THE IMPACT OF FAST FOOD ON CANADA'S PUBLIC HEALTH CRISIS, ECONOMIC BURDENS, AND PATHWAYS TO NUTRITIONAL EQUITY

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Abstract

Fast food has become a dominant force in Canada's dietary landscape due to urbanization, socio-economic disparities, and cultural normalization, leading to serious public health and equity questions. This study seeks to understand the structural and behavioural influences of fast-food consumption and its implications for health vulnerability while exploring nutritional equity awareness and policy directions to reduce reliance on, and make better access to, healthier food alternatives. The study utilized a mixed-methods methodology combining primary data collected from a stratified random sample of 700 Canadians (aged 18–65) in urban, suburban, and rural settings utilizing a validated 21-item Likert-scale questionnaire, administered through Qualtrics, along with pilot testing and content validation, then descriptive and SEM analyses were performed in SPSS and AMOS. Mediation analysis and integration of secondary data from national health databases allowed economic risk modelling (via CAGR) to contextualize health vulnerabilities and predicted costs of fast-food-related health outcomes over 10 years. The results suggest that fast food consumption in Canada is shaped primarily by structural influences like accessibility, cost justification, cultural normalization, and advertising. Coupled with attitudinal influences, these structural and behavioral influences lead to increased perceived health vulnerability, particularly for those who are low-income, Indigenous, urban, and youth. Mediation analysis revealed that Nutritional Equity Awareness partially mediated these relationships. In addition, secondary data suggests a clear dose-response relationship between fast food frequency and increasing rates of obesity, mental health issues, and chronic illness, likely to cost Canada CAD 15.78 billion per year by 2034 if not addressed. Our study highlights the need for policy interventions that are integrated and equity-driven.

Keywords: Fast Food Consumption, Health Vulnerability, Nutritional Equity, Canada, Mediation Analysis, Public Health Policy.

1. INTRODUCTION

Fast food has become one of the leading forces in the global food landscape, shaping dietary practices, eating habits, and public health outcomes (Akbaş, 2024). This is more evident in Canada, where fast food chains have rapidly proliferated, and busy lifestyles, urban sprawl, income inequality, and other socio-economic factors have changed how Canadians eat (Chang & Nayga, 2024; Saleem et al., 2025). Canada has historically been noted for its diversity of food culture related to fresh produce, community food practices, and localized traditions (Domingo et al., 2021). However, over the past few decades, there has been a seismic shift to fast food choices that are convenient, calorie-dense, and nutrient-poor (Gómez, 2023).

This shift is not just a change in consumer preference but the result of structural, environmental, and lifestyle factors, such as successful marketing, urban zoning decisions, inequitable access to nutritious food, and socio-economic stressors (Iguacel et al., 2025). Some communities, such as Indigenous communities, low-income neighborhoods, and racialized groups, have exponentially more health risks because of structural injustices to their food access and healthcare (Williams et al., 2024).

Statistical trends from the last two decades compound the urgency of fast food and its role in Canada's public health. The entire cost of not treating adult obesity in Canada is projected to be $27.6 billion in 2023, which includes $21.7 billion in lost productivity and $5.9 billion in increased healthcare expenses (Chen et al., 2025). Research found that over 55% of Canadian adults consume fast food at least once per week, and for youth aged 14–24, fast food consumption at least once a week was 70% (Gudelj Rakić et al., 2024).

The main issue is that fast food consumption in Canada is no longer merely a decision that individuals make: it is now a structural and cultural issue at the centre of the socio-economic underpinnings of everyday life (Seale et al., 2022; Burningham & Venn, 2022). The normalization of fast food, particularly among vulnerable populations, has solidified health inequalities and added to the unsustainable burden on the Canadian healthcare system (Borras, 2023; Kaplan-Myrth, 2024).

Given this context, there is an important and obvious gap in research that diverges from simplistic depictions of dietary patterns and considers the simultaneous impact of individual behavior, environment, socio-economic inequities, and public policy on fast food consumption of children/youth (and families). The main purpose of this study is to better understand how the consumption of fast food creates compounded and systemic vulnerabilities towards public health and economic burden in Canada, while identifying pathways towards nutritional equity. Specifically, the study aims to: (1) examine the relationship between fast food accessibility, normalization of consumption, justification of cost, advertising exposure, and nutritional knowledge on perceived health vulnerability; (2) investigate levels of nutritional equity awareness as a mediating factor in these relationships; (3) explore patterns of food access and health outcomes among different socio-economic and geographic contexts; and (4) recommend policy changes to mitigate the dependency on fast food, and access to nutrient-dense food sources. These objectives will allow the research team to holistically examine the phenomenon of fast food through a quantitative and qualitative understanding, and its implications on Canadian public health and social equity overall. Ultimately, this interdisciplinary approach will inform and better debate the contemporary state of scholarly delivery, public policy, and grassroots influence to effectively shift food access to alternative healthy indicators within Canada.

2. LITERATURE REVIEW

A lot of research has investigated the links between fast food and public health, especially in terms of youth behavior and effects, economic impact, and governmental policy. Li et al. (2022) examined the psychological models of junk food consumption of children and adolescents, and their findings revealed that perceived severity, vulnerability, and fear all reduced junk food consumption when the otherwise positive association with obesity was accounted for. Also, the study argued that prescription transparency would mitigate the detrimental influences of junk food consumption, suggesting that transparency is a buffer against obesity.

Similarly, Shimul et al. (2021) used a multi-phase project examining regulatory focus, message framing, and health consciousness as factors towards combining avoidance of junk food consumption, indicated that individuals with a health consciousness motivator and perceived risk were more likely to exhibit avoidance consumption, particularly when health related communication was framed based on a promotion or prevention focus.

Upreti et al. (2021) used a socio-ecological model to measure junk food consumption levels among schoolchildren and explained how nutritional knowledge at the micro level and meso-level had substantial outcomes, demonstrating that sharing peers at school were strong predictors of food choices.

Raut et al. (2024) noted in addition to behavior-focused views, structured nutrition education can lead to improved attitudes about nutrition and greater overall diet quality amongst adolescents. Raut et al. (2024) employed a 12-week controlled nutritional education program in Nepal, which resulted in statistically significant increases in knowledge and health-related behavior among students who received an explicitly tailored health education. This supports the idea that systematic nutritional educational interventions should be part of sound public health interventions, particularly in schools.

In a similar vein, McKelvie-Sebileau et al. (2022) investigated nutrition-related interventions in an Indigenous community in New Zealand using a Group Model Building approach to explore community-driven nutrition-related projects. McKelvie-Sebileau et al. (2022) acknowledged that a combination of systemic (cost of housing, financial literacy) and individual-environment (marketing, mental health) factors contributed to poor nutrition. The group employed a culturally based participatory approach to offer ten interventions prioritized by the community, including fostering cultural connectedness in schools, which provided evidence that community participation can identify feasible interventions to address children's diets.

Through a cross-cultural lens, Lin et al. (2022) analyzed the ways dietary practices, cultural beliefs, and psychological perceptions coalesced to form food behaviors of Chinese tourists in Spain through an assemblage theory lens. The authors found that health perceptions were significantly influenced by familiarity and comfort with dietary habits, with tourists often refraining from unfamiliar foods due to perceived risk.

The findings inferred that dietary choices and health choices are culturally and emotionally bound, a relationship that resonated throughout the unfolding events of multicultural societies such as Canada. Anyanwu et al. (2022) similarly investigated Indonesia's nutrition transition through interviews with health and environmental specialists.

The authors witnessed a generational change in food preferences that coincided with an increase in food outlets and modern fast food, often coupled with the barely healthy tradition of frying. The experts characterized these changes as leading to increased risk of cardiovascular disease, highlighting the ways food consumption patterns are subject to the simultaneous influence of globalization and cultural transition, and the associated health outcomes.

