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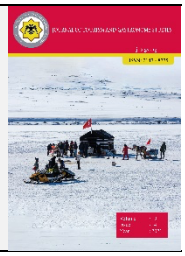

Examining the Relationship Between Fast Food and Obesity: A Systematic Literature Review and Future Agenda

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Abstract

With the concept of "Laissez Faire", a new paradigm has been formed which includes liberalization, privatization and economic reforms based on globalization. Within this paradigm, globalization proceeds in line with the goals of capitalism. Through causing important transformations in political, economical and cultural fields after World War II, capitalism has become the subject of debate for the consumption phenomenon which is one of the aspects that makes up the cultural structure. Sociological examination of consumption and capitalism starting with Marshall indicates that consumption cannot be taken into consideration separately from society. The eating habits of individuals is one of the areas that capitalism, which emphasizes on consumption rather than production and aims to achieve consumerism on a global scale, has shown its effects. The goal of this study is to examine the scientific research by analyzing the systematic literature review on fast food and obesity relations. To structure the tables, papers were reviewd through the lenses of Callahan's (2014) and Billore, S., and Anisimova (2020) review format of 6 W. For this purpose, it will contribute to the literature in three ways; identifying influential articles in the fields, visualizing trends of research areas and synthesizing areas for further research. The results show that adults were the focus population group of about twenty two articles either as children, or as aadolescent or pregnant women. Additionally, thematic areas are examined fast-food outlets after the relationship between obesity and fast food restaurants predominant investigation areas. Following the searches to reduce the positive relationship between fast food and obesity, traditional fast foods and consumption should be increased.

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Review Article

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INTRODUCTION

The new millennium, which supports the globalization paradigm, has been redefined by the concept of the "Laissez Faire", designed long ago by the French physiocrats and later approved by the neo-classicalists. Karl Marx, Keynes and their followers opposed the Laissez-faire paradigm (Burgin, 2015), which expresses a social system that places responsibility on markets rather than on politics for economic results. The reason being for this opposition was to emphasize that state intervention is necessary for sustainable development. However, in the late twentieth century, both socialist countries and state-controlled mixed economies faced serious economic crises. In the early 1990s, most socialist regimes collapsed, and their mixed economies were replaced with economic reforms based on liberalization, privatization, and globalization. As a result, the laissez faire paradigm, being an important part of free market capitalism, has once again been revived (Basu, 2008). Within this paradigm, globalization proceeds in line with the goals of capitalism. By causing important transformations in political, economical, and cultural fields after World War II, capitalism has become the subject of debate for the consumption phenomenon which is one of the aspects that makes up the cultural structure. Sociological examination of consumption and capitalism starting with Marshall indicates that consumption cannot be taken into consideration separately from society (Trentmann, 2004). The eating habits of individuals is one of the areas that capitalism, which emphasizes on consumption rather than production and aims to achieve consumerism on a global scale, has shown its effect. The transformation of food in post-industrial society is realized with the dynamics of globalization. The Green Revolution, which first appeared in the 19th century, caused an increase in food supply and led to the rapid industrialization of countries, especially Asian countries, at the end of the century. The spread in the food industry has increased rapidly after the second half of the 20th century, (Standage, 2017). In this case, George Ritzer's (2016) theory of McDonaldization of society can be shown as an example. McDonald's is one of the most influential developments in 20th century America. McDonaldization, as an example of a paradigm, is a process where the principles of fast food restaurants are beginning to dominate different sectors of the American society and the rest of the world (Ritzer, 1992). The rapidly-growing fast-food culture has also taken a fordist approach in the food field. While McDonald's is a restaurant with fast production and consumption, it has also become a symbol of a social transformation over time. It is the representation of the American economy, lifestyle and culture with its chains spreading across a large part of the world. As of 1980, with the acceleration of the globalization process, the development of mass culture and the spread of this culture to different areas of life are mentioned. The fast-food consumption habit, being one of the important elements of the global mass culture, and its global expanse has caused obesity to spread like an epidemic throughout many countries (Jeffery & French, 1998).

Due to the prevalence of excessive food consumption and obesity, it is in the focus of academic research. When the literature was examined, no research was found on the systematic literature review of scientific publications related to fast food. In order to bridge this gap in the current literature and contribute to the theoretical knowledge, this article aims to identify influential articles in the fields, visualize trends of research areas and synthesize areas for further research.

Literature Review

Fast Food

Fast food was introduced "ready meal" and was expressed as a light food that was prepared in a short time and which little time was spent for eating. This eating habit includes all kinds of food that is prepared and cooked beforehand or prepared with heated ingredients and served to customers within 3-10 minutes. These foods may also be traditional, and may constitute a country's own individually unique franchise (Reed, McIlveen & Strugnell, 2020). The fast-food restaurants that come to mind first among food and beverage businesses are restaurants that are identified with the American lifestyle whose conceptual basis is old and extends to Europe (Kniazeva & Venkatesh, 2007). Georgo Ritzer (2016) explained that the fast food culture, which has increased with the concept of "McDonaldization of the society", has become the representative of the American economy, lifestyle and culture by adopting a Fordist approach in the field of eating. The fast food industry, which has a starting point that enables the American people to eat and drink outside after the war, has not only changed their eating and drinking habits, but also caused the spread of fast consumption-based consumption culture to the whole world (Schlosser, 2012). Consumption of fast-foods has been associated with higher energy, fat, sodium, added sugar and sugar-sweetened beverages and lower intake of fruit, vegetables, fiber, and milk in children, adolescents, and adults. A review of neighborhood environments in the United States found that fast-food restaurants are more common in low-income and ethnic minority areas and contribute to economic inequalities (Fleischhacker et al. 2011). The reasons such as the limited time for fast-food consumption, the taste, the filling of the portions, the affordable price, the need to eat fast due to the short lunch breaks for working individuals lead individuals to fast-food consumption (Bipasha & Goon, 2013).

