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Perceptions of Probiotics and Kombucha Consumption in Relation to Emotion Regulation: An Exploratory Study Comparing Portugal and Brazil

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Abstract: Probiotic products have been the focus of research for several years due to the potential of their biological properties to impact mental health, mood, and cognitive functions. Kombucha is a probiotic drink that has been reported to be beneficial for mental health, particularly at the level of emotion regulation. This study aims to understand the perception of the Portuguese and Brazilian populations regarding the consumption of probiotics and Kombucha, as well as to understand these consumers' perceptions related to the impact on emotion regulation (and the impact of this consumption on emotion regulation). The research was conducted through an online questionnaire and had a total sample of 256 participants. The results show that there are no statistically significant differences between the consumption of probiotics and Kombucha when comparing the Portuguese and Brazilian samples. Additionally, this study reveals a significant association between probiotic consumption patterns in both the Portuguese and Brazilian samples. However, no statistically significant relationship was found between the consumption of probiotics and Kombucha and emotion regulation. This study intends to contribute to the increase in knowledge about the perception of probiotics and Kombucha consumption in relation to emotion regulation, and to draw attention to the importance of this topic in the community (society, academia, and industry).

Keywords: functional food; probiotics; microbiota; brain impact; emotion regulation; cross-cultural

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1. Introduction

The population's concern for both physical and mental health has been growing. To keep up with this growing concern, the development and demand for food that benefits human health have been increasing exponentially [1]. Probiotic products are a recent example of a food product that has awakened interest and consumption [2]. The World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO) define probiotics as live microorganisms that, when ingested in sufficient quantities, offer health benefits to their host [3]. These microorganisms help to balance the intestinal mucosa and promote the prevention and treatment of several pathologies [3]. Some studies have reported the association of probiotic consumption with their effectiveness in regulating intestinal microbiota, controlling gastrointestinal infections, improving the absorption of certain nutrients, reducing cholesterol levels, stimulating the immune system, and influencing psychological aspects, such as mood and cognitive functions [4,5]. On the other hand, the literature has reported an association between probiotic consumption and decreased stress levels, improved well-being, and more stable emotion regulation [6–9].

This relationship between microorganisms and brain impact has driven researchers to understand the bidirectional gut–brain axis [10–12]. The recent literature has reported the

relationship between the intestinal microbiota and the brain [6,7,13]. Several studies have indicated that changes in the intestinal microbial community influence the central nervous system and may be involved in the development of pathologies such as depression, anxiety, Parkinson's disease, schizophrenia, disorders of the autism spectrum, and other mental disorders [8,14–16]. In this way, intestinal microbiota such as Lactobacillus acidophilus and Bifidobacterium have been proven to offer therapeutic effects on mental illness. In addition, microbiota secrete neurotransmitters such as gamma-aminobutyric acid (GABA) and catecholamine, which have the potential to regulate nerve signals by influencing brain mechanisms [17].

This study pays particular attention to the probiotic product known as Kombucha, whose consumption has been increasing, particularly in the European context. Kombucha is a fermented drink developed from tea and a symbiotic culture of bacteria and yeasts (SCOBY), accommodated on a cellulosic basis. Following fermentation, Kombucha is composed of a blend of different chemical elements. These include various substances such as sugars; tea polyphenols; organic food acids; fiber; ethanol; amino acids such as lysine; essential elements such as copper, iron, manganese, nickel, and zinc; water-soluble vitamins (e.g., B and C vitamins); carbon dioxide; antibiotic agents; and hydrolytic enzymes [18,19]. The rise in the popularity of Kombucha occurred simultaneously with the scientific exploration of the microbiome's impact on health [20,21]. Today, this beverage is considered potentially beneficial for intestinal microbiota, and has evidence to support its impact on health in general [22]. According to the recent literature, Kombucha presents biological properties that are beneficial to health, such as anti-inflammatory, antibacterial, antidiabetic, detoxifying, antioxidant, and immunostimulant properties [4,23–26]. Some evidence highlights the neuroprotective effect of Kombucha, which has an impact on neurodegenerative diseases [23,27]. However, there is still a lack of information about this product and its health benefits, and the literature on this topic needs to be increased [28].

