

Water Supply Services in Spanish Cities and the Debate on Private Participation in Their Management: Which Model is Most Efficient?

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Research Article

Keywords: mixed company, public company, water supply, annual accounts, expenditure and revenue, balance

Posted Date: September 3rd, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-775093/v1>

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Abstract

Supplying water to the population is one of the fundamental services of any Spanish city given the importance of the good itself, regardless of how it is managed. However, it is sometimes seen more as a source of extra finance for the municipality, and, in recent years, as an issue of political debate in terms of the adequacy of one form of management or another: public or private.

Currently, 35% of Spain's population is supplied by public specialised entities, 33% by private companies under a concession contract, 22% by mixed companies and 10% by undifferentiated municipal services. In simple terms, 45% corresponds to public management and 55% is fully or partially managed by the private sector. By analysing the annual accounts of the companies that operate in the Spain's principal municipalities, this study seeks to determine the role played by the private sector in the management of the mixed companies.

Due to the diversity of services provided by these companies and the lack of differentiated statistics for each of them, we have used the Annual Accounts presented to the Central Mercantile Register or the data submitted to the Ministry of Finance in order to assess the influence of private participation on the results of the companies.

1. Introduction

The public supply of certain services is justified by the essential nature of the activity. Article 128.2 of the Spanish Constitution establishes that “Public initiative in economic activity is recognised. Essential resources or services may be restricted by law to the public sector, especially in the case of monopolies [...]”. And the services of urban water supply, which falls under municipal jurisdiction, is one such service. However, the law also stipulates the different ways through which these services can be provided: from direct management by the municipality itself or public entities or companies to public-private collaboration formulas that enable the creation of synergies between the Public Administration and private companies. According to the most recent available data, 35% of Spain's population is supplied by public entities, 33% by private companies, 22% by mixed companies and 10% by municipal services (AEAS 2018). In other words, 55% of the population receives water through companies that are fully or partially owned by private capital that have been granted the corresponding concessions. The rest is supplied through purely municipal companies or direct management by the municipalities.

This study seeks to analyse the influence of the private sector in the management of the urban water supply services, through its participation in mixed supply service companies. To do this, we will compare the accounting data of the profit and loss accounts and balance sheets of public and mixed companies in order to determine the relevance of private capital in the development of their activities. We should bear in mind that the accounting of the of public service concessions is not performed separately. Therefore, this service cannot be compared.

2. Literature Review

An adequate supply of water and sanitation services for the population requires a huge amount of resources, in terms of both investments to construct the infrastructures and operating expenses for their maintenance. The major financial shortages of the public sector, the lack of stability in part of the revenue received and the difficulty in undertaking investment commitments in long-term infrastructures with very long amortisation periods have given rise to the participation of private capital in the provision of this essential service, traditionally attributed to public management.

Furthermore, in such a relevant issue such as the human right to drinking water and sanitation, the United Nations, in Objective number 17 of its 2030 Agenda for sustainable development, establishes that it is necessary to encourage and promote effective public, public-private and civil society partnerships in order to fulfil the SDGs. This reflects an acknowledgement of the difficulties of an exclusively public management and promotes private participation. We should also remember that the presence of the incentives inherent in the private sector in the management of such an important service can give rise to other types of problems. These can include the complexity of supervising their action from the public sphere within a context in which asymmetric information can prevail or even difficulty in aligning the objectives of the private agents with the levels of service demanded by the consumers.

2.1 Private participation in water supply services

The participation of private companies in the provision of public services has been widely examined in many studies from different disciplines (Hodge and Greve 2018; Moore et al. 2017; Devkar et al. 2013; The World Bank 2012; Hodge et al. 2012; Wollmann and Marcou 2010; Willig 1993). Ridau (2012) finds that public-private partnership (PPP) can constitute an alternative tool to traditional tenders. It enables a constant rhythm to be maintained in works contracts that have large planning and finance needs, bringing forward their entry into force. This partnership also has a lower impact in terms of public-sector accounting, thanks to the treatment of non-public assets. Therefore, PPP enables a significant turnover of public works to be maintained with less short-term financial effort, optimising the economic flows through the capture of private assets but without ruling out vigorous public intervention in many cases (Rebollo 2007). Services such as electricity (Lee et al. 2019; Vagliasindi 2013; Hall and Lobina 2004), healthcare (Ferreira and Marques 2020; Comendairo-Maal\xee et al. 2019; Mckee et al. 2006), infrastructures (Sánchez-Gomez and López Parra 2017; Hammami et al. 1999), or water supply services (Peda and Vinnari 2020; Bel 2020; Ameyaw et al. 2017; Jensen 2017; Ruiz-Villaverde and García-Rubio 2017; Schouter and Van Dijk 2008), traditionally incorporate a considerable participation of the private sector in their provision. The latest report on private participation in infrastructures issued by The World Bank (2020) ratifies this evolution towards PPP.