Obesity

According to the data announced by the World Health Organization, 38 million children under the age of 5 were overweight or obese in the year 2019. While the rate of overweight and obesity among children and adolescents aged 5-19 was only 4% in 1975, this rate rose to over 18% in 2016. Following studies explaining the relationship of obesity with health, there are studies that address obesity as a type of epidemic and emphasize its social multiplier effect (Christakis & Fowler, 2007; Renna et al. 2008). In relevance to this, there are also studies on the effect of fast foods on the rate of obesity among young generations. While some of the studies conducted show that there is a positive effect between fast food and obesity epithemia (Anderson & Matsa, 2011), some studies have revealed opposite results. Overweight and obesity are important risk factors for chronic diseases such as diabetes, cardiovascular disease and cancer. Obesity has a measurable impact on physical and mental health, and the health-related quality of life. It has the potential to cause psychosocial problems (Puder & Munsch, 2010). The cornerstone of the current classification system for obesity is body mass index (BMI). However, like all anthropometric measurements, it is a backup measure of body obesity (Prentice & Jebb, 2001). In adults, body mass index (BMI) calculated by dividing body weight in kilograms by the square of length in meters is widely used; A body mass index of 25 ± 30 is generally considered overweight and 30+ is considered obese (Chinn & Rona, 2002). However, there are no equivalent standards for school-age children (De Onis & Lobstein, 2010). The reason for this is the changing body shapes that progress with normal growth. In addition, as a result of the measurement of body mass index, it is not possible to distinguish between fat and lean mass and the result can increase obesity in muscular children (Dehghan, Akhtar-

Danesh & Merchant, 2005). Different diagnostic methods such as weight in accordance with height, measurement of skinfold thickness and body weight in relation to age are used in the identification of childhood obesity. Although these measures reflect different aspects of body composition, they are moderately associated with body fat even in growing children (Must & Strauss, 1999). According to the data published by Statistica (2019), the obesity rate among kindergarten students (<5) is 5.9%; 20.6% among school-age (5-9) children; in adolescents / youth (10-19) (17.3%) and in adults (18. +) 38,9%. While 1% of children and adolescents aged 5-19 were obese in 1975, it was stated that more than 124 million children and adolescents were obese in 2016. In 2016, more than 1.9 billion adults aged 18 and over were overweight, of whom over 650 million were obese. 39% of adults aged 18 and over were overweight in 2016 and 13% were obese. The prevalence of obesity in the range of 0-5 years in Turkey, 8.5% in 2010, between 6-18 years of age while the prevalence of obesity was 8.2% (Ministry of Health, 2010). Although the factors that because obesity are complex, especially food supply, eating behaviors, family work culture, socio-economic situation, urban design and public policies clearly include new or changed interactions (Dixon, 2010). Behavioral and emotional problems are found in most, if not all, obese children, more prevalent in clinical, treatment-seeking instances. The emotional state of individuals contributes to physical and emotional well-being as well as influencing behavior (Diener & Chan, 2011).

Methodology

Systematic Literature Review

"A systematic, explicit, [comprehensive,] and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners" (Fink, 2005; Okoli, 2015). Systematic literature reviews are concerned primarily with the problem of bringing together research that may have been obtained using various techniques and using different databases (Brereton et al., 2007). A systematic literatüre review process is formed three consecutive stages: planning,execution and result analysis (Rouhani et al., 2015). Systematic literature reviews are related to the problem of aggregating empirical evidence (Brereton et al., 2007).

