



THERMAL SPA TREATMENTS AND BENEFITS PERCEIVED BY USERS OF CRÓ AND CARVALHAL SPA FOR DERMATOLOGICAL PURPOSE

Ana Pereira

School of Health Sciences, Polytechnic Institute of Guarda, Portugal

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Cecília Fonseca

School of Health Sciences, Polytechnic Institute of Guarda, Portugal
Research Unit for Inland Development (UDI), Polytechnic of Guarda, Portugal

Paula Coutinho

School of Health Sciences, Polytechnic Institute of Guarda, Portugal
Research Unit for Inland Development (UDI), Polytechnic of Guarda, Portugal

Agostinho Cruz

School of Health Technology, Polytechnic Institute of Porto, Portugal

André RTS Araujo

School of Health Sciences, Polytechnic Institute of Guarda, Portugal
Research Unit for Inland Development (UDI), Polytechnic of Guarda, Portugal

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Resumo

O termalismo constitui um produto turístico altamente reconhecido pelo seu enorme potencial de exploração dos recursos endógenos regionais com impactos económicos notáveis para as comunidades locais. Nas últimas décadas, verificou-se uma mudança importante no uso clínico de água termal para o tratamento de diversas doenças dermatológicas, principalmente devido ao aumento de conhecimento e pesquisa, que destacam os efeitos benéficos dessas águas para a manutenção, melhoria ou tratamento dos diferentes transtornos.

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O objetivo do presente estudo foi avaliar os benefícios dos tratamentos termais em diferentes doenças cutâneas percecionados pelos aquistas (N = 74) com doenças dermatológicas, das estâncias termais do Cró e do Carvalhal, da região centro de Portugal.

A maioria dos participantes afirma ter conhecimento dos benefícios/propriedades terapêuticas dermatológicas das águas termais (78,4%), destacando o efeito cicatrizante, hidratante e antipruriginoso. Embora um pequeno número de participantes tenha referido alguns efeitos adversos (25,7%), o cansaço e a sonolência foram os mais reportados. O tratamento termal mais utilizado foi o banho de imersão (49,3%), o duche parcial/geral (17,8%), a piscina termal (15,8%) e o chuveiro circular (8,2%). A redução do eritema (27,8%), a descamação (25,6%) e o prurido (25,6%) foram as melhorias mais valorizadas pelos participantes.

Concluiu-se que os aquistas afirmam ter conhecimento sobre a eficácia e segurança das águas termais no tratamento de patologias cutâneas. Nesse sentido, é vislumbrado que as modalidades do turismo de saúde, juntamente com a de bem-estar, resultarão num elevado impacto económico neste mercado turístico.

Palavras-chave: Água termal; Estância termal do Cró; Estância termal do Carvalhal; Dermatologia; Turismo de Saúde; Tratamento termal.



Abstract

Thermalism constitutes one touristic product highly recognized for its enormous potential regarding the exploitation of regional endogenous resources with noteworthy economic impacts for local communities. In the last decades, an important change occurs in the clinical use of thermal water for the treatment of several dermatological diseases, mainly due to the increase of knowledge and research, that highlighting the beneficial effects of these waters to support, improve or treatment of different disorders. The aim of present study was the evaluation of the benefits of thermal treatments on different skin diseases perceived by users (N=74) with dermatological diseases, of the thermal spas of Cró and Carvalhal, from the central region of Portugal.

Most of the participants claim to have knowledge of the dermatological therapeutic benefits/properties of the thermal waters (78.4%), highlighting the healing effect, moisturizing and anti-itching properties. Although a small number of participants meet some secondary effects (25.7%), tiredness and drowsiness were the more often referred. The thermal treatment most frequently used were immersion bath (49.3%), partial/general shower-massage (17.8%), thermal swimming-pool (15.8%) and circular shower (8.2%). Reduction of erythema (27.8%), flaking (25.6%) and pruritus (25.6%) were the most valued improvements on skin conditions referred by participants.

It was concluded that thermal spas users claim to have knowledge about the effectiveness and safety of thermal waters in skin pathologies treatment. Therefore, it is envisioned that growing well-being modality of thermalism together with the medicinal one, it will certainly be rendered in a high economic impact in this touristic market.

Keywords: Thermal water; Cró Spa; Carvalhal Spa; Dermatology; Health Tourism; Thermal spa treatment.



