INFLUENCE OF PARENTAL PROVISION OF HEALTH NEEDS AND PHYSIOLOGICAL NEEDS ON ACADEMIC ACHIEVEMENT OF PUBLIC SECONDARY SCHOOL STUDENTS IN ANAMBRA STATE

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Abstract

The Study investigated the Influence of Parental Provision of Health Needs on Academic Achievement of Senior Secondary School Students in Anambra State. The study used a descriptive research design. The population of the study was made up of 24025 Senior Secondary two students in the 2018/2019 session of the 263 public secondary schools in Anambra state. The sample of the study was made up of 240 Senior Secondary two students (SS2). 10 (ten) coeducational schools were selected using simple random sampling. In each of the 10 schools, 24 students were selected by simple random sampling technique totally 240 SS2 students. The instrument used were two Questionnaires titled Health Needs Questionnaire (HNQ) and Physiological Needs Questionnaire (PNQ) respectively. Two Null hypotheses and two research questions guided the study. Data collected were analyzed in relation to the research questions and hypotheses in the study using Mean, Standard Deviation and Paired Sample t-test statistics. The Mean was used to answer the research questions while the Paired sample t-test statistics was used to test the null hypothesis at .05 level of significance. The findings parental provision of health needs influenced students' academic achievement in Mathematics and English language to a high extent.

The findings also showed that parental provision of health needs has a significant influence on students' academic achievement in Mathematics and English language. Based on the findings, the researcher recommend among others that parents should ensure simple practices for their children, such as good hygiene, good sleep and vaccination, bearing in mind that these can be very effective in reducing absences among school aged children. Schools should create enabling environments and policies that promote student health individually and collectively which in turn contributes to academic achievement.

Keywords: Health needs, Physiological needs, Parents, Academic Achievement

Introduction

Parents play critical role in providing the necessary needs of their children which in turn, influence their academic achievement. Provision of health needs for the students, has an influence on academic achievement. Parents provide basic needs like water, plenty of nutritious foods, shelter, a warm bed with sheets, blankets, and a pillow, medical care as needed/medicine when ill, clothing that is appropriate for the weather conditions and proper hygiene. (Grace, Jethro&Aina, 2012)

Academic achievement is the results of the learning outcome in a given session or at the end of a programme. According to Jolaosho, Dajan and Ezeudu (2020), academic achievement represents performance outcomes that indicate the extent to which a person has accomplished a specific goal that constitutes the focus of activities in formal learning settings. It is considered to be the centre around which the whole education system revolves. Narad and Abdullah (2016) opined that the academic achievement of students determine the success or failure of any academic institution. Academic achievement is grades obtained by learners at the end of an academic programme. In the context of this study, the academic achievement of students will be measured using the average scores of students in Mathematics and English Language. Good academic achievement gives joy to the school personnel, students and their parents. However, Chukwuemeka, Ezepue, Kalumba, Iremeka, Nweke, Madu and Uwakwe(2020) observed that the issue of poor academic achievement of students has led to wide acclaim fall in the standard of education in Nigeria. Despite government huge investment in public secondary schools, the output is still rated poorly when compared with the students' academic achievement in both internal and external examinations like West Africa Examination Council (WAEC). For instance, in the 2018 November/December WAEC Examinations, 60% failure was recorded. The Head Nigeria National Office of WAEC Mr. Olu Adenipekun announced that 39,557 candidates obtained credits and above in a minimum of five (5) subjects including English and Mathematics for private candidates in the country. He said the figure represents 35.99% of 109.902 candidates that sat for the examination (Adesulu, 2018). Only Similar to this, Ojukwu (2016) asserted that these poor academic achievements usually bring about sadness and frustration to the individual concerned and his/her parents as well as other members of the family. The Minister of Education described the mass failure in WAEC Examinations as worrisome, disgraceful and sub-standard of education in Nigeria. According to Oladele, Abubakar, Ali and Adawa (2021), for students to have a better academic achievement there must be proper care and support from the parent to enable the students to be able to concentrate on their studies effectively. Hence this study concentrates on parental provision of health needs and its influence on academic achievement.