Growing evidence suggests that probiotics may play a role in emotion regulation. Research has shown that the intestinal microbiota produces many of the neurotransmitters and hormones (including serotonin, dopamine, and gamma-aminobutyric acid—GABA) that are involved in regulating mood and behavior [29]. Research on the connection between Kombucha and emotion regulation is still limited. Only a few studies have indicated that probiotic consumption could have advantages for psychological health and well-being [30]. However, further investigation is required to completely comprehend the processes that cause these outcomes. The literature has reported the impact of these probiotic products on the gut–brain relation and, consequently, the impact of gut microbiota changes on mental illness [31].

Thus, considering the high standard consumption of probiotic products and Kombucha in society, it is necessary to understand the consumption effects of these products and their influence on emotion regulation. This study compares the results obtained from samples collected in Portugal and Brazil to assess the level of familiarity with probiotic products, namely, Kombucha. Brazil and Portugal have a shared history, resulting in many similarities between the two cultures, but also differences that reflect the divergent paths that the two countries have taken. Additionally, eating habits and social customs are aspects that can vary greatly between cultures [32]. Kombucha first appeared in Brazil and quickly became very popular, particularly among health-conscious consumers as well as investors and entrepreneurs in Brazil's beverage industry, while it just recently arrived in Portugal [33].

The specific aims of this study are to compare the perception of these products (sources, benefits associated) and their consumption pattern in both countries (Portugal and Brazil); to analyze the age-related differences in each sample; and to investigate the participants' perception of Kombucha's impact on emotion regulation.

2. Materials and Methods

2.1. Participants and Study Design

The sample comprised 256 participants aged between 18 and 76 years and followed a convenience sampling process. Participants were recruited through various methods, including social media outreach, dissemination via marketing channels, and email communication, from October 2022 to November 2022. Inclusion criteria to be included in the study were defined as individuals aged 18 years or over who voluntarily agreed to participate in the study and who agreed to the collection and use of the data anonymously and confidentially.

The platform used in this study was selected to ensure the anonymity and confidentiality of the data. The participants were informed about the study's objectives and all of them provided written informed consent.

This study was conducted following the guidelines of the Declaration of Helsinki, and ethical clearance was obtained from the Ethics Lab of the Universidade Católica Portuguesa.

2.2. Instruments

A survey was developed with the following different parts: information about sociodemographic characteristics (age, gender, nationality, marital status, academic qualifications, and professional activity), physical exercise habits, existence of psychological disorder, sleep quality, health perception, and questions about probiotic and Kombucha consumption (supplementary document). The Emotion Regulation Questionnaire (ERQ) (Gross & John, 2003; Portuguese version of Machado et al., 2008 [34]) was also included to allow for a comparison between the consumption of these products and emotion regulation. The final version of the survey was validated and adjusted as necessary by a team of experienced researchers and some members of the academic community.

2.3. Design Procedure

The instrument was developed and made available through the Qualtrics platform. Through the link, the participants were directed to the study page showing the aims, ethical commitment, and contact of the responsible researcher. The survey also included the informed consent form, which clarified that the data collection and their codification would be made anonymous/confidential. Participants were required to provide their informed consent to participate in the study voluntarily; otherwise, they would not be presented with the questionnaire.

2.4. Statistical Analysis

Quantitative analysis was performed using IBM SPSS software (version 27.0.0.0). Descriptive statistics were used to analyze the sample. Data preprocessing was also performed to validate the information available.

The chi-squared test (χ^2) was also used in this study to determine the difference between the responses of study subjects. To analyze Spearman's correlation results, values below 0.30 were considered weak or nonexistent correlations, values between 0.30 and 0.50 were considered moderate correlations, and values greater than 0.50 were considered strong correlations. A p value < 0.05 was considered as statistically significant.

3. Results

3.1. Characteristics of the Sample

Of the 251 participants, who were aged between 18 and 76 years old (M = 33.3 years, SD = 15.7), 198 were female and 53 were male. Regarding the nationality of the participants, 78.9% of the participants were of Portuguese nationality, and 21.1% were of Brazilian nationality. Regarding marital status, most participants were single (68.1%).

In relation to academic qualifications, most participants (60.1%) had completed higher education. Regarding main professional activity, 53% were students, and 47% performed other activities (e.g., social worker, teacher, psychologist, pharmacist, engineer, etc.) (Table 1).

