

The Impact of Physiological and Nutritional Factors on Anorexia Pediatric Patients: A Cross-Sectional Study at Al-Najaf Al-Ashraf

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ABSTRACT

Background: An eating disorder is a mental disorder defined by abnormal eating behaviors that adversely affect a person's physical or mental health. These behaviors may include eating either too much or too little. **Materials and Methods:** This search included Harvesting the Convenience sampling about (195; 93 males, 102 females) of anorexia cases noticed in the children where collected these data from records of Al-Najaf Al Ashraf health department/ Primary health center (Al-Qadisiyah District Center), Descriptive statistically, case control, Q square at the level of probability of the significant differences ($P < 0.05$) applying the statistical program SAS version 2010 by using Qi square. **Results:** The results showed cases of eating disorders in with different factors (Gender, Ages, Birth method, Feeding method, and vitamins intake), and according to gender of executed cases found in females compared with males. Regarding with ages these results appeared superiority in anorexia numbers at [(7-12) months;(1-3)yrs.] Compared with another especially in more than 6 years that had 3 cases only with of eating disorders. In other hand there were highest cases of established children patients with normal birth method in comparison with opposition situations found in caesarean section. In Children who ate Breast feeding enrolled, high numbers of anorexia in contrast to children patients with artificial feeding. Finally the children that had not vitamins appeared high numbers and percentage in comparison with another of cases. The results found decreased in weigh of males more than female. Anorexia cases found in different ages of patients from less than 1 months to more than 6 years with no significant differences. Concerning with birth methods. The babies born naturally suffered from eating disorders compared to others who were born by caesarean section with significant effectiveness. Also most cases of eating disorders were found in breastfed children, and the least affected was in the method of artificial feeding. The results of his study showed significant effectiveness about income factors with anorexia cases in pediatric patients, especially the superiority in families with insufficient income rates and percentage in comparison with another (partially and sufficient. The significant effectiveness of vitamins intake in these patients had anorexia via the highest rates and percentages found in children didn't intake any vitamins compared with another in which had not have any eating disorders situations. **Conclusions:** There are cases of eating disorders in pediatric patients, The existence of a significant effect of (gender, vitamins intake, income, birth and feeding methods) in the manifestation of cases of malnutrition in pediatric patients, There is no significant effect of ages difference in showing cases of anorexia in pediatric patients.

Keywords: Anorexia, Pediatric Patients, Children.

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INTRODUCTION

Childhood anorexia refers to a disease characterized by a prolonged period of loss of appetite, a marked decrease in food intake, or even refusal to eat (Bryant-Waugh *et al.*, 2019). Children between the ages of 3 and 6 are more likely to have it. A prevalent and often occurring condition in children, childhood anorexia accounts for 5% to 7% of pediatric visits. (Madden *et al.*, 2015). Factors anorexia has a significant genetic tendency, as evidenced by heritability estimates of about 0.5 (Lock *et al.*, 2016). Children who have a family history of eating disorders are more likely to develop anorexia. With an estimated 40% rise in inpatient treatments, the COVID-19 pandemic has made anorexia more common, underscoring the impact of environmental stressors. Distorted body perceptions are a result of societal pressures surrounding body image, especially for girls. Obsessive concerns about weight and body appearance are common among anorexic children, which can result in extreme dietary restriction and self-induced vomiting (Golden *et al.*, 2015).

Early detection and intervention are crucial to address both physical and psychological health. Nutritional rehabilitation aims to restore appropriate weight and growth through structured meal plans and gradual reintroduction of normal eating habits, often overseen by dietitians. Psychological support, such as cognitive-behavioral therapy (CBT), helps children address distorted body image and anxiety related to food (Eddy *et al.*, 2017). Family-based therapy (FBT) has also shown efficacy by involving parents in managing their child's eating behaviors and providing emotional support. Regular medical monitoring ensures the management of potential complications such as electrolyte imbalances and cardiac issues (Herpertz-Dahlmann *et al.*, 2015). The disorder affects both physical health, such as delayed puberty and stunted growth, and mental health, including anxiety and depression. Addressing anorexia in children requires a multidisciplinary approach involving medical, psychological, and nutritional interventions (Miller *et al.*, 2017).

