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Child Nutrition and Fitness in Switzerland and the United Kingdom: Analyzing Preventative Solutions for the Developing Obesity and Diabetes Crises

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Abstract

The current study takes a novel approach to analyzing how child nutrition and fitness can be used as preventative measures to solve the ongoing crises of obesity and diabetes. A comparison case-study between two stereotypically different European nations, Switzerland and the United Kingdom, was utilized to address how nutrition and fitness education, policy, culture and programs affect the health of the country. Each nation was analyzed comprehensively, accounting for dietary and exercise practices from infant stages to adolescence. Personal interviews with experts in the fields of breastfeeding, nutrition and fitness provided the main sources of information. Primary research was supplemented with data and studies collected from the literature, to provide a well-rounded depiction of nutrition and fitness cultures in Switzerland and the UK. Following investigation into the countries' practices, non-communicable disease (NCD) rates were consulted in an attempt to draw a correlation between the observed differences in nutrition and fitness culture and disease trends. While a specific causative relationship was nearly impossible to draw, the anecdotal data support the notion that poorer nutrition and fitness cultures in the UK are an unquestioned factor in the higher obesity and overweight rates seen in this country. The results depicted in this study give credence to the notion that proper public health policy, programs and educational initiatives targeting infant to adolescent nutrition and fitness can be used as powerful preventative mechanisms to slow the spread of NCDs such as obesity and diabetes.

Preface

My initial interest in this topic was sparked from a realization that sport in many European nations is a unifying force that brings masses of people together. As the world faces growing health concerns, I was curious to investigate how international organizations such as FIFA, UEFA and the IOC – all headquartered in Switzerland – could promote the prevention of obesity and diabetes through information dissemination and fitness culture. During the course of my studies in Switzerland and Morocco, I noticed that food and eating practices, like athletics, could have an equally profound impact on large-scale health outcomes. A particularly poignant moment occurred on my SIT study trip to Morocco – here the impact of globalization and westernization was inherently apparent. I could see first hand how poor diet, lack of information, and a shift away from traditional eating and fitness practices were facilitating the rapidly growing obesity and diabetes crises. At this point, I was determined to integrate nutrition into my research and to analyze which fitness and nutrition policy measures and programs could be utilized to prevent obesity and diabetes. Switzerland and the United Kingdom proved to be ideal locations for a case-study comparison, as the former is widely praised for healthy eating and exercise habits, while the latter has increasingly struggled in these areas. It was not until a moving lecture on infant nutrition and breastfeeding that I became interested in focusing my project around the young child and adolescent subset of the population. My hope is that this case-study and analysis will provide clear evidence for the merit of proper nutrition and fitness education in preventing the heightened obesity and diabetes crises. In globalized nations, a paradigm shift in nutrition and fitness habits is necessary and hopefully smart policies and programs targeted at the youth of today can help to alleviate the growing burden of obesity and diabetes.

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Introduction

The global health landscape has undergone an ever-apparent shift in the past fifteen to twenty years. As biomedical and pharmaceutical technology has grown considerably, much of the developed world is now capable of adequately treating an entire array of infectious diseases. Antibiotics, vaccines and a greater knowledge of pathogens have sparked an epidemiological transition that now sees non-communicable diseases (NCDs) as the foremost global health concern. Two such NCDs that have gathered considerable recent attention are obesity and type 2 diabetes. While these diseases are inherently complex and are the result of a cascade of risk factors, lifestyle choices and genetics, there is an irrefutable link between obesity and diabetes and two controllable aspects of life: eating and physical activity.

Despite the vast variability in worldwide cultures, nutrition and fitness remain an integral part of each and every society. Because of their applicability to the daily life of nearly every person across the world, nutrition and fitness will always remain invaluable assets to public health policymakers. Nonetheless, as the world has become increasingly globalized, the traditional roots behind sport and food cultures have begun to fade away. The high-paced lifestyle in large cities has put a premium on time, resulting in on-the-go eating habits, the blossoming of the fast food industry and abandonment of historical breastfeeding practices in favor of formula substitutes. Meanwhile, technological innovations have also changed the fitness landscapes in many nations. Children are sacrificing time spent participating in athletics in favor of videogames and television. More so, technology has also revolutionized the public transport system. While this has resulted in rapid access to city centers and has optimized the process of commuting, it has also greatly diminished the daily physical activity that both children and adults are engaging in. These unquestionable lifestyle changes have forced public health officials to

reevaluate fitness and nutrition in an ever-urbanizing world. One clear target of new public health policies and programs has to be children. Faced with harmful junk-food advertising, endless choices and a constant temptation to eat, children and adolescents are at high-risk for the development of unhealthy eating and physical activity habits. With sport, exercise and food being such engrained aspects of culture, it is paramount that we educate the world's youth to know and practice proper eating and physical activity habits.

Purpose and Hypothesis

The purpose of this study is to offer a novel analysis in the field of child nutrition and fitness. The current report is comprised of a unique comparison case-study evaluating the landscapes of infant to adolescent fitness and nutrition in two stereotypically diverse countries: Switzerland and the United Kingdom. Both nations are highly developed, relatively wealthy European countries, allowing the current study to control for potentially confounding variables. Nonetheless, while Switzerland has historically been praised for healthy eating and physical activity practices, the UK has garnered a reputation for poor nutrition and an increasingly sedentary population. Beginning with infant feeding, the nutrition and fitness cultures in these two countries will be explored and analyzed, with a focus on dissemination of information, education of children and parents, and nationwide public health programs. Subsequently, the current report will seek to establish a correlational relationship between the cultures of fitness and nutrition and national rates of diabetes and obesity. The hypothesis is that Switzerland, with an expected advantage in breastfeeding rates, healthy eating habits, physical activity of youth and nutrition and fitness education, will exhibit lower rates of obesity and overweight than the UK. These results could be used to facilitate proper public health policy aimed at improving child nutrition and fitness to prevent obesity and diabetes.

Literature Review

Data on obesity and diabetes compiled over the last five to ten years illuminate an alarming worldwide trend. As of 2008, the WHO estimated that 1.4 million adults were obese, with reports stating that the increasing obesity trends were unlikely to stabilize (Murer et al., 2015). While the United States has the highest percentage of obese individuals among OECD countries with 33% of the population affected, many European nations have concerning obesity rates as well. The United Kingdom, with its long-perceived poor nutrition and fitness habits, sees 26.9% of its population inflicted with obesity (The World Factbook, 2008). Meanwhile, the other European nation of interest for the current study, Switzerland, has a much more modest nationwide obesity rate of 17.5% (The World Factbook, 2008). One of the most vulnerable subsets of the population is children. Due to the links between parental lifestyle, education and childhood obesity, it is paramount that children are raised to be health-conscious adults. Nevertheless, childhood obesity rates are, as well, on the rise; in the UK, 14% of children aged 2-15 were classified as obese, while another 14% were considered overweight (Ryley, 2012). In Switzerland, only 19% of children are considered overweight or obese, but the issue remains on the forefront of Swiss public health policy and programming (Murer et al., 2015).

