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Attitudes, perceptions, and trends of honey consumption in Portugal

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ABSTRACT

The research aim was to evaluate the Portuguese honey consumers' profile, their attitudes, perceptions, and trends towards the product, production, and consumption, to allow the development of marketing strategies. With this purpose, a questionnaire was developed in accordance with the Ajzen's Planned Behaviour Theory and was then completed by 784 interviewees to retrieve quantitative and qualitative data. These included demographic, consumption pattern, and behavioural pattern variables collected in a Likert scale. Spearman correlations were performed between ordinal and continuous variables, and chi-squared tests of independency applied to contingency tables between nominal variables. A positive correlation was found between age and frequency of purchasing. Men consume honey more frequently than women. Portuguese honey has a good reputation, and it is preferred in relation to imported honey. The Portuguese consumer is not completely aware of the different floral characteristics of honey, other hive products, and positive externalities associated with beekeeping. By filling the marketing gap identified, production and consumption of honey could be increased in Portugal. Marketing campaigns promoting the health benefits of honey and other hive products, as well as the externalities of beekeeping may be advantageous.

KEYWORDS

honey, consumer profile, Ajzen's Planned Behaviour Theory, Portugal

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1. INTRODUCTION

Studying behaviour and needs of food consumers reveals important information about the production and commercialisation chains (Unnevehr et al., 2010). For food, aspects of sustainability, benefits for health, economy, sociology, and law are increasingly important (Martini et al., 2021). Studying market viability based only on consumption restriction has limitations, as the consuming behaviour and experience are not evaluated (Aurier and Siriex, 2004). To understand a consumption market, it is important to study the symbolic representations of the consuming habits (Bekker et al., 2017). The consumer perceives consumption in accordance with social norms and values, and choices are under the influence of norms, values, taboos, permissions, prohibitions, and believes (Andorfer and Liebe, 2013). The consumers' attitudes have been considered important determinants of their behaviour (Ajzen, 1991). The Ajzen's Planned Behaviour Theory (APBT) (Ajzen, 1991) postulates that a person's interest to perform certain behaviour or not is a direct function of individually and socially related variables. The individual component is based on the individual's attitude or mood to react favourably or unfavourably to an object, individual, institution, or event (Kim and Hunter, 1993). The social component includes the subjective norms determined by the perception of the social pressures acting on the individual, to perform certain behaviour or not (Ajzen 1991).

Honey production in the world has been increasing (2.2% per year in average for number of hives and 2.1% for honey). In 2020, world production was 1,770,119 t (FAO, 2022). Asia is the main producer, followed by Europe, with production of 842,830 and 388,902 t in 2020, respectively (FAO, 2022).

The EU produced around 137,000 t of honey in 2016 (EC, 2020a). The main producers are Romania, Spain, and Germany, with production of 31,000, 29,000 and 28,000 t in 2018, respectively (EC, 2020b). The EU has a deficit of honey, importing 250,000 t mainly from China (≈70,000 t), Ukraine (≈30,000 t), Argentina (≈30,000 t), and Mexico (≈20,000 t), exporting only 20,000 t mainly to Switzerland, Saudi Arabia, USA, and Canada (EC, 2020b).

Portugal produced 9.346 t of honey in 2013 and it reached 14.246 t in 2016. The following year (2017) was atypical with a decrease to 10.756 t. The production doubled from 2009 to 2017. The Portuguese honey market is self-supplying, and some imports are compensated by exports in similar amounts (GPP, 2019).

Apiculture in Portugal is an activity traditionally connected to farming and performed as an additional income. There are, however, beekeepers with the main income resulting from apiculture (GPP, 2019). The activity cannot be analysed based on a direct cost-benefit relationship, as it embraces externalities, such as pollination, that overtake the production value. The number of beekeepers, apiaries, and hives has been increasing in Portugal. It is, however, noticed that the increase in apiaries and hives was twice the number of beekeepers, indicating growth in dimension, reflecting the EU financial programmes supporting apiculture (GPP, 2019).

There is concentration of apiaries in the North and Centre of the country (66% of the beekeepers and 55% of the apiaries). The South has less beekeepers, however, the larger operations can be found here (averaging 158 hives and 11.4 apiaries per beekeeper) (GPP, 2019).

