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Generational Shifts in Consumer Perceptions and Consumption of Nutraceutical Products: The Influence of Advertising and Health Awareness

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ABSTRACT: In the present study, generational differences has been explained by consumers attitude and consumption of nutraceutical products with a special emphasis on ad influence and health consciousness. This study is descriptive and analytical type of research to obtain the data from the respondents, and the number of respondents contains 300 respondents from generation Z and millennials, Generation X and Baby Boomers. The collected data were analysed using descriptive statistics and the Chi-square test using five-point Likert's statements. The results pointed towards a positive attitude among consumers towards the use of nutraceutical products, and that increased awareness of their health products and advertising are some of the factors that influenced their consumption. Overall, millennials showed the higher degree of orientation towards a nutraceutical product, followed by Generation Z, Generation X and Baby Boomers. Data revealed a new generation gap in nutraceutical consumption and therefore generation-specific marketing and communication strategies should be considered.

INTRODUCTION

As the focus is shifting toward preventive healthcare and healthy lifestyles and reducing disease risks, nutritional products that contain health claim ingredients (hereafter nutraceuticals) have increasingly become a popular area of interest for consumers. Nutraceuticals are generally considered to be food, food ingredients or nutritional products with a health promoting effect. They are also becoming increasingly popular, as the range of their use has morphed from an almost entirely treatment-based use of consumption to a more prevention and wellness-based use. Biofortification, with vitamins and minerals, as well as probiotics, antioxidants, omega-3, herbal ingredients and other bioactive compounds, are gaining growing popularity among consumers, who increasingly want products that boost immunity, energy, digestion, cardiovascular health and healthy ageing. However, consumer acceptance does not depend only on their nutritive characteristics, but others factors affecting the decisions on consumption such as the perception of the health benefits, trust, knowledge, price, advertising, as well as individual health orientation also play an important role (Jadhav et al., 2023; Urala & Lähteenmäki, 2004).

The psychological factors that influence the consumption of nutraceuticals and functional foods include health awareness, which has become one of the most important. The health-conscious consumer pays more attention to nutrition and disease prevention/lifestyle factors, making them more aware of products that are good for their health. Highly health concerned consumers, for instance, were more willing to consume functional foods and had stronger modern health concerns (Chen, 2013). In the same way, Chen (2011) found that health awareness and healthy lifestyles are two factors that together shape the attitude towards consumption of functional foods.

The other influence that is significant is advertising as consumers often see nutraceutical products on the TV, advertisements in print, advert in digital media, social media advert, website, or celebrity endorsing them and talking about them. Advertising can create awareness, convey benefits of the product and build positive brand associations. But there continue to be concerns about the claims' credibility and interpretation. Wu et al. (2012) concluded that congruent endorsers, message framing and rewards positively impact consumers' ad responses; advertising believability has a positive effect on attitudes towards adverts/brand and in turn, behavioural intentions towards dietary supplements. On the other hand, it has been found that supplement claims are often made that look like scientifically substantiated health claims but without the need for supporting data (Kapsak et al., 2017).

Advertising may even be meaningful to another generation in other ways. Defining generational cohorts based on similarities in information-search behaviour, media use, health concerns, buying habits, and so forth relies on the idea that they grew up in distinct technical, social and economic contexts. While older consumers may value traditional media, insights from professionals, and trusted brand reputations, younger generations like Millennials and Generation Z might be more open to digital communication, social media, and online reviews. Cross-generational research in recent times found that while there may be some overlap in health awareness and positive attitudes toward health-optimizing products among generations, their underlying motivations to buy such health-related products could be significantly different (Chen et al., 2024).

For this reason, understanding how things have changed between the generations becomes a special consideration for the nutraceutical industry. In recent times, the study of Millennials (also known as Generation Z) has also shown their health consciousness and subjective knowledge, and attitudes can have a significant impact on the intentions of their health-oriented purchase (Dolgoplova et al., 2025). However, studies among middle aged and older consumers suggest that more scrutiny of aspects of adverts, including cognitive involvement, is more critical when consumers notice potentially misleading details (Sun et al., 2024). Therefore, advertising and health awareness should not be looked at in isolation, and may have different effects depending on the generational traits of consumers.

The study aims to examine generational differences and combine two factors found to be critical determinants of nutraceutical consumption: exposure to ads and health awareness. This may help create a more complex picture of the differences in the perception, evaluation and consumption of nutraceutical products among the various generations of consumers.