Despite the serious health concerns that result from individuals being overweight or obese, the most concerning threat associated with this NCD may be its inherent connection with diabetes. Several studies have corroborated that an obese individual is at a much higher risk for the development of type 2 diabetes (Kahn et al., 2006). An increase in adipose (fat) tissue leads to higher levels of specific cytokines, glycerol, hormones and fatty acids that provoke the progression of insulin resistance. While not all individuals that acquire heightened insulin resistance develop type 2 diabetes, in conjunction with non-functioning pancreatic islet β-cells,

type 2 diabetes will occur (Kahn et al., 2006). As a result, diabetes rates have been on an inter-connected rise along with obesity rates worldwide. In Europe today, 52 million people have diabetes and 537,000 deaths in 2014 can be attributed to the disease (IDF Diabetes Atlas, 2014). Jointly, obesity and diabetes pose a significant health risk and represent an immense burden on healthcare systems.

The question becomes, then, how can developed, technologically innovative nations such as Switzerland and the UK prevent obesity and diabetes? The medical sphere has produced controversial reports as to the main cause of obesity. Doctors from the UK have suggested that a nutritional intake high in sugar, fat and salt is the root cause and that it is a strong myth that physical inactivity is the main factor driving obesity increases (Hope, 2015). Nonetheless, separate studies have reported that greater numbers of hours spent watching television and lower physical activity levels are significantly correlated with higher body fat percentage and a greater BMI (Andersen et al., 1998). Public policymakers in the UK and Switzerland seem to acknowledge that both nutrition and fitness are determinants for obesity and diabetes and that information and programs targeting children in both of these aspects of life are essential as prevention strategies.

National Health Services (NHS) in the UK publishes clear physical activity guidelines for infants and children, including 180 minutes of activity per day for toddlers and the avoidance of any long sedentary periods for children under the age of five (Physical activity guidelines for children [under five years], 2015). Further NHS reports have outlined recommendations for youth aged five to eighteen, suggesting 60 minutes of activity per day and vigorous, muscle strengthening actions at least three times a week (Physical activity guidelines for children and young people, 2015). Nutrition reports from Switzerland have provided evidence suggesting that

Switzerland, even more so than the UK, clearly articulates nutrition related data, recommendations and policies to the public and offers several government-funded programs targeting parental education and mandatory school nutrition and fitness agendas (Sixth Swiss Nutrition Report Summary, 2012). It is clear, then, that both Switzerland and the UK are committed to policy changes and programs aimed specifically at infant to adolescent nutrition and fitness. The subsequent report will seek to analyze nutrition and fitness cultures, policies and programs in these two nations in more depth; following this analysis, the intended goal is to conclude whether or not the lower observed childhood obesity rates in Switzerland as compared to the UK can be attributed to a Swiss public health system that is more aware of and catering to proper nutrition and fitness recommendations.

Methodology

Primary Research

Interview Participants

The majority of information gathered for this project came from personal interviews with experts in the fields of nutrition and fitness. Primary accounts were preferred over scientific reports and journal articles as informational sources because interviewees offered their specific, expert opinions on a wide range of topics and questions could be tailored to suit the current study. A total of six interviews were conducted, the first four formal, and the final two informal:

1) Dr. Francesco Branca – Director of Health and Nutrition at the WHO
2) Lida Lhotská, via Skype – expert on breastfeeding, associated with IBFAN/GIFA
3) Professor Maaike Kruseman – nutritionist and professor at HESGE in Geneva
4) JR, anonymous – University of St. Andrews School of Medicine Student, nutrition focus
5) Sophie Robart – University of St. Andrews exchange student from America, vegetarian

6) Nezha Drissi – SIT Morocco Study trip coordinator, native Moroccan

These six participants were selected for their expertise, experience or anecdotal accounts in the fields of nutrition or fitness. While all four experts have studied these topics on a global scale, the first three were able to offer knowledge specific to Switzerland, while the fourth and fifth participants' information focused on the United Kingdom. The interview subjects answered a variety of questions in as much detail as time afforded them. More information on interview participants can be found in the Interactive Research Log portion of this report, and interview notes and transcripts can be found in the Work Journal attached as an appendix.

Additional Personal Accounts

In addition to the six interviews recorded above, several other anecdotal accounts or discussions were had in order to gather information on the fitness and nutrition cultures in Switzerland and the UK. Six informal discussions with residents and employees from the Geneva, Switzerland area were used to gain information on local, organic produce in Swiss nutrition. These informal interviews were conducted for a previous project on Slow Food in Switzerland and are cited in the current report (also found in the Interactive Research Log). Additionally, several students at the University of St. Andrews were stopped to briefly discuss their opinions on nutrition and fitness in the UK as a means to get a preliminary knowledge of culture in this nation.

Ethical Considerations

All ethical considerations were followed in accordance with proper research methods. For all formal interviews, a consent form was distributed, indicating the purpose of the study, permission to record the interview, and a choice to remain anonymous. Two copies of each consent form were signed and dated by the interview participant and the interviewer, one for

each party to keep. Copies can be found attached to the end of this report. Participants were verbally informed of their ability to end the interview at a time of their choosing. No vulnerable, at-risk, or minor (under 18 year old) subjects were interviewed. Informal interview participants were acknowledged of their ethical rights and were given the choice to remain anonymous.

Supplementary Research

In addition to primary accounts from interview subjects, supplementary sources from the literature were consulted. Background information was gathered on obesity, diabetes, breastfeeding and physical activity rates in the UK, Switzerland and other developed countries. At times, information gathered from interview participants was supplemented or corroborated with research studies, online magazine articles and/or books in order to gather a more rounded view of the subject at hand. All supplementary research was conducted through online libraries such as JSTOR, ProQuest, Google Scholar or Bowdoin Library's OneSearch. Sources are cited following APA guidelines in the Bibliography section of this report.

Analytical Framework

The two most important definitions to keep in mind in the current study are those of nutrition and fitness. In terms of this report, nutrition will refer to the eating habits of a person or populations. This comprises not only what one is eating, but also the manner and setting in which eating is done, where ingredients are sourced from, and nutritional intake. Fitness, meanwhile, will refer to a two-part definition of physical activity: sport or athletics comprised of organized sports or other intense activity (hiking, cycling, running, etc.), and daily physical activity such as walking or biking to work, working on one's feet instead of in a sedentary manner, etc. The current study will seek to evaluate infant through adolescent fitness and nutrition with regards to the definitions provided above. The study will first focus on culture in Switzerland, beginning

with breastfeeding practices in this nation, before discussion various aspects of nutrition and fitness. Next, the focus will shift towards a similar analysis in reference to the United Kingdom. Differences between the two nations will be analyzed to determine whether there appears to be significant variability in child nutrition and fitness cultures amongst citizens of Switzerland and the United Kingdom. Trends and statistics from the literature will be referenced once again to attempt to garner significant evidence supporting or denouncing the hypothesis that Switzerland exhibits lower obesity and/or diabetes rates, especially in children, as a result of healthier fitness and nutrition practices. If the hypothesis is supported, the current study will lend evidence to the argument that public heath policies and programs designed at improved child nutrition and fitness – such as ones that are already in place in Switzerland – can be effectively utilized as obesity and diabetes prevention techniques.