The World Health Organization (WHO) asserted that health is not merely the absence of diseases, but a complete state of well-being. However, research evidence reveals a significant relationship between academic achievement and the health status of students. (Busch, Loyen, Lodder, Schrijvers, Van, & de Leeuw,2014)). The World Health Organization asserted that health is created and lived by people within the settings of their everyday life; where they learn, work and play. The World Health Organization (2014) proposes three dimensions of health, which are mental, physical and social health. The importance of health on academic achievement was emphasized by the Centers for Disease Control and Prevention. 'CDC recognized that the academic success of youth is strongly linked with their health. In turn, academic success is an excellent indicator for the overall well-being of youth and is a primary predictor and determinant of adult health outcomes'. One of the most interesting theories that offer helpful solutions in defining health is the theory of Salutogenesis that has been also evolving over time. The theory was postulated by Antonovsky and later advanced by Lindstrom in 2010. The term Salutogenesis was coined by Antonovsky to describe health as a holistic concept. It posited that health is a

continuum that focuses on the relationship between health, stress and coping. The theory comprehends health holistically; that is, health is more than the absence of illness. In the health promotion context, the term Salutogenesis is used to describe approaches which focus on factors that support human health and well-being, rather than those that focus on factors that cause disease. Thomas, (2018) asserted that the health services provided at school can alleviate the problem of absenteeism, late-coming and undisciplined student behaviour, and increase in graduation rate. A child's physical health, and in particular physical fitness, is associated with improved confidence, increased attention, reduction in health problems, improved social engagement, reduction in obesity, increased organization, and a host of potentially protective factors for students at risk for poor academic achievement (Sallis, 2010). Low levels of physical fitness have been implicated in a host of mental health and academic problems (Leatherdale, 2013). Low levels of physical fitness and obesity are risk factors for poor physical health, poor mental health, and poor academic achievement (Busch et al., 2014).

Nutrition is closely linked to overall physical health and is a link to academic achievement (Hoffman, Franko, Thompson, Stallings, & Power, 2010). Nutrition has become an increasingly problematic issue for school-aged children (McCaughtry, Martin, Fahlman, &Shen, 2012). Food with high sodium, high fat, and low protein profiles are increasingly available, convenient, and inexpensive. High fibre and nutrition-dense foods are often difficult to find, require preparation time, and can be relatively costly (Eagle, T. F., Sheetz, A., Gurm, R., Woodward, A. C., Kline-Rogers, E., & Leibowitz, R. 2012). As nations develop economically, diets often consist of more processed, inexpensive, and convenient foods, associated with increasing rates of children being overweight and childhood obesity across developing nations (Prelip, M., Kinsler, J., Thai, C. L., Erausquin, J. T., &Slusser, W. 2012). Poor nutrition can lead to malnutrition, which impairs normal growth and development. Children who are malnourished tend to be smaller and more vulnerable to illness than children who receive adequate nutrition. Malnutrition can also negatively impact cognitive development in children because the brain does not mature as it should when necessary vitamins and minerals are lacking. It is no surprise, then, that children who do not have access to healthy foods do not learn as efficiently as those who do.

Children cannot learn if they are not present in school. Poor hygiene and lack of immunization both increase the chances of illness among children; this contributes to an increase in absences and a decrease in academic achievement. That said, reducing illness-related absenteeism is essential toward increasing learning in children. Simple practices, such as good hygiene and vaccination, can be very effective in reducing absences among school-aged children.

Health and education are reciprocally related and research indicated that unhealthy students are poorly positioned to learn. In order to generate positive academic outcomes, it is essential for the students to maintain their psychological and physical health. When a student is healthy, then he will be able to participate actively in classroom activities. On the other hand, factors such as, stress, anxiety, fear, trauma, depression or physical health problems prove to be impediments to meaningful learning. It is vital for the students to take pleasure and look towards their school and classroom activities from a positive viewpoint. Consuming a healthy and nutritious diet, being involved in extra-curricular activities, staying calm and finding pleasure in studying are some of the characteristics that help in sustaining good psychological and physiological health. For the students, it is vital for their

parents to make provision of adequate diet and nutrition, so that they are able to wholeheartedly concentrate on their studies. Parental provision of health needs makes the child strong and ready to face the challenges in the learning process.

