

Managing Childhood Obesity for Public Health Nursing in Developing Countries

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Abstract

Childhood obesity is one of the most severe public health challenges of the 21st century. The problem is global and is steadily affecting many low and middle-income countries, particularly in urban settings. The vast majority of overweight or obese children live in unindustrialized countries, where the rate of increase has been higher than that of industrialized countries. The purpose of this paper is to recognize the issues influencing childhood obesity, pinpointing the consequences of this epidemic, ascertaining various researches conducted on obesity intervention, governmental actions that address obesity, and what facilitates and hinders intervention programs for childhood obesity. The literature reviewed consisted of peer-reviewed articles in English that were published between 2010 and 2016. The University of the West Indies Libraries Information Connection (UWI lic) was used to search databases such as PubMed, Medline, CINAHL, EBSCO host, Web of Science, ProQuest, and Medscape. A total of 1500 articles were initially generated. When the criteria were added 678 articles were generated. A total of 8 articles were selected for this review. Childhood obesity can profoundly affect children's physical health, social, and emotional well-being, and self-esteem. It is also associated with poor academic performance and a lower quality of life experienced by the child. Many co-morbid conditions like metabolic, cardiovascular, orthopedic, neurological, hepatic, pulmonary, and renal disorders are also seen in association with childhood obesity. As nurses, it is important to recognize that children who are overweight have a health problem and are at risk for developing other long-term health issues.

Keywords: Caribbean; Childhood Obesity; Developing Country; Public health nurse.

This paper is a literature review on childhood obesity, this topic is important as nursing personnel have an understanding of this public health challenge is essential in preventing childhood obesity which is of public health significance; additionally, primary care is a vital setting for early intervention. Maintainable public health approaches directed at undertaking the emergent childhood obesity can be established if adequate information on its burden and risk factors are presented, and if governments, communities, and families are encouraged to make better health decisions. Over the past decade, the prevalence of children who are overweight or obese has increased significantly. According to The Centre for Disease Control and Prevention (2016), overweight is defined as a BMI at or above the 85th percentile and below the 95th percentile for children and teens of the same age and sex. Obesity is defined as a BMI at or above the 95th percentile for children and teens of the same age and sex [3]. This situation presents a public health challenge because there has been an increase in this issue in all age groups throughout most countries in recent decades.

Globally, in 2010 there were an estimated 42 million children who were overweight, and 35 million were living in unindustrialized countries [15]. Although the highest prevalence rates of childhood obesity have been detected in industrialized countries; those rates are also increasing in unindustrialized countries [9]. In the last 13–24 years, the prevalence of overweight and obesity has increased and the highest rates are among children in general, however, female adolescents followed by school-aged girls are more overweight and obese than their male counterparts [15]. The Caribbean is also affected by this issue as one in every five children is either overweight or obese and thereby at greater risk of developing non-communicable diseases e.g. diabetes later in life [2]. In Jamaica, children between the ages of 6 to 10 years had a prevalence rate of 17%. Within this age range, there was a substantial escalation in the prevalence as children got older. Significantly higher percentages were also found in girls and in metropolitan areas. The sex dissimilarity continued in early adolescence (11–13 years) with 33% of girls found to be overweight or obese compared to 27% among boys across the Caribbean (Henry, 2016).

The literature reviewed consisted of peer-reviewed articles in English that were published between 2010 and 2016. Articles that were older than 5 years that were deemed essential to Literatures from quantitative and qualitative studies as well as systematic reviews focusing on obesity in children were examined. Literature that was older than five years that were essential to the study were used to support the study. The University of the

West Indies Libraries Information Connection (UWI linc) was used to search databases such as PubMed, Medline, CINAHL, EBSCO host, Web of Science, ProQuest, and Medscape. A further search was conducted utilizing advanced journals such as; Journal of Advancing Nursing, and Journal of Academic Medicine, Google Scholar was also used to review scholarly articles. Key phrases used to inform the search included; the Caribbean, Developing country, and obesity in children. A total of 1500 articles were initially generated. When the criteria were added 678 articles were generated. Articles were selected if their title and abstract were relevant to the current paper. A total of 8 articles were selected for this review.