Analysis

Infant Health and Breastfeeding

Many will argue that the wellness of a child truly starts well before birth, with maternal health, nutrition and fitness all constituting significant factors in the health of infants. Nonetheless, for the purpose of this study, the discussion of infant and child nutrition and fitness will commence with an examination of perinatal care and the so called "first 1000 days." According to Lida Lhotská, a worldwide expert in breastfeeding and former employee of the International Baby Food Action Network (IBFAN) and Geneva Infant Feeding Association (GIFA), the first one thousand days of a child's life can be seen as the most integral time in a human's life (L. Lhotská, personal communication, 28 October 2015). Proper nutrition and fitness in this period of life is paramount, and failure to comply with scientifically backed

recommendations can have grave consequences in terms of the physical, cognitive and emotional development of a child. For these reasons, the World Health Organization (WHO), in conjunction with non-governmental organizations such as IBFAN and GIFA, has decided to place a large emphasis in policy discussions on infant nutrition (Badham, 2013). According to Dr. Francesco Branca, Director of Health and Nutrition at the WHO, both WHO and UNICEF recognize universal agreement among world leaders and public health policymakers that breastfeeding deserves support, promotion and protection (F. Branca, personal communication, 30 October 2015).

Breastfeeding Recommendations

In recognition of the importance of natural breastmilk for proper infant nutrition, the WHO has proposed a three-stage breastfeeding protocol (WHO European Region, 2015). The first recommendation is for early-onset breastfeeding, beginning within one hour after birth. Naturally, the commencement of breastfeeding within such a short timeframe requires the assistance and cooperation of hospitals. In response, the WHO and UNICEF launched a comprehensive program in 1991, entitled the Baby-friendly Hospital Initiative (BFHI). This enterprise seeks to provide knowledgeable hospital staff to commence immediate breastfeeding, to educate mothers, and to promote, protect and support exclusive breastfeeding within the first six months of life (World Health Organization and UNICEF, 2009). Since its proposal in 1991, 152 countries across the globe have implemented the BFHI, and the initiative has resulted in significant progress in the number of mothers engaging in early-onset of breastfeeding. The second WHO/UNICEF recommendation is that mothers engage in exclusive breastfeeding for the first six months of their infants' lives (WHO European Region, 2015). According to Lida Lhotská, this can be viewed as the most essential aspect of the infant and young child feeding

guidelines. Mrs. Lhotská has chronicled that the benefits of exclusive breastfeeding during this period are numerous: a mother's breastmilk is specifically tailored to her infant, providing around-the-clock access to the exact nutritional intake that the baby needs and conferring pathogen immunity to infants (L. Lhotská, personal communication, 28 October 2015). Furthermore, infant nutrition via breastfeeding comes with no waste and at no cost, meaning breastfeeding is inherently the most safe and sustainable manner of child nutrition. While the first six months of exclusive breastfeeding may be the most significant portion of infant feeding, it is important to note the WHO's third recommendation: continued supply of breastmilk from six months to two years old, supplemented by adequate foods. Mrs. Lhotská suggests that this guideline is often where mothers tend to fall short, turning instead to baby milk substitutes. Nonetheless, it is vital to child health that breastfeeding continue until age two or beyond, supplemented only by simple, local foods such as potatoes and bananas (L. Lhotská, personal communication, 28 October 2015). According to Dr. Branca, these three recommendations are disseminated to mothers across the world, providing easy access to the very education and information that has the potential to save millions of infant lives, decrease worldwide waste and reduce the burden on healthcare systems (F. Branca, personal communication, 30 October 2015).

Infant Nutrition and Obesity

As mentioned previously, the benefits of breastfeeding have garnered universal support and promotion, backed jointly by scientific data and by international organizations such as the WHO and UNICEF. Nonetheless, mothers across the world continue to find difficulty providing consistent access to breast milk. Failure to meet the WHO's three-stage infant feeding protocol is accompanied with significant health risks for both mothers and their children. Studies have suggested that infants not afforded adequate breastmilk-based diets carry higher risks of infant

death, gastroenteritis, pneumonia, middle ear infections, and poor teeth and jaw development (L. Lhotská, personal communication, 28 October 2015). While these health consequences are all serious in their own right, perhaps the most significant consequence of poor infant nutrition, and one of heightened interest in relation to the current study, is the intriguing correlation between poor breastfeeding practices and a higher risk of obesity and diabetes. The interactions that obesity and breastfeeding have with each other are multidirectional (L. Lhotská, personal communication, 28 October 2015). Primarily, data have suggested that mothers who are obese have a much more difficult time breastfeeding, as a result of mechanical issues that confer trouble with the infant-to-breast attachment process. Furthermore, epidemiological studies have revealed that obesity in mothers also yields metabolic problems that negatively affect lactogenesis, or the production of milk (L. Lhotská, personal communication, 28 October 2015). Additional data have chronicled an association between perinatal maternal nutrition and infant and child obesity (Das, 2008). During fetal and perinatal development, appetite-stimulating neuropeptides as well as molecules that control insulin resistance are programmed in relation to the mother's diet. In studies conducted with pregnant female rats, a maternal diet high in junk food resulted in an increased risk of rat offspring developing obesity (Das, 2008). These findings suggest that healthy maternal nutrition, in humans too, is necessary to reduce the risk of infants being born with an increased inherent risk of childhood obesity and type 2 diabetes.

The other side of the link between obesity and breastfeeding is that multiple reports have shown the efficacy of breastmilk-based infant nutrition in preventing the onset of obesity in both mothers and children. For mothers, the argument is fairly simple: lactogenesis requires a significant amount of energy output. Thus, breastfeeding has the ability to regulate a mother's caloric intake versus output, controlling weight and reducing the risk of obesity (L. Lhotská,

personal communication, 28 October 2015). Further epidemiological studies have revealed that metabolic changes that occur in mothers who are actively breastfeeding enable the regulation of weight and lessen the likelihood of both ovarian and breast cancers. While a scientific basis for these metabolic changes has yet to be understood, there is an indubitable link between breastfeeding and a mother's ability to properly lose the weight that was put on during pregnancy (L. Lhotská, personal communication, 28 October 2015). From the perspective of the infant, there is ample data to suggest that formula-fed babies display much higher rates of obesity, both during the infant stage and later in adolescence (L. Lhotská, personal communication, 28 October 2015). According to Lida Lhotská, babies are born with an innate ability to control their nutritional intake when feeding from their mother's breasts. Presentation of a novel stimulus, such as the baby bottle, can throw off the infant's natural regulatory mechanisms, leading to over-nutrition, increased protein intake and the development of obesity (L. Lhotská, personal communication, 28 October 2015). Additionally, preliminary scientific reports have suggested that the plastics that many baby bottles are made with contain bisphamol-A, a chemical that has been correlated with increased risk of obesity (L. Lhotská, personal communication, 28 October 2015). In conclusion, breastfeeding allows an infant to follow a normal growth curve, regulating nutritional intake and reducing the risks of obesity in both children and mothers.