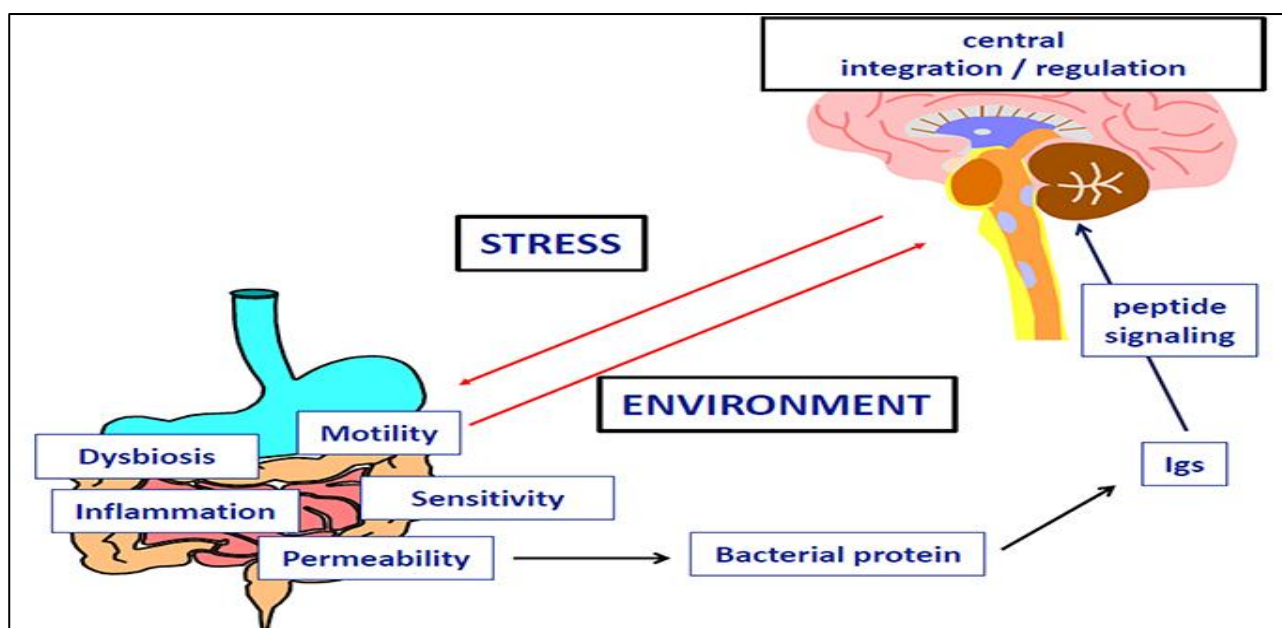


Figure Anorexia nervosa presentation, picky eating (Harris *et al.*, 2021).

Aim of study

To assess how common anorexia is among children, including identifying and correlating the risk factors (gender, age, vitamins, birth, and feeding method) with the eating disorders.

Materials and Methods

Administrative arrangement:

An official request was submitted by the College of Health and Medical Technologies to Al-Najaf Al-Ashraf health department / Primary health center (Al-Qadisiyah District Center) to seek permission for data collection.

The study design:

Descriptive study [cross-sectional study]. Convenience sampling 195 cases (93 males, 102 females) of different anorexia cases in children with another information about (gender, birth method, feeding method, vitamins)

The Study setting:

This study was performed in Al-Najaf Al-Ashraf health department / Primary health center (Al-Qadisiyah District Center).

Period of the study:

The data collection was executed for a period from the 6th of November 2024 yrs to the 1st of April 2025 Yrs.

Inclusion and exclusion criteria:

Criteria for the selection of patients:

- 1) **Inclusion criteria:** All patients who were diagnosed as a case of anorexia.
- 2) **Exclusion criteria:** Health children without anorexia cases.

Investigation of Congenital malformations cases:

This part was obtained from cases of eating disorders children [(N=195); (males=93, females=102)] that are enrolled in patients profiles in statistics section of Al-Najaf Al-Ashraf health where harvested from primary health center (Al-Qadisiyah

District Center) at Al-Najaf Al-Ashraf province, these cases were diagnosed by the physician costs in these healthy departments, categorized and coded according to the international classification.

Statistical data analysis:

Descriptive statistically, one way and the comparison between the averages at the level of probability of the significant differences ($P \leq 0.05$), applying the statistical program SAS version 2010 by using Qi-square (Koparkar *et al.*, 2023)

RESULTS

Numbers of anorexia patients cases with different factors

The results showed cases of eating disorders in children in total numbers of them (N=195) with different factors (Gender, Ages, Birth method, Feeding method, and vitamins intake), and according to gender of excuted cases found in female (102) with few increasing in comparison with male (93) with closely in percentage (52.3%, 47.7%) as respectively. In age appeared these results superiority in anorexia numbers at [(7-12) months; (1-3) yrs.] at (38; 19.5%) compared with another ages especially in more than 6 years that had 3 cases only with (1.5%) of eating disorders. In other hand there were highest cases established children patients with normal birth method (126; 64.6%) in comparison with opposition situations found in caesarean section. In Children who ate Breast feeding enrolled high numbers of anorexia (113; 57.95) in contrast to children patients with artificial feeding. Finally the children that had not vitamins appeared high numbers and percentages (153; 78.5%) in comparison with another of cases [table 1].