Globally, 2.8 million individuals die annually as a result of being overweight or obese and an estimated 35.8 million (2.3%) of worldwide DALYs are caused by overweight or obesity (WHO, 2014). For populations who are overweight or obese, inadequate physical activity is common, accompanied by further health issues. One issue that continues to be persistent is the extent to which children with weight issues become adults who have inadequate physical activity. Approximately 3.2 million deaths and 32.1 million Disability- Adjusted Life Year (DALY) (representing about 2.1% of global DALYs) annually are attributable to inadequate physical activity. Adults who are physically inactive have a 20–30% increased risk of all causes of mortality compared to those who engage in at least 30 minutes of moderate-intensity physical activity on most days of the week (World Health Organization [WHO], 2014). The prevalence of inadequate physical activity was highest in the WHO Region of the Americas and the Eastern Mediterranean Region. In both of these regions, almost 50% of women were inadequately active, while the prevalence for men was 40% in the Americas and 36% in the Eastern Mediterranean. The South-East Asia Region showed the lowest percentages (15% for men and 19% for women). In all WHO regions, men were more active than women (WHO, 2014).

Childhood obesity predisposes the upcoming generation for higher risk of obesity, as obese children are more likely to be obese adults, is at a greater risk for cardiovascular diseases such as high cholesterol, hypertension, type 2 diabetes, stroke, and several types of cancer [25]. Additionally, childhood obesity is associated with a psychological disorder such as depression which occurs at an increased frequency in children who are obese [9]. Childhood obesity is associated with a significant reduction in quality of life and these children are at a greater risk of being teased, bullied, and maybe socially isolated (WHO, 2012). Childhood obesity is associated with a higher chance of premature death and disability in adulthood. Planning interventions at

this point are crucial as the earlier children become overweight/obese, the greater the risk of these children remaining overweight/obese at older ages (CDC, 2017).

Author(s)	Year of publication	Year of reference	Country	Demographics of children	Statistics of overweight obesity
CDC	2018	2018	USA	2-5 years (both genders)	8.9% obese
				6-11 years (both genders)	17.5%
Choukem et al.	2017	2016	Cameroon	8- 15 years (both genders)	17.9% (obese and overweight)
				6-10 years (both genders)	3.5% (obese and overweight)
			South-west-ern Nigeria	6-12 years (both genders)	11.6% (Obese and overweight)
			South-eastern Nigeria	Black children 6-13 years (both genders)	13.4% (obese and overweight)
Hernandez-Cordero, Cuevas-Nasu, Moran-Ruan, Humaran, Avila-Arcos & Rivera-Dommarco	2017	2015	Mexico	School age children (both genders)	19.5% (overweight) 17.4% (obese)
				Adolescents (both genders)	23.7% (overweight) 12.1% (obese)
Wilke, Standage, Gillison, Cumming, & Katzmarzyk	2016	2015	England	10-11years (both genders)	33.5% (obese and overweight)
Fernandez, Kubow, Gray-Donald, Knight, &Gaskin	2015		Barbados	6-11 years (boys)	40.9% (overweight and obese)
				6-11 years (girls)	44.2% (overweight and obese)
Schwiebbe, Van Rest, Visser, Holthe, &Hiras-ing	2011		Bonaire	4-16 years (boys)	24.3% (overweight) 9.9% (obese)
				4-16 years (girls)	31.9% (overweight) 13.7% (obese)
Dehghan, Akhtar-Danesh, & Merchant	2006		Saudi Arabia	6-18 years (both genders)	1 in every 6

Table 1. Showing statistics of childhood obesity in different countries

Risk Factors for childhood obesity

There are numerous influences that contribute to childhood obesity one of which is behavioral factors. There has been a constant decline in physical activity among all age groups; this has contributed to the rising rates of obesity all around the world [9]. Sedentary behaviors such as: watching television, playing computer games, and internet use are linked with an increased prevalence of obesity and being overweight. With the increase in the number of children who are being driven to school which is combined with low participation levels in sporting activities and physical education, there is an increased prevalence of childhood obesity [9]. The reduced physical activity could also be related to the unsafe neighbourhood in some of these unindustrialized countries which may prevent walking or outdoor activities [16]. As well as the lack of open spaces and playgrounds in schools and communities that adds to the reduction of physical activities [23].