Switzerland and United Kingdom Breastfeeding Rates

Despite the clear nutritional benefits that are associated with breastfeeding and an unquestionable link between formula-feeding and a risk of obesity, many nations still face a problem in protecting breastfeeding rights. While one would expect low-income, developing nations to have the largest problem supporting breastfeeding, as Dr. Branca explains, it is paradoxically the most developed nations that see some of the world's lowest breastfeeding rates

(F. Branca, personal communication, 30 October 2015). Because these high-income countries have clean water to prepare formula in, have relatively wealthy societies and tend to have more women in the workforce, breast milk substitutes are often viewed as non-problematic. The result is that breastfeeding rates are much lower than expected in developing countries, with recent figures suggesting that in Europe only 13% of mothers exclusively breastfeed for the first six months, the lowest rates breastfeeding rates in the world (Starling, 2015). European nations that have some of the best nutritional education and obvious access to WHO infant and child feeding reports, would not be expected to be failing so significantly in terms of breastfeeding rates. Of all OECD countries with sufficient data, the United Kingdom has the lowest proportion of infants who were exclusively breastfed until three months, at just above 15% (Breastfeeding Rates, 2009). Many have blamed the UK's breastfeeding problems on a lack of income, with reports having linked low breastfeeding rates across Europe to households with low socioeconomic status (Starling, 2015). Nonetheless, these reports fail to recognize one painstakingly obvious fact: the world's highest breastfeeding rates are found in developing, low-income countries where median family income is assuredly much lower than that in the United Kingdom (Abano, 2014). Clearly, then, it is not income, but rather cultural norms, the sexualization of the breast, poor maternal labor legislation, and promotion of breastmilk alternatives that are preventing developed nations from embracing breastfeeding as the sustainable, cost-effective infant nutrition option that it is (L. Lhotská, personal communication, 28 October 2015).

As compared to the United Kingdom, Switzerland has much higher rates of breastfeeding, with around half of infants being exclusively breastfed for three months and 35% of mothers continuing to follow WHO recommendations until at least four months (Breastfeeding Rates, 2009). While it is not entirely clear why Switzerland observes much better

breastfeeding practices as compared to the United Kingdom, one potential hypothesis is that mothers and families are more educated and willing to follow recommended infant nutrition protocols. Despite the fact that Swiss household tend to be relatively wealthy, the income gap between Switzerland and the United Kingdom is small enough to reasonably rule out socioeconomic reasons as the causative variable in observed breastfeeding differences. As Lida Lhotská has chronicled, proper protection and promotion of infant nutrition often relies on information, training and education (L. Lhotská, personal communication, 28 October 2015). While there is no hard data to support this notion, a theory could be posited that the presence of organizations such as GIFA in Geneva and the Swiss population's proximity to and support of an international organization like the WHO lead to a better informed society. With increased education, mothers are more aware of the consequences of formula feeding and choose to more strictly adhere to the universally recognized guidelines for infant nutrition.

Protecting Breastfeeding

Much can be said for the power of information dissemination, education and workplace law in protecting infant nutrition. Nonetheless, one of the most serious threats to adequate breastfeeding practices comes in the form of multinational corporations that promote breastmilk formula substitutes (L. Lhotská, personal communication, 28 October 2015). In conjunction with UNICEF, the WHO has developed an international code of marketing for breastmilk substitutes, clearly articulated what constitutes illegal promotion of milk formula (F. Branca, personal communication, 30 October 2015). Still, these provisions have only been adopted in full by about 40 of the WHO's 194 member states, leaving breastfeeding to be unprotected in many nations. Lida Lhotská has lamented how big corporations such as Nestlé have continually succumbed to the profitability of breastmilk substitutes, leaving millions of infants to suffer with

improper nutrition (L. Lhotská, personal communication, 28 October 2015). Even as countries begin to fight back, enacting stricter legislation on the promotion of milk formula that replaces breastfeeding for the first six months, corporations have simply shifted their focus toward products that can be used in the six month to two-year timeframe (L. Lhotská, personal communication, 28 October 2015). The answer of how to protect breastfeeding is a complex issue, but at the very least, nations must come together to enact and enforce legislation preventing the advertising of harmful substitutes. Breastfeeding clearly represents the most sustainable, cost-efficient, balanced method of infant nutrition, and without proper protection, millions of babies worldwide are left with inadequate feeding and at higher risk of developing serious cognitive and physical problems, obesity and type 2 diabetes.

The Case of Switzerland

Nutrition

Switzerland has long had the reputation as an extremely healthy European nation. With this generalization comes the notion that dietary practices and nutrition in Switzerland should be analyzed and taken as the ideal model. Expert nutritionist and professor at Haute École de Santé Genève (HEDS) & Hautes Écoles Spécialisées Genève (HESGE) Maaike Kruseman mentions that while these notions can be seen as stereotypes, they generally hold true (M. Kruseman, personal communication, 5 November 2015). Professor Kruseman has refuted reports that have speculated that a traditional Swiss diet led people to fall short of several nutrition recommendations. Despite the acknowledgement that some subgroups have slight difficulty reaching nutritional guidelines for intake of micronutrients such as folic acid, selenium and iron, Professor Kruseman has cautioned that studies indicating that the Swiss public fall short of

nutrition recommendations are likely subject to small sample size and selection bias. In her expert opinion, Professor Kruseman has clearly confirmed the notion that Switzerland is one of the European nations with the best nutrition culture (M. Kruseman, personal communication, 5 November 2015). The question becomes, then, what practices, policies and programs lead the Swiss society to choose to abide by such a healthy lifestyle?

Information and Education

The world's leading public health officiating body, the WHO, has repeatedly indicated the value of information dissemination in provoking correct nutritional practices. According to Dr. Francesco Branca, he and his colleagues at the WHO have regularly released dietary goals and nutritional information to worldwide populations, beginning in 2003 with Technical Report 916 'Diet and the Risk of NCDs' (F. Branca, personal communication, 30 October 2015). This report and subsequent updates disseminated specific dietary guidelines to nations around the world; the goals recommended having fats be less than 30% of total energy intake, not eating industry-generated transfats, salt intake less than five grams and high fruit and vegetable intake of at least 400 grams a day (F. Branca, personal communication, 30 October 2015). While these guidelines are translated into several languages and are easily available in almost all 194 WHO member states, the problem is often whether this information reaches the general public. According to Professor Kruseman, the Swiss society has not had this issue: she has revealed that Switzerland excels in having a well-informed public in relation to nutritional goals and dietary recommendations (M. Kruseman, personal communication, 5 November 2015). With education of parents and children having been proved vital to a successful nutrition culture (Ruel and Aldermen, 2013), it appears as though an informed Swiss society is one of the primary reasons for this country's healthy eating habits.