The EU classifies the dimension of the beekeepers as professionals (>150 hives), amateurs (>25, but <150 hives), and self-consumers (<25 hives). The distribution of beekeepers in each of the above classes shows that Portuguese beekeepers are mainly non-professionals. Nevertheless, the dimension has been increasing in the past decade. The non-professionals represented 90% of the beekeepers in Portugal in 2018 (96.6% in 2010) but own only 41% of the hives. The professionals represent 10% of the beekeepers and 59% of the hives, averaging 363 hives per beekeeper (GPP, 2019).

It is recognised that the climatic conditions and the flora in Portugal create potential to the production in quantity and quality of honey. Portugal offers conditions for monofloral honey from species such as lavender (*Lavandula stoechas*), heather (*Erica umbellate*), chestnut (*Castanea sativa*), rosemary (*Rosmarinus officinalis*), strawberry tree (*Arbutus unedo*), and purple viper's-bugloss (*Echium plantagineum*) (GPP, 2019).

It is the aim of this study to contribute to the understanding of honey consumers in Portugal. The knowledge of the consumers' attitudes towards honey and hive products, consumption, and production, is key in the definition of marketing strategies. This knowledge is limited at the moment as few of the beekeepers and their associations have marketing expertise. We used the APBT model to capture the required information. The ultimate goal is to provide directions for the development of consequential marketing strategies.

2. MATERIAL AND METHODS

2.1. Data collection

Data were collected through questionnaires between February and July 2022 to retrieve quantitative and qualitative data. These included demographic, consumption pattern, and behavioural pattern variables collected in a Likert scale.

A pilot study was implemented interviewing 45 consumers for validation of the questionnaire. A sample of 784 individuals was calculated, considering a population standard deviation $\sigma = 0.5$ (the maximum value for dichotomic variables), an estimated error $e = 3.5\%$, and a significant level of $\alpha = 95\%$. All 21 Portuguese districts were sampled. The sample was stratified by gender and proportional to the number of residents in each district. The questionnaires were directed only to adults above 18 years of age, however, the answers related to household consumption habits and family/friends attitudes included all ages. The full range of ages from 18 years of age was sampled and, despite the lack of control of proportions, a good spread was aimed and achieved (Fig. 1). A semirandom sampling strategy was implemented contacting people directly in the streets and online.

2.2. Data analysis

Inferential statistics including Spearman correlations between ordinal and continuous variables and chi-squared tests of independency were applied to contingency tables for nominal variables. The level of significance was set as $P < 0.05$ for all tests. Data were initially entered in a spreadsheet (Microsoft® Excel® for Microsoft 365 MSO, version 2204 Build 16. 0. 15128. 20240, 64-bit), and was then analysed with a statistical package (IBM Corp.® SPSS® Statistics, Armonk, NY, USA. Version: 28.0.1.1, 15).

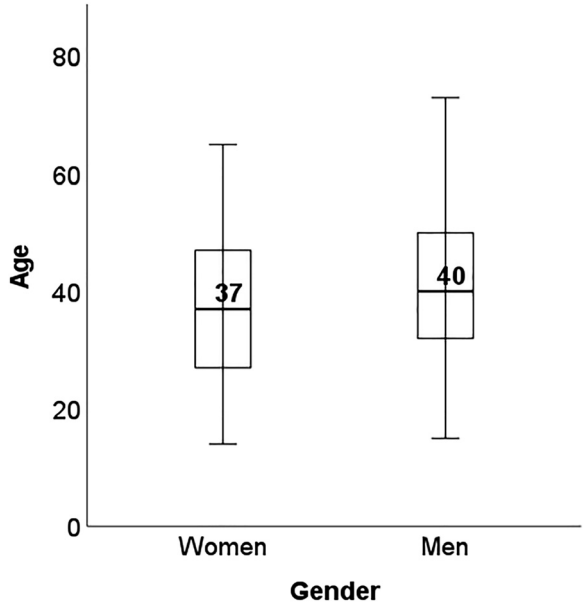

Fig. 1. Box-whiskers plot with the quartile distribution, maximums, and minimums of the sampled interviewees by gender and age. The second quartile is the median

3. RESULTS AND DISCUSSION

3.1. Demographic variables

Pareek et al. (2022) reiterated that demography, lifestyle, and personality are important factors in the characterisation of the consumers' profile. Rivera (2005) argued that the demographic variable with higher influence in honey consumption is gender, as women are still more important than men in household food purchasing. Housewives are more frequently responsible for the detection of household needs, brand choice, and the decision of when and where to buy. Accordingly to Pérez et al. (2001), as the housewife grows older, honey purchasing frequency increases. The same result was obtained in our study, as a positive correlation was found between age and frequency of purchasing ($r = 0.196$; $P < 0.001$). Kopała et al. (2019) have also reported the same tendency.