Economic implications also emerged as an area of concern in the research. A meta-analysis of ultra-processed food (UPF) consumption by Martini et al. (2021) showed that UPFs accounted for up to 80% of daily caloric intake for those living in Canada and the U.S.. This paper indicated that UPFs were inversely associated with the consumption of less-processed, nutrient-dense foods, which suggests a major nutritional trade-off with public health relevance.

This high caloric intake from low-nutrient foods has led to a rise in obesity and other non-communicable diseases (NCDs), leading to economic burdens on healthcare systems, due to constant chronic illness. Opusunju et al. (2025) explored consumer perceptions in Nigeria and addressed gender differences in Quick Service Restaurants (QSRs), but in line with the findings of Kinsey, both genders agreed that QSRs were not sufficiently proactive in teaching the public about healthy eating.

The study did not find any significant differences in age implications, and food knowledge gaps were cross-generational, not simply due to a lack of food knowledge for a particular generation. These

findings had important parallels in Canadian cities, as QSRs were widespread and widely unaccountable for promoting health literacy.

Gültekin and Veuphuteh (2023) investigated food price and health awareness and examined how health consciousness of university students moderated the relationship between price sensitivity and food quality from the purchase intention perspective in Canada and Turkey. Using PROCESS analysis as part of their employed model, Gültekin and Veuphuteh showed that high health-conscious students thought about food quality more than price and were less influenced by price in the fast-food purchasing situation.

In addition to pointing to the significance of health literacy to young people (who are targets of marketing for fast food), these results emphasized the process of shaping one's food choices. De Kervenoael et al. (2021) analyzed consumer behaviour in Singapore and reported that subjective norms, perceived usefulness, and personal motivations strongly affected the perceived value of healthier foods.

They also used a PLS-SEM and showed that cultural values and social influence were very important in food choice behaviours, underscoring the need to understand healthier eating through a socio-cultural lens. These findings are particularly important for Canada's diverse population and multicultural orientations to food that likely define barriers and opportunities for public health interventions.

In Italy, Caso et al. (2022) noted that during COVID-19 lockdowns, there was an initial increase in healthy food consumption, cooking activity, and a decrease in junk food consumption among respondents. This initial increase in healthy food consumption and cooking activity only temporarily changed food behavior, as respondents did engage in healthy eating post-lockdowns, but not to the same extent, although there was still reduced junk food consumption. These findings reflect the nature of food behavior being complex, contextual, and the time-limited impact of the situation (e.g., a pandemic).

Structural disruptions, like those of a pandemic, may ultimately result in greater temporary food consumption, but ongoing behavior change will also require some length of ongoing and systemic support. In Canada, the COVID-19 pandemic influenced ongoing food insecurity and therefore disrupted normal routines, which also made it difficult to subsequently modify eating patterns over the longer term without broad institutional support.

Additionally, a variety of studies pointed out the existentially multi-faceted nature of food consumption as a behavior. For example, Shimul et al. (2021) showed how one could use public health campaigns to promote healthy food consumption behaviours because of psychological characteristics like regulatory focus and health consciousness. At the same time, Li et al. (2022) provided substantive data illustrating that junk food consumption among youth was deterred by health concern aspects of fear, vulnerability, and perceived severity, lending credibility to the impact of health messages.

Also, Upreti et al. (2021) and Raut et al. (2024) supported the importance of an early educational intervention, or peer knowledge sharing, for promoting healthy food consumption. Together, these results indicated the development of convergence in the literature towards the imperative for educational, psychological, and policy changes for reducing fast food consumption and health effects.

Overall, the literature reviewed indicated an increasing acknowledgement of fast food and ultra-processed food consumption as harmful to physical health, psychological health, and public health economics. Fast food consumption was associated with observed increases in obesity and chronic disease prevalence overall and for each age group, though problematically, children, adolescents, and young adults appear to be the most vulnerable.

For such a critical topic of research, there is already substantial research on food consumption, health effects, and fast-food consumption; however, the majority of studies have considered psychological, economic, or cultural approaches on their own, and not as a comprehensive and multidimensional approach.

Very few studies have attempted to look at how accessibility, cultural normalization, advertising, and cost considerations relate to perceived health vulnerability with nutritional knowledge complementary in the context of a Canadian food environment. Furthermore, the role of nutritional equity awareness and any differences relating to socio-economic and geographic sectors deserve more attention.

This study will build on these gaps in knowledge through the synthesis of primary and secondary data in a holistic manner to investigate the interactions among these variables and make visible policy opportunities that could enhance socially equitable access to nutrition and reduce reliance on fast or convenience food consumption.

2.1. Theoretical Framework and Hypothesis Development

This study clarifies the complex interactions affecting the consumption of fast food in Canada and the associated health consequences using two established theoretical approaches, the Social Ecological Model (SEM) (McLeroy et al., 1988) and the Health Belief Model (HBM) (Strecher & Rosenstock, 1997). As a pair, these models provide a layered perspective that considers individual attitudes and beliefs about fast food consumption, as well as socio-environmental factors describing the food context, context of eating, dietary habits, and health vulnerability to understanding food consumption.

The Social Ecological Model (SEM) allows a comprehensive view of the interplay of influences that affect individual behavior at various levels, including intrapersonal, interpersonal, institutional, community, and policy levels (Alghzawi & Ghanem, 2021).

This has specific relevance to nutrition-related behaviors since eating is rarely executed in context-free isolation of the surrounding social and environmental contexts (Cohen & Siegel, 2014). For this paper, the SEM informs three independent variables: Fast Food Accessibility Perception (FFAP), Cultural Fast Food Normalization (CFFN), and Advertising Influence Score (AIS).

In the context of the SEM, FFAP is understanding how individuals conceptualize and assess the availability and convenience of fast food outlets when healthier food options are available in their immediate environment (Oexle et al., 2015). Given the SEM perspective, when fast food options are perceived to be available and more convenient than healthier options, individuals might consume fast food frequently, elevating the risk of negative health consequences (Janssen et al., 2018).

Similarly, Cultural Fast Food Normalization (CFFN) relates to SEM's community and societal layers (Adzovie & Jibril, 2020). This variable assesses the extent to which consumption of fast food is contextualized in social norms and cultural practices, such as tying fast food to celebrations and to bonding with friends or to convenience (Akbaş, 2024). Normalizing fast food in cultural contexts decriminalizes the stigma of poor eating habits and may dysregulate consumption habits to overconsumption.

SEM asserts that social norms shape individual behavior, which relies on social reinforcement as well as collective modeling, thus perpetuating chronic health inequities (Rangan, 2025). Advertising Influence Score (AIS) is also theoretically relevant to SEM with respect to the larger environmental and media context (Collins et al., 2010). Advertising for fast food similarly exploits cognitive research and emotional appeals to induce preferences for food in consumers, especially youth and low-income groups. Simultaneously, the Health Belief Model (HBM) is a psychological framework to better

understand the individual perceptions and decision-making in relation to health behaviours (Anuar et al., 2020). HBM has at its core that health action is based upon the individual's belief in a personal threat from a health concern and that the individual believes that the recommended health behaviour will reduce that threat (Abraham & Sheeran, 2005).

HBM directs key variables in this study: Cost Justification for Fast Food (CJFF); Nutritional Knowledge Deficit (NKD); and the dependent variable, Perceived Health Vulnerability (PHV). CJFF can be found in HBM's idea of perceived barriers: individuals may perceive fast food as unhealthy, but justify consumption for the cost or convenience of time (Lee & Lien, 2015). This perceived barrier prevents individuals from adopting healthier behaviours, even with knowledge of the risk.