Another contributing factor to childhood obesity is the consumption of sweetened beverages, energy-dense food and snack, limited water, and fresh fruits and vegetable. Children's weight is also influenced by the changes in living conditions and lifestyles in contemporary society which has influenced the rise in obesity [30]. In relation to the Caribbean, customers have observed that the high price of healthy foods to less healthy foods is a major factor that influences their food selection [14]. Culture also plays a role in this public health issue as being overweight is associated with good health and prosperity. There is also a misconception that having a "fat/chubby" child is a sign of good family health and the ability to provide [1]. Dietsentailing refined grains, extra sugars, and extra fats are more inexpensive than the diets based on lean meats, fish, fresh fruits, and vegetables. These actions are entrenched within environmental and social settings that may be well outside of the individuals living in a low socioeconomic status control [13].

Another risk factor contributing to childhood obesity is parental overweight. This is a significant threat to maintaining a healthy weight and is as a result of the combination of genetic factors that are passed on to the child as well as environmental factors that include the type of food that the child consumes [7]. As guardians of children parents have particular practices, styles, and beliefs, and are responsible for the type and quantity of food served to their children [25]. Maternal educational level is a significant risk factor for childhood overweight/obesity. Children whose mothers have not achieved a higher education more frequently developed overweight/obesity [7].

The intense and innovative promotion of energy-dense diet and beverage items, by producers and retailers, through the use of television marketing, kids meals, toys and other advertising resources directly targeted to children is a very prevalent tactic [1,25]. The minds of children are young and impressionable and particularly vulnerable to these types of tactics. And this places them at risk for obesity as they most often indulge in these items [2]. Studies have been conducted on obesity to gather evidence about the burden for example, in Africa. It has been found that overweight/obesity is comparatively common in sub-Saharan African youngsters and the prevalence is linked with high socio-economic status. However, this association may be facilitated by sweet drink consumption, inactivity, and means of transportation to school and lack of involvement in physical activity at school [6].

Socioeconomic status is critical and suggests that the prices of food in the Caribbean and other unindustrialized countries might play a vital part in contributing to obesity. Essentially, it's important to observe that the price of food plays a significant part in food consumption patterns. Food costs have a key effect on purchasing habits with fats and sugars being profoundly subsidized. These calorie-laden foods become the cheapest and most appealing to low-income buyers. For children, the advertising and marketing of these energy-dense foods lead to adverse health consequences [13]. The growing rates of obesity in the lower social and educational groups also suggest that behavioral patterns of individuals living in poverty are more likely to encourage obesity than those who are higher-income earners. Poverty and food insecurity are linked with lower food expenditures, low fruit, and vegetable intake and lower-quality diets [25].

The beginning of the obesity in the Caribbean is a feature of the region's state of development. The metropolitan populace has been developing quicker than the rural populace and presently it is now much larger. This rural/urban change has had dismal consequences on a person's capability to pursue active lifestyles [1]. Additionally, since the dietary energy availability in the Caribbean has been steadily increasing, the average daily energy supply per capita in the Caribbean has been surpassing the suggested day-to-day allowance in the year 2000 by 17% [2].

Pienaar's (2015) findings revealed that the general prevalence of obesity increased considerably from 6-9 years. Obesity increased more when compared to overweight during the period the study was conducted. The prevalence and rate of escalation varied significantly in different sexes, races, and socioeconomic status. A transition to an unhealthy BMI was more common than obtaining a healthier BMI over a three year period. The finding

also revealed that it was more challenging to disrupt the cycle of obesity once it had started at an early age.