Table 1. Sociodemographic characteristics of the participants.

		Portugal		Brazil	
		M	***SD***	***M***	***SD***
Variable					
Age		28.5	11.6	45.6	15
		N	%	N	%
Gender	Female	144	80.9	54	74
	Male	34	19.1	19	26
Marital status	Single	139	78.1	32	43.8
	Cohabitation	13	7.3	5	6.8
	Married	24	13.5	29	39.7
	Divorced/separated	2	1.1	5	6.8
	Widowed	0	0	2	2.7
Academic qualifications	Primary/basic education	1	0.6	2	3
	Secondary education	84	48	9	13.6
	Degree	48	27.4	19	28.8
	Master's degree	39	22.3	16	24.2
	PhD	3	1.7	20	30.3
Professional activity	Student	115	64.6	18	24.7
	Other	63	35.4	55	75.3
Past psychiatric/psychological follow-up	Yes	109	62.3	27	37
	No	69	37.7	46	63
Current psychiatric/psychological follow-up	Yes	47	43.1	11	37.9
	No	62	56.9	18	62.1

3.2. Consumption of Probiotics and Kombucha in the Portuguese and Brazilian Samples

When the consumption pattern of probiotics was analyzed, it was verified that 85.9% of the total sample claimed to be aware of probiotic products; however, 14.1% did not know what these products are. Regarding Kombucha, 67.3% knew of the drink, and 48.6% had tried it; however, 32.7% did not know about it, and more than half of the sample 51.4% had never tried it (Table 2).

Table 2. Perception and knowledge of probiotics and Kombucha in the total sample of participants.

	Portugal		Brazil	
	n	**%**	***n***	**%**
Do you know what probiotic products are?				
Yes	144	81.8	70	95.9
No	32	18.2	3	4.1
Do you know about Kombucha?				
Yes	116	66.3	51	69.9
No	59	33.7	22	30.1
Have you consumed Kombucha?				
Yes	78	44.3	43	58.9
No	98	55.7	30	41.1

The participants were asked about which sources of information enabled them to obtain knowledge about probiotic products. Among the different sources of information mentioned, health professionals (26.2% of the Portuguese sample and 34.1% of the Brazilian sample), social media (24.8% Portuguese and 23.1% Brazilian), and advertisements by

marketing campaigns (18.2% Portuguese and 17.6% Brazilian) stood out as the main sources through which participants obtained information about these products (Figure 1).

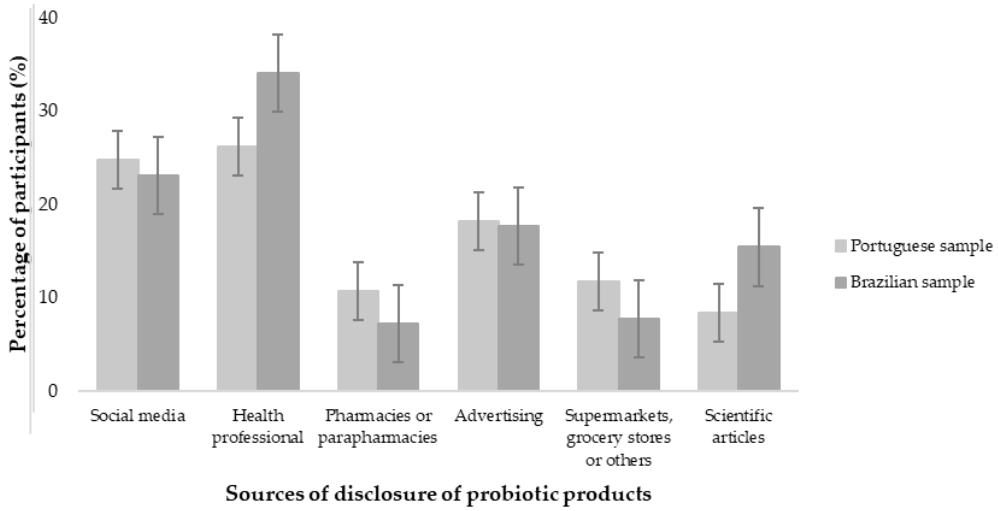

Figure 1. Sources of dissemination of probiotic products in the total sample of participants.