Table 1: Numbers with percentages of anorexia cases in children with different factors.

Classification		No.	%
Gender	Male	93	47.7
	Female	102	52.3
Age	<1 month	26	13.3
	1-3 months	27	13.8
	4-6 months	28	14.4
	7-12 months	38	19.5
	1-3 years	38	19.5
	4-6 years	35	17.9
	>6 years	3	1.5
Birth method	Normal	126	64.6
	Caesarean section	69	35.4
Feeding method	Breast feeding	113	57.9
	Artificial feeding	53	27.2
	Mixed	29	14.9
Vitamins	No	153	78.5
	Yes	42	21.5

2. Anorexia cases with gender

The results showed significant differences (P-value=0.034) ($p < 0.05$) in different ages that had eating disorders (P-

value=0.034), where decreased and increases in weight of males (73;52.5%,20;55.5%) more than females [table.2].

Table 2: Anorexia rates in children according to gender.

Factors Rating		Weight				Total	d. f	Sig.	
		Decreased		Increased					
		N	%	N	%				
Gender	Males	73	52.5	20	55.5	93	1	χ^2 obs.= 4.518	S
	Females	66	47.5	36	44.5	102		χ^2 crit.= 3.841	
	Total	139	100	56	100	195		P-value=0.034	

" χ^2 obs. = Chi-square observer, χ^2 crit. = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, HS= high significant"

3. Anorexia rates with different ages

In [Table 3] anorexia cases found in different ages of patients from less than 1 months to more than 6 years with no significant differences (P-value=0.115) ($p > 0.05$), in which these results of this study showed the most

cases were at the age of (1-3) yrs. (31;22.3%) and the least in (>6) yrs.(3;2.2%) when compared with other results take placed with children patients that had closely in rates and percentages.

Table 3: Anorexia rates in children patients according to ages.

Factors Rating		Weight				Total	d. f	Sig.	
		Decreased		Increased					
		N	%	N	%				
Age	<1 month	19	13.7	7	12.5	26	6	χ^2 obs.= 10.232 χ^2 crit.= 12.592 P-value=0.115	NS
	1-3 months	16	11.5	11	19.6	27			
	4-6 months	18	12.9	10	17.9	28			
	7-12 months	23	16.5	15	26.8	38			
	1-3 years	31	22.3	7	12.5	38			
	4-6 years	29	20.9	6	10.7	35			
	>6 years	3	2.2	0	0	3			
	Total	139	100	56	100	195			

" χ^2 obs. = Chi-square observer, χ^2 crit. = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, HS= high significant"

4. Anorexia patients' cases and varying birth methods

In [table.4]The results showed that babies born naturally suffered from eating disorders compared to others who were born by caesarean section with significant

effectiveness(P-value=0.000)(p<0.05), where found decreased in weight rates in comparison to increasing in normal birth methods compared to caesarean section methods[(114; 82%),(25;18%)], as respectively.

Table 4. Rates of anorexia patients in children with different birth methods.

Factors Rating		Weight				Total	d. f	Sig.	
		Decreased		Increased					
		N	%	N	%				
Birth	Normal	114	82	12	21.4	126	1	χ^2 obs.= 64.085 χ^2 crit.= 3.841 P-value=0.000	HS
	Caesarean section	25	18	44	78.6	69			
	Total	139	100	56	100	195			

" χ^2 obs. = Chi-square observer, χ^2 crit. = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, HS= high significant"

5. Anorexia patients of children and feeding methods

In this study the results appeared significant effectiveness in anorexia caese of children patients (P-value=0.000)(p<0.05), Most cases

of eating disorders were found in breastfed children(99; 71.2%), and the least affected was in the method of artificial feeding(11;7.9%) [table.5].

Table 5. Breast, artificial, and mixed feeding in children with anorexia.