Figure 1. Process of Systematic Literature Review

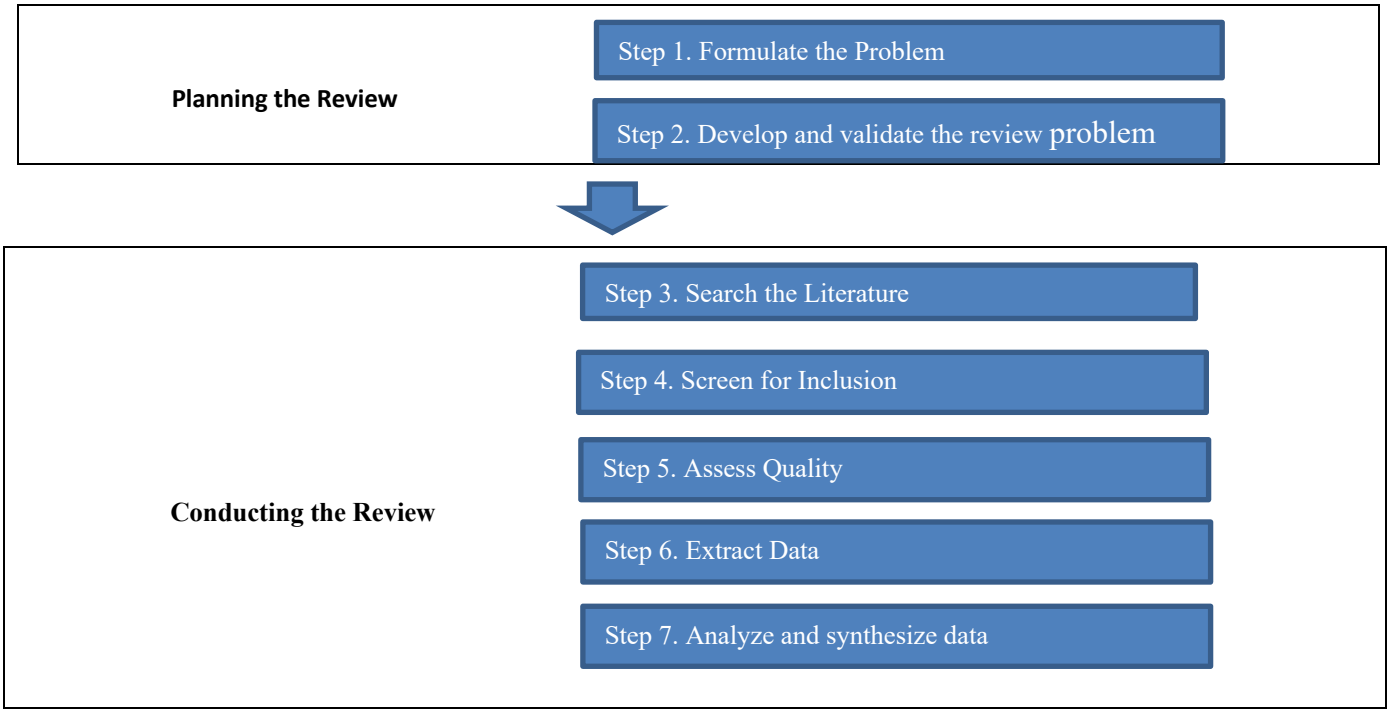

Figure 1. Process of Systematic Literature Review (Continuation)

Reference: Xiao & Watson, 2019

Systematic literature reviews are exhaustive and can provide a means to figure out the best evidence available to declare decisions, establish how much reliance we canplace on research findings, ascertain the consistence of findings across studies, address specific questions, identify gaps in our knowledge (JindalSnape et al., 2020).

Search Strategy

Electronic databases form the predominant resource of published literature collections (Kılıçlar vd., 2021). We began the search process with databases include Google Scholar, JSTOR, Web of Science and Scopus. The reaching database led to a large number of hits that exceeded were a mixture of scientific or unscientific publications. Many of these publications were proceeding paper, meeting abstract and letter from different parts of the world. Therefore, to provide a more targeted search for convenient scholarly works, we opted for publisher- specific databases.

Inclusion Criteria

We determined inclusion/exclusion criteria from our review in accordance with the systematic literature review method to ensure the reproducibility of the results (Arun et al., 2021). This review has four inclusion criteria: a) full text review, b) Open Access, c) studies in English, d) studies across all of the years covered in the searched databases and e)focus on fast food and obesity. We had the following exclusion criteria: a) articles not in the English language, b) articles without keywords and c) non-peer-reviewed articles, including books, book chapters, conference proceedings, and other non-peer-reviewed articles.

The availability of the resultant depends on the specific parameters. Therefore, we applied the following inclusion criteria: 1) Studies, with enough information concering methodological and research design parameters, were provided. 2) Only scientific research studies were included in the final pool (Billore & Anisimova, 2021). After assessing the papers against these criteria, the final data set comprised 59 relevant research papers. Studies examined the issue of fast food and obesity, occupational health, social sciences and humanities, economics, business, management. Our review is a combination of a domain- based review (Lisboa et al, 2010) and a framework- based review (Levrat, Iung & Crespo Marquez, 2008). To structure the tables, papers were reviewd through the lenses of Callahan's (2014) and Billore, S., and Anisimova (2020) review format of 6 W– Who, When, What, Where, How and Why. The obtained articles were scanned using the words "fast food", "fast food and obesity" and "fast food consumption and obestiy" in the title, abstract and keywords.

Table.1. Review format of 6 W

Who	Who conducted the search for "data?"
When	When were the data collected? Were all the data produced during a particular time frame?
Where	Where were the data collected?
How	How were the data found? Did you conduct database searches? What other means did you use the literature on your topic?
What	What did you find?
Why	Why did you choose the works that were annexed in your final data set?

Reference: Callahan, 2014

Findings

We firstly started our analysis of examining the relationship between obesity and fast food with a tabular presentation of the selected research articles in Table 1. It reports on the perspective of What and answers the question *'What do we know about relationship between obesity and fast food as an academic context?* In Table 2, we address the question *'Where is the research happening?'* and list the geographical location of the studies. Table 3 reports on the methods employed for the study and answers *'HoW was the research conducted?'*. Table 4 addresses the question 'Why should academicians, practitioners and policymakers know more about relationship between obesity and fast food?' and lists the research objectives and findings. It also aspect of the gaps addressed and directions for future research as underlined by each study.