The Role of Schools

While information dissemination and education of parents have proven integral towards Switzerland's nutrition successes, perhaps a more significant source of nutrition training comes from within the Swiss school system. In many developed nations, such as the United States, schools are often blamed for many problems associated with nutrition, health and obesity. In America, for example, vending machines distributing high-sugar, high-fat foods to kids within educational settings have recently become the target of severe backlash and legislation. Nevertheless, according to Dr. Branca, the WHO has long considered schools to be fundamental to the promotion of healthy nutrition (F. Branca, personal communication, 30 October 2015). Dr. Branca has recognized the importance of pre-primary and primary schools, stating that programs such as the recent Nutrition Friendly School Initiative will be relied on heavily to promote healthy food environments and to halt the spread of obesity and diabetes (F. Branca, personal communication, 30 October 2015). In Switzerland, specifically, schools play an even larger role in educating young people on proper nutritional practices and encouraging healthy eating. In Swiss secondary schools in the canton of Geneva, there exists mandatory nutrition education taught by professional dietitians for two semesters. Children are taught not only how to cook, but also about the sourcing of food, sustainable harvesting practices and how to follow a healthy diet (M. Kruseman, personal communication, 5 November 2015). Currently, a program in Switzerland is being drafted to bring a similar nutritional mandate to schools throughout the country's 26 cantons. More so, discussions with Professor Kruseman have revealed that nutritional education is weaved into almost all aspects of Swiss schooling. For example, when primary school children learn about geography, they are informed, as well, about specific foods that come from each region. In this way, the Swiss education system is relied on heavily to

inform children of nutritional facts that can lead them to live healthy lifestyles (M. Kruseman, personal communication, 5 November 2015).

Another manner in which schools in Switzerland aid the movement toward nutritional sustainability and a healthy diet is through nationally supported programs such as Fourchette Verte (M. Kruseman, personal communication, 5 November 2015). This initiative was originally created to lend restaurants a special label if they met specific nutritional criteria for, among other factors, vegetable use and good fats. The program has now been extended to schools, allowing parents to decipher educational facilities that provide safe eating environments for children. Fourchette Verte has drastically improved the quality of nutrition within Swiss schools, to the point where almost all schools in the canton of Geneva have been awarded the Fourchette Verte label (M. Kruseman, personal communication, 5 November 2015). Other government-funded initiatives such as 'Movimento e gusto con l'equilibrio giusto' in the Swiss canton of Ticino and 'Senso5' in the Canto du Valais target schools as settings to promote proper nutritional health and wellness (Sixième Rapport sur la Nutrition en Suisse, 2012). These examples provide ostensible support, accrediting the Swiss education system and government programs targeting schools as pivotal actors in the promotion of adequate child nutrition.

Local and Organic Food Sourcing

Another aspect of Switzerland that separates it from many developed countries in terms of nutritional practices is the countrywide culture of growing and cooking with local and organic produce. The prevalence of sustainable, organic agriculture in Switzerland can be attributed to two factors: a high consumer demand for the highest quality ingredients and a willingness by food providers to meet their customers' desires. The first portion of this movement towards local, organic food in Switzerland arises as a product of consumer demand. Three interview

participants from the canton of Vaud in Switzerland suggested that they choose either to purchase solely organic ingredients or to grow their own produce in private gardens because they believe in the health benefits and superior taste of such food (P. Michellod, personal communications, October 2015, anonymous Borex, personal communications, October 2015, and JH Morges, personal communications, October 2015). To these Swiss residents, the higher cost in terms of time, money and effort that is associated with local, organic food is well worth the benefits they receive in terms of health and taste. Accounts from Nezha Drissi, an expert in Moroccan culture, have confirmed that such a movement back toward traditional food sourcing convenes health benefits and prevents the risk of obesity (N. Drissi, personal communications, 15 September 2015). According to Professor Kruseman, the purchasing of BIO (organic) produce in Switzerland is not heavily affected by the variable of socioeconomic status. Even lower-income families who look to save money on common household items will tend to be willing to spend the extra money to purchase local, organic food (M. Kruseman, personal communication, 5 November 2015). Consumer demand for such produce is aided by Switzerland's relatively high-income society and the fact that even large Swiss supermarket chains such as Migros and Coop are committed to providing organic food (M. Kruseman, personal communication, 5 November 2015). Swiss purchasing data has confirmed the nations propensity to pay more for higher quality food. While organic meat and tomatoes will run 30-50% higher in price as compared to non-organic options (Swiss Organic Food Sales, 2015), Swiss residents spent $1.81 billion on organic produce in 2011, trailing only Denmark in European nations (Siegenthaler, 2012). Such figures exemplify Swiss society's willingness to pay for the best nutritional foods they can find.

This consumer demand is backed by a corporate landscape that has consistently provided Switzerland with nutritious food in a wide range of businesses. Even the lowest level of food providers in Switzerland, fast food companies such as McDonald's, source all beef, potatoes and wheat used in buns from local Swiss farmers (McDonald's Employee Nyon, personal communication, October 2015). Higher end restaurants have been trending toward farm-to-table practices and consistently attempt to provide diners with locally sourced, organic ingredients in all of their meals (Rando Burger Employee, personal communication, October 2015). Accounts from a worker in Migros, one of Switzerland's largest supermarket chains, have revealed that large-scale grocery providers also stock their shelves with produce grown locally, free of pesticides, and always BIO (Migros Employee, personal communications, October 2015). The involvement of supermarkets in providing local, organic food to the Swiss public dates back to the 1990s, when large chains Migros and Coop first began competing with each other to deliver the highest quality produce (Swiss Quick to Move, 2009). It is this commitment of big businesses to local, organic food that has given Switzerland an even larger edge in maintaining quality nutritional practices and meeting many of the WHO dietary guidelines for infant and young child feeding.

Fitness

The other aspect of wellness culture that the nation of Switzerland is consistently praised for is fitness. The WHO releases physical activity guidelines based on age groups, with a particular concern for both children and elderly populations (F. Branca, personal communication, 30 October 2015). These informational protocols are vital for engaging parents in the physical wellbeing of their children. As mentioned in reference to nutritional information, Swiss families tend to be very well educated on WHO recommendations, contributing to the general perception

of an active Swiss society. While the stereotype of the Swiss man hiking in the Alps every weekend does not hold entirely true anymore, there is still an aspect of athletic culture that is engrained in Swiss society (M. Kruseman, personal communication, 5 November 2015). In terms of child fitness trends in Switzerland, there has been a slight downward trend in daily activity, but in many subgroups of Swiss society, intense physical activity by children has actually been increasing (M. Kruseman, personal communication, 5 November 2015). In analyzing these trends, it has become apparent that two factors in Swiss society contribute to the culture of fitness: school systems and public accessibility.