LITERATURE REVIEW

The knowledge attained from functional food research gives a valuable theoretical background in consumption of nutraceuticals. Results from the patient population (n=1158) constructed by Urala and Lähteenmäki showed several dimensions, involving willingness to use functional food namely, perceived reward, confidence, perceived necessity, medicinal perceptions and health-related benefits. Perceived reward was the significant predictor that emerged, with regard to willingness to use functional food. Their reported results are that consumers make their health claim judgements based on both functional and psychological rationale.

In a study conducted by Landström et al. (2007) they found that the association between health consciousness and perceived product effects and consumption was strong, when studying the consumption of functional foods among Swedes. The results confirmed the importance of health orientation as a determinant not only of intention to purchase functional foods but actual use as well.

Chen (2011) also found that attitudes towards functional foods affect willingness to use functional foods and that the combination of health consciousness of consumers and healthy lifestyle leads to significant differences between consumer groups. This means that health awareness is part of a broader lifestyle and could be seen as an indicator of consumers' healthy lifestyle choices.

Later, Chen (2013) explored health awareness and health concerns in Taiwan among 1166 consumers. The amount of individuals interested in using functional foods was higher in the highly health-conscious group. This observation suggests that the information about health dangers could trigger preventive consumption, and it may reinforce the willingness to buy products of the nutraceutical type.

Kapoor and Munjal (2017) took a look at functional food consumption among Indian women and established that the consumers of the same can possibly be segmented based on their health orientation and perceptions of functional foods.

More specifically, their Indian relevance is due to the growing interest in functional foods on the back of factors such as increasing urbanisation, increasing disposable income, and health consciousness.

Through sociopsychological level analysis, Huang et al. (2019) examined trust-related antecedent and positive health consciousness's effect on purchase intention through purchase attitudes in China. Importantly, this study showed that trust was more important than being health conscious, indicating that credibility plays an important role in health-related product market relationships.

In Vietnam, the study by Nguyen et al. (2020) revealed that having a strong feeling of health consciousness and a positive attitude from others (subjective norms) can positively impact attitude toward functional yoghurt, whereas the price of functional yoghurt has a negative effect on the attitudes. Subjective norm and attitude then were predictive of purchase intention. This study also highlighted the communication and consumer education to focus on functional-food benefits.

Another important area of study is on the understanding of health claims by consumers. Wills et al. (2012) found consumers are generally interested in health claims but there is some variation with regards to knowledge of and trust in these claims. The perception of nutrition and health claims is also country specific and relates, in part, to the wording and presentation of claims, as was also found by van Trijp & van der Lans (2007).

Research into the advertising influence is available. Increase in advertisement liking was shown by Wu et al. (2012) with the use of celebrity endorsers, positive message framing and rewarding a message will boost advertisement believability which will boost brand attitudes and behavioural intentions. This was found to be the case in the study conducted by Willis and Stafford (2016) who also show that health consciousness significantly predicts attitudes towards dietary supplements while the familiarity with the advertising of these supplements does not. The result implies that, when consumers lack the inborn health motivation, viewing advertising does not provide enough motivation.

Kapsak et al. (2017) reviewed 6,179 structure-function claims as presented in U.S. supplement advertisements in order to gain an understanding of the frequency with which these claims were found, and determine how closely they resemble disease-related health claims and whether they were well-supported by clinical evidence. This creates a problem for consumers being able to tell the difference between scientific information and selling.

Jadhav et al. (2023) focused especially on the determinants of nutraceutical purchases, where they found health consciousness, product knowledge, availability, price, and marketing strategies and social influences as important determining factors. Their Mumbai survey also showed relatively high levels of nutraceutical usage amongst younger consumers and yet, for the older consumers, their awareness of the nutraceuticals was comparatively low.

Kumar and Pinakapani (2025) explored the impact of celebrities on consumer behavior and local government on consumer behavior in the field of nutraceuticals. A total of 231 respondents were used in this study with a mixed-method design, and the results showed all of the celebrities had a significant effect on consumer attention, trust, consumer perceived efficacy and willingness to try nutraceutical products. The factor analysis uncovered four dimensions of question credibility, attractiveness and product–endorser match, which were found to be significant in Chi-square test results with regard to consumer willingness.