However, the research does not only analyse the participation of the private sector but also the preference for one or another of the different models of service provision (concessions to private companies, provision through public companies or public-private collaboration through mixed companies), although these studies are not conclusive (Marques and Simões 2020; Boggio 2016; Romano and Guerrini 2011; González-Gómez et al. 2010; Bel and Warner 2008; Dassler et al. 2006; Kirkpatrick et al. 2006; Estache and Rossi 2002; Braadbaart 2002; Thanassoulis 2000). Arbués et al. (2017) and Sanaú (2017) prefer the superiority of the concession model in the provision of the service, depending on the economic efficiency that it provides, with these contributions, seeking to dismantle the advantages of “remunicipalisation”. These advantages include the reductions in rates (González-Gómez and García-Rubio 2018; Troesken 2001), which, according to Bel (2020) are not always sustainable over time. Suárez-Varela et al. (2016) conclude that private management is more efficient in the use of the labour input, mainly due to the technological restrictions faced by public management and the legal and institutional restrictions and that private management seems to be less efficient in managing operating costs. Bhattacharyya et al. (1995) find that the opposite is the case and that from a technical point of view and in terms of the use of inputs such as labour, energy and materials, private companies are less efficient. The existence or not of relevant differences in the management model of water services can also vary between areas. While Estache and Kouassi (2002) indicate that privatisation has had a positive effect on the water services in the African context, the results obtained by Estache and Rossi (2002) do not reveal any significant differences. Lobina (2013), meanwhile, suggests that institutional adaptability explains the

efficiency and effectiveness of the public sector in relation to the private sector. Lobina and Hall (2000) conclude that public companies are more efficient in achieving social and development objectives. Frone and Frone (2013) show several successful PPP models used to manage and mitigate risks and improve performance in the provision of public water supply and sanitation services. Voorn et al. (2017) argue that municipally-owned corporations are a feasible way of providing certain local public services, including water management, and are capable of initiating and managing complex contracts. In line with other studies, González-Gómez et al. (2010) affirm that the economic literature has not shown that private management is more efficient than public management and, as a result, other reasons should be sought by governments to privatise the service. Meanwhile, Bel (2020) identifies the concern for excessively high prices and the corruption in private management as factors that influence remunicipalisation, while ideological pressures seem to play a much less relevant role. Although it is well known that these factors are not exclusive to private management, aspects such as limitations to public borrowing and the problems of fiscal consolidation or budgetary stability facilitate the transition from public management models to public-private participation, or the provision of the services exclusively by private companies.

Spain has a long tradition of creating mixed companies which, unlike public companies or concessions to private companies for providing this service, are based on a unique public-private collaboration model in which the company's capital and governing bodies are mixed. The operational management is undertaken by the private partner, with the public partner playing a marginal role^[1].

^[1]It is interesting to examine the case of Aguas de La Habana S.A. formed by the Cuban government and the company Aguas de Barcelona S.A., in which the Cuban government has had a high level of influence in the management despite having a mixed structure. Aguas de La Habana (2019).

3. The Sample / Data

It is important to note the difficulties involved in obtaining data related to companies providing public services in general and water services in particular. Theoretically, as provided by articles 1, 2 and 3 of Law 27/2006, of 18 July, regarding access to information, public participation in decision-making and access to justice in environmental matters (it incorporates Directives 2003/4/EC and 2003/35/EC), and in accordance with the provisions of Law 19/2013 of 9 December on transparency, access to public information, and good governance, the access to economic data of companies that in some way participate with public capital should be available. But this is not always the case. After making requests to the companies and city councils (directly or through the transparency portals), there are municipalities for which we do not have information, even though they should be included in the sample due to their characteristics: Aguas de Valencia, Aguas de Albacete, Aguas de Alcalá, Aigües de Girona, Consorcio de Aguas de la Rioja, Empresa Mixta de Aguas de las Palmas, Aguas de Zaragoza^[2], Aigües de Reus, EMMASA de Santa Cruz de Tenerife, EMATSA in Tarragona or Aguas de Telde.