Health needs and Physiological needs work hand in hand. According to this framework, physiological needs of students are defined as those needs which if not met, would threaten the survival of a child. According to Maslow's Hierarchy of Needs (1943). physiological needs include food, shelter, clothing and sleep. If these needs are not met, then all efforts are focused on these needs. Physiological needs are the most important, and if they are not met, higher needs like learning will be jeopardized. If hunger is the issue, all other needs and desires will be suppressed in order to satisfy hunger. A learner may act out and cause disruptions or be insubordinate because the learner's first concern is not learning but rather obtaining food. In the same respect, learners may fall asleep instead of completing work because they did not sleep the night before, and thus sleep is the motivating factor for their behaviour, rather than learning. A child would not be able to take learning seriously if he is hungry. Some children are exposed to conditions that threatened their very existence as human beings through deprivation. If pupil were inadequately fed, dressed or housed, there would be a higher probability of them missing out on school and even if they attend school, there would be a great possibility of them lacking the necessary concentration to give their lessons due diligence.

There is no possible way that a teacher can provide food, clothing, shelter, and adequate sleep for each learner. That is the major duty of the parents or caregiver. Nevertheless, ensuring that learners have clothing, healthy personal hygiene habits, and adequate sleep is still a concern of the parents or caregiver. Furthermore, based on this model, we know that when these basic needs are not met, learners will not be able to focus on learning.

Parents are the first and foremost individuals, whom children approach, when they experience any kinds of problems and difficulties. They are even regarded as the first teachers of their children. When parents listen to their grievances and help them solve their problems, this leads to encouragement of positivity and solutions to problems (Ogunsola, Osuolale, &Ojo, 2014). It is vital for the parents to focus upon the needs and requirements of their children and possess a helping attitude towards their children academic pursuit. When children achieve good grades in assignments and tests, they give credit to their parents for providing all the support and help. Next, they give credit to their teachers for explaining the concepts to them and for using effective teaching-learning methods. Hence, in order to do well in all tasks and to stimulate their mind-sets, they need energy and one is able to obtain energy through adequate diet and nutrition. Factors such as, attention, concentration, and memory can be improved through proper diet and nutrition which is very vital to the learning process.

Statement of the Problem

The poor academic achievement of secondary school students has become a source of worry to parents, teachers and other stakeholders. One may suspect that the unsatisfactory academic achievement of students may be attributable to many factors among them is provision of basic needs like Health and physiological needs. Some parents rarely fulfill their roles of providing these basic needs for their children wellbeing. The role of parents in the life of their children cannot be overemphasized. In general, parents provide

all the basic needs of a child which includes health and physiological needs. Failure to provide for these needs, threatens the life of a child.

Unfortunately, many parents do not adequately provide the health and physiological needs of their children. They lack in so many aspect like non-completion of Immunizations and Vaccines, proper hygiene, provision of nutritious food and clean drinking water and so on. Nutrition is closely linked to overall physical health and is a correlate of academic achievement. It is in this context that this research is designed to establish whether parental provision of health needs has any influence on academic achievement of secondary school students. Hence the problem of this study posed as a question is: How would parents provision of health needs influence the academic achievement of public secondary school students.

Purpose of the Study

Generally, the purpose of this study is to determine the influence of parental provision of health needs on the academic achievement of public secondary school students in Anambra state. Specifically, the study sought to determine the influence of parental provision of:

- 1. Health needs on academic achievement of secondary school students.
- 2. Physiological needs on academic achievement of secondary school students

Research Questions

In order to carry out this research, the following research questions have been formulated as a guide to the study:

- 1. To what extent does parental provision of health needs influence academic achievement of secondary school students.
- 2. To what extent does parental provision of physiological needs influence academic achievement of secondary school students.

Research Hypotheses

The following hypotheses are formed to guide the study at .05 level of significance:

- 1. Parental provision of health needs has no significant influence on students' academic achievement.
- 2. Parental provision of physiological needs has no significant influence on students' academic achievement.