Nutritional Knowledge Deficit (NKD) is linked to the HBM constructs of perceived susceptibility and perceived self-efficacy (Nooriani et al., 2019). The HBM suggests that when people lack knowledge of the health hazard and how to avoid it, they are unlikely to take preventive action (Rosenstock, 1974).

Perceived Health Vulnerability (PHV), the dependent variable, informs the subjective evaluation of how at risk someone believes they are for negative health consequences as a result of fast food consumption (Millstein & Halpern-Felsher, 2002). According to HBM, the greater the perceived risk, the greater the likelihood of behavior change, unless that perception is neutralized by cultural or economic justifications.

Besides these models, this research introduces the concept of Nutritional Equity Awareness (NEA) as a mediating variable between individual behavior and structural inequality. While SEM can describe structural influences on behavior, NEA describes an individual's cognizance of inequitable access to nutritious food based upon their social class, neighborhood, and ethnic community (Agurs-Collins et al., 2024). It reflects a new psychological mechanism by which individuals could self-reflectively consider their decisions within the bigger system in which they are situated.

Based on the application of SEM with HBM, the study proposed the following hypotheses:

H_1:   Levels of greater access to fast food, cost justification, nutritional knowledge deficiency, cultural normalization of fast food, and advertising influence are positively related to higher perceived vulnerability to health among Canadian consumers.

To assess the effects of these factors individually, the study developed the following sub-hypotheses:

H_1a: Fast Food Accessibility Perception (FFAP) has a positive influence on Perceived Health Vulnerability (PHV).

H_1b: Cost Justification for Fast Food (CJFF) has a positive influence on Perceived Health Vulnerability (PHV).

H_1c: Nutritional Knowledge Deficiency (NKD) has a positive influence on Perceived Health Vulnerability (PHV).

H_1d: Cultural Normalization of Fast Food (CFFN) has a positive influence on Perceived Health Vulnerability (PHV).

H_1e: Advertising Influence Score (AIS) has a positive influence on Perceived Health Vulnerability (PHV).

The study hypothesizes that Nutritional Equity Awareness (NEA) may serve as a mediator that could lessen the strength of some of these relationships:

H_2:   Nutritional Equity Awareness (NEA) mediates the relationship of the independent variables (CJFF, NKD, CFFN) and Perceived Health Vulnerability (PHV). Figure 1 shows the Conceptual framework diagram.
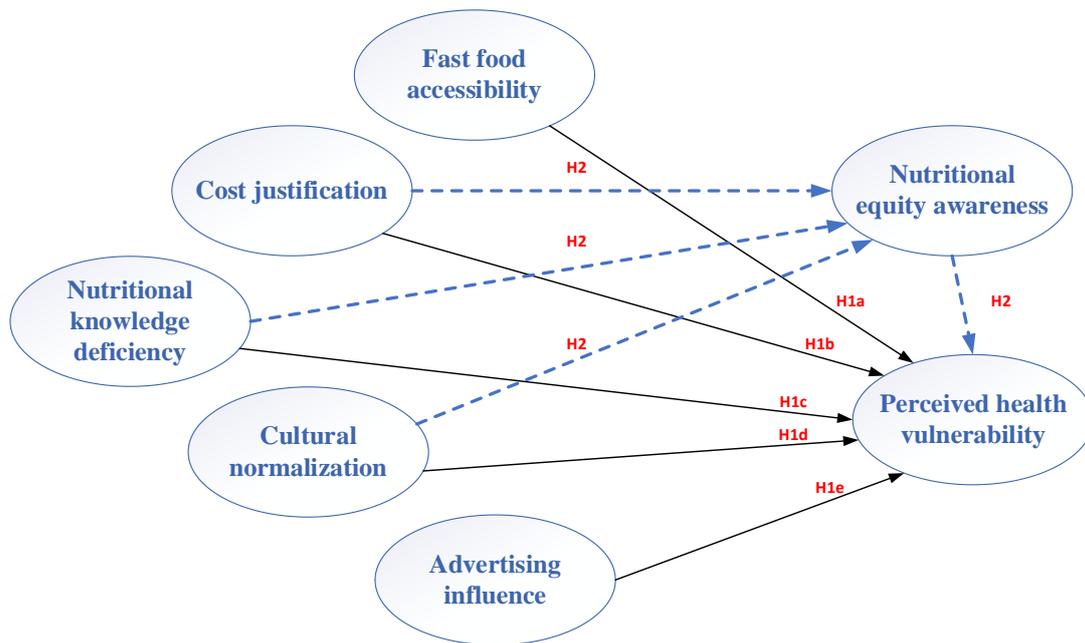
Figure 1: Conceptual framework diagram

3. RESEARCH METHODOLOGY

3.1. Study Population and Sampling Strategy

The study population consists of Canadian adults aged 18-65 years, from urban, suburban, and rural contexts across the 10 provinces. The sampling strategy is stratified random to be representative in proportion to key demographic factors such as gender, income, education, and location. Sample strata are based on Census data from 2021. A minimum sample size of 700 respondents was estimated using G*Power 3.1 for a medium effect size at a statistical power of 0.95 and α=0.05 for structural equation modeling, ensuring sufficient statistical power to detect significant relationships within the model.

3.2. Instrument Development

A structured self-administered questionnaire was developed to study the latent and observed variables associated with the study. The questionnaire consisted of 21 items (representing seven core constructs (FFAP, CJFF, NKD, CFFN, AIS, NEA, and PHV)) that were derived from previously validated scales with modifications made for the context of Canadian public health. Each item was rated on a 5-point Likert scale (1 being Strongly Disagree and 5 being Strongly Agree), a common scale used for measurement of behaviors, perceptions, and attitudes. The three public health and psychometrics experts evaluated the items for content validity, and a pilot test was completed with fifty respondents (for testing wordings, order of wording, and time to complete).

3.3. Data Collection Procedures

The final questionnaire was created in Qualtrics, an online survey platform that follows Canadian data storage guidelines. The data collection period lasted eight weeks. Participants provided informed consent digitally. In an effort to be inclusive, the survey was available in English and French. Logic branching and validation checking was put in place to reduce missing or inconsistent answers. Monitoring of IP addresses helped account for duplicates, and incentives were also provided via the panel (in points), to assist with studying their effectiveness at collecting data.

3.4. Descriptive and Preliminary Analyses

Before conducting the modeling, descriptive statistics were calculated for all items and all constructs to look at means, standard deviations, skewness, and kurtosis. This allowed for the assessment of normality assumptions and made choices about the analyses. Any items with possible excessive skewness or kurtosis (greater than ±2) were noted for further investigation. Internal consistency reliability of each scale was assessed using Cronbach's alpha (α) which is a measure of the average correlation among the items in the scale. Acceptable levels of α are greater than 0.70 with strong reliability levels being above 0.80.

3.5. Construct Validation: Convergent and Discriminant Validity

Confirmatory Factor Analysis (CFA) was performed with AMOS to test the measurement model. Because of its ability to handle complex models, non-normal data, and exploratory validation studies, AMOS facilitates this process. Discriminant validity was tested with the "Fornell–Larcker criterion", in this instance where the square root of the AVEs for each construct must be greater than the highest correlation with any other construct. This step determines the conceptual distinctiveness of each of the variables.

3.6. Exploratory Factor Analysis (EFA)

Before CFA, an Exploratory Factor Analysis (EFA) through Principal Axis Factoring with a Varimax rotation was conducted to understand the factor structure. This process provided us with the underlying factor loadings for our 21 items and also allowed us to check construct dimensionality. We also conducted the Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity to check that our data was sufficient for conducting a factor analysis. The number of factors we kept was based on three criteria: eigenvalue > 1, scree plot interpretation, and a coherent set of factors. We examined the factor loadings of each item, and items that had factor loadings below 0.60, or if they were heavily loaded on more than one factor (> 0.30 on more than one factor), were considered for removal or resignation.