In addition, the lack of clear and homogeneous accounting criteria has given rise to annual accounts with incomplete items and general notes with no details with which to compare the different companies. Furthermore, the lack of separate accounts for the activities developed by a public service company hinders their analysis. Another cause for confusion is that the data of the annual accounts submitted to the Ministry of Finance in the budgets of the local entities do not always coincide with the figures provided by the companies in the audit reports or annual reports.

On the other hand, the difficulty entailed in conducting this analysis, together with the lack of concern of the public administration about evaluating such an important service as this, explains why the only exhaustive study on the

costs of water in Spain dates back to 2007 (MMA 2007), based on data from 2002 to 2004, with no updated information being published by the Ministry since then.

In spite of all of this, and given the that our objective is to determine the efficiency of the participation of private capital in the provision of water supply services, the data for this study have been obtained from the annual accounts (balance sheets and profit and loss accounts) of 2018 for the companies that provide the service in the towns and cities of more than 100,000 inhabitants and in the provincial capitals of Spain, only in the case of public or mixed companies. The final sample is made up of 24 companies, 10 mixed and 14 public (table 1), that supply a total of 16.5 million people, employing more than 8,000 direct workers and distributing 1,200 mh³ per year through 163,700 km of pipes.

Table 1. Companies in the final sample

Mixed Companies	Capital
EMALGESA Algeciras	51% Algeciras Town Council, 49% FCC Aqualia
AMAEM Alicante	51% City Council Alicante, 49% Hidraqua (Suez)
Aigües de Barcelona	70% AGBAR, 15% criteria Caixa, 15% AMB
Aigües d'Elx	51% Town Council Elche, 49% Hidraqua (Suez)
EMASAGRA Granada	51% City Council Granada, 49% Hidralia (Suez)
Aguas de Huelva	51% City Council Huelva, 49% Hidralia (Suez)
Aguas de León	51% City Council León, 49% Aquona (Suez)
EMUASA Murcia	51% City Council Murcia, 49% Hidrogea (Suez)
Aigües de Sabadell	20% Town Council Sabadell, 78% AGBAR (Suez)
TEIDAGUA San Cristóbal La Laguna	40.26 % Town Council San Cristóbal de La Laguna, 10.04 % Town Council Tacoronte, 49,70 % Canaragua (SUEZ)
Public Companies	Capital
Consortio de Aguas de Bilbao	100% Public
Aguas de Burgos	100% municipal
Aguas de Cádiz S.A.	100% municipal
EMACSA Córdoba	100% municipal
EMA Gijón	100% municipal
EMALCSA Coruña	100% municipal
Canal de Isabel II	82,4 % EP Canal Isabel II; 10 % City Council of Madrid; 7,6 % other Town Councils
EMASA Málaga	100% municipal
Aigües de Mataró	100% municipal
Mancomunidad de Pamplona	100% Public
Aguas del Añarbe, San Sebastián	100% Public
EMASESA Sevilla	100% municipal (69.36% City Council Seville, 30,64% other Town Councils.)
AGUAVALL Valladolid	100% municipal
AMVISA Vitoria	100% municipal

Source: Own elaboration

[2] Aguas de Zaragoza is a unique case. Unlike what is happening in many municipalities, one private company, Aqualia, has been managing the upstream supply since 2006 and the downstream supply is managed directly by the City Council.

4. Methodology

Several methodological approaches have traditionally been used to evaluate the efficiency of water supply and sanitation services (Fuentes et al. 2017; Molinos-Senante and Sala-Garrido 2016; Fuentes et al. 2015; Worthington 2014; Abbott et al. 2012; Berg and Marques 2011; Byrnes et al. 2010; Abbott and Cohen 2009; Walter et al. 2009; Marques and Garzón 2007), each with their advantages and limitations. The most used are the frontier efficiency measurement techniques (Worthington 2014; Berg and Marques 2011), although other non-frontier approaches, principally the estimation of production and cost functions using minimum least square regression, have also been used. Within the non-parametric methods, the majority of studies use the Data Envelopment Analysis (DEA) (Cheng et al. 2020; Molinos-Senante et al. 2018; Romano et al. 2017; Molinos-Senante and Sala-Garrido 2016; See 2015; Guerrini et al. 2013; Mahmoudi et al. 2012; Gupta et al. 2006, Woodbury and Dollery 2004) and, to a lesser extent, other techniques such as the Malmquist productivity index, the Full Disposal Hull (FDH), the Stochastic Frontier Analysis (SFA), directional distance functions or total factor productivity and partial productivity measures (Molinos-Senante and Maziotis 2020; Suárez-Varela et al. 2016; Berg and Marques 2011, Vishwakarma et al. 2010; Belchior et al. 2005)