Another issue explored in the present study is the type of probiotic products that individuals consumed. It was verified that 44.2% of Portuguese and 39.8% of Brazilian participants consumed yogurts, 9% of the total sample consumed supplements sold in supermarkets, 7.7% consumed supplements sold in pharmacies, 9.3% consumed fermented vegetables, 7.4% consumed medication, and 23.8% consumed other products, such as kefir, brown paste, and fermented beverages (Table 3).

Table 3. Type of probiotic products consumed.

	Portugal		**Brazil**	
	n	**%**	***n***	**%**
Type of probiotic products				
Yogurts	102	44.2	37	39.8
Supplements sold in supermarkets	18	7.8	11	11.8
Supplements sold in pharmacies	13	5.6	12	12.9
Fermented vegetables	20	8.7	10	10.8
Medication	15	6.5	9	9.7
Other products	63	27.3	14	15.1

Regarding the perception of the benefits associated with the consumption of probiotic products, the following results were found: 25.2% of the participants associated the use of probiotics with the balance of the gastrointestinal tract, 23.2% associated probiotic use with the improvement of the immune system, 20.7% associated probiotic use with mental health (improvement of mental health and emotion regulation), and 1.8% associated probiotic use with antidiabetic effects (Table 4).

On the other hand, when the perceptions about Kombucha consumption were analyzed, it was found that the majority of the participants (32.5%) related this product to the improvement of gastrointestinal activity, 22% mentioned the anti-inflammatory effect, 13.9% associated Kombucha consumption with emotion regulation and antibacterial effect, and 9.7% associated Kombucha consumption with the improvement of cognitive functions (Table 5).

Table 4. Perception of the benefits associated with the consumption of probiotics.

	Portugal		Brazil	
	n	**%**	***n***	**%**
Benefits associated with the consumption of Probiotics				
Balance of the gastrointestinal tract	103	23.5	61	28.5
Improvement of the immune system	101	23.1	50	23.4
Stimulation of bacterial growth in the intestine	59	13.5	34	15.9
Improvement of mental health	54	12.3	17	7.9
Emotion regulation	51	11.6	13	6.1
Improvement of cognitive functions	28	6.4	11	5.1
Prevention of cardiovascular diseases and cancer	24	5.5	10	4.7
Stronger bone structure	15	3.4	9	4.2
Antidiabetic effect	3	0.7	9	4.2

Table 5. Perception of the benefits associated with Kombucha consumption.

	Portugal		Brazil	
	n	**%**	***n***	**%**
Benefits associated with the consumption of Kombucha				
Improvement of gastrointestinal activity	80	30.4	44	37
Anti-inflammatory effect	57	21.7	27	22.7
Emotion regulation	45	17.1	8	6.7
Antibacterial effect	36	13.7	17	14.3
Improvement of cognitive functions	28	10.6	9	7.6
Antidiabetic effect	12	4.6	10	8.4
Anti-proliferative effect	5	1.9	4	3.4

According to the results obtained ($\chi^2(1) = 160.7$, $p < 0.001$), it is possible to state that there is a significant association between the consumption pattern of probiotics and Kombucha in the total sample.

Concerning the pattern of probiotic and Kombucha consumption, most of the sample indicated that they had never tried Kombucha (56.3%), while only 15.6% reported the same regarding probiotics. While Kombucha consumption was relatively infrequent, almost half of the entire sample reported consuming probiotics frequently (i.e., daily or weekly). However, only approximately 20% of the respondents reported consuming Kombucha with the same frequency, while almost 80% reported rare or no consumption of this beverage (Figure 2).

To characterize consumption according to the age of the participants, the sample was divided into three subgroups according to broader categories, namely, 'young', 'adults', and 'seniors' (18–35 years; 36–53 years; 54–76 years), to minimize bias and increase the generalizability of the findings. Probiotic consumption is prevalent in the youngest age group (18–35 years) (Table 6). Similarly, there is a higher consumption of Kombucha among the younger age group (18–35). However, this consumption is lower compared to the consumption of probiotics.