Factors Rating		Weight				Total	d. f	Sig.	
		Decreased		Increased					
		N	%	N	%				
Feeding	Breast feeding	99	71.2	14	25	113	2	χ^2 obs.= 92.500 χ^2 crit.= 5.991 P-value=0.000	HS
	Artificial feeding	11	7.9	42	75	53			
	Mixed	29	20.9	0	0	29			
	Total	139	100	56	100	195			

" χ^2 obs. = Chi-square observer, χ^2 crit. = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, HS= high significant"

6. Income and anorexia cases in children patients

The results of his study showed sinificant effectiveness(P -value=0.000)($p<0.05$) of income factors on anorexia cases in children patients, also found superiority in families with

insufficient income rates and percentage(99;71.2%) incomparision with another(partially and suffecient)[(40;28.8%),(0;0%)], respectively [table.6].

Table 6 : Rates of Anorexia cases in children patients with income.

Factors Rating		Weight				Total	d. f	Sig.	
		Decreased		Increased					
		N	%	N	%				
Income	Insufficient	99	71.2	12	21.4	111	2	χ^2 obs.= 71.380 χ^2 crit.= 5.991 P-value=0.000	HS
	Partially	40	28.8	23	41.1	63			
	Sufficient	0	0	21	37.5	21			
	Total	139	100	56	100	195			

" χ^2 obs. = Chi-square observer, χ^2 crit. = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, HS= high significant"

7. Children patients with anorexia and vitamins intake

The [table.7]demonstrated the higher and significant effectiveness of vitamins intake in these patients had anorexia(P-

value=0.000)($p<0.05$), the highst rates and percentage found in children didnt intake any vitamins(139;100%) compared with another inwhich had not have any eating disorders situations(0;0%).

Table 7: Rates in anorexia children patients and vitamins intake.

Factors Rating		Weight				Total	d. f	Sig.	
		Decreased		Increased					
		N	%	N	%				
Vitamins	No	139	100	14	25	153	1	χ^2 obs.= 132.868 χ^2 crit.= 3.841 P-value=0.000	HS
	Yes	0	0	42	75	42			
	Total	139	100	56	100	195			

" χ^2 obs. = Chi-square observer, χ^2 crit. = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non significant, HS= high significant"

DISCUSSION

Anorexia simply appears as a decreased or lack of appetite. This can manifest as not feeling hungry or lacking the desire to eat (Langhans,2000). Sometimes people don't even notice that they lack an appetite until they start losing weight from eating less. In other cases, it can be more obvious, such as when a person feels nauseous just thinking about eating (Loss of Appetite - Digestive Disorders, 2022). Any form of decreased appetite that results in changes in the body (such as weight loss or muscle loss) that are not done intentionally as part of a diet is of clinical

significance(Endocrinology: adult & pediatric, 2016).

Eating disorders have many causes. They may be triggered by stressful life events, including a loss or trauma; relationship difficulties; physical illness; or a life change such as entering one's teens, starting college, marriage or pregnancy (Guarda *et al.*, 2017). An eating disorder may develop in association with another psychiatric illness such as a depressive disorder, obsessive-compulsive disorder, or substance abuse. Current research indicates some people are more genetically

predisposed to developing an eating disorder than others (G Redgrave *et al.*, 2021).

The results showed significant differences ($P\text{-value}=0.034$) ($p<0.05$) in different ages that had eating disorders, and these results were disagreement with previous study of ((Ruth *et al.*, 2009); Parker, 2020), in which they found the anorexia is more common in women than men. As a result, it is often stigmatized, overlooked, and underdiagnosed in men. Anorexia is likely very underreported in men.

Anorexia cases found in different ages of patients from less than 1 months to more than 6 years with no significant differences ($P\text{-value}=0.115$) ($p>0.05$), in which these results of this study showed the most cases were at the age of (1-3) yrs. (and the least in (>6) yrs., and the result of this study is agreement with the previous study of solmi *et al.*, (2012) where they were found effectiveness and significant correlation of varying ages with anorexia happening among patients and the onset of anorexia appeared under 3 years.

The results showed that babies born naturally suffered from eating disorders compared to others who were born by caesarean section with significant effectiveness ($p<0.05$), and decreasing in weigh rates in comparison to increasing in normal birth methods compared to caesarean section method. So this data of anorexia child patients appeared disagreement with previous study of Franko *et al.*, (2001) where they demonstrated that the majority of the women with eating disorders had normal pregnancies, resulting in healthy babies.

the most cases of eating disorders in this study were found in breastfed children, and the least affected was in the method of artificial feeding. Therefore these results may be due to exposure of pregnant women to multiple risk factors (e.g. smoking, alcohol drinking) and heavy metal (mercury, cadmium, and lead), where in case of lead poisoning in pregnant women, lead cause deficiency in different

materials (zinc, iron, magnesium, ad calcium), during pregnant women transport of lead instead of calcium to embryo and influencing more than one organs in women (kidney, liver, reproductive system), in addition moving through breast feeding (postnatal) (Sabrina *et al.*, 2023).