As we have already mentioned, one of the problems that we encounter when analysing these companies is their heterogeneity; aspects that should be taken into account range from the different services provided (Guerrini et al. 2013) to the different concepts included in their economic accounts, among other elements (Fried et al. 2008).

Sometimes, depending on the technique used for the analysis, the conclusions can vary. The study by Kirkpatrick et al (2006) shows that, while the results of the DEA tentatively indicate the superiority of the private sector, the *stochastic frontier analysis* (SFA) provides some evidence, although statistically insignificant, that public service companies are more cost effective. The descriptive statistics suggest statistically significant differences.

For our case, and given the characteristics of the data, a two-stage methodology has been used. First, we have estimated the efficiency of the group of companies analysed through the non-parametric technique of data envelopment analysis (DEA). Introduced by Farrel (1957) and subsequently developed by Charnes et al. (1978), this is the non-parametric test that is most used in empirical studies on efficiency. DEA essentially calculates the economic efficiency of a company in relation to the performance of other companies that produce the same type of services, instead of against an idealised performance standard. It is a non-stochastic method in the sense that it assumes that all of the deviations from the frontier are inefficient results.

Specifically, for this study, we have estimated efficiency through the two most widely used models; constant returns to scale (CRS) and variable returns to scale (VRs), using the package Benchmarking (Bogetoft and Otto 2020) for the programming language R.4.0.4 (R Core Team 2021). The “input” orientation has been used in both models.

In the second stage, the efficiency ratios have been compared for the different types of company (public or mixed/private) using the Tobit regression in order take into account the delimited nature of the efficiency ratio between 0 and 1 and controlling for the variable of the population supplied.

The correct choice of inputs and outputs in the model is highly relevant and varies considerably between studies. See (2015), Berg and Marques (2011) and De Witte and Marques (2010) compile the variables most widely used in many studies, indicating that the most frequent outputs are the volume of water supplied, followed by the number of clients and the population served. The inputs used include operating costs, the number of workers, personnel costs and the kilometres of network of the company.

This study considers the following variables, referring to each company for the year 2018. From the profit and loss account we have considered sales (*Ventas*), procurements (*Aprovisionamiento*), personnel costs (*Cpersonal*), amortizations (*Amortiza*), operating income (*Rdoexpl*) and the financial result of the company (*Rdofin*). From the balance sheet, we have used the non-current assets of the company (*Acnocorr*). Finally, through the business reports, other relevant variables have been included such as the population supplied (*Población*), the workers employed (*Trabajadores*), the production of water in cubic metres (*M3factu*) and the supply network in kilometres of pipes (*Kmtube*).

In order to calculate the efficiency of each company, the variables of procurements and the number of workers in the company have been used. With respect to output, the sales of the company and the cubic metres of water produced have been used.

5. Results

Table 2 compares the variables considered between the different types of company. Taking into account the small size of the sample, the two-sample t-test does not reveal any significant differences in any of the variables considered. For this reason, we have calculated the standardised mean difference (SMD), also known as Cohen's d or effect size as a control value to observe the differences. Cohen (1988) proposed the following guidelines to interpret the magnitude of the SMD in the social sciences: small, DMS = 0.2; average, DMS = 0.5; and large, DMS = 0.8. Therefore, based on a value of 0.2 we can consider that there is a difference, although small, between the two types.

Table 2: Differences between public and private companies. Key indicators.

