to the three dimensions

Variables	Dimension				Variables	Dimension			
	1	2	3	Mean		1	2	3	Mean
Sex	0.007	0.000	0.000	0.003	Health	0.346	0.302	0.021	0.223
Age	0.002	0.017	0.074	0.031	Recognition	0.588	0.216	0.016	0.274
Crop area	0.007	0.003	0.031	0.014	Autonomy	0.368	0.141	0.010	0.173
Cultivation system	0.015	0.003	0.165	0.061	Emotional	0.264	0.162	0.005	0.143
Height	0.005	0.022	0.172	0.066	Support	0.358	0.001	0.012	0.124
Weight	0.004	0.036	0.668	0.236	Compensation	0.665	0.330	0.011	0.335
BMI	0.001	0.004	0.537	0.181	Control	0.541	0.345	0.019	0.301
Origin	0.016	0.017	0.186	0.073	Demands	0.245	0.452	0.013	0.237
Irrigation system	0.000	0.002	0.074	0.025	Mental load	0.637	0.000	0.006	0.214
Rhythm	0.478	0.515	0.014	0.336					
Mobbing	0.080	0.046	0.047	0.058	Active total	5.106	2.962	2.083	3.384
Relations	0.476	0.349	0.002	0.276	% variance	24.315	14.106	9.920	16.114

BMI, body mass index.



**Figure 2** Relationship of all the categories studied in two and three dimensions (<https://youtu.be/5hTar4Zt1OQ>). The MPF-related categories are indicated by '▲-purple'. Those referring to the individual characteristics of workers (age, sex, height, weight, BMI and origin) appear as '▲-green'. Those related to the crop (crop area, cultivation system and irrigation system) are indicated by '+'. Clusters with the most discriminating significant categories for each dimension (celestial arrows) can also be seen. BMI, body mass index; MPF, mini psychosocial factor.

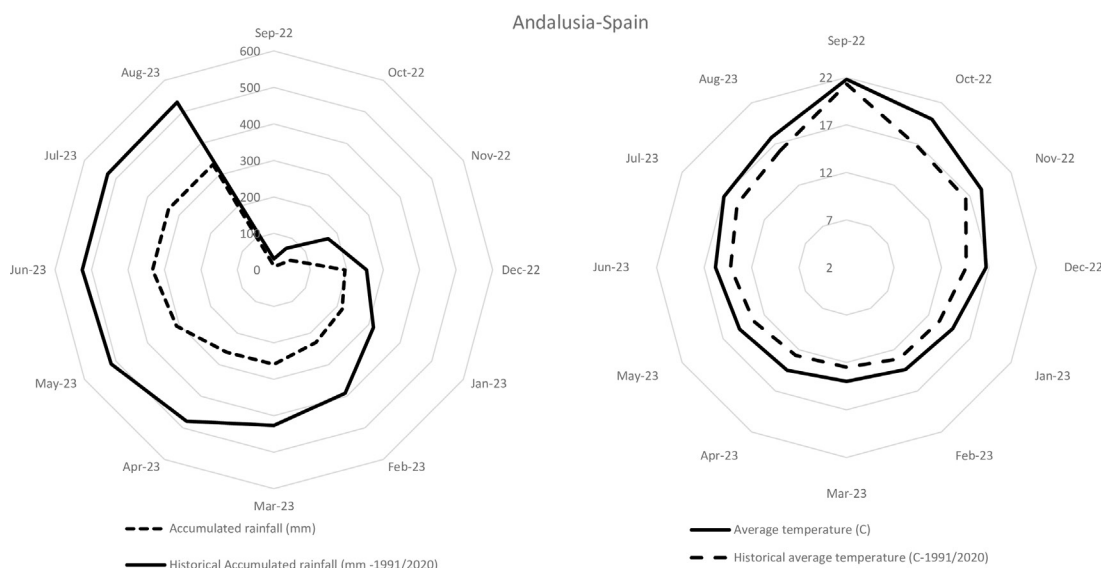
a good working environment that avoids conflicts<sup>3</sup> could help reduce the average psychosocial risk detected in the present study. Nonetheless, actions of this type are already offered by the Spanish authorities, and it is clear that they do not reach all of the vulnerable population. Spain is a country whose ORP legislation strictly complies with the guidelines issued by the European Union.<sup>12</sup>

Psychosocial, organisational and musculoskeletal risk factors are closely related.<sup>34</sup> Reducing work pressure, introducing breaks during the working day<sup>35</sup> and increasing risk assessments<sup>36</sup> would also be necessary improvement actions.

Currently, the food consumed in the European Union needs requirements not only in terms of product quality (olives, tomatoes,

peppers, lettuce, etc) but also in terms of the conditions under which they are produced.<sup>37</sup> These conditions are subject to continuous improvement and assessment in Andalusia (the southern region of Spain), where interaction between local workers and immigrants is high, as demonstrated in this and related research.<sup>22</sup> Fortunately, the results tend towards good coexistence at work without the high risks found in other agricultural sectors being apparent (fruit and vegetable greenhouses in southern Spain).

If agricultural products are of good quality, farmed with respect for the environment and obtained under healthy working conditions, they are awarded the seal of being sustainable products,<sup>38</sup> which is a distinguishing feature over products from third countries. It is also a reason for this research.



**Figure 3** Andalusia climatic data 2022/2023. Also, historical average temperature and accumulated rainfall (1991–2020).<sup>40</sup>

Regarding the limitations of this work, a second psychosocial risk questionnaire would have complemented the research with other variables that the MPF method does not include. Other variables impacting the workers' environment could have been studied, such as the level of education, relationship with other risks, family balance and the type of prevention service, etc. Likewise, a higher response rate would have been desirable. Finally, an update/compilation of Spanish legislation on ORP may be necessary since this legislation dates from 1995 onwards and the various updates are scattered over time.

## CONCLUSION

Our research has revealed that the psychosocial conditions of olive-grove workers in Jaén (Spain) are acceptable. There is no high risk present in any of the variables studied, but there is a medium risk. This is not a problem of legislation, but rather a management issue, which prevents measures included in legislation from fully reaching the most vulnerable workers. Workers who are in good physical condition and not overweight have a better feeling of well-being. The average age of Spanish and foreign agricultural workers is over 40 years old. In addition, the extreme drought conditions of the 2022/2023 agricultural season could have affected the demands placed on workers. This last relationship is very relevant.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** This study involves human participants and was approved by Bioethics Committee on Human Research at the University of Almería (Ref:UALBIO2022/021). Participants gave informed consent to participate in the study before taking part.

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**Data availability statement** Data are available on reasonable request. All data relevant to the study are included in the article or uploaded as online supplemental information.

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