Introduction

Health tourism, namely thermalism, is currently an emerging and recognized touristic product, due to the association of leisure, wellness and global health rehabilitation. In this way, the new thermal spa facilities are increasingly as successful investments, especially due to increase in lifespan and to the growing importance of aesthetics and concern with health status in our society in recent years, which makes its services and products related to health and well-being as specially attracting for users, due to its scope in the paradigm of health and well-being recommended by the World Health Organization.

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As reviewed by Rita Lopes (Lopes, 2016) tourist visitors that have been in Portugal on thermal programs in 2014 were very satisfied with their experience and with the services offered. It was also registered that, in comparison with other European countries, Portuguese offer in thermalism, thalassotherapy and wellness programs was perceived as “premium” by the tourist visitors (Portugal, 2015).

The thermalism phenomenon constitutes, nowadays, one touristic product highly recognized for its enormous potential in regard to the exploitation of the endogenous resources of the regions. The thermal activity exhibits noteworthy economic impacts and produces effect on the wellbeing of the local populations due, as example, to the existence of other types of infrastructure and services, the preservation of heritage, in job creation and territorial anchoring of populations (Antunes, 2012; A. R. Araujo, Paiva, Ribeiro, & Coutinho, 2015), as well as its position in the face of an emerging paradigm – that of the assertion of inland destinations (Costa, Quintela, & Mendes, 2015; García, del Río, González-Vázquez, & Lindahl, 2015; García, Del Río, Rama, & Alonso, 2014).

Thermal waters can be defined by waters from the subsoil, which are generated in specific geological conditions presenting “physico-chemical dynamism”. They share three fundamental characteristics: their natural origins from the earth ‘springs’, their bacterial purity and their therapeutic potential (Ghersetich, Freedman, & Lotti, 2000; Matz, Orion, & Wolf, 2003). The geological variability in Portugal, one of the richest European countries in terms of thermal waters, enables the occurrence of thermal waters with a high diversity based on physico-chemical composition depending on the mineralogical composition of the geological formations that the waters flow through as reviewed by Araujo et al. 2016 (A. Araujo, Sarraguça, Ribeiro, & Coutinho, 2016).

Thermal spa treatment comprises the use of this natural resource and other complementary means in therapy, rehabilitation and prevention of a number of diseases as well as in the promotion of well-being (Decreto-Lei nº142/2004). Today water therapy is being practiced in many countries which have a variety of mineral springs and muds that are considerably different from one another in their hydrogeologic origin, temperature, and chemical composition, between others. Besides, thermal water therapy has been proved to be safe, effective and pleasant for patients and there are almost no side effects during or after treatment, and there is very low risk to the patient’s general health and well-being (Matz et al., 2003).

In the past decades, an important change occurs in the clinical use of thermal water for the treatment of several diseases in continental Europe, mainly due to the increase randomized clinical trials mainly in the area of dermatology for the treatment (or the therapeutic support) of different dermatologic conditions, such as atopic dermatitis, contact dermatitis, seborrhea, seborrheic dermatitis, psoriasis and ichthyoses



(Chevutschi, Dengremont, Lensel, Pardessus, & Thevenon, 2007; Faílde & Mosqueira, 2006; Ghersetich et al., 2000; Halevy & Sukenik, 1998; Lotti & Ghersetich, 1996; Matz et al., 2003; Merial-Kieny, Mengual, Guerrero, & Sibaud, 2011; Nunes & Tamura, 2012; Panico & Imperato, 2009; Tabolli, Calza, Di Pietro, Sampogna, & Abeni, 2009). The mechanisms by which these diseases are treated in spa therapy are nowadays more fully justified and scientifically supported, involving chemical, thermal, mechanical and immunological effects. Indeed, thermal waters have demonstrated different effects on the skin, from cellular renewal, skin hydration, recovery of cutaneous barrier and keratolytic effects to antimicrobial activity, detergent property, antioxidant capacity and anti-inflammatory activity (Faílde & Mosqueira, 2006; Matz et al., 2003; Nunes & Tamura, 2012).

The thermal spas of Cró and Carvalhal from the central region of Portugal, are geological similar with magmatic rocks from Center Iberian. The mineromedicinal waters from Cró and Carvalhal spa are weakly mineralized, with sodium, calcium and potassium as the main cations. They are also classified as sulfurous and silicated waters. Based on its composition they have dermatological therapeutic indication approved by the Portuguese National Health Authority.