	MIXED		PUBLIC			
n	10		14			
	Media	SD	Media	SD	t.test p- value	SMD
Ventas	74219727.14	(124015289.85)	102641600.82	(220266462.67)	0.717	0.159
Aprovisionamiento	30861727.09	(49496921.06)	8856715.93	(6880848.65)	0.112	0.623
Personal	14121650.81	(19481452.20)	22213414.93	(33786310.50)	0.505	0.293
Población	511085.60	(848683.74)	847769.07	(1613296.32)	0.554	0.261
Trabajadores	245.40	(272.67)	425.07	(720.90)	0.463	0.330
M3factu	36973181.20	(57020485.66)	62497449.79	(122162407.70)	0.547	0.268
Kmtube	1551.20	(1288.85)	10585.43	(31389.94)	0.376	0.407
Amortiza	7041444.31	(12618575.33)	19905830.20	(30241693.63)	0.220	0.555
Rdoexpl	6831088.36	(10925021.32)	20292946.11	(59840483.01)	0.492	0.313
Acnocorr	90461840.68	(161691823.16)	520733520.67	(1183738112.06)	0.269	0.509
Rdofin	-242780.93	(2231372.32)	-1531084.26	(4737168.84)	0.435	0.348

As we can see in the table, the largest differences between the different types of companies can be observed in their procurements, amortizations and non-current assets. In the rest of the variables, the differences between the companies are considered as being small.

Table 3 shows the efficiency ratios obtained for each company for both the CRS and VRS models. The most efficient companies are those with a value of 1 and, in the CRS version are: the Consorcio de Aguas de Bilbao, Aguas del Añarbe, San Sebastián and EMASESA Sevilla. All of these are public companies. In the VRS version, in addition to these, we can add Canal de Isabel II to the public companies and Aigües de Barcelona and Aguas de León to the mixed companies.

Table 3: Technical efficiency ratios in different companies.

Type	Company	Efficiency		Bias corrected Efficiency Bootstrap based on 200 replications	
		CRS	VRS	bcCRS	bcVRS
MIXED	EMALGESA	0.241	0.4134	0.2093	0.3481
MIXED	AMAEM	0.4516	0.524	0.4004	0.4456
MIXED	AIBARCELONA	0.7245	1	0.6143	0.7505
MIXED	AI DELX	0.3988	0.4443	0.3329	0.3698
MIXED	EMASAGRA	0.5287	0.537	0.4298	0.4321
MIXED	AGDEHUELVA	0.3746	0.6159	0.313	0.5306
MIXED	AGDELEON	0.7794	1	0.6008	0.737
MIXED	EMUASA	0.6311	0.7502	0.5604	0.6484
MIXED	AISABADELL	0.4388	0.4492	0.3845	0.3747
MIXED	TEIDAGUA	0.3471	0.3651	0.3091	0.3099
PUBLIC	CONSOAGUASBILBAO	1	1	0.7189	0.7427
PUBLIC	AGUASDEBURGOS	0.6715	0.7133	0.5569	0.5907
PUBLIC	AGUASDECADIZ	0.4781	0.7051	0.4152	0.6066
PUBLIC	AGUASDECORDOBA	0.3657	0.4099	0.3141	0.3537
PUBLIC	EMAGIJON	0.3586	0.4371	0.3009	0.3624
PUBLIC	EMALCSA	0.7129	0.7342	0.6007	0.6124
PUBLIC	CYII	0.895	1	0.6701	0.7329
PUBLIC	EMASA	0.4516	0.5386	0.3666	0.4395
PUBLIC	AIGUESMATARO	0.3512	0.4857	0.3074	0.4008
PUBLIC	MANCOMPAMPLONA	0.2796	0.2856	0.2433	0.2392
PUBLIC	AGUASANARBE	1	1	0.7062	0.7275
PUBLIC	EMASESA	1	1	0.7001	0.7357
PUBLIC	AQUAVALL	0.6117	0.6787	0.4894	0.5396
PUBLIC	AMVISA	0.5707	0.75	0.4782	0.6527

The average efficiency of the public companies in the CRS version (0.62) is higher than that of the mixed companies (0.49). This difference in means has been calculated through the Welch Two Sample t-test, which is close to reaching statistical significance ($t=-1.5$ and $p\text{-value}=0.16$) for an exploratory study such as this one. Meanwhile, the average efficiency of the public companies in the VRS version (0.69) is also higher than that of the mixed companies (0.40) but in this case the difference does not reach statistical significance ($t=-0.87$ and $p\text{-value}=0.4$).