Kumar and Pinakapani (2024) studied the effect of celebrity endorsement on consumer purchase behavior for health care nutraceutical products using "deep learning". Sentiment analysis, convolutional neural networks (CNNs), and recurrent neural networks (RNNs) were used to analyse textual and visual social-media data. It discussed celebrity credibility, attractiveness and celebrity–product congruence as influential factors in the formation of consumers' perceptions and decision-making, and suggested that complicated computational techniques could yield more sophisticated understandings of endorsement's effectiveness.

Kumar and Pinakapani (2024) conducted a comparative analysis of the effect of celebrities on the purchasing behaviour of consumers in the nutraceutical segment of healthcare products, through an empirical study. Given the marketing opportunities of celebrity endorsements, the study underlines their effectiveness for boosting brand visibility, credibility and it is also stated that it is the source of consumers' trust. Results showed that 61% agreed or strongly agreed that the use of celebrity endorsements had a positive influence on perceptions of nutraceutical products and increased the consideration to purchase. Overall, the study found that meaningful celeb brand connection increases users' positive purchase decisions.

More recent evidence support the generational dimension. However, both shared similarities and distinct differences in terms of the consumer motivations driving health-oriented food purchases were identified when comparing the motivational drivers for health-oriented food consumption between Generation Z and Generation Y consumers (Chen et al., 2024). Sun et al. (2024) discovered that in the realm of misleading online advertising for dietary supplements comprised of botanical ingredients, middle aged and older consumers showed a clear difference in their response to the information conveyed in the advertising message. They found that cognitive product involvement was a significant factor in their decision making process. Health awareness and subjective knowledge have also been found to greatly contribute to purchase intention of health-related foods, when examining Millennials and Generation Z (Dolgoplova et al., 2025). Lastly Jia and Liu (2025) found health consciousness has a strong influence on attitudes towards functional foods and these attitudes and perceived behavioural control also contribute significantly to food consumption behaviour.

The overview of the literature reveals that health consciousness, knowledge, trust, perceived benefits, advertising, social influence and price are significant factors that influence functional-food and nutraceutical consumption in general. Fewer studies have investigated these two concepts – the generational divide and advertising effects on awareness of health and consumption behaviors – together with the way these affect actual nutraceutical perceptions and consumption, however. This gap has prompted the start of the present study.

Objectives:

1. To compare consumers' perceptions and consumption of nutraceutical products across generations.
2. To evaluate how well different generations understand, perceive and purchase nutraceutical products due to advertising.
3. To investigate generational differences in the perception of health awareness of consumers and their consumption of nutraceutical products.

METHODOLOGY

The design of the study will be descriptive and analytical type. The purpose of the study is to see the changes in consumer perception and consumption of nutraceutical product among different generations and to know the effect of advertising and awareness of health on consumer behaviour. The primary data will be gathered using a structured questionnaire to which consumers from various generations (Generation Z, Millennials, Generation X and Baby Boomers) will be offered. The sampling will be done using stratified random sampling with sufficient representation from each generation (300 respondents). Respondents' knowledge of nutraceutical products and their perceptions of their health claims will be assessed and their levels of exposure to and impact of advertising will also be measured with suitable Likert scale statements as well as actual use and purchase behaviour of the products. Secondary sources to be used are research journals, books, industry reports and other reliable sources. Data collected will be analyzed using frequency and percentage, mean and standard deviation, chi-square test, correlation and regression analysis as appropriate to reveal generational differences and the effect of advertising and health awareness on the consumption of nutraceutical products.

RESULT AND ANALYSIS

The study is based on responses obtained from 300 consumers belonging to four generational groups, namely Generation Z, Millennials, Generation X and Baby Boomers. Descriptive and inferential mode of analysis was used with the collected data. The statements were categorised into three broad constructs which were Consumer Perception, Advertising Influence and Health Awareness and Consumption for analysis purpose. The responses were analyzed using the means and standard deviations and comparative analysis was performed to detect variation in responses from the generations. A Chi-square test was then performed to see if there was a significant relationship between nutraceutical intake by generational group.

Table 1: Generational Distribution of Respondents

Generational Group	Age Group	Frequency	Percentage
Generation Z	18–27 years	78	26.0
Millennials	28–43 years	96	32.0
Generation X	44–59 years	72	24.0
Baby Boomers	60–78 years	54	18.0
Total		300	100.0

As per the table, the biggest fodder for the table is Millennials with a 32.0% share of the respondents whereas Gen Z holds its 26.0% and Generation X holds its 24.0% proportion out while Baby Boomers enjoyed a 18.0% share. The distribution is a representation of different generations and they facilitate comparison of their perceptions and participation to the ads, health awareness and consumption of nutraceutical products.