3.7. Structural Model Design

Following the validation of the measurement model, the structural model was specified. The model's hypothesis posits that PHV (Perceived Health Vulnerability) is predicted by six independent latent constructs: FFAP, CJFF, NKD, CFFN, AIS, and NEA. The SEM allows for investigation of direct and indirect effects among constructs, and bootstrapping (5,000 resamples) allows for assessing the stability of coefficients.

The structural relationships were modeled with the regression equation:

$$PHV = \beta_1 CJFF + \beta_2 FFAP + \beta_3 CFFN + \beta_4 NKD + \beta_5 AIS + \beta_6 NEA + \epsilon$$

Where β_i denotes the standardized path coefficients and ϵ Is the error term.

3.8. Mediation Analysis

The model incorporates Nutritional Equity Awareness (NEA) as a possible mediator between structural drivers (CJFF, NKD, and CFFN) and PHV. A mediation analysis was conducted by modeling indirect effects with bootstrapping. The indirect effect is calculated as:

$$Indirect\ effect = \beta_{CJFF \to NEA} \cdot \beta_{NEA \to PHV}$$

Significance was assessed using bias-corrected confidence intervals, whereby indirect effects were considered meaningful if the 95% CI excluded zero.

3.9. Integration of Secondary Data and Risk Modeling

To put primary data research findings in context, secondary datasets from Statistics Canada, the Public Health Agency of Canada (PHAC), and the CIHI were incorporated. Variables included the prevalence of obesity, trends in BMI, rates of depression, incidence of diabetes, and socioeconomic risk profiles broken down by the frequency of fast food consumption. A compound annual growth model (CAGR) was run to estimate the economic costs associated with fast-food-related diseases over a ten-year projection using:

$$Cost_t = Cost_0 . (1 + r)^t$$

where $Cost_0$ Is the base year cost estimate, r is the growth rate, and t is the number of years projected.

3.10. Ethical Considerations

This study adhered exclusively to research ethics standards in Canada's Tri-Council Policy Statement 2 (TCPS2). Participation in the study was voluntary and anonymous, based on informed consent. No identifiable personal information was obtained. Data collected was stored on encrypted servers and included access by the research team only.

4. RESULTS

4.1. Demographic Associations and Fast Food Perception

Table 1 provides the distribution of the significant demographic variables and the chi-square significance. The sample had a near-even representation of male (48%) and female (48%), with only four percent identifying as non-binary. The gender variable emerged with no significant relationship with fast food perception (χ^2 = 2.89, p = .089), suggesting the possibility that there may not be differences in perceptions of fast food associated with gender identity. The variable for age groups also showed the potential for significance (χ^2 = 5.11, p = .078), indicating potential differences between generations in attitudes or behaviours toward fast food consumption. Monthly income levels, however, are more than significant for fast food perception (χ^2 = 9.34, p = .023*), which may show the significance of economic concerns as an influence on food choice. This reinforces that fast food consumption is more often driven by economic implications influencing food choices, particularly in lower and lower-middle income brackets.

Table 1: Demographics Frequency Table

Demographic Variable	Category	Frequency (n=500)	Percentage (%)	χ² (Significance)
Gender	Male	240	48.0%	χ² = 2.89 (p = .089)
	Female	240	48.0%	
	Non-binary/Other	20	4.0%	
Age Group	18–25	100	20.0%	χ² = 5.11 (p = .078)
	26–40	220	44.0%	
	41–60	130	26.0%	
	60+	50	10.0%	
Monthly Income	< $2,000	110	22.0%	χ² = 9.34 (p =.023)*
	$2,000–4,999	180	36.0%	
	$5,000–7,999	140	28.0%	
	$8,000+	70	14.0%	

4.2. Descriptive Measures, Scale Validity, and Latent Constructs

Table 2 shows the descriptive statistics of different constructs influencing fast food behavior. The means of all constructs are considered to be acceptable (3.20-3.95), and the standard deviations are all below 1, indicating moderate agreement on average from the set of respondents. Cronbach's alpha values for all the constructs exceed the 0.80 criterion for strong internal reliability.

Convergent validity is ascertained with values of AVE greater than 0.50 and composite reliabilities (CR) being greater than 0.70. These measurements confirm the validity of the constructs: Fast Food Accessibility Perception (FFAP), Cost Justification for Fast Food (CJFF), Nutritional Knowledge Deficit (NKD), Cultural Fast Food Normalization (CFFN), Advertising Influence Score (AIS), Nutritional Equity Awareness (NEA), and Perceived Health Vulnerability (PHV).

This validation upholds the theoretical appropriateness of these measures in the assessment of attitudes and behaviors concerning fast food consumption and health vulnerability. Interesting measurements, in particular, were those for accessibility (FFAP = 3.85) and advertising influence (AIS = 3.95), which could be said to reflect structural and marketing-based drivers of fast food consumption. Figure 2 shows the Mean scores.

Table 2: Descriptive Statistics, Reliability (Cronbach's α), and Validity

| Construct	Mean	SD	Cronbach's α	AVE	CR
Fast Food Accessibility Perception (FFAP)	3.85	0.74	0.841	0.64	0.87
Cost Justification for Fast Food (CJFF)	3.72	0.80	0.854	0.62	0.86
Nutritional Knowledge Deficit (NKD)	3.45	0.68	0.821	0.59	0.84
Cultural Fast Food Normalization (CFFN)	3.60	0.76	0.877	0.66	0.89
Advertising Influence Score (AIS)	3.95	0.69	0.836	0.61	0.85
Nutritional Equity Awareness (NEA)	3.20	0.81	0.842	0.60	0.86
Perceived Health Vulnerability (PHV)	3.78	0.77	0.864	0.65	0.88
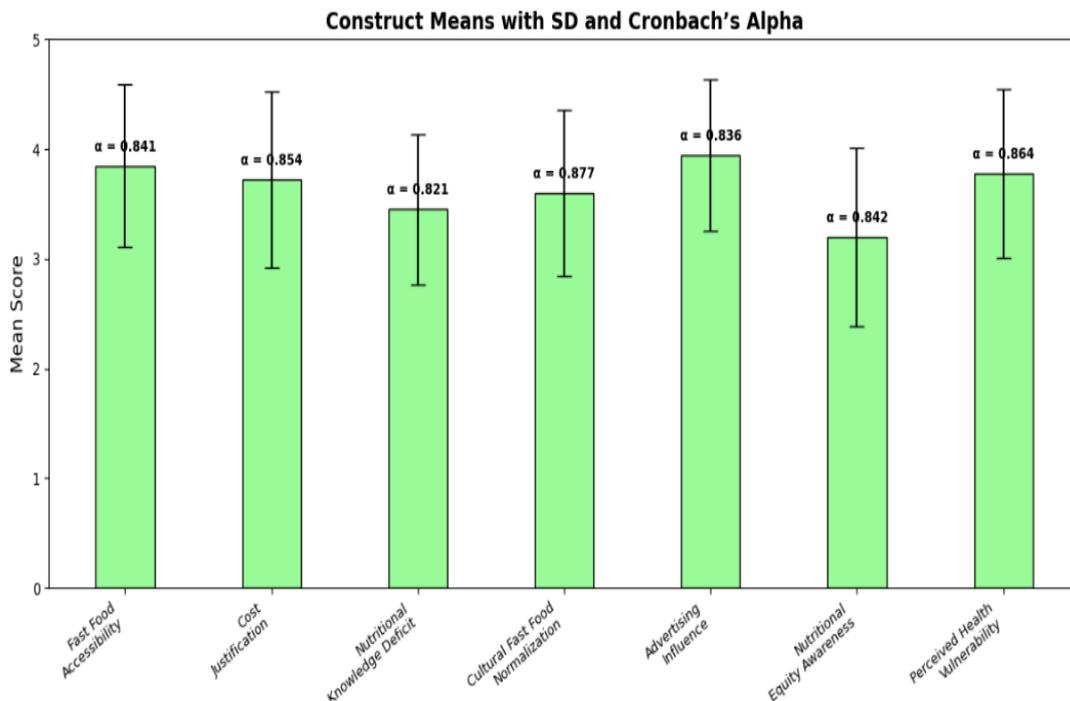
Figure 2: Mean scores