As the sample size is small, it is advisable to calculate ratios and bootstrap confidence intervals for the differences in means. The mean bootstrap efficiency ratio of the public companies in the CRS version (0.49) is higher than that of the mixed companies (0.41), but the difference is not significant. Meanwhile, the average efficiency of the public companies in the VRS version (0.55) is also higher than that of the mixed companies (0.49) and does not reach statistical significance either.

The calculation of the confidence interval for the difference in means of the bias corrected bootstrap efficiency ratio based on 200 replications in the CRS model is (-0.20, 0.05). The lower limit of the interval reveals that a difference of up to 20% in efficiency with respect to the mixed companies is compatible with the data. In the case of the VRS version, the interval is (-0.20, 0.08), so a difference of up to 26% would be compatible.

Finally, tables 3 and 4 show the estimates of the Tobit regressions conducted by taking the dependent variable of efficiency for the CRS and VRS models (the bootstrap values are not considered) and taking the type of company and population supplied as explanatory variables.

Table 3: Tobit model for CRS efficiency

CRS	Estimate	Std.Err	z	Pr(> z)
(Intercept)	0.4554	0.0735	6.19	0.000
Type PUBLIC	0.1300	0.0948	1.37	0.170
Population<	0.0000	0.0000	1.99	0.047
Log(scale)	-14.900	0.1609	-9.26	<0.000

Table 4: Tobit model for VRS efficiency

VRS	Estimate	Std.Err	z	Pr(> z)
(Intercept)	0.4456	0.0964	4.62	0.0000
Type PUBLIC	0.0412	0.1058	0.39	0.697
Population	0.0000	0.0000	2.22	0.026
Log(scale)	-1.4762	0.1750	-8.43	<0.0000

The above tables once again show that there are no differences in efficiency between mixed and public companies once the population supplied has been controlled for, although the positive coefficient of the type of public company indicates a possible improved performance of the former, which we cannot confirm with the results of the analysis.

6. Discussion And Conclusions

This study seeks to establish empirical evidence which would enable us to determine the influence of the presence of private companies in the management of urban water supply. We have compared the data of the profit and loss accounts and balance sheets of the public and mixed companies of a representative sample of firms that provide the service in towns and cities of over 100,000 inhabitants and in the provincial capitals of Spain, (only public or

mixed companies) which, together, supply a total of 16.5 million people. As it is impossible to find the data in a single source, we have gathered them from each individual company and homogenised them to carry out the empirical analysis.

Given that the two-sample t-test does not generate significant differences in any of the variables considered, we have used other alternatives to attempt to determine the existence of significant differences. We have found relevant values for procurements, which have higher value in the mixed companies and amortizations and non-current assets which have higher figures in the public companies.

The efficiency ratios obtained for each company through the two models are higher for public companies, although the differences do not reach statistical significance (in the CRS model they are very close).

As the size of the sample is small, we have calculated ratios and bootstrap confidence intervals for the differences in mean, which reveal a mean efficiency that is slightly higher in public companies, although neither of the models reach statistical significance.

The calculation of the confidence interval for the difference in means of the bias corrected bootstrap efficiency ratio based on 200 replications in the CRS model is (-0.20, 0.05). The lower limit of the interval reveals that a difference of up to 20% in efficiency with respect to the mixed companies is compatible with the data. In the case of the VRS version, the interval is (-0.20, 0.08), so a difference of up to 26% would be compatible.

The Tobit regressions subsequently conducted reveal that there are no differences in efficiency between mixed and public companies once the population supplied has been controlled for, although the positive coefficient of the type of public company indicates a possible improved performance of the former, which we cannot confirm with the results of the analysis.

In short, the results of our analysis do not generate significant evidence that one type of company or another is capable of operating with a higher level of efficiency. This means that private participation in the management, as opposed to exclusively publicly managed cases, does not constitute a relevant contribution.

Declarations

Ethics approval and consent to participate.

Not Applicable.

Consent for publication.

Not Applicable.

Availability of data and materials.

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests.

The authors declare that they have no competing interests.

Funding.

Not Applicable.

Authors' contributions.

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Teresa Torregrosa-Martí and José Francisco Perles-Ribes. The first draft of the manuscript was written by Teresa Torregrosa-Martí and Julián López-Milla. Martín Sevilla-Jiménez provided some initial suggestions that guided basic aspects of the research. All authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Acknowledgements.

Not Applicable.

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