Fitness in Schools

Just like in nutritional health, schools play a pivotal role in the engagement and physical activity of young Swiss children. In studies performed in Mexico, a country that is immensely affected by childhood obesity, it was revealed that a school-wide intervention program did not significantly alter the level of physical activity of children in that school (Safdie et al., 2013). Nonetheless, similar research from Swiss school programs disagrees with this notion, suggesting that school intervention initiatives can indeed affect the physical health of children. Research conducted in Swiss elementary schools has revealed that an intense, structured, compulsory physical activity programmed entitled KISS both increased the level of physical activity in youth and reduced their adiposity (fat) tissue counts (Kriemler et al., 2010). This initiative, which included physical activity lessons, education and homework, has proven that school-based fitness programs can indeed improve child physical activity levels and reduce the risk of obesity. Further studies have corroborated the need for approximately 60 minutes of physical activity per day for young, school-aged children (Strong et al., 2005). In practice, Swiss schools already incorporate fitness into their educational protocols. Primary and secondary schools have

mandatory physical education curricula. Additionally, while it is not common for afterschool sport activities to be run through the education system, schools often lead weeklong ski and spring athletic camp trips, which offer the opportunity for skiing, hiking, swimming and other forms of physical exercise (M. Kruseman, personal communication, 5 November 2015). These school trips are not limited to high-income families and help to close the income gap in fitness that exists in Switzerland as a result of the high cost of skiing, horseback riding and similar forms of exercise (M. Kruseman, personal communication, 5 November 2015). Whether it be through physical education, school-run field trips or rigorous physical activity interventions, Swiss schools make a profound effort to keep children active and to promote a healthy fitness culture across the nation (M. Kruseman, personal communication, 5 November 2015).

Public Access to Fitness Infrastructure

An often-overlooked aspect of fitness culture is a nation's ability to provide public access to athletic facilities and exercise-friendly infrastructure. A recent study out of Switzerland has confirmed the importance of such access to fitness settings. Research has found that Swiss children in the German regions are more physically active and less sedentary than their French-region fellow youth (Bringolf-Isler et al., 2015). The observed differences, however, were not correlated with environment or socioeconomic status, indicating that more likely factors affecting physical activity were culture and accessibility (Bringolf-Isler et al., 2015). According to Professor Kruseman, cycling lanes, driving practices and a society that promotes physical activity are more prevalent within German-Switzerland as compared to French-Switzerland (M. Kruseman, personal communication, 5 November 2015). This is not to say that the French speaking regions of Switzerland do not provide sufficient access to infrastructure. In fact, Dr. Branca has indicated, after living in Italy, Switzerland and several Nordic countries, that

Switzerland compares very favorably with Nordic nations that have long been perceived as providing unmatched accessibility to swimming pools, cycling lanes and other facilities that promote physical activity (F. Branca, personal communication, 30 October 2015). What these studies reveal is that proper access to infrastructure and athletic facilities are paramount to the creation of a society that abides by recommendations for healthy fitness behavior. While there are noted regional differences within Switzerland, the country as a whole excels in providing this access, contributing to a sustainable, healthy culture of fitness within Switzerland.

The Case of the United Kingdom

The previous analysis has focused on the nation of Switzerland, compiling primary evidence and supplementary data from the literature that suggests support of the perception that Switzerland excels in both healthy dietary and physical exercise habits. For the purpose of this comparison case-study, it is now necessary to turn the attention towards another European country, the United Kingdom. Unlike Switzerland, the UK has recently been criticized as a nation that follows unhealthy nutritional practices and has become increasingly sedentary. The following analysis will rely jointly on primary interview accounts and supplementary literature to investigate whether the claim of the UK's unhealthy dietary and fitness trends holds true or not.

Nutrition

One of the most abundant perceptions of the United Kingdom is that citizens in this country have some of the unhealthiest nutritional habits of any country in Europe. An associate at the University of Saint Andrews School of Medicine, who chose to be referred to by the initials JR, has confirmed that this widely held opinion is valid and that, in fact, the trends in the UK indicate diet is becoming increasingly poor (JR, personal communication, 28 October 2015).

Recent reports out of England have revealed that unhealthy nutritional practices are responsible for approximately 70,000 deaths in Great Britain per year and result in a £10 billion burden on British healthcare services (Poor Diet Kills 70,000, 2008). Clearly then, the United Kingdom is in a precarious situation in relation to nutrition, with consumption of high-sugar, high-fat foods reaching an all time high and many people failing to reach even half the recommended daily intake of fruits and vegetables (Poor Diet Kill 70,000, 2008). Accounts from JR, who focuses on nutritional studies at the School of Medicine in St. Andrews, have revealed three primary rationales for the UK's failure to implement healthy nutrition culture into its society: poor reception of nutritional information, unhealthy food environments within schools, and rising food prices. While these three factors do not completely explain the presence of such a concerning nutritional culture in the United Kingdom, the current study focuses on them as integral parts of the problem.

Reception of Information

As mentioned in the analysis of Switzerland's nutritional culture, a large part of the success in Swiss dietary practices can be attributed to well-informed parents and children. Dr. Branca mentioned that the WHO sends nutritional guidelines to all of its 194 member states, translating these recommendations into several languages. Such a statement reveals that the information is likely to reach families in the United Kingdom just as easily as it would reach the Swiss populous (F. Branca, personal communication, 30 October 2015). Furthermore, as is indicated by a recent report released by 'Public Health England' on the dangers of a high-sugar diet, several organizations in the UK regularly disseminate nutritional information to the public (Tedstone et al., 2015). The availability of such international and national guidelines, coupled with the fact that the UK is a relatively well-educated, high-income nation, would lend one to

believe that families in the United Kingdom are, in fact, aware of nutritional recommendations. According to JR, this expectation is valid, as parents and children in the UK have ostensibly easy access to WHO reports and guidelines and the society tends to be very well informed (JR, personal communication, 28 October 2015).

Nonetheless, the UK remains mired in a state of poor nutrition. The only explanation for unhealthy dietary practices in the face of a well-informed public is that parents, despite being aware of the consequences, are simply not abiding by the recommendations. Such a phenomenon is not unique to the United Kingdom; Nezha Drissi has revealed that in Morocco people are often well aware of the diabetes and obesity risks that are associated with a diet high in sugar. Nonetheless, sometimes even after being diagnosed with diabetes, these people still choose to consume unhealthy foods and tea flavored with immense amounts of sugar (N. Drissi, personal communication, 15 September 2015). A similar situation could be developing in the United Kingdom, where parents and children are aware of the dangers of a high-sugar, high-fat diet and, yet, are unwilling to change their cultural norms or nutritional practices despite the noted consequences. Thus, as JR has explained, the problem becomes not one of information dissemination or accessibility, but rather an issue of how this educational data can actually change behaviors (JR, personal communication, 28 October 2015).

Nutrition in School Systems

One fundamental setting for the transition of nutritional information and guidelines into daily improvements in habits is the education system. The current report utilizes information gained from the University of St. Andrews dining halls and two students at this university, the aforementioned JR and an American exchange student named Sophie Robart. While the University of St. Andrews caters to an age group that is older than the infant to adolescent

subsection that this study focuses on, it nonetheless represents an ideal setting to analyze UK school-based nutrition. The University of St. Andrews is one of the most prestigious schools in the United Kingdom, and, as such, is expected to offer top quality dining to its students. Nevertheless, in talking with both JR and Mrs. Robart it has become apparent that the quality and health of food provided and this university falls well short of nutritional recommendations.