In 2014, and based on statistics reports provided by General Direction of Energy and Geology (Direção Geral de Energia e Geologia -DGEG), Cró and Carvalhal thermal spas have been considered for Classic Thermalism Treatment Programs by 1036 and 1429 users, respectively, and 10261 and 581 users, respectively, for Thermal Wellness programs offered in these spas. In this year this report registered a total of 41486 users for Classic Thermalism programs and 61253 users in Thermal Wellness programs offered in all national thermal spas. Different studies and reports consider the potential of these programs for the improvement of health status considering the different mineral composition and therapeutic indication, being dermatological treatment considered by above 2% of all thermalists.

The aim of present study was the evaluation of the benefits of thermal treatments on different skin diseases perceived by the users of the thermal spas of Cró and Carvalhal, through a survey questionnaire, and correlating these data with the potential as a highly recognized touristic product in the field of Health and Wellness Tourism.

Methodology

This was a cross-sectional study, with a self-administered questionnaire developed by the authors, being used as the data collection instrument. Data collection took place in the thermal spas of Cró (Guarda) and Carvalhal (Viseu) between April and November of 2014. Participants were fully informed of the study objectives and who agreed to participate in the study signed the informed consent.

The target population included all thermal spas user's adults in the 13 spas which have dermatological therapeutic indication approved by the Portuguese National Health Authority. However, it was only obtained the formal authorization of the clinical directors of 2 thermal spas, and therefore the sample size was 74. The dimension of the samples of users, who did dermatological treatments, considered in the study for each thermal spas took into account the data previously mentioned in introduction about the proportion in relation with all thermal spas users (~ 2%) and it is even higher than the proportion data for the year prior to our study. The Canavezes and Eirogo spas were found closed for an unlimited period, and the Estoril and Piedade spas only held



aesthetic and spa treatments, respectively, and thereby were excluded from the present research.

The questionnaire survey was developed using a systematic approach, with the objectives of being concise and easy to understand. After pretesting the survey in ten individuals from the target population, changes were made in the text of some questions in order to improve understanding. The survey had two parts, and included closed questions, with single or multiple-choice responses, and some questions with an open response.

The first part inquired about the sociodemographic characteristics of respondents, and the second asked about their individual perception about the benefits of spa treatments.

The independent variables were gender, age, profession and the spa. The parameters assessed in the profile use of treatments available in spas and the evaluation of individual perception about the benefits of spa treatments were the dependent variables.

Descriptive data analysis provided the sociodemographic characterization and description of health status and usage profile issues of the sample. The Fisher's exact test, for dichotomous variables, and the chi-square test of Pearson, in other cases, were applied to study the association between qualitative variables. The distribution of two independent samples was compared by the Mann-Whitney test, in the case of a quantitative variable, to complement the association study. The binomial test was applied in order to compare the proportion in dichotomous variables. The results were analysed for a significance level of 5%. Data processing and analysis were conducted using Statistical Package for the Social Sciences version 20.

Results and Discussion

The sample was constituted by 44 (59.5%) thermal users of the Carvalhal spa and 30 (40.5%) thermal users of the Cró spa, who did dermatological treatments. Of the 74 respondents, 58.1% were female. Regarding the professional situation, 56 (75.7%) respondents said to be active professionally, 5 (6.7%) students and 13 (17.6%) retired. The spa users have between 17 and 90 years old, with an average age of 45 years (SD=16) (Figure 1). The age distribution obtained in the sample, for dermatological treatments, was compared with the known official statistics reports for 2015 ((DGEG), 2015) and for all treatments (Table 1). It can be observed that a significant part of the users are in the age range from 45 to 65 years.

The majority of respondents (52, 70.3%) consider that the composition of the thermal water influenced the choice of spa. It was found that most of the participants claim to have knowledge of the dermatological therapeutic benefits/ properties of the thermal waters (58, 78.4%). The moisturizing, healing effect and anti- itching properties was the more mentioned (Figure 2). The results provided statistical evidence, that the percentage of subjects who claims to know the benefits / dermatological therapeutic properties is greater than the percentage that does not know ($p < 0.001$).