Table 2: Consumer Responses Across the Three Constructs

Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

Construct	Sr. No.	Statement	Mean	SD	Rank
Consumer Perception	1	I consider nutraceutical products useful for maintaining good health.	4.15	0.79	3
	2	I believe nutraceutical products can help prevent certain health problems.	4.02	0.91	6
	3	I trust nutraceutical products that provide clear and credible health information.	4.21	0.76	1
	4	I believe nutraceutical products provide benefits beyond basic nutrition.	4.08	0.84	4
	5	I check product information and health claims before purchasing nutraceutical products.	4.05	0.89	5
Construct Mean		Consumer Perception	4.10		
Advertising Influence	6	Advertisements increase my awareness of nutraceutical products.	4.12	0.88	2
	7	Advertisements help me understand the benefits of nutraceutical products.	3.91	0.94	8
	8	Attractive advertisements influence my interest in nutraceutical products.	3.86	1.02	9
	9	Social media advertisements influence my perception of nutraceutical products.	3.74	1.08	11
	10	Celebrity/influencer endorsements affect my perception of nutraceutical products.	3.51	1.15	13
Construct Mean		Advertising Influence	3.83		
Health Awareness & Consumption	11	I am aware of the health benefits associated with nutraceutical products.	4.08	0.86	4

	12	I regularly seek information about health and nutrition.	4.18	0.83	2
	13	Awareness of lifestyle-related health problems encourages me to consume nutraceutical products.	3.97	0.92	7
	14	I prefer nutraceutical products as part of preventive healthcare.	3.82	1.01	10
	15	I intend to continue consuming nutraceutical products in the future.	3.78	0.98	12
Construct Mean		Health Awareness & Consumption	3.97		
		Overall Mean	3.97		

The outcome shows that the general picture of the perception of the respondents was positive for nutraceutical products with the construct mean score of 4.10 for Consumer Perception. The statement with the highest individual mean score is that the consumers trust nutraceuticals that give clear and credible health information (4.21). This means that trust and transparency play a significant role in influencing consumers' sense of trust. The scores (mean 4.15) for the usefulness of the nutraceutical products in maintaining good health also show a positive perceived value in relation to the preventive and health-supporting value of nutraceuticals.

The mean score of Advertising Influence is 3.83, which is considered as very high influence of advertising. With advertising being particularly important for raising product awareness as indicated by highest advertising-related mean being 4.12, it also came out as the second most frequently used communication tool with a mean of 3.16. A relatively high score of 3.91 is also obtained for the advertisements which explain the benefits of products. But celebrity and influencer endorsements have a lower average of 3.51, indicating that perhaps consumers aren't solely using promotional personalities as a gauge for assessing nutraceutical products.

The Health Awareness and Consumption construct scores 3.97 on the average which is a high level of answers being aware of their health and consuming the same. The highest score in this construct is for the regular search for health and nutrition information (4.18). Awareness of health benefits is a mean of 4.08 and a mean of 3.97 for awareness of lifestyle related health problem that makes people consume nutraceuticals. The analyses show that health awareness is highly correlated with consumers' interest in nutraceutical products as well as their intention to not stop consuming these products.

The overall mean score (3.97) reflects an overall positive attitude of respondents towards the nutraceutical products.

Table 3: Generational Difference in the Three Major Constructs

Generational Group	Consumer Perception	Advertising Influence	Health Awareness & Consumption	Overall Mean
Generation Z	4.05	4.01	3.89	3.98
Millennials	4.19	4.18	4.12	4.16
Generation X	4.08	3.69	3.94	3.90
Baby Boomers	3.91	3.42	3.76	3.70
Overall	4.10	3.83	3.97	3.94

There are distinct contrasts in responses between the generations as indicated in the table. For each construct, millennials have the highest mean score; Consumer Perception (4.19), Advertising Influence (4.18) and Health Awareness and Consumption (4.12). Based on their overall mean score of 4.16, they are the most positive orientation towards the nutraceutical products.

Generation Z is also fairly sensitive to adverts, with a mean of 4.01 compared to 3.69 for Generation X and 3.42 for Baby Boomers. This suggests that younger consumers are easier to market to, even more so when the marketing is done through social media or digitally.