When comparing the probiotic consumption pattern between the Portuguese and Brazilian samples, which was categorized into five groups (daily, weekly, monthly, rarely, and never), a significant association was seen in which the probiotic consumption pattern in the Portuguese sample was closely linked to that of the Brazilian sample ($\chi^2(6) = 21.9$, $p = 0.001$) (Figure 3).

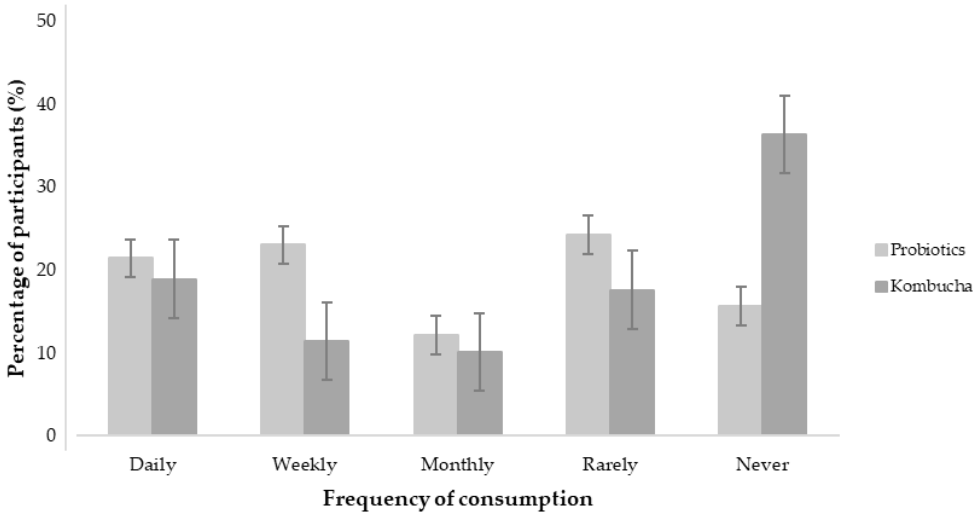

Figure 2. Consumption pattern for probiotics and Kombucha in the total sample of participants.

Table 6. The consumption pattern of probiotics and Kombucha according to age and the total sample of participants.

Frequency of Consumption of Probiotics and Kombucha											
		Daily		**Weekly**		**Monthly**		**Rarely**		**Never**	
		n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Age class											
18–35	P	34	13.8	40	16.2	21	8.5	32	13	34	13.8
	K	13	5.1	13	5.1	8	3.1	25	9.8	109	42.9
36–53	P	13	5.3	12	4.9	7	2.8	10	4	2	0.8
	K	12	4.7	7	2.8	4	1.6	10	3.9	11	4.3
54–76	P	8	3.2	7	2.8	3	1.2	20	8.1	4	1.6
	K	3	1.2	4	1.6	1	0.4	10	3.9	24	9.4

P (probiotics), K (kombucha).

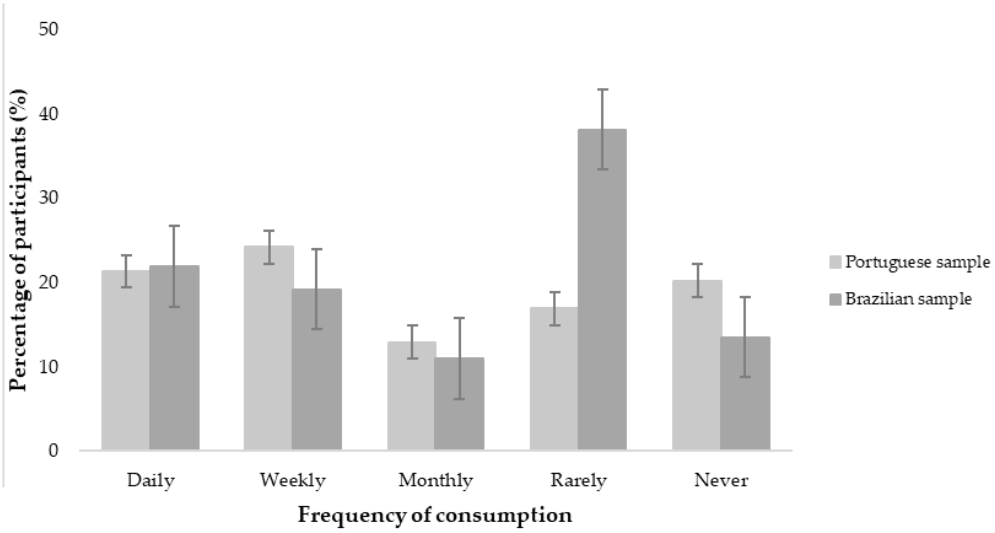

Figure 3. Consumption pattern of probiotics in the Portuguese samples and in the Brazilian samples.