Method

The study was carried out using descriptive survey design in examining the influence of parental provision of health and physiological needs on academic achievement of public secondary school students in Aguata education zone. The population of the study consisted of 24, 025 SS2 (senior secondary two) students in the 263 public secondary schools in Anambra state. Aguata education zone has 49 public secondary schools under its supervision. The sample for the study was 240 SS2 students from the population. Ten coeducational schools were selected using simple random sampling in Aguata education zone. In each of the 10 schools, 24 students were selected by simple random sampling technique. The instrument for data collection were two questionnaires titled Health Needs Questionnaire (HNQ) and Physiological Needs Questionnaire (PNQ)both on academic achievement. It was constructed on the basis of research questions with 17 items and adopted a 4 point response option of Very High Extent (VHE) 4.50-5.00, High Extent (HE)

3.50-4.49, Low Extent (LE) 2.50-3.49, Very Low Extent (VLE) 1.50-2.49. Data collected from the field by the researcher were analyzed in relation to the research questions and hypotheses in the study using Mean, Standard deviation and Paired sample t-test statistics. Academic result of 240 students on Mathematics and English Language that made up the sample of the study were also made available for the analysis of data. The Mean was used to answer the research questions while the Paired sample t-test statistics was used to test the null hypothesis at .05 level of significance.

Result

Research Question I: To what extent does parental provision of health needs influence academic achievement of secondary school students in Mathematics and English language?

Table I: Mean and Standard deviation (SD) of respondents on Influence of parental provision of health needs on Students' academic achievement in Mathematics and English language.

Ite	m Statements _				
		No.	X	SD	Decision
1.	Students perform better when their parents provide them with nutritious food before coming to school.	240	4.10	0.94	HE
2.	Students perform better when their 240 parents ensure they get adequate sleep at home	4.00	0.77	HE	
3.	Students perform better when their 240 parents ensure to take them for necessary immunizations to avoid being sick.	4.300).64 H	ΗE	
4.	Students whose parents encourage physical exercise to keep fit perform better.	240	4.40	0.66	HE
5.	Students whose parents ensure they are not mentally sick perform better.	240	3.90	1.04	HE
ó.	Students whose parents provide clean drinking water are not always sick.	240	4.30	0.78	HE
7.	Students whose parents avoid pressure, perform better.	240 4.	40 0.6	66 H	Е
8.	Students who are encouraged by their parents to avoid drug abuse perform better.	240	4.20	0.74	HE
€.	Students who are monitored by their Parents do not experience depression.	240	4.30	1.00	HE

Research Question II: To what extent does parental provision of physiological needs influence academic achievement of secondary school students in Mathematics and English language?

Table II: Mean and Standard deviation (SD) of respondents on Influence of parental provision of physiological needs on Students' academic achievement in Mathematics and English language.

S/N	Item Statements		_		
		No.	X	SD	Decision
1.	Students perform better academically when their parents provide them with conducive environment for learning	240	4.00	1.00	HE
2.	Students whose parents provide adequate clothing for different weather conditions are not always sick.	240	3.90	1.04	HE
3.	Students perform better academically when their parents ensure safe home	240	4.10	0.94	HE
4.	Proper diet enhances students' attention in class.	240	4.20	0.87	HE
5.	Students who are not hungry in school perform better academically.	240	3.60	1.11	HE
6.	Students whose parents provide clean drinking water are not always sick.	240	4.30	0.78	HE
7.	Students would not take learning seriously if they are hungry	240	3.90	1.04	HE
8.	Students who don't get enough sleep always sleep during learning process in the class.	240	4.00	0.63	HE
9.	Students who are inadequately dressed Will lack concentration during learning.	240	4.10	1.04	HE

Hypothesis 1

Parental provision of Health needs has no significant influence on students' academic achievement in Mathematics and English Language

Table III: Paired samples t-test of parental provision of health needs on students' academic achievement in Mathematics and English language

Vari	ation	No.	- X T-cal I)F S	std. Dev. P-v	alue Remark
1.	Parental provision of	24037.90	39.632	239	4.35 .000	Reject
	Health needs.					
2.	Academic achieveme	nt 240 66.	58		10.12	
	In Mathematics and					
	English Language.					

Hypothesis 2

Parental provision of physiological needs has no significant influence on students' academic achievement in Mathematics and English Language

Table IV: Paired samples t-test of parental provision of physiological needs on students' academic achievement in Mathematics and English language

Vari	ation	No.	$\bar{\mathbf{x}}$	T-cal	DF St	d. Dev	. P-va	lue Remark
1.	Parental provision of	240	31.80	46.725	2384.96		.000	Reject
	Physiological needs.							
2.	Academic achievement	240	66.58			10.12	,	
	In Mathematics and							
	English Language.							