Participants were with ages from 18 to 78 years (age sample mean 38.85 [38.1; 39.6]). The household median in the sample was 2 individuals with interquartile range [1; 3] ($\mu = 2.24$; $\sigma = 1.2$). The education level of the individuals in the sample showed that 55% of the individuals had a high school education, 42% attended college or had already their first degree, and 3% had or had been attending post graduation studies. The professions of the sampled individuals were much diversified ranging from the 1st to the 3rd sector and included unemployed and students as well.

3.2. Consumption pattern variables

3.2.1. Frequency and seasonality of consumption. Most of the interviewees (94%) are consumers of honey. A significant difference was found for gender consumption frequency ($X^2 = 18.8$; $P < 0.01$). Men consume honey more frequently than women (Fig. 2), which agrees with the findings of authors such as Kopała et al. (2019). Consumption occurs mainly in the winter (64%) and autumn (17%) with 12% in spring and a residual 7% in the summer, which tally the results of Fernandes et al. (2019).

3.2.2. How is honey consumed. Most of the honey is consumed pure, but also as replacement of sugar, mixed with other foodstuffs, or as medicine. National honey is preferred by 95% of the interviewees, 10.3% consume imported honey, and 4.7% do not care about the origin. From this it can be concluded that the majority of imported honey goes to the food industry. Imported honey, especially from China, has competitive prices.

3.2.3. Floral characteristics of the honey consumed. Only 18% of the interviewees recognise monofloral honey and buy accordingly, with 52% ignoring the characteristics. This evidences the need for advertising the qualities of different products. Monofloral characteristics add value to fill specific market niches. The characterisation of the Portuguese floral areas has been developing GPP (2019), and at the moment there are 9 regions with Protected Designation of Origin (PDO). These regions have the honey therein produced characterised, including its physico-chemical and organoleptic properties, floral provenience, and production method. A marketing advantage is, therefore, evident. PDO honeys are predicted to meet consumer preferences, and, therefore, their consumption will increase (Di Vita et al., 2021).

3.2.4. Other beehive products. In relation to honey, 52% of the interviewees do not consume and 10% ignores other beehive products. In reality, the other beekeeping products (pollen, propolis, royal jelly, beeswax, and apitoxin) are extremely important in supplementing beekeeping income (Semkiw and Skubida, 2021). As such, there is also a marketing gap to be fulfilled.

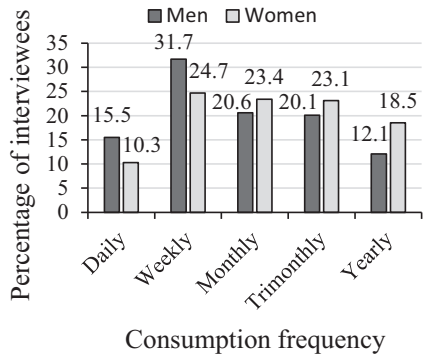

Fig. 2. Honey consumption frequency of men and women in Portugal

3.2.5. Colour and packaging preferences. Intermediary shades were preferred to light or dark shades, which tally Fernandes et al. (2019), who report no preference for colour. Glass flasks are the preferred packaging for 92% of the interviewees, with sizes varying between 250 g and 1 kg, which again agree with findings of Fernandes et al. (2019). Glass flasks are preferred to plastic all over Europe (Ballco et al., 2022). It was also recognised that there is an information shortage in the media in relation to different types of honey and other beehive products.

3.3. Consumers' attitudes toward honey

3.3.1. Related directly with honey. The attitudes of the interviewees are summarised in Table 1. Those related with honey show a positive appreciation of the product. Overall 75% of the interviewees agree or strongly agree with the questions posed: 91% believes in the therapeutic properties of honey, 81% is in favour of the inclusion of honey in everybody's diet, and 65% think that if more information were available consumption would increase.