Among the reasons which led to the realization of treatment in the spa, most individuals, 53 (71.6%) reported advice by others, 20 (27.0%) were found to be on their own initiative, and 1 (1.4%) reported that, for temporary inability to perform biological treatment, performed thermal treatment. Of the 53 respondents who answered another



person's advice, 32 (60.4%) said that it was a physician who counseling the realization of these treatments, however, 12 (22.6%) friends, 11 (20.8%) family members and 6 (11.3%) pharmacy professionals, these already have some relevant percentage in this kind of counseling.

With regard to the assessment of the knowledge of side effects in the use of thermal water, 55 (74.3%) individuals said that they did not know side effects. Although a small part of the sample (19, 25.7%) know some side effects, namely tiredness and drowsiness were the most mentioned. Actually, the incidence of side effects is more frequent with mineralized hyperthermal waters. However, in intensive treatments it can be found side effects like tiredness, discomfort, headache, fever and mucous irritations. These effects usually disappear with the reduction of the treatment intensity or cessation of treatment for a few days (Torres et al., 2006).

Respondents were requested to indicate if they know any contraindication to the use of thermal waters and 54 (73%) don't know any contraindication. Among the 20 (17%) individuals that said they knew some contraindication, oncological diseases (18, 90%) were the more often referred, followed by cardiovascular diseases (2, 10%), skin irritations (1, 5%) and rheumatic diseases (1, 5%).

Of the 58 individuals who claim to know the thermal waters benefits / properties, 43 (74.1%) report not knowing the side effects. It was also observed that from the 16 respondents who said they did not know the benefits / properties, 12 (75%) mentioned not knowing the side effects. These results lead to independent between the factors under analysis (Fisher's exact test $p = 1.00$).

The association between the sociodemographic variables and the knowledge of the dermatological therapeutic benefits / properties of the thermal waters, as well as the side effects, was investigated and in the following the results are presented.

Crossing the information about the gender and the knowledge about the dermatological therapeutic benefits / benefits of thermal waters, it is observed that of the 43 females, 33 (76.6%) said they knew the benefits against 25 (80.6%) from the 31 males. There was no association ($p = 0.688$) between the gender and knowledge about the dermatological therapeutic benefits / benefits of thermal waters. Analogously, the gender and the knowledge about side effects are not related ($p=0,575$). In this case, 33 (76.7%) females and 22 (71.0%) of the males said they did not know side effects.

The professional situation was classified in: active individuals (with a professional activity) ($n = 56$) and students / retired ($n = 18$). It was observed that 45 (80.4%) of the active individuals said they knew the dermatological therapeutic benefits / properties of the thermal waters against 13 (72.2%) students / retirees. Further, there was no association ($p = 0.517$) between professional situation and knowledge about the dermatological therapeutic of thermal waters. Likewise, the professional situation and the knowledge about side effects are not related ($p = 1,000$), being that 13 (72.2%) of the students / retired and 42 (75.0%) of the individuals with one professional activity, reported that they did not know of any side effects.

The data allow us to conclude that there are differences, statistically significant, in the knowledge of the benefits / properties of dermatological therapies in thermal waters in relation to age ($p = 0.011$), being the youngest respondents who said they knew the benefits / properties of the thermal waters. A similar analysis for the side effects revealed no differences according to the age of respondents ($p = 0.105$).

The dermatological pathologies most commonly treated in both thermal spas were psoriasis (52, 70.3%) and eczema (27, 36.5%), followed by seborrheic dermatitis (6,



8.1%) (Figure 3). In fact, the dermatologic diseases that are often treated by balneotherapy with a high success rate are psoriasis and atopic dermatitis (Matz et al., 2003). The average age of the users with psoriasis and eczema was about 46 years. With regard to how long they have the pathologies, the majority (62, 83.8%) have dermatoses for more than 1 year, with 6 individuals (8,1%) 1 year ago and there were an equal number of respondents (3, 4.1%) for 1-6 months or 6-9 months. The most commonly duration of spa treatment was 14 days (70, 94.6%) and the remaining options were 7-12 days or 21 days, with equal adherence (2, 2.7%). The frequency with which respondents do the treatments is mostly 1 time per year (59, 79.7%), some (15, 20.3%) refers 2 times a year.

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The thermal treatment most frequently used by respondents was the immersion bath (72, 97.3%), followed by the partial/general shower-massage (26, 35.1%), thermal swimming-pool (23, 30.3%) and circular shower (12, 16.2%), the remaining had lower representativeness, namely vichy (9, 12.2%), jet shower (1, 1.4%), hydrotherapy (1, 1.4%) and pulverization (1, 1.4%) These results are in compliance with other studies, in which the treatment was mostly based on immersion baths, which are widely used in the treatment of various dermatological diseases (Ghersetich et al., 2000; Matz et al., 2003).