RESULTS

Table I:

It indicated the extent parental provision of health needs influence students' academic achievement in Mathematics and English language. All the items on the questionnaire influence students' academic achievement to a High extent

Table II

It indicated the extent to which parental provision of physiological needs influence students' academic achievement in Mathematics and English Language. The result showed that the respondents all agreed that the items on physiological needs influence students' academic achievement to a High extent.

Result on Test of Hypotheses

Table III

Table III revealed paired sample t-test of mean responses of parental provision of health needs on students' academic achievement in Mathematics and English language. The study showed t-cal of 39.632 at 239 degrees of freedom and p-value of .000 The p-value of .000 was less than .05 level of significance hence null hypothesis was rejected. Hence, parental provision of health needs has a significant influence on students' academic achievement in English language.

Table IV

Table IV indicated that t-cal was 46.725 at 239 degrees of freedom and p-value of .000. The result showed that p-value of .000 was less than .05 level of significance, hence null hypothesis was rejected. This implied that parental provision of physiological needs has a significant influence on students' academic achievement in English language

Discussion of Findings

The findings showed that the respondents agreed that all the items in the questionnaire influenced students' academic achievement. Also, parental provision of health needs influenced students' academic achievement in Mathematics and English language to a high extent. Parental provision of nutritious food, adequate sleep, vaccines, physical exercise, mental health, hygiene, avoiding pressure, drugs and depression all have positive influence on academic achievement. Also, parental provision of physiological needs like conducive environment for learning, adequate clothing for different weather condition, safe home, proper diet, and adequate sleep all have positive influence on academic achievement. On the contrary, lack of parental provision of health needs and physiological needs can have adverse effect on the learners towards their academic pursuit. The findings revealed that parental provision of health and physiological needs can influence the learners academic achievement positively to a high extent.

The result of the present study is somewhat consistent with previous studies conducted by Erin, Doug, Kate, Collen and Paul (2017) who found out that physiological needs such as, diet, sleep, and screen time had independent effects on academic achievement. They also observed that increased consumption of vegetables, pulses, and fruits, and more regular healthy eating habits, were positively associated with higher academic achievement. Health promoting interventions within children and youth's key settings, like schools and family environments, present a potential opportunity to support both health and academic achievement among children and early adolescents. Thomas (2018) found out that there is a statistically significant relationship between health and academic achievement. Children who are healthy are at a low risk for school problems than students who are unhealthy. Students with good health tend to perform better in school than those with poor health. Problems that emanate from poor health include a higher probability of school failure, poor levels of concentration, grade retention and dropout. The present study implies that there is need for parents and educational settings to provide an environment that ensures sound health of learners, bearing in mind that the health of learners is a priority that enhances academic achievement. The Researcher wish to state that good health plays a significant role in students' academic endeavours and hence is an important tool in academic achievement.

Conclusion

Studies that have been carried out show a significant connection between academic achievement and health. Problems such as lack of nutrition which eventually results to malnourishment can affect the cognitive development of the child because of lack of minerals and vitamins. Lack of sleep also affects academic achievement because a child who did not have adequate sleep at night will end up sleeping during academic activities and also will be too weak to participate in school actively. Lack of necessary immunizations and vaccines leaves the child vulnerable to diseases. It is only when a child is healthy that he can participate actively in school. Physical inactivity results to poor retention and poor concentration in school, hence it's a barrier to academic achievement. mental illness brings about poor academic achievement.

disorganizes active participation of the student in school. Depression brings about poor concentration of students in class. Lack of proper hygiene like consumption of clean water causes diseases which in turn affects academic achievement negatively. Drug abuse causes poor retention and it's a major cause of school dropout and poor academic achievement.

Recommendations

- 1. Children who are malnourished are more vulnerable to illness than children who receive adequate nutrition. Malnutrition can also negatively affect cognitive development in children because the brain does not develop as it should when necessary vitamins and minerals are lacking. It is important that parents ensure their children are always provided with nutritious food always.
- 2. Schools are in a distinctive position of enlightening students about life in general and more specifically about diseases. Schools should create enabling environments and policies that promote student health individually and collectively.
- 3. Comprehensive school health services in charge of health care delivery operating within the school normally made up of Doctors, Nurses and other health care workers will contribute positively to the academic achievement of students by rendering services that promote health, protect health, prevent and control diseases and maintain their health.
- 4. Parents should ensure simple practices, such as good hygiene and vaccination, which can be very effective in reducing absences among school-aged children