Similarly, according to the results obtained ($\chi^2(5) = 12.6$, $p = 0.027$), it is possible to affirm that there is a significant positive association between the consumption patterns

of Kombucha in the Portuguese and Brazilian samples. Figure 4 displays the frequency of consumption of Kombucha for each sample. Almost half (46.6%) of the participants in Brazil had never consumed Kombucha, while more than half of the participants in Portugal (60.1%) reported that they had never consumed Kombucha.

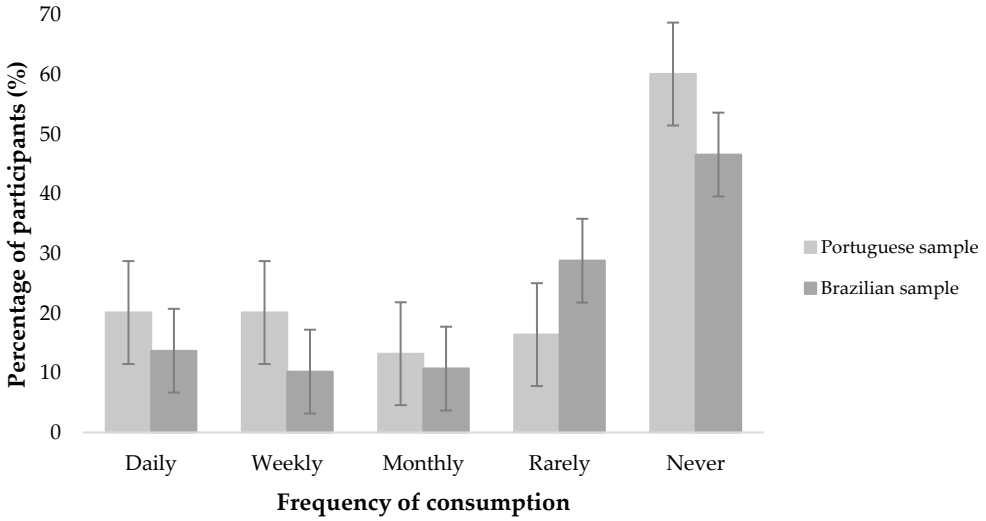

Figure 4. Consumption pattern of Kombucha in the Portuguese sample and Brazilian sample.

3.3. Impact of Probiotics and Kombucha Consumption on Emotion Regulation

Subsequently, the relationship between probiotic consumption and self-reported emotion regulation capacity was evaluated. The results show that there is no statistically significant association between the patterns of probiotics and Kombucha consumption, considering the means obtained via the ERQ as a metric ($rs = –0.20$, $p = 0.747$). The participants who consumed probiotics ($M = 39.91$, $SD = 7.52$) and Kombucha ($M = 39.07$, $SD = 7.2$) daily showed high scores on the ERQ. However, only a small percentage of the total participants consumed these products daily (32.4%) compared to those who never consumed them (71.9%), especially Kombucha (56.3%).

Therefore, the consumption pattern of probiotics and Kombucha in this sample is not associated with the reported pattern of emotion regulation, according to the data collected from the ERQ (Table 7).

Table 7. Results related to the Emotion Regulation Questionnaire according to frequency of the consumption of probiotics and Kombucha.