The individuals were questioned about their perception related to the improvements in their skin condition after the thermal treatment. Most participants (50, 67.6%) rated as high improvements experienced with thermal treatment, while 24 (32.4%) reported that some improvements were perceived, but no one mentioned no improvement or little improvements. The improvements more valued were the reduction of erythema (65, 87.8%), flaking (60, 81.1%), and pruritus (60, 81.1%). The reduction of the crust (33, 44.7%), burning sensation (11, 14.9%) and edema (4, 5.4%) were also reported, although less frequently.

Based on the information given by the respondents about their knowledge of the dermatological therapeutic benefits / properties of the thermal waters and on the results of the treatment (Table 2), it was concluded that there is independence between the variables in question ($p = 0.12$). Thus, the results indicate that there is no association between the variables, being that the majority (58, 78.4%) felt some or great improvements in their health and considered to have knowledge about therapeutic benefits / properties of thermal waters.

Conclusions

The development of different studies in the dermatology area has been crucial to the understanding of the biological effects that thermal waters trigger, and also allow their therapeutic orientation for other areas of intervention, such as for affections of rheumatology, respiratory disorders, among others. In this sense, there is now scientific evidence that demonstrates that the therapeutic properties of thermal waters are due to its chemical composition, and in particular, the presence of certain minerals and trace elements that make up the individual physico-chemical profile of each water, whose emphasis is more recently been given.

This study represents an important effort to assess the thermal impact on the perception of users about the benefits of spa treatments in the main symptoms of their dermatological affections. It was found that the majority of users know what are the benefits/dermatological therapeutic properties of thermal waters, and have perception of the effectiveness of thermal treatments carried out by the reported improvements, which



are held mainly to a decrease of erythema, flaking and pruritus. On the other hand, most of them do not know any side effects during the treatments, probably because they know the benefits of thermal water are superior and very uncommon side effects.

Considering the results obtained it was concluded that the thermal spas users claims to have knowledge about the utilization of thermal waters, as also the individual perception of the effectiveness and safety of thermal spas treatments in skin pathologies. By these reasons, the medicinal modality of thermalism continues to be a driving force for this kind of market.

From this point of view, this work highlight the potential of claim the thermal spa treatment for the therapy, rehabilitation and prevention of specific diseases as a relevant touristic product in the field of Health and Wellness to be exploited to render high economic impact in the regions where thermal spas are located with a clear and recognized differentiation in this touristic market.

It is also envisioned that the creation of thermalism related products will contribute to expand the role of thermal tourism and its contribution to the health tourism with noteworthy impact at economic, social and cultural levels.

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Table 1. Age distribution of the thermal users in the sample (A) and official results in 2015 for all treatments (B) of the Cró spa and Carvalhal spa

Age	Results in the Sample				Official results in 2015 (DGEG)			
	Cró spa		Carvalhal spa		Cró spa		Carvalhal spa	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
≤15	0	0.0	0	0.0	126	11.5	60	4.2
16-25	3	10.0	4	9.1	41	3.7	56	3.9
26-35	10	33.3	7	15.9	21	1.9	67	4.6
36-44	6	20.0	10	22.7	39	3.5	155	10.7
45-65	9	30.0	14	31.8	366	33.3	401	27.8
66-74	2	6.7	7	15.9	203	18.5	387	26.8
≥75	0	0.0	2	4.5	303	27.6	316	21.9
Total	30	100.0	44	100.0	1 099	100.0	1 442	100.0

(A)

(B)