The University of Saint Andrews, according to Mrs. Robart, provides three meals a day to its students. Nonetheless, primary accounts have revealed that the nutritional variety offered by these meals is subpar and clearly does not facilitate a healthy diet (S. Robart, personal communication, 26 October 2015). The primary issue with school-based dining in the United Kingdom appears to be the lack of sufficient fruit and vegetable options and a reliance on meats, starches and carbohydrates. Mrs. Robart has recalled that her dining services have put in place a rule that students are only able to receive one piece of fruit per meal (S. Robart, personal communication, 26 October 2015). Given that WHO and UK nutritional guidelines recommend at least five servings of fruits and vegetables, it becomes nearly impossible for St. Andrews students to meet these dietary goals (Poor Diet Kills 70,000, 2008). The University of St. Andrews dining staff is much more lenient with distribution of hot dishes and deserts, however. Mrs. Robart has reported that students are allowed to take two servings of the dining hall's high-sugar, high-fat deserts and are often also permitted the opportunity for seconds of main courses that typically contain meat and a starch such as potatoes (S. Robart, personal communication, 26 October 2015). These allow students to easily meet their energy intake needs, but in a non-healthy manner, consuming far too much sugar, salt and fat and not meeting recommendations for oat, nut, vegetable and fruit intakes (JR, personal communication, 28 October 2015). More concerning is the apparent ignorance of special dietary needs in the UK school system.

According to Mrs. Robart, a vegetarian herself, the salad bar in her dining hall is often sparse and she has been served, on multiple occasions, purported 'vegetarian' meals that contain meats such as turkey or pork (S. Robart, personal communication, 26 October 2015). Such a reluctance to fill the needs of vegetarians, vegans, or alternative dietary restrictions has revealed that school-based nutrition in the United Kingdom is a primary agent causing the nation's poor eating habits.

Food Poverty and Poor Quality Produce

Apart from the availability of nutritional food in schools, a secondary issue that arises is the quality of such produce both internal and external to educational settings. JR has revealed that families in the United Kingdom have little regard for locally sourced and organic foods (JR, personal communication, 28 October 2015). In schools, as well, even when vegetables and fruits are sufficiently offered, they are generally of poor quality, are non-organic and are imported from thousands of miles away (JR, personal communication, 28 October 2015). This creates an environment in which children are not afforded the opportunity to consume food that can support quality nutrition and health and puts this subset of the UK population at much higher risk of developing poor eating habits and diseases such as obesity and diabetes.

One reason for the reluctance of families in the United Kingdom to provide the best quality foods in their households is a phenomenon known as food poverty. Data have suggested that in the United Kingdom, food prices have risen by 32% from 2007-2012, with large increases of 34% and 22% coming in the prices of fruits and vegetables, respectively (Butler, 2012). While families in the UK remain of relatively high socioeconomic status, the increases in food prices have indubitably affected the quality of nutrition provided to children in their homes. Reports have confirmed the expected result that low-income youth are most affected by rising food prices. In poorer families, food poverty has resulted in a significant decline in the intake of fruits

and vegetables as well as an increase in consumption of processed foods high in sugar, fat and salt (Mwatsama and Stewart, 2005). Only the most well-off UK households are maintaining their ability to serve quality, nutritious fruits and vegetables to their children, leaving many lower-income youth susceptible to obesity and diabetes-inducing diets (Butler, 2012). It is apparent then, that governmental policies must be put in place to halt the increases in food prices and to protect lower-income families from the burdens of food poverty. Food poverty, lack of healthy school eating environments and a general reluctance of UK families to abide by international dietary recommendations all contribute to the poor nutrition culture in the United Kingdom, which is threatening the health of children across the nation.

Fitness

In debating the primary cause for increased obesity rates observed in the United Kingdom, many have presented the dichotomy of gluttony or sloth. The previous analyses suggest that poor nutrition serves a large role in the UK's poor health trends. Nonetheless, physical inactivity cannot be ignored as an integral causative agent in increasing rates of childhood obesity in the United Kingdom. Early health reports from Great Britain have seemed to point to physical activity as the root cause of rapidly growing obesity rates (Prentice and Jebb, 1995). One study has found that as overweight and obesity trends increased exponentially, energy intake in England actually declined. These results seem to indicate that physical activity, and not overeating, is a more dominant determinant for obesity. A more sedentary lifestyle reduces the body's demand for energy, resulting in people becoming obese without significant changes in their caloric intake (Prentice and Jebb, 1995). More recently, a 34 country international study has concluded that youth categorized as overweight were correlated most significantly with decreased levels of physical activity and increased television viewing time and

not with a decreased intake of fruits and vegetables or increased soft drink consumption (Janssen et al., 2004). While alternative studies could certainly be found proving the undoubted links between nutrition and poor health, the fact remains that fitness trends are large determinants in the prevalence of obesity and overweight.

Physical Inactivity Among UK Youth

Recent data from The British Heart Foundation in the United Kingdom have revealed alarming physical inactivity rates among children aged five to fifteen. In England, for example, only 21% of boys in 2012 reached physical activity recommendations, a 7% decline from data procured in 2008 (Townsend et al., 2015). Fitness levels in girls aged 5-15 are even more concerning, with only 16% of English girls in this age group meeting recommendations (Townsend et al., 2015). These data are considerably alarming in the context of the United Kingdom having a relatively strong sporting culture. Historically, children have been involved in both formal and informal athletics, with interest in football and rugby, among other sports. As of 2012, the British Heart Foundation has reported that between 66 and 68% of all youth aged five to ten participate in organized sports in their schools (Townsend et al., 2015). These figures indicate that a large percentage of children in the UK are undertaking rigorous, organized physical activity. The problem, however, arises when data concerning mundane physical activity are analyzed. In part due to increased public transportation technology and the prevalence of cars, children in the UK are living increasingly sedentary daily lives. Only about two thirds of youth report having walked to school at least one time per week and a mere 1% of girls and 6% of boys aged two to fifteen in England cycle to school (Townsend et al., 2015). In this way, unfriendly cycling infrastructure and a reliance on cars and public transport may be contributing

to immensely reduced levels of daily physical activity among UK children (JR, personal communication, 28 October 2015).

Sports in University

While the previous data from the British Heart Foundation suggest that organized sports play a large role in UK adolescent fitness culture, a different narrative holds true for late adolescence and early adulthood. According to students consulted with at the University of St. Andrews in Scotland, several athletics teams, ranging from polo to rugby, do exist at this university. Nonetheless, sports teams at the University of St. Andrews have devolved into makeshift fraternities, focusing their efforts more on partying and the consumption of alcohol than on practice and physical activity (JR, personal communication, 28 October 2015). Several students have revealed to me that attending practices and even matches remains optional, indicating that a sporting culture that was so prevalent in UK youth aged two to fifteen appears to die out once these children have reached late adolescence.