4.3. Exploratory Factor Structure

Table 3 shows an accounting of factor analysis results, clustering 21 items into 7 well-defined latent constructs. Items loaded well under their expected factors with the least cross-loading, indicating the strength of factorial validity. Perceived Health Vulnerability (PHV) items loaded above 0.77 on Factor 1, reflective of a well-constructed dimension of individual health perception related to diet. Additionally, Cost Justification (CJFF) items loaded at heights (>0.78), thus reinforcing economic reasoning as one of the most important sources. Cultural Fast Food Normalization (CFFN) emerged as a separate social-behavioral construct supported by high loadings in items (>0.81). Access and convenience (FFAP), advertising influence (AIS), and knowledge deficit (NKD) also form clean factors. NEA, as a different dimension, represents people's social consciousness on equity in food access, making it important for linking public health to socio-political activism. By successfully loading these items on factors, one could generally deduce that one is dealing with a stably multi-dimensional model to study fast food behavior and its social implications.

Table 3: Factor analysis

Item Code	PHV	CJFF	CFFN	FFAP	AIS	NKD	NEA
PHV1	0.812						
PHV2	0.789						
PHV3	0.776						
CJFF1		0.837					
CJFF2		0.821					
CJFF3		0.786					
CFFN1			0.852				
CFFN2			0.828				
CFFN3			0.811				
FFAP1				0.843			
FFAP2				0.814			
FFAP3				0.795			
AIS1					0.816		
AIS2					0.802		
AIS3					0.775		
NKD1						0.804	
NKD2						0.783	
NKD3						0.768	
NEA1							0.821
NEA2							0.808
NEA3							0.796

4.4. Discriminant and Convergent Validity

Table 4 shows a correlation matrix with the AVE square roots along the diagonal. Diagonalized entries have VAVE ranging from 0.77 to 0.81, which measures discriminant validity by being greater than the off-diagonal correlations. Correlations among constructs are all positive and in general they are moderate (e.g., FFAP - PHV: r = 0.41; CJFF - PHV: r = 0.45), thus supporting their theoretical interrelatedness, though distinction in concept remains. FFAP, CJFF, and CFFN have strong relationships with PHV on the premise that perceived health vulnerability is primarily a consequence of access, cost, and cultural factors. On the other hand, the relationships indicated that NEA has comparatively fewer correlations with other constructs because awareness of equity issues can exist independently of individual consumption behavior-highlighting the gap between structural awareness and personal health behavior. Figure 3 shows the Correlation heat map**.**

Table 4: Correlation Matrix with VAVE on the Diagonal

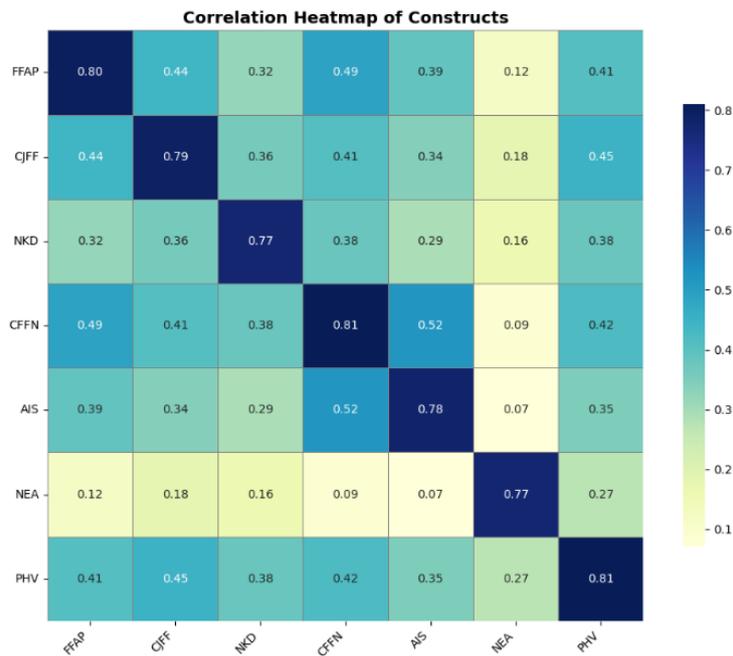| Construct	FFAP	CJFF	NKD	CFFN	AIS	NEA	PHV
FFAP	0.80	0.44	0.32	0.49	0.39	0.12	0.41
CJFF	0.44	0.79	0.36	0.41	0.34	0.18	0.45
NKD	0.32	0.36	0.77	0.38	0.29	0.16	0.38
CFFN	0.49	0.41	0.38	0.81	0.52	0.09	0.42
AIS	0.39	0.34	0.29	0.52	0.78	0.07	0.35
NEA	0.12	0.18	0.16	0.09	0.07	0.77	0.27
PHV	0.41	0.45	0.38	0.42	0.35	0.27	0.81

Figure 3: Correlation heat map

4.5. Structural Model Fit and Path Analysis

Since all model fit indices fall within or exceeded the threshold of recommendations, such as CFI = 0.963 > 0.95, RMSEA = 0.041 < 0.06, it implies that the model is very well fitted. The path coefficients predicting Perceived Health Vulnerability (PHV) are indicated in Table 6. All predictors positively and significantly affect PHV at p < .001, as shown in the following: CJFF (β = 0.27), which is the strongest predictor, shows that affordability concerns directly lead to higher health risk perception.

Both FFAP (β = 0.21) and CFFN (β = 0.22) reveal that increased accessibility and cultural normalization of fast foods, respectively, contribute critically to perceived vulnerability. The two most important determinants among the following, NKD (β = 0.18) and AIS (β = 0.14), reflect the importance of nutritional literacy and marketing exposure, respectively.

NEA also has a significant but smaller direct effect on PHV (β = 0.12), suggesting that a structural awareness does influence perceived risk but is a lesser extent than personal or social factors. The model shows statistically significant results, hence proving the hypotheses H1a to H1e. Figure 4 shows the Pathway diagram.