	Probiotics			**Kombucha**		
	n	***M* (ERQ)**	***SD* (ERQ)**	***n***	***M* (ERQ)**	***SD* (ERQ)**
Frequency of consumption						
Daily	55	39.91	7.52	28	39.07	7.2
Weekly	59	39.83	10.42	24	37.38	7.24
Monthly	31	38.39	10.19	13	42.39	6.56
Rarely	62	39.39	13.27	45	41.8	11.76
Never	40	38.35	14.53	144	38.9	12.48

4. Discussion

Recently, probiotics and Kombucha have gained popularity as dietary supplements, with a considerable increase in the consumption of these products in daily routines [35]. The encouragement of the consumption of functional products in place of soft drinks may have triggered this increase in consumption [35]. It is therefore important to know the

consumption and perception that consumers have of these products and their impact on health, particularly mental health. It was verified that most of the participants reported having knowledge about probiotic products and Kombucha. This information was obtained through different sources, such as health professionals (doctors, pharmacists, nurses), social networks (mainly Facebook, Instagram), and advertising (television, magazines), among others. Previous studies corroborated these results [36–38] and showed that the source from which information is obtained is important and can influence consumption. For example, when participants were confronted with the statement, "Would you consume probiotics more frequently if advised by your doctor", 78.1% of participants gave an affirmative answer.

Therefore, it is important to increase health literacy about this topic. Percup and colleagues emphasize that there needs to be more general knowledge about the concept of probiotics and that there is a growing need for information disclosure (about the association between the consumption of probiotics and health benefits) that should be provided by health professionals [28]. Additionally, when analyzing the participants' perception of the benefits of consuming these products, it was found that most participants mentioned the effect on the gastrointestinal system (i.e., the balance of the gastrointestinal tract and stimulation of bacterial growth in the intestine). In fact, this is one of the main causes of probiotic consumption, and several authors mention that there is a growing interest in the population concerning the potential benefits of probiotics for the improvement of gastrointestinal health and digestion [29–31]. However, other benefits have been reported in the literature, such as anti-inflammatory, antioxidant, antibacterial, antidiabetic, and anticancer activity, as well as a reduction in cholesterol concentration and an improvement of the hepatic metabolism, immune system, and gastrointestinal functions [1,24,29]. Additionally, the impact of these products on mental health and emotion regulation has also been investigated, although this effect is not well known or referenced.

This study also verifies that there is an association between the consumption of probiotics and Kombucha in the total sample of participants, and most individuals who consume probiotics also consume Kombucha. However, the consumption of Kombucha is lower than the consumption of probiotics.

The association between the individual's age and the probiotic and Kombucha consumption patterns was analyzed, showing that a higher consumption occurs in the 18–36 age group. This higher consumption pattern in the younger age group is corroborated by Tanemura and Hamadate [32], whose results show that young adult individuals with healthier lifestyles have a more in-depth knowledge of gastrointestinal health and the benefits of probiotic consumption, and are the most likely to consume this type of product.

Regarding gender, the results show a low consumption in females. It should be noted that the lack of information on the effects of probiotics may affect the percentage of consumption. When participants were asked if they "Would consume more Kombucha if it had more information available on its benefit", the percentage of positive answers was 68%. This proves the importance of information in this area and the lack of literacy regarding the benefits of this fermented drink in physical and mental health [9,31].

On the other hand, the lack of information on the labels of the drink may also have an influence on the consumption of the drink. Christoph and collaborators [36] claim that before buying food or drinks, consumers pay attention to information, such as calories (71%) and sugar (34%). In this study, when the participants were asked about if "the information highlighted in the labels is relevant to me", 88.7% answered affirmatively, showing the importance of the contents present in the product labels. Several authors mention that both the knowledge of certain products and their effects can contribute positively to consumer decision making [29,32,36].

Thus, although there is an increasing number of probiotic products available on the market, the underconsumption of these products is often associated with slightly higher prices due to the lack of disclosure [29]. The question of "would buy more probiotics if they were cheaper" had a representability of 64.1% of affirmative answers. Similarly, when the

participants were asked about the perception of probiotic products as expensive, 65.6% of participants also said "yes".

Subsequently, the differences found between the consumption pattern of probiotics and Kombucha in the Portuguese and Brazilian samples were not statistically significant. In other words, the consumption pattern between the two samples is similar. However, these results may be conditioned by a lack of information. In the study conducted by Bressa and colleagues about the perception and attitudes of young students toward functional foods (e.g., probiotics), they verified that more than half of the respondents were unfamiliar with the concept; however, they would buy this type of product in the future if more information on the benefits was made available [37]. Additionally, a study was carried out on 104 students, with the objective of assessing knowledge and awareness of probiotics among students. The authors concluded that 94.1% of consumers were familiar with the concept, and more than half of the respondents (52%) had taken probiotics for gastrointestinal purposes, thus highlighting the need for increasing awareness about other benefits for health [39].