Figure 1. Age distribution of respondents

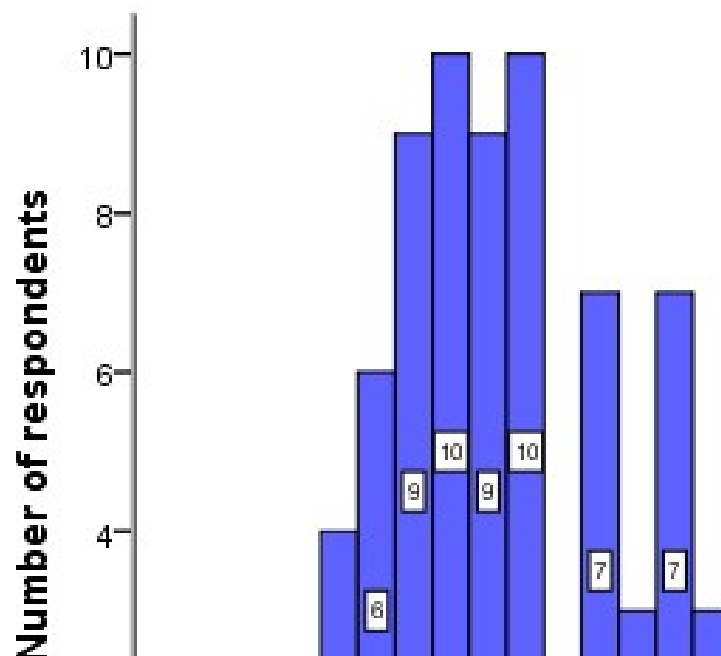




Figure 2. Benefits / dermatological therapeutic properties referred by the users

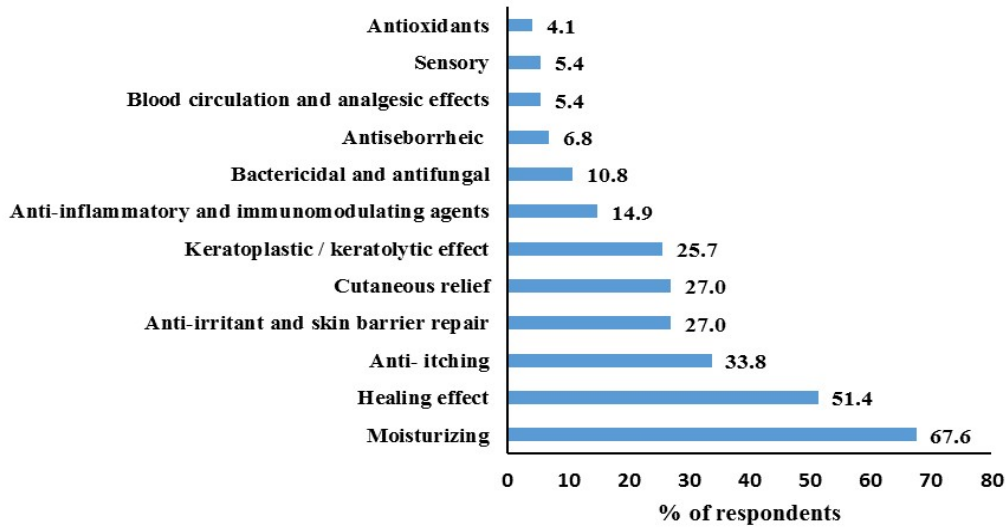


Figure 3. Clinical situations that led to the realization of thermal treatment

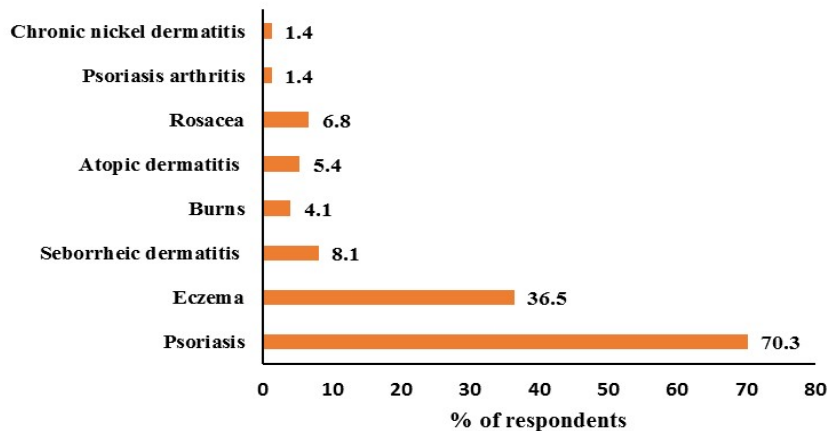


Table 2. Crossing the improvements with treatment and knowledge about therapeutic benefits / properties of thermal waters

	Did you feel better with treatment in the spas?		Total	
	some improvements	great improvements		
Do you know what are the dermatological therapeutic benefits of thermal waters?	Yes	19	39	58
	No	5	11	16
Total	24	50	74	