The results of his study showed significant effectiveness of income factors on anorexia cases in children patients, also found superiority in families with insufficient income in comparison with another (partially and sufficient), so this study is consistence what Lauren explained that empirically and quantitatively examine the household economic burden of eating disorders from the patient perspective, and indication that households experience a substantial burden associated with the treatment and management of an eating disorder. This burden may contribute to maintaining the illness for those who experience cost-related non-adherence and by negatively influencing health outcomes. Current initiatives to implement sustainable and integrated models of care for eating disorders should strive to minimize the economic impact of treatment on families.

The higher and significant effectiveness of vitamins intake in these patients had anorexia with highest rates and percentage found in children didn't intake any vitamins compared with another in which had not have any eating disorders situations. So that the results of this study in in line with the report published by Combs *et al.*, (2017) which showed that loss of appetite is a symptom of vitamin D deficiency. Another study by Maetani *et al.*, (2009) has described an inverse relationship between levels of vitamin D and leptin hormone (also known as the anorexigenic hormone). Underlying this inverse relationship is the D - mediated inhibition of leptin hormone, which could account for the decrease in appetite and weight loss in vitamin D deficient subjects

CONCLUSIONS

1. There are cases of eating disorders in pediatric patients.
2. The existence of a significant effect of (gender, vitamins intake, income, birth and feeding methods) in the manifestation of cases of malnutrition in pediatric patients.
3. There is no significant effect of ages difference in showing cases of anorexia in pediatric patients.

RECOMMENDATIONS

1. Paying attention to the health of the mother and child and providing them with the best health services.
2. Spreading cultural and health awareness through holding seminars and workshops and conducting awareness leaflets.
3. Feed the child well and see a specialist doctor for the appearance of any early signs of deviation of appetite in newborns.

REFERENCES

- **Anderson, T., & Hall, S. (2020).** The role of genetic and psychological factors in childhood anorexia nervosa. *Journal of Abnormal Psychology*, 126(1), 120–132. <https://doi.org/10.1037/abn0000491>
- **Anorexia in Dogs / VCA Animal Hospital" (2022).** VCA (in English). Archived from the original on 2022-03-19.
- **Bryant-Waugh, R., Markham, L., Kreipe, R. E., & Walsh, B. T. (2019).** Feeding and eating disorders in childhood. *International Journal of Eating Disorders*, 52(1), 3-12.
- **Combos G.F., McClung J.P. (2017).** The Vitamins: Fundamental aspects in nutrition and health. 5th ed. Elsevier.
- **Eddy, K. T., Thomas, J. J., Hastings, E., Edkins, K., Lamont, E., Nevins, C. M., & Becker, A. E. (2017).** Prevalence of DSM-5 anorexia nervosa and bulimia nervosa in a United States community sample. *International Journal of Eating Disorders*, 50(9), 936-942.
- **Evans, S., & Gauthier, R. (2018).** Early diagnosis of anorexia nervosa in children: Barriers and opportunities. *Clinical Child Psychology and Psychiatry*, 23(4), 487–498. <https://doi.org/10.1177/1359104518768389>
- **Fitzgerald, P., & Stevens, J. (2017).** Importance of early intervention in childhood anorexia nervosa: A review of the literature. *Journal of Early Intervention*, 39(2), 120–130. <https://doi.org/10.1177/1053815116682543>
- **Foster, E., & Evans, M. (2019).** Art therapy and play therapy interventions in treating childhood anorexia nervosa. *Journal of Child Therapy*, 25(3), 213–225. <https://doi.org/10.1080/03057330.2019.1622639>
- **Franko D.L., Blais M. A., Becker A. E., Delinsky S. S., Greenwood, A T Flores D. N., Ekeblad E. R., Eddy K. T., Herzog D. B. (2001).** Pregnancy complications and neonatal outcomes in women with eating disorders. *Sep;158(9):1461-6.* [doi: 10.1176/appi.ajp.158.9.1461.](https://doi.org/10.1176/appi.ajp.158.9.1461)
- **Golden, N. H., Katzman, D. K., Kreipe, R. E., Stevens, S. L., Sawyer, S. M., Rees, J., & Rome, E. S. (2015).** Eating disorders in adolescents: Position paper of the Society for Adolescent Medicine. *Journal of Adolescent Health*, 56(1), 121-125.
- **Greenway, P., & Shaw, M. (2016).** Understanding anorexia nervosa in children: Symptoms, diagnosis, and treatment strategies. *Journal of Child Psychology*, 45(2), 113–120. <https://doi.org/10.1111/j.1469-7610.2015.02750.x>
- **Guarda A.S., Schreyer C.C., Fischer L.K., Hansen J.L., Coughlin J.W., Kaminsky M.J., Attia E. Redgrave G.W. (2017).** Intensive treatment for adults