Table 2. List of scientific papers on relationship between obesity and fast food used in the literature review (1975-2021)

No.	Journals	Title	References	Citiation (Based on Google Scholar)
A1	Obesity Review	Fast Food Consumption and Increased Caloric Intake: A Systematic Review of a Trajectory Towards Weight Gain and Obesity Risk	Rosenheck, R. (2008)	756
A2	International Journal of Behavioral Nutrition and Physical Actitivty	Are Fast Food Restaurants an Environmental Risk Factor for Obesity?	Jeffery, R. W. Et al., (2006)	670
A3	American Journal of Public Health	Proximity of Fast-Food Restaurants to Schools and Adolescent Obesity	Davis, B., & Carpenter, C. (2009).	573
A4	American Economic Journal: Economic Policy,	The Effect of Fast Food Restaurants on Obesity and Weight Gain.	Currui, J, et al. (2010)	483
A5	Economics & Human Biology	Exposure to Food Advertising on Television: Associations with Children's Fast Food and Soft Drink Consumption and Obesity	Andreyeva, T., Kelly, I. R., & Harris, J. L. (2011).	437
A6	American Journal of Health Promotion	The Relationship Between Obesity and the Prevalence of Fast Food Restaurants: State-Level Analysis	Maddock, J. (2004)	380
A7	American Journal of Health Promotion	Obesity and the Built Environment: Does the Density of Neighborhood Fast-Food Outlets Matter?	LI, Fuzhong, et al. (2009)	275
A8	Journal of public health policy	Portion Sizes and Obesity: Responses of Fast-Food Companies	Young, L. R., & Nestle, M. (2007).	231
A9	British Journal of Nutrition,	Association of Fast Food Consumption with Energy İntake, Diet Quality, Body Mass Index and the Risk of Obesity in a Representative Mediterranean Population.	Schröder, H., Fïto, M., and Covas, M. I. (2007).	207
A10	Economics & Human Biology,	Obesity under Affluence Varies by Welfare Regimes :The Effect of Fast Food, İnsecurity, and Inequality	Offer, A., Pechey, R., & Ulijaszek, S. (2010).	188
A11	Preventing Chronic Disease	Fast-Food Consumption and Obesity Among Michigan Adults	Anderson, B., et al. (2011)	187
A12	The American Journal of clinical nutrition,	The Association of Fast Food Consumption with Poor Dietary Outcomes and Obesity among Children: Is it the Fast Food or the Remainder of the Diet?	Poti, J. M., Duffey, K. J., & Popkin, B. M. (2014).	180
A13	American Journal of Preventive Medicine,	Fast Food and Obesity: A Spatial Analysis in a large United Kingdom Population of Children Aged 13–15.	Fraser, L. K., et a., (2012)	159
A14	Social Science & Medicine	Governing Childhood Obesity: Framing Regulation of Fast Food Advertising in the Australian Print Media.	Henderson, J. et al., (2009)	127
A15	International Journal of Pediatric Obesity,	Neighbourhood Fast Food Outlets and Obesity in Children and Adults: The CLAN Study	Crawford, D. A., et al., (2012)	125
A16	Health & Place,	The Association between the Geography of Fast Food Outlets and Childhood Obesity Rates in Leeds, UK	Fraser, L. K., & Edwards, K. L. (2010).	125
A17	Economics & Human Biology	The Effect of Fast-Food Availability on Fast-Food Consumption and Obesity among Rural Residents: An Analysis by Race/Ethnicity.	Dunn, R. A., Sharkey, J. R., & Horel, S. (2012).	114
A18	American Journal of Agricultural Economics	The Effect of Fast-Food Availability on Obesity: An Analysis by Gender, Race, and Residential Location.	Dunn, R. A. (2010).	108

Table 2. List of scientific papers on relationship between obesity and fast food used in the literature review (1975-2021) (Continuation)