Table 1. Attitudes of the consumers towards honey. Data were collected in a 5 points Likert scale (1 completely agree to 5 completely disagree). Results are expressed as percentage of the interviewees in each score. Questions are divided in the four fields titled in bold. The calculated overall score percentages for each of the fields is also given (**bold**)

Attitudes of the interviewees that consume honey (%)	Likert scale value				
	1	2	3	4	5
Related with honey	**41**	**34**	**13**	**6**	**2**
• Honey is a natural product with therapeutical properties	57	34	4	3	2
• Honey should be part of everybody's diet	43	38	13	4	2
• Honey consumption is reduced due to lack of information	24	41	23	10	2
Related to Portuguese beekeeping and economy support	**36**	**33**	**18**	**7**	**4**
• Only Portuguese honey should be consumed once it is trustable	23	30	28	14	5
• Only Portuguese honey should be consumed to support local economy	62	27	6	2	3
• Most of the times honey origin is unknown by the consumer	22	41	19	15	3
Related to the beekeeping activity	**6**	**23**	**45**	**15**	**8**
• Beekeepers should produce honey only	3	9	36	31	21
• Beekeepers should rent their beehives for pollination services	12	27	53	6	2
• Beekeeping is more rewarding in terms of life quality than economically	3	33	47	7	1
Related to subjective norms of production and consumption of honey	**13**	**44**	**32**	**9**	**2**
• My friends & family think beekeepers produce honey related products only	10	32	38	16	4
• My friends & family think beekeepers has a favourable environmental impact	11	46	35	6	2
• My friends & family think beekeeping complements local farms' income	18	54	23	4	1
• My friends & family think honey is beneficial for health and wellbeing	39	45	13	2	1

Likert scale: 1 completely agrees, 2 agrees, 3 does not agree or disagree, 4 disagree, 5 strongly disagrees.

3.3.2. Related with support to the national economy and beekeeping. Overall 69% of the interviewees agree with the questions posed. About 53% of the interviewees believe that Portuguese honey is better than others, 28% are neutral, and only 19% disagree. A huge 89% portion of the interviewees think it is important to consume only Portuguese honey to support the local economy, and 63% believe that most of the times the consumer buys honey unknowing its origin, in agreement with Fonte et al. (2017). Ballco et al. (2022) reported the tendency observed in the EU countries to prefer PDO locally produced honey. García (2018) reports that countries such as China do not have their production standards aligned with the Codex Alimentarius as countries in the EU have, opening doors for adulteration. Adulterations of Chinese honey were reported by Ritten et al. (2019); and Wang et al. (2022) reported that antibiotic residues were found in 84% of the honey on the Chinese market.

3.3.3. Attitudes related with the beekeeping activity. The beekeeping activity is not, apparently, completely understood by the interviewees. Overall 45% of the interviewees show a neutral position in relation to this set of questions. It is, however, noticed that a significant percentage of the interviewees (52%) have some knowledge about other beehive products apart from honey. The interviewees show some ignorance in relation to the role that beekeeping has in pollination (53% neutral), however, those recognising it come upon those ignoring it (39% and 8%, respectively). Lack of opinion is also felt in relation to the beekeeping economy (47% of the interviewees with neutral position), but those believing in the economic struggling (36%) leave behind those that do not (8%). The beekeeping activity has externalities of enormous importance for the ecosystems, namely in pollination, raising marketing potential for honey (Stampa and Zander, 2022).

3.3.4. Attitudes related with subjective norms. In relation to the production of beehive products, there is a mixed tendency with agreement and disagreement that beekeepers produce honey related products only. Around 38% have a neutral position, revealing some ignorance about the beekeeping activity. There is a positive perception (57% of the interviewees) about the environmental impact of the beekeeping activity, with 8% only in disagreement, however, there are still 35% interviewees with a neutral position. In relation to the benefits for health and wellbeing, there is a strong perception (84%) favouring honey consumption, which raises marketing potential (Zanchini et al., 2022).

3.4. Limitations of the study

Despite the appropriate sampling size and its geographic and demographic distribution and range, we should note that the interviewees were chosen per convenience sampling in a semi-random strategy. Therefore, this aspect may be pointed out as a limitation in this study.

4. CONCLUSIONS

Portuguese honey has a good reputation between the consumers in this study and is preferred to imported honey. However, it is evident that a marketing gap exists, and if properly filled, could increase sales. It is important to develop a marketing strategy to promote differentiated products based on specific attributes, such as floral characteristics, organic production, and

PDO. This is important in the promotion of high-quality products that should not enter in direct competition with lower quality imported honey. There is a deficit of honey production in the EU to be explored. The "nostalgia market" of the large Portuguese expatriate community has to be explored. The beekeeper associations are important for the protection of regional high-quality products. The externalities of beekeeping may also be used in marketing with advantage. Price premiums may be obtained with mono-floral varieties, PDO, Organic certified, and glass packages.

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