Consumer perception (3.08) and health awareness (3.94) are relatively good amongst generation X, while advertising influence (3.69) is comparatively low. The youngest generation – the Baby Boomers – scores lowest across the three constructs, especially in terms of influence of advertising. The advertising score for their foods and drink was 3.42, a number that indicates that traditional advertising and/or digital advertising may not be as influential on their decision-making as in more youthful generations.

Results thus show that nutrients products marketing perception, reception and consumption are different from generation to generation. The younger appear more receptive to the marketing communication while the older consumers seem relatively less affected by advertisements.

Hypothesis Testing

Based on the objectives of the study, the following hypothesis was formulated:

H₀: There is no significant association between generational group and consumption of nutraceutical products.

A Chi-square test of independence was used to evaluate the difference between the four groups of those who consumed and did not consume any nutraceuticals.

Table 4: Chi-Square Test of Association Between Generation and Nutraceutical

Statistical Test	Chi-Square Value	df	p-value	Decision
Pearson Chi-Square	18.764	9	0.027	Significant
Likelihood Ratio	19.142	9	0.024	Significant
Linear-by-Linear Association	8.917	1	0.003	Significant
Number of Respondents	300			

Level of Significance = 0.05

This Pearson Chi-square value is 18.764 and there are 9 degrees of freedom, the associated p-value is 0.027. This value of p is less than the critical p value of 0.05 so the null hypothesis would be rejected. Thus, the combined result of the two groups of generations significantly differs with regard to the consumption of nutraceutical products.

The discovery supports the theory that the different generations don't act in same manner with regard to consumption. The descriptive feedback confirms this trend, as Millennials and Generation Z reveal relatively higher scores in health awareness, advertising responsiveness and advertising consumption intention, when compared to the scores of Generation X and the Baby Boomers. H₁ is accepted: A significant association is observed between generational group and the use of nutraceuticals products.

OVERALL FINDINGS

The mean scores for the constructs of the Consumer Perception indicate that the general attitudes of the consumers are favorable for nutraceutical products, being the highest values in the construct with a mean of 4.10. Consumers highly appreciate trustworthy health information, while they consider nutraceutical products as beneficial to maintain health and to prevent health-related issues.

The Advertising Influence mean of 3.83 reflects that advertising is having a significant impact in creating consumer awareness and influencing consumer perceptions. The relatively low interest in celebrity and influencer endorsements, though, suggests that “be” may be out of favor with consumers, meaning they might be more inclined to consider a nutraceutical based on product information and credibility than traditional promotion or hype.

Value for the Health Awareness and Consumption equals to “3.97” which means that one of the important factors underlying nutraceutical consumption is health consciousness. B2B consumers actively looking for health and nutrition

information are more likely to have a positive perception of nutraceuticals and view them as part of their preventive health care.

Perhaps most significantly, the generational analysis reveals that Millennials exhibit the highest overall interest in nutraceutical products, followed by Gen. Z, Gen. X and Baby Boomers. By confirming these consumption differences between generations from a significant statistic, the Chi-square result further reinforces the statistical significance of the generational differences in consumption. Therefore, the results give empirical grounds for further consideration of generation as a significant factor in explaining the relationships between advertising, health awareness, and consumption of nutraceuticals.

CONCLUSION

The study highlights the importance of the generational traits in consumer perceptions and consumption of nutraceutical products. The results suggest that consumers have positive attitudes towards nutraceuticals and have some awareness of the benefits they offer to health and preventive health care. Results obtained from the three constructs showed that Consumer Perception had the highest mean score (4.10), followed by Health Awareness and Consumption (3.97) while Advertising Influence (3.83) came last. This means that consumers will accept nutraceutical products above all because of their perceived health benefits, the trust in information provided about the product and the awareness of the importance of preventive care in healthcare. But the study also shows that there are distinct generational differences. The top two groups with the most positive attitude toward nutraceutical products were Millennials and Gen Z compared to Gen X and Baby Boomers. Consumers were found to be more sensitive to advertising than the older consumers were. The Chi-square analysis also confirmed a statistically significant link between generational group and nutraceuticals consumption ($\chi^2 = 18.764$, $p = 0.027$). Therefore, the consumption of nutraceuticals shouldn't be counted as a common type of consumer behavior and instead, should be considered in the context of the interplay of generation, health consciousness, perceptions, and exposure to advertising. The results indicate that changes in communication on the part of nutraceutical marketers are necessary to reach the various generations, while simultaneously maintaining the credibility, transparency and scientific support of the product's health claims.