No.	Journals	Title	References	Citiation (Based on Google Scholar)
A19	Economics & Human Biology	The Effect of Fast-Food Restaurants on Childhood Obesity: A School Level Analysis.	Alviola IV, P. A., et al (2014)	99
A20	Social Science & Medicine,	Diet and Obesity in Los Angeles County 2007–2012: Is there a Measurable Effect of the 2008 "Fast-Food Ban"?.	Sturm, R., & Hattori, A. (2015)	88
A21	The American Journal of Clinical Nutrition	Does Neighborhood Fast-Food Outlet Exposure Amplify Inequalities in Diet and Obesity? A Cross-Sectional Study	Burgoine, T. (2016)	88
A22	Obesity Surgery,	The Fast Food and Obesity Link: Consumption Patterns and Severity of Obesity.	Garcia, G., Sunil, T. S., & Hinojosa, P. (2012).	71
A23	American Journal of Preventive Medicine	Receptivity to Television Fast-Food Restaurant Marketing and Obesity among US youth.	McClure, A. C. et al (2013)	64
A24	Public Health Nutrition,	Impacts of Fast Food and the Food Retail Environment on Overweight and Obesity in China: A Multilevel Latent Class Cluster Approach	Zhang, X., van der Lans, I., & Dagevos, H. (2012).	62
A25	Journal of Happiness Studies,	Childhood Obesity and Unhappiness: The Influence of Soft Drinks and Fast Food Consumption	Chang, H. H., & Nayga, R. M. (2010).	62
A26	BMJ Open	Consumption of Takeaway and Fast Food in a Deprived Inner London Borough: are they Associated with Childhood Obesity?	Patterson, R., Risby, A., & Chan, M. Y. (2012).	59
A27	BMC Public Health	Fast Food Consumption and its Associations with obesity and Hypertension among Children: Results from the Baseline Data of the Childhood Obesity Study in China Mega-Cities	Zhao, Y., et al (2017)	56
A28	Critical Public Health,	'Globesization': Ecological Evidence on the Relationship between Fast Food Outlets and Obesity among 26 Advanced Economies	De Vogli, R., Kouvonen, A., and Gimeno, D. (2011).	51
A29	International Journal of Pediatric Obesity,	Child body Mass Index, Obesity, and Proximity to Fast Food Restaurants	Mellor, J. M., Dolan, C. B., and Rapoport, R. B. (2011)	50
A30	American Journal of Health Promotion	Local Concentration of Fast-Food Outlets Is Associated With Poor Nutrition and Obesity	Kruger, D. J., (2014)	48
A31	PLoS One,	Time Trends in Fast Food Consumption and Its Association with Obesity among Children in China	Xue, H., et al. (2016)	47
A32	Business & Society	A Social Connection Approach to Corporate Responsibility: The Case of the Fast-Food Industry and Obesity	Schrempf, J. (2014).	46
A33	BMC Public Health	The Association Between Neighborhood Economic Hardship, the Retail Food Environment, Fast Food Intake, and Obesity: Findings from the Survey of the Health of Wisconsin	Laxy, M.,et al (2015)	46
A34	Journal of Behavioral Nutrition and Physical Activity	Examining the Interaction of Fast-Food Outlet Exposure and Income on Diet and Obesity: Evidence from 51,361 UK Biobank Participants	Burgoine, T., et al. (2018)	45
A35	Economics & Human Biology,	Fast Food Prices, Obesity, and the Minimum Wage.	Cotti, C., and Tefft, N. (2013).	44
A36	Health economics	Obesity and Fast Food in Urban Markets: A New Approach Using Geo-Referenced Micro Data	Chen, S. E., Florax, R. J., &Snyder, S. D. (2013).	43
A37	Obesity Research & Clinical Practice	Obesity and the Effects of Choice at a Fast Food Restaurant	Brindal, E., et al. (2008)	38
A38	Journal of Business Research	Implications of Fast Food Restaurant Concentration for Preschool-Aged Childhood Obesity	Newman, C. L., Howlett, E., & Burton, S. (2014).	37

Table 2. List of scientific papers on relationship between obesity and fast food used in the literature review (1975-2021) (Continuation)

No.	Journals	Title	References	Citiation (Based on Googlr Scholar)
A39	Contemporary Economic Policy	Television Viewing, Fast-Food Consumption, And Children's Obesity.	Chang, H. H., & Nayga Jr, R. M. (2009).	34
A40	The American Journal of Clinical Nutrition	Higher densities of Fast-Food and Full-Service Restaurants are not Associated with Obesity Prevalence	Mazidi, M., & Speakman, J. R. (2017).	30
A41	Journal of Public Health Policy	Overweight and Obesity: Can We Reconcile Evidence About Supermarkets and Fast Food Retailers for Public Health Policy?	Viola, D.,et al (2013)	26
A42	BMC Public Health	Association between Full Service and Fast Food Restaurant Density, Dietary Intake and Overweight/Obesity among Adults in Delhi, India	Patel, O., et al (2018)	20
A43	Obesity Facts	Association between Childhood Obesity and Neighbourhood Accessibility to Fast-Food Outlets: A Nationwide 6-Year Follow-Up Study of 944,487 Children	Hamano, T.,et al (2017)	14
A44	Pediatric Obesity	No Influence of Sugar, Snacks and Fast Food Intake on the Degree of Obesity or Treatment Effect in Childhood Obesity	Trier, C.,et al (2016)	6
A45	The American Journal of Medicine	Neighborhood-Level Analysis on the Impact of Accessibility to Fast Food and Open Green Spaces on the Prevalence of Obesity	Mylona, E. K.,et al (2020)	5
A46	Economics & Human Biology	Do Fast Food Restaurants Surrounding Schools Affect Childhood Obesity	Asirvatham, J.,et al(2019)	5
A47	Spatial and Spatio-Temporal Epidemiology	Fast-food Outlet Availability and Obesity: Considering Variation by Age and Methodological Diversity in 22,889 Yorkshire Health Study Participants.	Hobbs, M. et al(2019)	4
A48	Ecology of food and nutrition	Association of Overweight and Obesity with High Fast Food Consumption by Gulf Cooperation Council Medical Students	Ahmed, J., et al(2019)	4
A49	Bulletin of Geography. Socio-economic Series,	Small-Area Variations in Overweight and Obesity in an Urban Area of Nigeria: The Role of Fast Food Outlets	Osayomi, T., & Orhiere, M. A. (2017).	4
A50	International Journal of Obesity	Fast Food Outlets, Physical Activity Facilities, and Obesity among Adults: A Nationwide Longitudinal Study from Sweden	Okuyama, K. et al (2020)	3
A51	Nutrients	Dietary Patterns Independent of Fast Food Are Associated with Obesity among Korean Adults: Korea National Health and Nutrition Examination Survey 2010-2014	Kim, D. Y.,et al(2019)	3
A52	Jurnal Gizi dan Pangan,	Fast Food as Drivers for Overweight and Obesity among Urban School Children at Jakarta, Indonesia	Febriani, D., & Sudarti, T. (2019)	2

This part of the research presents all papers of the resultant pool included in this literature review analysis. The period consist of 1975– 2021. Callahan's (2014) 'How' corresponds to the Methodology. From the relationship between obesity and fast food our review shows that different methodologies were applied such as mixed methods, quantitative (cross- sectional surveys), econometric models, multivariate regression analyses and content analyses. However, the method most used in the researches examined is regressinon analyses (29 articles). The most used method after regression analysis is econometric analyse (5).