REFERENCES

- Busch, V., Loyen, A., Lodder, M., Schrijvers, A. J. P., van Yperen, T. A., & de Leeuw, R. J. (2014). The effects of adolescent health-related behavior on academic performance: A systematic review of the longitudinal evidence. *Review of Educational Research*, 84, 245–274.
- Centre for Disease Control and Prevention. (CDC) *The association between school-based physical activity, Including physical education, and academic performance.* Atlanta, GA: U.S. Department of Health and Human Services;
- Dayo, A. (2018) Report on West Africa Examination Council 2018

 November/December Private Examinations (www.vanguardngr.com November 2018)
- Erin, L.F., Doug, G., Kate, E.S., Colleen M.D. & Paul, J.V., (2017) Healthy lifestyle behaviours are positively and independently associated with academic achievement: An analysis of self-reported data from a nationally representative sample of Canadian early adolescents. *Plos One Journal 12 (7), 1371*
- Chukwuemeka, J.C., Ezepue, E.I., Kalu-mba, E., Iremeka, U.F., Nweke, P.O., Madu, C.V. &Uwakwe, I.S. (2020). Teachers' professional ethics and classroom management

- as a correlate of students' academic performance in public secondary schools in Abia State, Nigeria. *The Journal of Social Sciences Research*, 6(7), 715-719.
- Eagle, T. F., Sheetz, A., Gurm, R., Woodward, A. C., Kline-Rogers, E., &Leibowitz, R. (2012). Understanding childhood obesity in America: Linkages between household income, community resources, and children's behaviors. *American Heart Journal*, 163, 836–843.
- Grace, A.M., A. Jethro, O.O. & Aina, F.F. (2012). Roles of parents on the academic performance of pupils in elementary schools, *International Journal of Academic Research in Business and Social Sciences* 2(1) 198
- Hoffman, J. A., Franko, D.L., Thompson, D.R., Stsllings, V.A., & Power T.J. (2010). Longitudinal behavioral effects of a school-based fruit and vegetable promotion program. *Journal of Pediatric Psychology*, 35, 61–71.
- Leatherdale, S. T. (2013). A cross-sectional examination of school characteristics associated with overweight and obesity among grade 1 to 4 students. *BMC Public Health*, 13, 982.
- Lindstrom, B.S. (2010) *Anintroduction* (internet) available from http://www.centrelearoback.org/assets/PDF/04
- McCaughtry, N., Martin, J. J., Fahlman, M., &Shen, B. (2012). Urban health educators' perspectives and practices regarding school nutrition educational policies. *Health Education Research*, 27, 69–80.
- Narad, A. & Abdullah, B. (2016) Academic performance of senior secondary school students: influence of parental encouragement and school environment *Rupkatha Journal on Interdisciplinary Studies in Humanities 8* (2) 12
- Ogunsola, F. (2018). Influence of parenting styles on the academic performance of secondary school students in Niger state. *International Journal of Research-Granthaalayah*, 6(10), 65-70
- Ojukwu, M.O. (2016). Perception of students on causes of poor performance in chemistry in external examinations in Umuahia North Local Government of Abia State. *International Journal of Education & Literacy Studies*, 4(1), 67-72.
- Oladele, A.M, Abubakar, H., Ali, F. & Adawa, P.F. (2021). The impact of parents' income and educational background on students' academic achievement in educational technology in Niger State, Nigeria. *International Journal of Educational Research*, 4(2), 103-113.
- Prelip, M., Kinsler, J., Thai, C.L., Erausquin, J.T. &Slusser, W. (2012). Evaluation of a school-based multicomponent nutrition education program to improve young children's fruit and vegetable consumption. *Journal of Nutrition Education and Behavior*,44,310–318.

- Sallis, J. F. (2010). We do not have to sacrifice children's health to achieve academic goals [letter to the editor]. *The Journal of Pediatrics*, 156, 696–697.
- Thomas, M. (2018). *Health, Academic Achievement and School-Based Interventions, Health and Academic Achievement*, Blandina Bernal-Morales
- World Health Organization (2014). Report of the first meeting of the ad hoc working group onscience and evidence for ending childhood obesity. Geneva: World Health Organization.