Finally, the sample's perception of the impact of consuming these products on emotion regulation did not show a statistically significant association, proving that there is no association between the two variables. These results do not resemble the results obtained in previous studies; however, the total sample of the present study presents a sociodemographic imbalance (age, gender, academic qualifications, marital status, professional activity, etc.) [4,12,38]. Therefore, these results may also be associated with the high representativeness of the female gender. According to the literature, this gender presents a greater vulnerability to stress and mental health impairment, both at the level of depressive and anxious symptomatology [39]. This situation may have influenced the mean obtained in the ERQ.

5. Limitations and Strengths of the Study

The analysis of this study also reflected on the limitations of the study. Therefore, some limitations should be considered when interpreting the results obtained. The first limitation is the fact that the sample is not representative of the Portuguese and Brazilian populations, and the interpretation of the results obtained cannot be generalized. We acknowledge that the size of our study group may restrict the generalizability of the findings to a larger population. However, even with a small sample size, our research contributes to the existing body of knowledge by offering nuanced insights within a specific context since generalizability is not the sole criterion for the value and significance of a study.

Second, it was not possible to obtain equity in the representation of the genders. The total sample presents a sociodemographic imbalance, which presupposes a prudent interpretation of the data. However, limitations related to sample imbalances are variables that researchers cannot control since the data collection followed a convenience sampling process. According to Goubet and colleagues, female participants have a higher motivation to participate in health-related studies than male participants [40]. Third, these gender differences also need to be taken into account with regard to emotional regulation processes, including the strategies used and neuronal systems involved [19]. According to the results obtained, 44.1% of female participants are currently receiving psychological/psychiatric follow-up (which may influence the total score of the ERQ). Finally, it is important to consider the fact that a short psychological assessment instrument (ERQ) was applied, limiting the observed results [35]. When the results of self-reporting instruments are evaluated, questions such as social desirability cannot be overlooked, and there may be a bias in the participants' responses. Moreover, answering several questions at once can often be influenced by the context in which the individual is present, as well as by other factors (perception of well-being, tolerance, and tiredness) [21]. However, these findings can be valuable for researchers, practitioners, and policymakers who are interested in understanding the perspectives and behaviors of the specific group under investigation.

On the other hand, this study has strengths, such as being an exploratory study that aims to address the need to obtain information on the population about the consumption of these products, why they consume them, how much they consume, what they know about these products, and the perception they have about the impact on physical health and mental health.

This study draws attention to the need for further studies on these products, namely, clinical studies that prove the benefits reported in the literature. Knowledge of these products is still very much focused on physical well-being, but more studies are needed to prove their benefits on a mental health level.

Conversely, the increasing consumption of probiotics worldwide and the incentive to consider them as healthier products and as belonging to a wellness market may be considered worrying, since in many countries, there is no regulation of this product, which may affect consumer safety [35].

This work also aims to draw attention to the need for increased literacy on this issue.

6. Conclusions and Perspectives

In conclusion, the growing demand and interest in Kombucha and probiotics have led to an increased study of their potential benefits. As these products have been associated with positive benefits for physical and mental health, it is important to understand consumers' perceptions, particularly in terms of their knowledge and consumption habits.

This exploratory study also highlights the importance of making more efforts in terms of research in this area. For instance, in terms of its impact on psychological functioning, particularly on cognitive and affective levels, there needs to be more studies in this area. This article and future works aim to draw attention to the need for an increase in clinical studies on these products, as well as the need for regulatory guidelines for their production and marketing. This need is urgent as the consumption of these products is increasing.

The collaboration between industries and academia to validate products and conduct robust studies before releasing them on the market has gained significant importance in recent years. This partnership is driven by several factors and mutual benefits that both parties can derive from such collaborations. Collaborating with academia can facilitate knowledge exchange, enabling industries to stay updated with the latest advancements and trends in their respective fields. Conversely, academia benefits from industry partnerships by gaining access to real-world data, practical challenges, and industry-specific expertise. This symbiotic relationship fosters a conducive environment for conducting robust studies and releasing products with increased confidence and reliability on the market.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/beverages9030061/s1.

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