The sample groups of the studies are examined that adolescent (1), adult (22), older adult (1) and children(11) groups are predominant. Adults were the focus population group of about twenty two articles either as children, or as aadolescent or pregnant women. However in the articles two different geographies or contexts(e.g. home) were used to characterized neighbourhood or the geo-graphical location of interest to affect fast food accessTo determine the variables and research areas of the relevant articles the titles and the purposes of the researchs were examined. For this purpose, a total of eight thematic areas were formed. These groups consist of: Fast-Food Restaurants and Obesity Research (Rosenheck, 2008; Davis and Carpenter, 2009; Maddock, 2004; Anderson, 2011; Fraser, 2012; Alviola et al., 2014; Garcia, Sunil and Hinojosa 2012; Xue et al., 2016; Brindal et al., 2008; Newman, Howlett and Burton, 2014; Mazidi and Speakman, 2017; Patel et al., 2018; Mylona et al., 2020; Asirvatham et al., 2019; Kim et al., 2019; Febriani and Sudarti, 2019; Currui, 2010), Fast Food Restaurants an Environmental Risk Factor for Obesity (Jeffery et al, 2006; Andreyeva, Kelly and Harris, 2011; Laxy, et al., 2015; Chen, Florax and Snyder, 2013), Fast-Food Outlets (Fuzhong, et al. 2009; Crawford et al., 2012; Fraser and Edwards, 2010; Burgoine, 2016; De Vogli, Kouvonen and Gimeno, 2011; Kruger, 2014; Burgoine et al., 2018; Hamano et al., 2017; Hobbs, et al., 2019; Osayomi and Orhiere, 2017; Okuyama et al., 2020), Fast-Food Companies (Young and Nestle, 2007; Schrempf, 2014; Offer, Pechey and Ulijaszek, 2010), Fast Food Consumption with Energy Intake, Diet Quality, Body Mass Index(Schröder, Fïto, and Covas, 2007; Poti, Duffey and Popkin, 2014; Sturm and Hattori 2015; Zhang, van der Lans and Dagevos, 2012; Zhao et al., 2017; Mellor, Dolan and Rapoport, 2011; Viola et al., 2013; Trier et al., 2016; Ahmed et al., 2019), Fast Food Consumption and Advirtising (Henderson, et al., 2009; McClure et al., 201; Chang and Nayga, 2009), Fast-Food Consumption and Obesity among Rural Resident, by Gender, Race (Dunn, Sharkey and Horel, 2012; Dunn, 2010; Febriani and Sudarti, 2019), Obesity and Emotions (Chang and Nayga, 2010; Patterson, Risby and Chan 2012.) and finally Fast Food Prices (Cotti and Tefft, 2013). When the thematic areas are examined fast food restaurants and obesity after fast-food outlets are predominant investigation areas. Considering the findings obtained from the researches;

- Positive association between fast food consumption and obesity, weight, body mass index (A1, A2, A4, A9, A13, A21, A26, A27, A29, A33, A34, A52).
- Students or adults with fast-food restaurants near their schools more likely to be overweight (A3, A19, A30,
- Fast food advertising is significantly related to body mass index (A5)
- Fast food outlets in the neighbourhood increases risk of obesity (A15, A16, A43, A47)
- There is a relationship between fast food consumption and socio-economic factors. (A23, A24, A34, A42,

Accessibility to fast food restaurants is associated with the presence of obesity (A45)

Table 3. Summary of analyses

Article No.	Method	Population	Research Objective	Findings
A1	Systematic Literature Review	Children and Adults	Examine the association between fast food consumption and caloric intake	Association between fast food consumption and weight are critical
A2	Quantative Research	High Scholl Students	Examine the "fast food" restaurants is associated with body weight.	Positive association between BMI and eating at fast food restaurants.
A3	Multivariate Regression Analyses	Adolescent	Examine the relationship between fast-food restaurants near schools and obesity	Students with fast-food restaurants near their schools more likely to be overweight.
A4	Econometric Analyses	Young Teens and Pregnant Women	Invastigate changes in the supply of fast food restaurants	Significant effect of affinity to fast food restaurant on the risk of obesity
A5	Regression Analyses	Children	Invastigate of food advertising on children's diet and diet-related health	Fast food advertising is significantly related to BMI.
A6	Multiple Hierarchal Regressions Analyses	Adults	Examine the correlation between fast food restaurants and obesity on a state-wide basis.	Association between the number of residents per fast food restaurant and the square miles.
A7	Multilevel Logistic Regression	Older Adults	Examine in obesity among older adults relative to the joint influences of density of neighborhood fast food outlets	Significant associations is found likelihood of being obese
A8	Content Analyses	Different Type of Fast Food	Examine the fast-food chains compare	Fast-food portions in the United States are larger than in Europe
A9	Multilevel Logistic Regression Analysis	Mediterranean Population	Describe the association of fast food consumption with BMI, energy intake and diet quality.	Fast food consumption is associated with, poor diet quality and higher energy intake.
A10	Regression Analyses	Overweight Population	Examine affluent countries prevalence of obesity	The fast-food 'shock' impact is market-liberal countries.
A11	Bivariate Analyses and Multivariate Logistic Regression	Adults	The main objective is examine the frequency and characteristics of fast-food consumption .	Positive association between fast-food consumption is across income and education.
A12	Cluster Analysis, Multivariate Logistic Regression	Children	Compare the independent associations with overweight/obesity for fast food consumption	Diet is independently associated with overweight.
A13	Spatial Analysis	Children	Invastigate the relationship between fast-food consumption and obesity	The consumption of fast food is associated BMI.
A14	Content Analysis	Children	Media reporting of the regulation of fast food consumption	Fast food advertising to children is discussed in relation to ideas about governance.
A15	Bivariate Linear Regression	Children	Invastigateassociations between density of and proximity to fast food outlets and body weight	Fast food outlets in the local neighbourhood increases risk of obesity.
A16	Correlation Analysis	Children	To analyse the association between childhood overweight and obesity.	Positive correlation between density of fast food outlets and higher deprivation
A17	Empirical Analyses, Probit Analyses	Adults	Effect of fast-food availability on fast-food consumption and obesity risk	Fast-food consumption is positively associate with non-white rural residents