Table 5: Model Fit Indices

Fit Index	Value	Threshold
Chi-Square/df	1.98	< 3.00
CFI	0.963	> 0.95
RMSEA	0.041	< 0.06
SRMR	0.037	< 0.08

Table 6: Path Coefficients

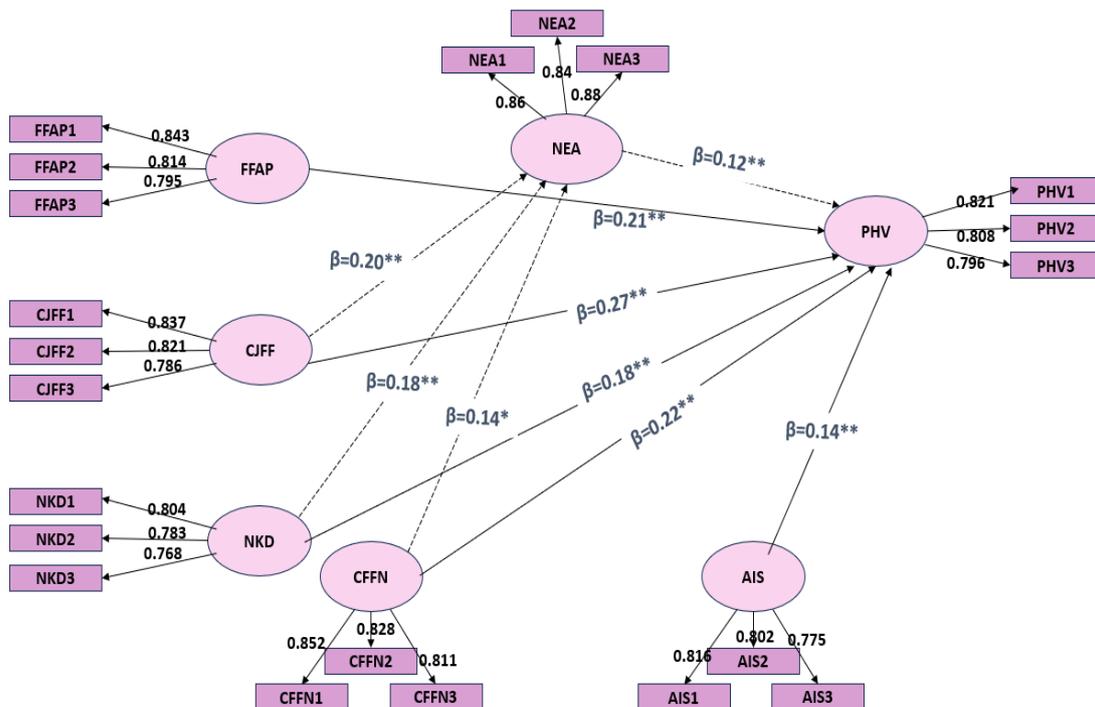| Predictor → PHV (DV)	β	SE	CR	p-value
FFAP → PHV	0.21	0.04	5.25	< .001 **
CJFF → PHV	0.27	0.05	5.90	< .001 **
NKD → PHV	0.18	0.04	4.20	< .001 **
CFFN → PHV	0.22	0.05	4.40	< .001 **
AIS → PHV	0.14	0.03	3.82	< .001 **
NEA → PHV (Direct Effect)	0.12	0.04	3.00	0.003 **

Figure 4: Pathway diagram

4.6. Mediation of Nutritional Equity Awareness

Table 7 shows mediation through bootstrapped indirect effects. NEA really mediates relationships among CJFF, NKD, and CFFN toward PHV. An example is CJFF → NEA (β = 0.20**) and NEA → PHV (β = 0.12**), which lead to an unexpected indirect effect of 0.024, which turned out to be significant at the 95% CI that did not include 0. The same goes with NKD and CFFN; they show partial mediation through NEA, hence proving the hypothesis H2. Such a finding implies strong theoretical significance. It implies that high cost-related habits in fast food consumption or poor nutritional knowledge could contribute to increased health susceptibility because awareness also includes the aspect of systemic inequities in food access. In other words, nutritional equity awareness does not help offset personal vulnerability by health; rather, it informs and accentuates it.

Table 7: Mediation Analysis via AMOS

IV → NEA (a)	NEA → PHV (b)	Indirect Effect (a*b)	95% CI (Bootstrap)	Significance
CJFF → NEA	β = 0.20 **	β = 0.12 **	0.024	[0.010, 0.044]
NKD → NEA	β = 0.18 **	β = 0.12 **	0.022	[0.009, 0.040]
CFFN → NEA	β = 0.14 *	β = 0.12 **	0.017	[0.005, 0.035]

4.7. Risk Escalation Trends

Table 8 provides national trend data according to fast food consumption levels; dose-response is seen clearly here, with more frequent fast food consumption increasing linearly with obesity, diabetes, BMI, calorie intake, and depression. From <1 time/week to ≥5 times/week, an increase in obesity prevalence of 140% occurs (23.5% to 57.3%), and depression nearly triples with the increase (9.2% to 23.4%). For this reason, fast food consumption is a risk factor both physiologically and psychologically. The considerable rise in mental health variables points in the same direction, indicating that the fast-food culture creates metabolic disorders and vulnerabilities in emotions and behaviors towards it. Such outcomes can reinforce and develop further the approach of fast food as an issue above dietary and a primary public mental health concern. Figure 5 shows the Health risk vs fast food consumption frequency**.**

Table 8: Trend Analysis: Risk Escalation with Increased Fast-Food Frequency

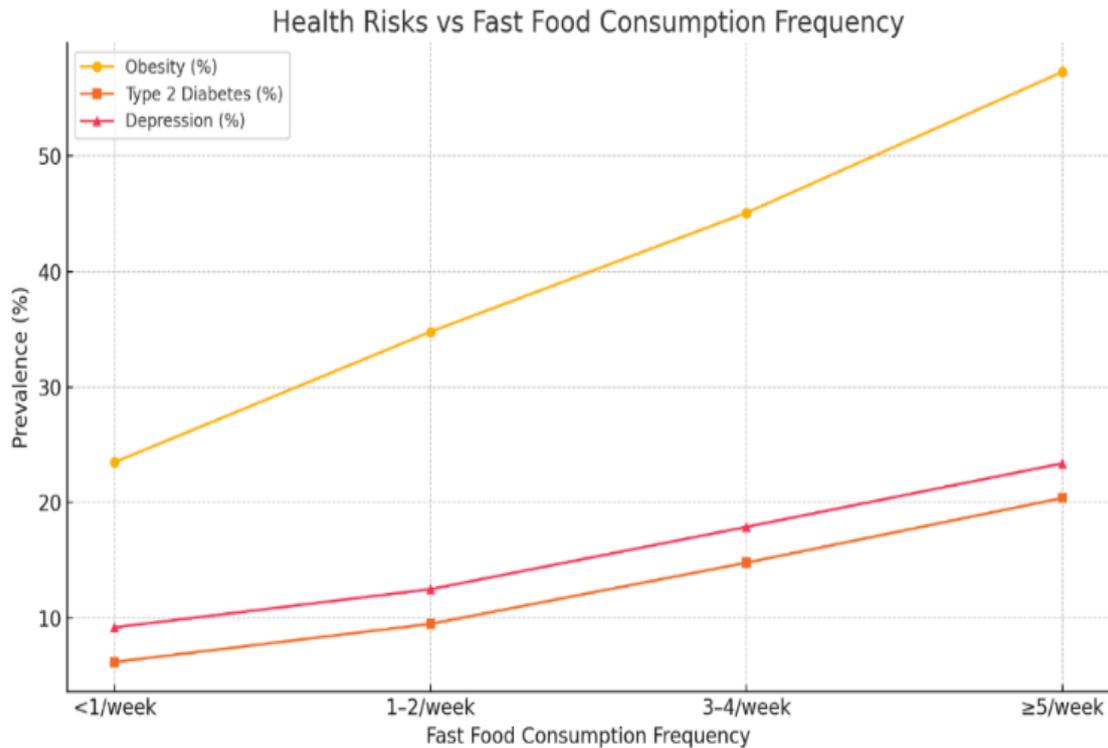| Consumption Level	Obesity (%)	T2 Diabetes (%)	BMI (kg/m²)	Daily Calories	Depression (%)
<1 time/week	23.5	6.2	24.6	1,950	9.2
1–2 times/week	34.8	9.5	27.3	2,350	12.5
3–4 times/week	45.1	14.8	29.1	2,800	17.9
≥5 times/week	57.3	20.4	32.4	3,250	23.4

Figure 5: Health risk vs fast food consumption frequency

4.8. Equity Lens: Who Bears the Burden?

In Table 9, fast-food reliance among vulnerable groups is discussed. The low-income, urban, Indigenous, and youth populations show a higher degree of dependence. Economic factors, food deserts, cultural exposure, and inundation by marketing serve as facilitators for such dependence.