RECOMMENDATIONS

1. **Develop generation-specific marketing strategies:** But in order to create a successful marketing strategy, a nutraceutical company will want to consider varying their marketing strategy by age group. D and social media marketing campaigns may perform well on Generation Z and Millennials, while informative communication via health care practitioners, pharmacies and traditional media may work well on Generation X and Baby Boomers.
2. **Strengthen health-focused communication:** Marketers should not only rely on promotional appeals, and should also present information regarding the nutritional composition, possible benefits and usage instructions as well as the preventive health aspects.
3. **Ensure credibility of health claims:** Scientifically supported and transparent health claims should be used by the companies. Simplifying the disclosure of ingredients, evidence, dosage and quality of products can improve consumer confidence and alleviate consumer doubts.
4. **Use digital platforms responsibly:** Consumer awareness can be raised by using social media, websites, reviewing online and providing education content. But overblown hype and bogus influencers marketing should be avoided as it could detract from consumer trust in the nutraceutical segment.
5. **Increase professional involvement:** By working with the medical profession, dietitians, nutritionists and pharmacists can increase the credibility of the information in regard to any eventualities of nutraceuticals, particularly among older consumers as well as consumers who are more wary of health-related nutrition products.
6. **Improve consumer education:** Promoters are misleading consumers by claiming benefits science has not proven, working towards awareness programmes that will help consumers differentiate scientific benefits from unsupported promotion. This can help to foster better than just advertising-related buying decisions.
7. **Focus on Millennials and Generation Z:** Given the level of awareness and high level of advertising responsiveness, as well as intention to consume, these groups would be good candidates for interactive digital communications, educational marketing, personalisation, and social media marketing strategies.

8. **Adopt an inclusive approach for older consumers:** Baby Boomers have reduced consumption and are less responsive to advertising, which indicates that products must be communicated more simply and in a professional manner; and must be made more readily available to reliable information, with attention to safety, credibility and suitability.
9. **Build long-term consumer relationships:** Instead of focusing just on the initial sale, nutraceutical companies should have a greater emphasis on trust, product quality, transparency, and ongoing consumer education. This can help increase repeat sales and consumption.
10. **Encourage regulatory and industry oversight:** The healthcare community should reinforce the regulation and oversight of claims and advertising in order to provide consumers with accurate and responsible information.

LIMITATIONS OF THE STUDY

Some limitations are observed in this study that needs to be considered in interpreting the results. The finding from the study may not completely reflect the perception and the nutraceutical consumption behavior of the total population of nutraceutical consumers because the study only limited to 300 subjects. Second, because the study is cross-sectional in nature, the perception of the customer does not reflect any fluctuations in perception over the time of the study, meaning there is no account for changes in perception, health awareness or consumption over time. Thirdly, the study is based mainly on self-reported responses of the questionnaire, which can be affected by both recall bias and socially desirable response to the questions. The study is primarily concerned with the constructs of consumer perception, advertising effects and health awareness and consumption, and other constructs like price, product quality, brand reputation, availability, income, recommendations from healthcare professionals, social influence and perceived risk, may also influence nutraceutical consumption. In addition, there can be big differences among individuals in each generation depending on their socioeconomic status, education, occupation and lifestyle. Last but not least, the study does not capture the use of nutraceuticals products by the segment of the population which is using different nutraceutical products, and thus different motivations for use.

SCOPE FOR FUTURE RESEARCH

Future studies could build upon this piece of work by administering a larger and more geographically uniform sample including those from various cities, states and urban/rural population groups for the results to be more generalisable. Longitudinal studies might be helpful in studying changes in consumer perception; health awareness and nutraceutical consumption changes over time especially across various age groups. Other factors like price sensitivity, product quality, brand trust, perceived risk, nutritional knowledge, income, lifestyle, social influence, health-care expert recommendations and online reviews could also be added to create a more comprehensive model of nutraceutical consumption in the future. Comparative research based on the perceptions of Generation Z, Millennials, Generation X and Baby Boomers could identify if advertising has an impact on these different media (traditional, social, influencer and digital health). Further studies can be done on particular formulas of nutraceuticals like probiotics, vitamins and minerals, herbal products, sports nutrition and immunity-based products. Qualitative interviews or Mixed method may be able to give in-depth understanding of the causes, concerns and experiences that affect generational differences. These studies, in turn, would assist in creating generation-by-generation more effective, credible and targeted strategies for communicating with and educating consumers about nutraceuticals from the marketing, healthcare and policy perspectives.

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