Table 3. Summary of analyses (Continuation)

Article Code	Method	Population	Research Objective	Findings
A18	Regressions Analysis	Adults	To investigate the effect of fast-food availability on weight outcomes	Aavailability does not affect weight outcomes in rural counties
A19	Regressions Analysis	Children	The main objective is examine the fast-food restaurants on school level obesity rates.	Students with fast-food restaurants near their schools more likely to be overweight.
A20	Multiple Regressions Analysis	Adults	Examine empirically the public health implications in Los Angeles	No evidence that it resulted in improving the diet of residents
A21	Linear and logistic regression	Adults	Observed differences in fast-food consumption and obesity by fast-food outlet.	Fast-food consumption, higher BMI were associated with lower educational levels.
A22	Logistic Regression	Patients	Eexamine behavioral factors associated with bariatric surgery patients	Behavioral factors, fast food consumption influence on higher levels of obesity.
A23	multivariate analysis	Youth	Examine the relationship between fast food advertisements and obesity	TV fast-food advertising, household income, TV time, and receptivity retained multivariate associations with obesity.
A24	multilevel latent class cluster	Adults	Examine the relationship consumer segments BMI and dietary knowledge in China.	Consumer segments associated with consumers' dietary knowledge and sociodemographic variables.
A25	Econometric Analyses	Children	Examine the determinants of childhood obesity and children's subjective wellbeing	Fast food and soft drink consumption negatively associated unhappiness.
A26	Descriptives Statistics	Children	To invastigate between the schoolchildren's consumption of fast food and takeaway outlets	BMI has a significantly inverse relationship to fast food
A27	Mixed Methods	Students	Examine risk factors for food consumption and associations with health outcome	Fast food consumption and obesity high among in major cities in China
A28	Multivariate linear regression	Adults	To investigate the relationship between the fast food restaurants and obesity.	Subway's outlets is positively associated with the prevalence of obesity.
A29	Logistic Regression	Students	Examine the associations between body mass index (BMI) and obesity, using full service restaurants to students' residences	Fast-food restaurants more likely to be higher values of BMI
A30	linear regressions	Adults	To investigate the relationship of the local availability of fast-food restaurant locations with obesity.	Individuals who living in near proximity to fast-food restaurants have higher BMI.
A31	linear regression	Children	Study the western fast food consumption and the association between obesity	Fast food consumption has increased in Chinese school-age children, especially medium-income families
A32	Content Analyses	Fast Food Chains	Examination of how fast-food chains are socially connected to obesity	Fast food chains are increasingly assigned a responsibility for obesity
A33	Linear regression analysis	Adults/Neightbourtd	Aims to investigate the association between neighborhood-level economic hardship, fast food consumption	Participants who they higher frequency of fast food consumption were more likely to be obese
A34	Multivariable regression	Adults	To investigate associations of neighbourhood fast-food outlet exposure and household income	Income and fast-food proportion were independently, systematically associated with BMI, body fat, obesity
A35	Regressions Analyses	Adult	Argue that fast food prices, conditional on income and employment	Fast food price changes affect adult BMI or obesity prevalence.

Table 3. Summary of analyses (Continuation)