The table resonates with the previously carried-out mediation analysis- a structural disadvantage both drives fast-food consumption and elevates health risks. It is revealed through this equity lens that the freedom of individual choice is often curtailed.

Youth find it hard to abstain from fast food due to convenience and its targeted social media marketing. The Indigenous are also victims of systemic underinvestment in food and historic food insecurity. Urban decay is characterized by the fast-food outlet saturation, coupled with supermarket deprivation and infrastructural challenge. Therefore, things cannot only be health behavior-promoting interventions, but will have to find solutions in urban planning, food policy, and public investment.

Table 9: Nutritional Equity Analysis: Who Bears the Burden?

Demographic	Fast Food Dependence	Reasons
Low-income households	High	Cheap calories, food deserts, marketing saturation
Youth (18–25)	High	Convenience, digital marketing, time poverty
Indigenous communities	Increasing	Historical food insecurity, limited access to fresh foods
Urban inner-city residents	High	Oversupply of fast-food chains, underinvestment in supermarkets

4.9. Economic Forecasts and Long-term Fiscal Impact

Table 10 is a hypothetical projection for the economic burden that may accrue over the next decade due to illnesses that stem from fast food. If these trends remain constant, this burden is expected to increase from CAD 9.18 billion in 2024 to CAD 15.78 billion by 2034-an increase of 71.8%. This forecast takes into consideration the prevailing trends of increasing chronic illness rates and healthcare inflation, and stagnant policy intervention.

These costs encompass both direct medical expenses and indirect losses from reduced productivity, absenteeism, and disability. Such a burden, if allowed to go unchecked, could totally overwhelm provincial healthcare systems.

Huge implications exist for public finance and insurance programs (Medicare, EI, etc.) from this projection. In addition, it validates the need for preventive health investment, which promises to pay back a higher return than will expenditures on reactive treatment. Figure 6 shows the Economic forecast.

Table 10: Economic Forecast Modeling: 10-Year Projection (2024–2034)

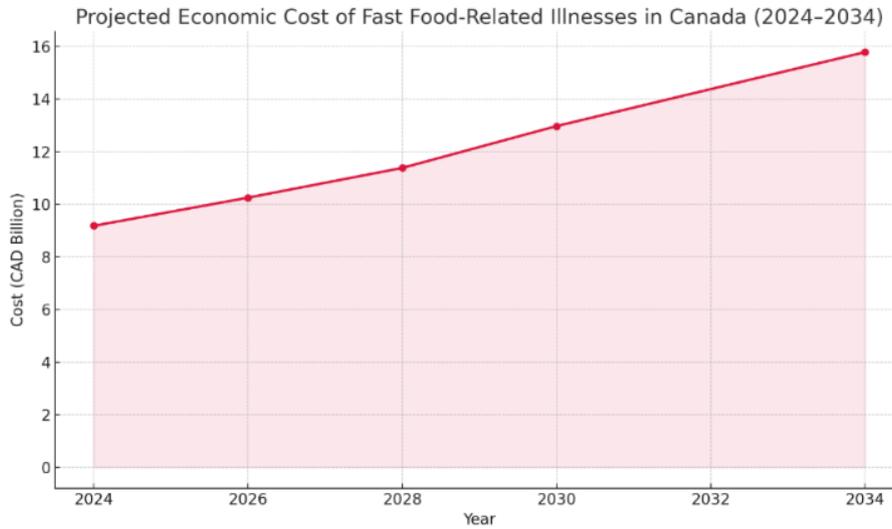| Year	Projected Annual Cost of Fast Food-related Illnesses (CAD Bn)	% Change from 2024
2024	9.18	—
2026	10.25	+11.6%
2028	11.38	+23.9%
2030	12.97	+41.2%
2034	15.78	+71.8%

Figure 6: Economic forecast

4.10. Policy Matrix: Strategic Interventions

Regulation of fast foods is synthesized in Table 11 for global best practices and subsequently ranked with respect to impacts. For instance, taxes on sugary drinks and fast foods have a proven high effect as they are modeled to yield a reduction in consumption of as much as 20% in light of the experiences of Mexico and the UK. The other initiative in targeting the youth is education, which harbors the potential to produce longitudinal behavioral change, especially when it begins early. Advertising prohibitions (especially for children), urban zoning laws, and subsidies for healthy foods would provide various benefits-not only supply but demand as well, and promote social equity. Menu labeling, though rather weak in effectiveness, would benefit the informed choice of literate consumers. The matrix shows that multi-level intervention—behavioral, economic, environmental—is obligatory for systemic change.

Table 11: Policy Effectiveness Matrix

Policy/Intervention	Potential Impact	Evidence
Sugary drink & fast food taxes	High	Modeled to reduce consumption by 15–20% (WHO, Mexico, UK case studies)
School & youth nutritional education	Moderate	Behavior change in early years: long-term gains
Subsidies for fruits/vegetables	High	Increases affordability and access, especially in food deserts
Restrictions on fast food ads to children	High	Proven impact on reducing demand in the UK, Chile, and Quebec
Menu labelling laws	Moderate	Helps informed decision-making; depends on literacy and visibility
Urban zoning against fast food density	Moderate	Reduces saturation in vulnerable neighborhoods

5. DISCUSSION

This investigation aimed to study structural, cultural, and informational variables such as accessibility, cultural normalization, cost justification, advertising, and lack of nutritional knowledge in creating perceived health vulnerability concerning fast food consumption. It further explored the mediating

effect of knowledge of nutritional equity and aimed to identify any dietary inequalities and health disparities across socio-economic and geographical divides. The evidence gathered propounds a strong socioecological model where health behaviors concerning diet are best understood within the complex interrelationships of environmental constraints, psychological deterrents, and cultural norms. As with Li et al. (2022), who investigated the effects of perceived vulnerability, severity, and fear on junk food consumption and obesity among adolescents, this study confirms that perceived health vulnerability is a key psychological mechanism through which people internalize dietary risk. Whereas Li et al. focused on fear-based motivation, the present study found that the structural and cultural drivers affecting perceived vulnerability-greater access, cultural normalization, and cost justification-gave the greatest weight. Among these, cost justification had the strongest predictive power, supporting the conclusions of Gültekin and Veuphuteh (2023) that price sensitivity drove fast food purchase intentions, moderated by health consciousness. This implies that within fast food behavior, economic rationality exists, especially among youth and poorer sectors of society who tend to value calorie content more than nutritionally relevant facts.

The huge access to fast foods combined with the cultural normalization has greatly contributed to the perceptions of health vulnerability. These results align with those reported by Upreti et al. (2021) whereby micro-level determinants as nutritional knowledge, and meso-level (peer-influence) would jointly shape junk food consumption among schoolchildren. In cultural normalization, fast food consumption is embedded within the fabric of society as a fruitful but also socially tolerable practice of diet. About the above, normalization is further heightened by constant exposure in advertisinga factor supported by findings from Clifford Opusunju et al. (2025) in which indicated that consumers perceive Quick Service Restaurants (QSRs) as inadequate in promoting health education yet culturally dominant. Meanwhile, the current discussion is the one on which advertising and media saturation are totally dedicated to youth. Caso et al. (2022) claim that during the COVID-19 lockdown, access to junk food was reduced, thus making fast food consumption decline in the economy. But in the post-lockdown period, people resumed their old habits of fast food culture. Ably echoing our study, these high scores have really contributed to the entrenchment of fast food norms. Such a view would explain why individuals perceive high-risk health outcomes from exposure to advertising. Thus, they are not completely passive receptors of advertising; rather, they recognize the schism that would appear between the content of marketing messages and health consequences, even if behavior does not always mirror that awareness.