Lamboglia, et al. (2013) [17] looked at exergaming and found that "Energy expenditure in adolescents playing new generation computer games" equated to the energy expenditure of adolescents when playing sedentary (XBOX360); however more energy was expended when children played new-generation active computer games (Wii Bowling, Wii Tennis, and Wii Boxing). The authors found that energy expenditure was considerably greater when playing active games (bowling, tennis, and boxing) than when playing sedentary games or when they were inactive. The workout connected to the active games, however, was not of high intensity to add to the suggested daily amount of workout in children [17]. To achieve self-efficacy according to [17] parents and children should be educated about the selection of healthy food options and participation in traditional physical activities as this increase in knowledge will help to build their confidence and as such can help to decrease the prevalence of childhood obesity through actions taken.

Examples of Child Obesity Prevention Programmes

As was stated previously children who are obese are more likely to become adults that have inadequate physical activity, this has led to the death of 3.2 million adults per year (WHO, 2014). With this trend, it is integral therefore for preventative measures to be developed in childhood and adolescence to curb unhealthy eating habits and behaviors. The increase of obesity in children has resulted in several interventions that have aimed to address this matter in children and adolescents. This is due to the realization that early intervention aids in the development and maintenance of health-promoting behaviors such as physical activity and food choice [12, 17]. The Romp and Chomp controlled trial is one such example. The Romp and Chomp project was developed to be a preventative measure against obesity in preschool-aged children (0-5 years) in Victoria, Australia [8, 27]. The project was initiated in family daycare centers, child care centers, and preschools to make adjustments to children's diet and activity level by training staff members in these organizations, implementing policies that encouraged nutrition and active play and by educating parents on healthy dietary practices for children [12,8]. After the project, a follow up was done and it was found that the physical environment for the children in the Long Day Care centers that participated in the study was more conducive to healthy living by having less screen-based sedentary behaviors, quiet sitting activities and organized play [8].

The study conducted by Tucker and Lanningham-Foster (2015) focused on how school nurses and student nurses assisted in obesity prevention in 2 elementary schools in a 7/4 month intervention period. The project involved the "Let's Go 5-2-1-0" health messaging program, which involved students having: 5 or more fruits and vegetables per day; 2 hours or less recreation time; 1 hour or more physical activity; 0 sugary drinks, more water, and low-fat milk. Student nurses were assigned to have weekly meetings with children that were assigned to them for 10 – 15mins during lunch break to discuss the program and the goals of the program to the children. The student nurses used program materials when speaking to the children and children were allowed to ask questions about the program. Nursing students would then have lunch with their assigned children in the school cafeteria and together set goals for any of the four aspects of the message that the children wanted to focus on. The results of the project showed that there was an insignificant reduction in BMI, however, there was a significant increase in physical activity and fruit and vegetable intake for both schools.

School Nurses from the Northern Health and Social Care (NHSC) in Northern Ireland developed the Healthy New You program for primary school children with the aim to improve health outcomes as well as to stop and prevent the progression of obesity in primary school-aged children (McKeown, 2016). The study focused on increasing physical activity and preventing weight gain through the strengthening of individual/group knowledge and skills and; involving parents, caregivers, school staff and children in addressing children's unhealthy behaviors over a 3 month period. School nurses engaged the children with information and activities on how to eat healthily. Students were also encouraged to participate in their local 'Active Communities' initiative. Over the same period, parents were given information on healthy lifestyles and were asked to register and participate in practical sessions. The results of the study showed that both parents and children enjoyed the program and believed that they were more knowledgeable about choosing healthy foods (McKeown, 2016).

Facilitators and Barriers of Obesity Interventions

Overweight and obesity are major health concerns in modern society which contributes to the rise in non-communicable diseases, diminished quality of life, and increased health-care costs. Surplus weight in childhood intensifies the risk of a child becoming an obese adult [11]. Interventions for the reduction of child obesity should not be attempted without the relevant stakeholders partnering together to facilitate the process.

The role of such partnerships is integral [27, 18, 19] as found in the systems analysis of the success of an intervention program for children. It was found that key elements of an intervention entail collaboration between stakeholders such as the policy-makers, sponsors as well as the immediate community of the participants which include community members, health workers, parents and teachers (Owen, Brown, Kuhlberg, Millar, Nichols, & Economos, 2018).