Article Code	Method	Population	Research Objective	Findings
A36	Econometric Analyses	Adult	To investigate relationship between features of the built environment and obesity in urban areas.	Positive relationships between individual BMI values and the density of fast-food restaurants.
A37	Descpritive Statistic	Fast Food Chains	Obesity and the effects of choice at a fast food restaurant	Fast food chain patronage can affect energy intake by 50%.
A38	hierarchical regression analysis	Child	Effects obesity rates associated with fast food restaurant, urbanization and consumer poverty.	Adult obesity rate, illiteracy rate, median income are positively related to obesity
A39	Econometric Analyses	Child	Examine the effect of children's TV viewing and fast-food consumption on obesity.	Age is positively related to TV viewing hours and fast-food consumption.
A40	sensitivity analysis/linear regression analyses	Adult	Population-level association between fast food and calculated the proportion of calories consume.	Obesity prevalence is significantly negatively related to the densities of bfast food restaurants.
A41	Network analyses/ecological analyses	Adult	Determine to fast food outlets and supermarkets associate with overweight and obesity	Positive relationships between supermarket access and obese neighbors
A42	multinomial logistic regression	Adult	Assess the association of full service and fast food restaurant density with dietary intake	Sociodemographic characteristics are significantly associated fast food restaurant density
A43	Multilevel logistic regression	Child	Examine neighbourhood accessibility to fast-food outlets and associate with obesity.	Neighbourhood accessibility to fast-food outlets is associated with obesity.
A44	Regressions Analyses	Child	The aim of the study is to intake of candy, snacks or fast food was associated with the of obesity.	No associations between the baseline intake of candy, snacks, and fast food
A45	Spatial analysis/logistic regression	Adult	Examined how accessibility to fast food restaurants and green spaces is associated with obesity.	Accessibility to fast food restaurants is associated with the presence of obesity.
A46	Econometric Analyses	Child	Examine the effect of restaurants around schools on children's BMI.	Restaurants have some effect on student BMI
A47	Cross-Sectional Analysis	Adult	Investigate relationship between fast-food outlet and obesity	Findings show that association between fast-food outlets and obesity varies.
A48	Cross Sectional Analysis	Adult	Examine association of overweight and obesity with fast food consumption.	Main reasons for consuming fast foods is influencef of family and friends
A49	Correlational Analysis	Adult	To determine the small-area variations in the prevalence of overweight and obesity in an urban area.	Fast food outlets was the only significant factor pattern of obesity
A50	Sensitivity Analysis	Adult	Examined the longitudinal association between availability of fast-food outlets and physical activity facilities and the risk of obesity	No meaningful associations between neighborhood fast-food outlets or physical activity.
A51	Multivariate logistic regression analysis	Korean Population	Examined the independent associations of obesity with fast food consumption and dietary pattern.	Not association between fast food consumer and overweight/obesity
A52	Logistic regression	Children	Analyse dominant factors associated with overweight and obesity	Fast food consumption is a dominant factor associated with overweight and obesity

Conlusion

The number of fast-food restaurants have grown over the years. The total revenue of the fast-food restaurant industry in the USA was reported to be $ 273 billion in 2019 (Statista, 2020). As stated by Ritzer and journalist Thomas Friedman (2006) fast-food is not just a food consumption culture, it is an indicator of the American trade and culture. Just by looking at whether or not any country has a McDonald's chain is sufficient enough to explain this situation.

Numerous studies have shown that a higher density of fast food restaurants can be an environmental promoter of obesity (Jeffrey & French 1998). As a result of this systematic literature review, most scientific research supports this situation (Table 3). Fast food outlets increases risk of obesity (Crawford et al., 2012; Fraser & Edwards, 2010; Hamano et al., 2017). Fort his reason fast food enterprises establishment locations should be carefully selected. It is important that they are not in particular near the school.

Fast food consumption is a phenomenon that has socio-economic aspects. Fast food is consumed by all socio-economic. Socio-economic, characteristics of fast food included gender; age; household income, occupation, race-ethnicity, and urbanization (Table 2). Achievement of major fast food chains has been their ability to objective populations based upon demographic and socio-economic criteria (Melaniphy, 1992; Thornton, Bentley & Kavanagh, 2009). The consumption of food, including fast food, is the subject of research in different disciplines. One of these disciplines is sociology. Pierre Bourdieu (1930–2002) was one of the sociologists who his theories applied in diffirent areas one of those food studies. *Distinction: A Social Critique of the Judgement of Taste* is Bourdieu's (2010 [1979]) observed through eating practices and various types of foods. The different classifications given to food (such as healthy food or unhealty food, organic food, fatty food and fast food) also correspond to a system used to classify people (Sato et al., 2016). Some research examining the relationship between socio-economic factors and fast food (Carvalho & Luz ; 2011; Sato et al., 2014) but it is not enough. If the number of these research is increased effective policies can be developed in fast food consumption caused by obesity. Theories in sociology discipline such as Bourdieu's should be evaluated for investigate relationship between obesit and fast food.

The dynamics of change in eating and drinking culture can be explained by the transformation of post-industrial society in countries. Relationship between fast food-obesity can be examined with econometric analysis, however, it should be investigated with different disciplines such as psychology and anthropology. The role of this situation in the prevention of this global epidemic that we call obesity, can be demonstrated by addressing the issue with the slow food trend that emerged over time against fast food nutrition and consumption habits.

In the studies that the relationship between fast food consumption and obesity is examined through TV advirtising (Henderson, et al., 2009; McClure et al., 201; Chang & Nayga, 2009) show that advertising is significantly related to body mass index. So that fast food advertising, can be rearranged at certain hours of the day. Especially should be taken care of in the hours of children watching television.

Quick economic development, and the growth of global trade have accelerated changes in, the observed shift in people' s food consumption from a traditional diet for instance China (Wang et al., 2016; Wang et al., 2007) and the number of fast-food restaurants have grown over the years. It can be achieved by alternative food to reduce this consumption style. Alternative products should be developed for fast foods such as traditional fast food restaurants.

The development of traditional fast food restaurant can be useful in terms of both health and economic development of local people. Additionally traditional fast food restaurants affect the sustainability of local foods. Traditional fast food outlets offer lots of chance for healthier fast food options than convenience stores (Creel et al., 2008). In line with the results of the research, some suggestions can be made for future research on fast food and obesity. Conceptual or theoretical framework for analyizng fast food and obesity synthesizing the individual, social, environmental influences could strengthen the fast food circumference evidence base and develop the linkages between research and effective interventions and policy initiatives. Additionally future research may find different concepts together to address the multidimensional relationship between fast food and culture. Access to fast food can be viewed in different ways from a socio-economic perspective.

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