Further, the lack of knowledge about nutrition constitutes an important reason for developing a heightened perceived vulnerability. Though lesser than cultural and economic effects, yet, it is statistically significant. Raut et al. (2024) emphasize the importance of nutrition education in achieving healthier attitudes and behaviors towards adolescents and demonstrate that school-based and context-relevant interventions can significantly improve nutritional awareness. In our model, the effect of knowledge deficits was direct as well as indirect, by virtue of being mediated by awareness of nutritional equity. Thus, supporting the notion forwarded by Shimul et al. (2021) that health consciousness and risk perception strongly affect the intention to abstain from junk food, especially when bearing effective health messages. The mediating role of nutritional equity awareness is among the most novel contributions of this study. The more aware one is of inequities in access—whether in price, food deserts, or the structural marginalization of food availability—the greater is that person's perception of health vulnerability. This is consistent with the results that McKelvie-Sebileau et al. (2022) derived with Indigenous systems mapping to determine how both youth and adults perceive social and economic conditions as the greatest obstruction to healthy eating. This research goes further: it quantifies the extent to which awareness of these barriers amplifies one's recognition that they confer health risk. Does nutritional equity awareness serve as a buffer or a drug? It intensifies

the feeling of perceived vulnerability, so structural awareness does not always lead to empowerment; sometimes, it may aggravate a sense of helplessness in constrained environments.

Although this demonstrates that health is equal to the product of various goods combined with certain costs, cultural determinants, access, and health awareness, addressing fast food consumption in many facets, such as the individual level, is just an avenue among many others for addressing the need for systemic policy reforms. For instance, Lin et al. (2022) hold that food healthiness is not simply a psychological belief in relation to food but rather a relational outcome of material, social, and cultural assemblages. Our study evidenced such a relationship, with strong path coefficients between structural and cultural variables and perceived vulnerability, mediated by awareness. It is clear: health vulnerability reflects not only dietary behavior but also the enveloping broader socio-political system of those behaviors. This makes the case more compelling when examining inequalities across socio-economic and geographic divides. Our study shows that fast food is highly sought after by low-income households, urban residents, youth, and Indigenous people because of economic necessity, food deserts, and cultural saturation. This is in line with the findings of Anyanwu et al. (2022), who reported on the widening generation and social gaps in terms of diet quality as a result of nutrition transition changes in Indonesia. It is similarly shown in Martini et al. (2021) studies, which reported that ultra-processed foods accounted for as much as 80% of total caloric intake in North America, mainly due to affordability and convenience factors.

This burden remains, psychologically, all the same, a mental one. Interpretation of secondary data indicates that there is an almost threefold increase in the rate of depression for fast food consumers. In supporting Li et al. (2022), who indicated that avoidance of junk food has been influenced by perceived threat and fear, this also implies that failure to work against unhealthy eating when risk is evident leads, by itself, to psychological stress. De Kervenoael et al. (2021) observed that decisions about food are becoming increasingly aligned with subjective norms and perceived barriers, thus confirming that daily consumption patterns are inextricably intertwined with psychological constructs of motivation and helplessness. Our findings support this, whereby the fast food consumption goes beyond taste or habit and into deeper psychosocial entrapment amid structural constraints. Economically, on a longer-term basis, projections based on our secondary data indicate that fast food-related diseases may lay an enormous burden on the public health system of Canada. That the healthcare cost appears to increase by 70% over the next decade must be seen as an indication that the consumption patterns we engage in are not sustainable, which is the near-global pattern of the rise of NCDs related to diet now being increasingly emphasized by Clifford Opusunju et al. (2025) as a major area of failure of the fast food industry to self-regulate and inform the public adequately.

Thus, policy solutions will be multifaceted. Fast food choice, as recommended by Gültekin and Veuphuteh (2023), recognizes the role of health consciousness as a moderator in this activity. However, it must be combined with other efforts that can address price sensitivity and cultural exposure at the same time. One way to alter economics to reduce sugary and ultra-processed food consumption is taxation, as done in countries like Mexico. In tandem with these approaches, subsidies that promote the consumption of fresh produce, zoning regulations that reduce the density of fast food outlets, and public food literacy initiatives offer an environment with great potential for healthy food choices. Educational interventions specifically targeting the youth should, as validated by Raut et al. (2024), be scaled to the national level through curricula integration and public campaigns. However, it requires addressing not only the content of the regulatory measures but also the context in which they are applicable. This applies especially to advertising restrictions for children and adolescents, given that this demographic is most vulnerable to media saturation. Message framing-whether one that appeals to gain versus one that highlights loss-may affect consumer decisions, especially when

aligned with the right regulatory focus (Shimul et al., 2021). This highlights the need for targeted, culturally relevant message strategies at the public health communication level.

6. CONCLUSION

Fast food consumption and its associated health implications, perceived health vulnerability, are multidimensional factors under consideration; the structural determinants investigated included their accessibility, cost justification, cultural normalization, advertising exposure, and nutritional knowledge.

The study also intended to examine how nutritional equity awareness acts as a mediator, determining the differences in fast food behavior and health outcomes across various socio-economic and geographical groups. This puts forward an argument on the ground that fast foods are not purely behavioral actions of the individual but lie within a matrix of environmental, cultural, economic, and information factors. Cost justification appeared to be the greatest predictor of perceived vulnerability to health, followed by accessibility and cultural normalization, suggesting rational considerations about fast food are more constrained socially than a simple lack of knowledge.

Advertising and nutritional knowledge were also found to have quite significant, but somewhat weaker, effects. Importantly, the study also found that nutritional equity awareness mediates the effect between these predictors and perceived vulnerability, thereby enhancing the awareness of individuals about the risk they are in within an environment where healthy choices are limited. Therefore, this mediation exposes an interesting paradox where greater awareness about food inequality does not necessarily empower people to make healthier choices but may instead strengthen the feelings of being trapped and vulnerable.

Unique to this study is its introduction of nutritional equity awareness as a mediating concern within a socioecological conceptualization. Indeed, this dimension is hitherto less recognized in fast food research. Unlike the traditional models that identify health awareness as the mitigating factor, here, awareness of structural inequality can boost psychological stress and perceived health risk in a context where becoming healthy has few or no options, as they are not structurally available.

Another important contribution of the study is the triangulation of primary and secondary data to give an integrated understanding of attitudes with the visible public health and economic trends. Even though secondary data show clearly that the frequency of fast food consumption is linked to a rise in obesity, diabetes, depression, and health care costs, these linkages demonstrate a clear-based urgency for systemic intervention.

The policy implications become wide-ranging. The policy findings necessitate a multilevel policy response, one that integrates behavioral modifications like public health education and menu labeling for policy change, structural reforms such as zoning laws limiting fast food density, subsidies for healthy foods, and taxation on ultra-processed products. As part of equity-based strategies, the efforts should also improve access to healthy foods in underserved communities, culturally relevant nutrition education, and regulation of targeted advertising to vulnerable populations such as youth and low-income households.

Nonetheless, there are limitations to the study. Cross-sectional design restricts cause inference, such that while structural equation modeling provides good associations, more robust causal validation would require longitudinal or experimental designs. Furthermore, although the study contains diverse lenses, probing deeper into the region or ethnic subdivisions would increase generalizability. However, it provides a comprehensive equity lens in the understanding and tackling of the fast food-public health nexus in Canada, making it useful for both policymakers and scholars.

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