Legislative/Policy

Nations of the Americas seized an opportunity to move forward in the battle against the escalating epidemic of obesity when they unanimously signed a new 5-year plan of action for the prevention of obesity in children and adolescents. The signing was performed during the 53rd Directing Council of the Pan American Health Organization (PAHO), which was also the 66th Session of the Regional Committee of WHO for the Americas. Alongside other measures, the plan calls for fiscal policies and regulation of food advertising and labeling, upgrading of school nutrition and physical activity environments, and marketing of breastfeeding and healthy eating. Its objective is to stop the increase of the obesity epidemic so that obesity frequency in each country does not escalate further (Etienne, 2014; Pan American Health Organization [PAHO], 2014).

In 2004, the World Health Assembly sanctioned a resolution (this is identified as Resolution WHA57.17) on the Global Strategy on Diet, Physical Activity and Health (DPAS). The Global Strategy deals with the increasing prevalence and burden of non-communicable diseases, especially, global diet and physical activity patterns (WHO, 2012).

Subsequently, in 2008, the WHO developed a structure to support the Member States in monitoring and evaluating the implementation of DPAS at Member State level. This structure recommends that national governments exhibit leadership and enable cooperative action in the enactment of policies and programs to endorse supportive environments for health. These actions are projected to facilitate positive changes in diet and physical activity behaviors, with related health, social, environmental, and economic outcomes (WHO, 2012). These are several policies that have been implemented, both locally and internationally to try and stem this public health challenge.

Additionally, in the Caribbean revealed that The 'Farm to Fork' (which incorporates fruits and vegetables in meals that are provided for the children in school) method to diet and nutrition safety has demonstrated to be an effective model for

improving the nutrition and health of primary school children, with the possibility of controlling overweight and obesity which has been found to be a key health challenge in the Caribbean (Phillip, Johnston, & Granderson, 2014).

Community

The direct environment in which the intervention is implemented is an important aspect of successfully completing an intervention geared towards reducing child obesity. This environment includes community members, health workers, teachers, and parents [28,18,24]. Health workers, teachers, and community members (families of the children) were expected to gain new knowledge and skills in order to enhance project implementation [19]. It would be necessary for the community to be aware of the intervention program to better involve them in the program. This leads to positive perceptions of the program where parents are more open in implementing the required strategies of the intervention.

Nurses also play an important part in facilitating the success of the implementation of these projects. According to [24] school, nurses can play an active part in reducing obesity in school-aged children. The study found that school nurses could facilitate strategic childhood obesity prevention (COP) because of the strategic role that they play in the lives of school children as well as strengthening relationships with school principals, teachers, pupils and their families [18]. It is vital, however, for school nurses to choose to be engaged with COP's and to have continued training as it was found that nurses that served in their profession longer and were more trained were more likely to be involved in COP's [24]. Additionally, student nurses [28], public health nurses [18], dieticians, medical doctors [29], and other health professionals can be used to assist in facilitating obesity prevention for children.

Parental support is paramount to the success of intervention programs. The more engaged they are in COP's the more likely it is that they will change the eating habits of their children as well as engaging their children in the making of their meals (McKeown, 2016). Conversely, if parents are disinterested in the intervention, or are disengaged from the program children are less likely to adhere to the intervention program [18,19]. The engagement of teachers in the intervention process is also necessary in reducing child obesity as detection for children who are overweight takes place at school health appraisals (McKeown, 2016). Teachers not only provide knowledge to children about nutrition but also have the capacity to train children on how to manage their food intake [29]. Barriers that can affect teachers in

COP's include not having enough information about the study, not having sufficient training as to how to implement the project, limited school resources, lack of resources from the administration of the school [8,19].

The issue of maintaining a healthy weight and how to manage physical activity and better food choices need to be incorporated in policies, schools, communities, and in families. Parents, teachers, health professionals (particularly nurses) need to be educated and trained to assist in the prevention of childhood obesity. A suggested prevention method that could be effective in the fight against obesity and overweight in children is to educate parents about childhood health in the prenatal period. This is an opportunity to include midwives as it can be utilized as a means of public education and health promotion activities for midwives who interact with these clients on a daily basis. Obesity and overweight can be reduced through childhood obesity prevention programs that incorporate policies, health professionals such as nurses, teachers, and guardians of children.

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