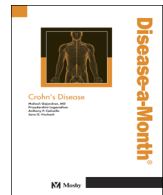




Contents lists available at ScienceDirect

Disease-a-Month

journal homepage: www.elsevier.com/locate/disamonth

Pediatric obesity: Current concepts

Donald E. Greydanus^{a,*}, Marisha Agana^a,
Manmohan K. Kamboj^b, Saad Shebrain^c,
Neelkamal Soares^a, Ransome Eke^d, Dilip R. Patel^a

^aDepartment of Pediatric and Adolescent Medicine, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI 49008, USA

^bSection of Endocrinology, Metabolism and Diabetes, Nationwide Children's Hospital, Columbus, OH, USA

^cDepartment of Surgery, Western Michigan University, Homer Stryker M.D. School of Medicine, Kalamazoo, MI, USA

^dDivision of Epidemiology and Biostatistics, Department of Biomedical Sciences, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI, USA

ARTICLE INFO

Keywords:

Obesity
Overweight
Children
Adolescents
Pharmacology
Bariatric Surgery

ABSTRACT

This discussion reflects on concepts of obesity in children and adolescents in the early 21st century. It includes reflections on its history, definition, epidemiology, diagnostic perspectives, psychosocial considerations, musculoskeletal complications, endocrine complications and principles of management. In addition to emphasis on diet and exercise, research and clinical applications in the second decade of the 21st century emphasize the increasing use of pharmacotherapy and bariatric surgery for adolescent and adult populations with critical problems of overweight and obesity. We conclude with a discussion of future directions in pediatric obesity management.

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Introduction: Historical perspectives

The phenomenon of obesity is not a condition affecting just twenty-first century *Homo sapiens* population. Obesity has been the object of public curiosity and concern since ancient times. Much of

*Corresponding author.

E-mail address: Donald.greydanus@med.wmich.edu (D.E. Greydanus).

what is known about historical perspectives of obesity is interpreted from sculptures, drawings, writings and discussions through the ages. This monograph begins with a brief historical perspective on obesity in humans.

Ancient times

One of the earliest historical representations of obesity may be a large ivory figurine that was unearthed from the basal Aurignacian deposits in the Swabian Jura of southwestern Germany that is estimated at being 35,000 years old.¹ The Venus of Willendorf is an ancient human figurine dated to 20-30 thousand years BC that depicts an overweight pregnant woman without an identifiable face but representative of that time for beauty, fertility, health and high socioeconomic status.²

Other ancient artifacts depicting obesity have been discovered in various archeological excavations around the world including the Venus of Berekhat Ram in the Golan Heights of Israel and the Venus of Tan-Tan in Morocco; these works have been attributed to the *Homo erectus* species.¹ While fossilized remains of human predecessors do not seem to provide evidence of obese beings in existence at that time period, the artifacts that show obese women in stone-age sculptures possibly convey obesity as a fact of life for them.

In a recent anthropological review of cardiovascular disease among ancient Egyptian women from 1570 BC, the investigators utilized computerized tomography scanning to visualize evidence of vascular calcification as a manifestation of atherosclerosis.³ One of the Egyptian royalties, the mummified body of Queen Hatshepsut (1507-1458 BC), has been found to have had pendulous breasts that is postulated to be a marker for obesity and modern studies suggests she had diabetes mellitus as well as bone cancer.¹

The Greek mythological figure Pluto (Hades), the god of wealth, was often depicted as obese in many great works of art. Writings of the French Rabbi Levi ben Gershon (1288-1344 AD) point to infertility as a complication of obesity in Biblical stories of Sarah and Rachel (approximately 2000 BC) and one can infer a possible diagnosis of obesity-related polycystic ovarian syndrome as well.⁴ In Christian Biblical religious works of art, a special group of angels known as cherubs were shown as overtly obese young children. Even the rendition of the infant Jesus in the famous work of Lorenzo di Credi (1459-1537), the Madonna and Child (1510), presents a cherubic" baby in the arms of the mother Mary.⁴

Early physicians considered issues of obesity in relation to health risks as reflected in the writings of Western medicine's icons Hippocrates of Kos (460 BC-370 BC) and Galen of Pergamum (129 AD-216 AD).^{5,6} These founders of Western medicine described complications or adverse effects of obesity that included sexual dysfunction and infertility.¹ Following this, various Western physicians from circa 25 BC to the 9th century AD (Table 1) continued the discussion on obesity with reference to its etiology, risks and potential treatment.⁷ These ancient physicians postulated that obesity resulted from an imbalance in one of the four basic substances or *humors* of the body (black bile, yellow bile, phlegm and blood).

Table 1

Key first century Western physicians with obesity reflections.

Aulus Cornelius Celsus (25 BC-50 AD)
Dioscorides Pedanius (40-90 AD)
Rufus of Ephesus (80-150 AD)
Aretaeus of Cappadocia (81-138 AD)
Soranus of Ephesus (98 AD-138 AD)
Galen of Pergamon (Aelius Galenus or Claudius Galenus-AD 129 – 216 AD)
Caelius Aurelianus (circa 400 AD)
Oribasius (325-403 AD)
Alexander Traillianus (Alexander of Tralles; 525-605 AD)
Aetius Amidenus (Aëtius of Amida-5 th century AD)
Paulus of Aegina: 625-690 AD)
Theophilus Protospatharius (7 th century AD)
Stephanus of Athens (7 th Century AD)

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