Apart from organized athletics, school systems in the United Kingdom generally tend to fare poorly in regards to physical education. Data compiled in 2012 have revealed that Welsh schools have particularly poor exercise curricula: only 53% of Welsh primary and 15% of Welsh secondary schools provide two hours of physical education per week (Townsend et al., 2015). A lack of proper physical education and allocated time for exercise in primary and secondary schools is devastating for the fitness culture of youth in the United Kingdom and places children at a much higher risk of developing NCDs such as obesity and diabetes. While the general sporting culture for children in the UK remains relatively strong, as evidenced by British Heart Foundation data of the participation in athletics, a decline in daily activity and poor physical

education in schools can be recognized as influential factors driving the development of poor fitness trends among UK youth.

Results and Conclusion

Results

The above analyses relied on personal accounts and supplementary data from the literature in examining youth fitness and nutrition cultures in the United Kingdom and Switzerland. While the nature of the current comparison case-study means that it is impossible to draw any scientifically-backed causative relationships, the previous data and depictions have revealed several convincing correlations.

Following broad analysis of the fitness and nutrition landscapes in Switzerland and the UK and investigation into some of the driving forces behind these cultures, it is apparent that many differences exist between these nations. A primary variation comes in the reception of nutrition information and education. Both Switzerland the United Kingdom are very easy countries for the WHO and national health services to distribute information to. This has resulted in the public of both Switzerland and the UK being well-informed in regards to nutritional guidelines and recommendations. The difference comes in the way in which families in each of these countries respond to this information: Swiss parents tend to abide by WHO dietary goals, following breastfeeding recommendations and providing their children with healthy, nutritious meals. Meanwhile, families in the UK ignore the information they have received, resulting in diets high in sugar, fat and salt and infants that are increasingly fed from the bottle. In addition, while both countries remain affluent from a socioeconomic perspective, it is clear that Swiss families retain a much higher willingness to pay increased prices for local and organic food. This results in a healthier nutritional environment in Swiss homes as compared to the UK, allowing

Swiss children to meet dietary recommendations at a much higher rate than their counterparts in the UK.

Another noted difference between the two nations arises in the nutritional landscapes set forth in educational environments. In Switzerland, policies and initiatives in schools ensure that children are afforded the opportunities to make healthy dietary choices. In fact, many schools even have met Fourchette Verte requirements documenting their commitment to serving quality vegetables, nuts and meats. Meanwhile, UK schools fail in comparison. Dining halls regularly serve meals that are high in carbohydrates, fats and salt, ignoring recommendations on fruit and vegetable consumption. Even when the selection is sufficient, schools tend to import many foods and provide inferior, non-organic produce. These observed differences between the UK and Switzerland conjointly yield a Swiss nutrition culture that appears significantly healthier than that in the United Kingdom.

In terms of fitness, accounts from both the United Kingdom and Switzerland have revealed that each of these nations lives up to their stereotypes of longstanding sporting culture. While Swiss youth focus more on outdoors activities such as skiing and hiking, children in the United Kingdom maintain an affinity for organized contact sports like football and rugby. Despite downward trends in physical activity in both countries, though markedly less in Switzerland, rates of children participating in rigorous athletic events have remained relatively stable. The observed difference causing significantly decreased physical activity rates in the UK as compared to Switzerland can, thus, be attributed to daily exercise trends. Children in the United Kingdom are increasingly reluctant to walk and cycle to school, while such activities are supported by Swiss fitness-friendly infrastructure. More so, physical education curricula in Swiss schools tend to be much more rigorous than in their UK counterparts. For these reasons, one can

conclude that the youth fitness culture in Switzerland exhibits healthier trends than that of the United Kingdom.

All of the previous analyses have proven that significant differences between the UK and Switzerland do appear to exist in regards to the infant to adolescent fitness and nutrition. As a result, the data, depictions and results drawn from the current comparison case-study clearly support the hypothesis that the observed lower rates of childhood obesity and overweight in Switzerland (19% versus 28% in the UK) are a direct result of superior nutrition and fitness cultures.

Policy Suggestions and Future Studies

The results of the current study provide merit to the notion that adequate child nutrition and fitness policies and programs can be utilized as preventative measures in the fight against obesity and diabetes. The case-study of the United Kingdom has revealed that a reluctant populous and ignorant schools systems put children at risk of unhealthy nutrition and physical activity practices. While Switzerland does not represent the perfect nation and obesity and poor health remain concerns for many subgroups in this country (M. Kruseman, personal communication, 5 November 2015), much can be learned by studying Swiss nutrition and fitness cultures. Switzerland focuses much of its policy and initiative efforts on improving public knowledge, facilitating local, organic food sourcing and improving physical activity and dietary environments in schools. As Dr. Branca has noted, “Children and adolescents are a critical group” and educating the youth to become healthy adults is of paramount importance (F. Branca, personal communication, 30 October 2015). Policies and programs directed at schools and aimed at improving child nutrition and fitness remain the most effective method to reach children and

their parents alike and it is up to public health officials to utilize such initiatives and information campaigns to fight the developing crises of obesity and diabetes.

In convincing policymakers of the efficacy of youth-aimed nutrition and fitness programs, further research is likely needed. The current study was only able to draw a correlational relationship between Switzerland's apparently superior nutrition and fitness cultures and the observed decreased rates of overweight and obesity in children, as compared to the United Kingdom. Nonetheless, more direct, data-based studies are probably needed to assess whether nutrition and fitness initiatives truly have the ability to decrease risks of obesity and diabetes. Further studies should implement such programs into school curricula, incorporating a control environment in which nutrition and/or fitness initiatives are not included. These types of one-variable studies could provide hard evidence supporting the utility of school-based programs, informational campaigns and policies in preventing NCDs such as obesity and diabetes. Nonetheless, the current study has laid groundwork in comparing two European nations with vastly differing nutrition and fitness cultures and linking these dissimilarities to observed variability in obesity and overweight rates. What has become increasingly apparent is that the world needs to take physical activity and proper diet seriously and that nutrition and fitness policies and programs may represent powerful weapons in the fight to reduce the risk of childhood obesity and diabetes across the globe.

Abbreviations List

APA – American Psychological Association
BFHI – Breastfeeding-friendly Hospital Initiative
BMI – Body Mass Index
BIO – Organic in French grocery stores
FIFA – Fédération Internationale de Football Association
GIFA – Geneva Infant Feeding Association
HEDS – Haute École de Santé Genève
HESGE – Hautes Écoles Spécialisées Genève
IBFAN – International Baby Food Action Network
IOC – International Olympic Committee
JSTOR – Journal Storage
NCD – Non-communicable disease
NHS – National Health Services
OECD – Organization for Economic Cooperation and Development
SIT – School for International Training
UK – United Kingdom
UEFA – Union of European Football Associations
UNICEF – United Nation's Children's Fund
USA – United States of America
WHO – World Health Organization

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