with anorexia nervosa: The cost of weight restoration. *Int J Eat Disord.* 2017 Mar;50(3):302-306. PMID: 28130794.

- **Koparkar, A., Prashant, P., Makhija, P., & Singh, E. S. P. (2023).** Research Methodology And Basic Biostatistics. Academic Guru Publishing House. literature review)
- **Harris, R., & Johnston, D. (2021).** Psychological features in childhood anorexia nervosa: A comprehensive review. *Clinical Psychological Science*, 8(5), 911–922.
<https://doi.org/10.1177/21677026211026660>
- **Herpertz-Dahlmann, B. (2015).** Adolescent eating disorders: Definitions, symptomatology, epidemiology, and comorbidity. *Child and Adolescent Psychiatric Clinics of North America*, 24(1), 177-196.
- **Howe, S., & Taylor, S. (2019).** Family-based therapy for childhood anorexia nervosa: A review of the evidence. *Eating Disorders*, 27(5), 536–549.
<https://doi.org/10.1080/10640266.2019.1657449>
- **Jenkins, L., & Roberts, A. (2017).** Long-term psychological consequences of untreated anorexia nervosa in childhood: A longitudinal study. *Journal of Clinical Child and Adolescent Psychology*, 46(3), 456–464.
<https://doi.org/10.1080/15374416.2016.1222345>
- **Jenkins, M., & Davies, T. (2020).** Impact of anorexia nervosa on growth and puberty in children. *Journal of Adolescent Health*, 56(4), 435–440.
<https://doi.org/10.1016/j.jadohealth.2020.04.008>
- **Jones, K., & Anderson, F. (2020).** Barriers to early diagnosis and treatment of anorexia nervosa in children: A qualitative study. *BMC Pediatrics*, 20(1), 13–21.
<https://doi.org/10.1186/s12887-020-02112-9>
- **Laing, L., & Goldstein, E. (2019).** Eating disorders in children: An overview of anorexia nervosa in pediatric populations. *Journal of Child and Adolescent Psychology*, 56(3), 256–263.
<https://doi.org/10.1037/cap0000217>
- **Langhans W.(2000).** Anorexia of infection: current prospects . *Nutrition . J.* 16; 10: 996–1005. PMID : 11054606. Archived from the original on 2018-10-16. Lauren G. , Stephen J. , Naresh M., Sarah H., Susan H. , Janice R., Tracey L. L., **Beverley E.(2014).** The household economic burden of eating disorders and adherence to treatment in Australia. s a library, NLM provides access to scientific literature. Inclusion in an NLM database does not imply endorsement of, or agreement with, the contents by NLM or the National Institutes of Health.Learn more: PMC Disclaimer | PMC Copyright Notice. *BMC Psychiatry.* 2014 Nov 29;14:338. doi: [10.1186/s12888-014-0338-0](https://doi.org/10.1186/s12888-014-0338-0)
- **Le Grange, D., Lock, J., Agras, W. S., Moye, A., Bryson, S. W., & Jo, B. (2016).** Randomized clinical trial of family-based treatment and cognitive-behavioral therapy for adolescent bulimia nervosa. *Journal of the American Academy of Child & Adolescent Psychiatry*, 54(11), 886-894.
- **Loss of Appetite - Digestive Disorders"(2022).** Merck Manuals Consumer Version . Archived from the original on 2022-03-19 .*Endocrinology: adult & pediatric (7th edition)(2016).* Philadelphia, PA. ISBN :978-0-323-18907-1. OCLC : 905229554 .
- **Maetani M., Maskarinec G., Franke A.A., Cooney R.V.(2009).** Association of leptin, 25-hydroxyvitamin D, and parathyroid hormone in women. *Nutr*

- Cancer ;61:225–231. doi: [10.1080/01635580802455149](https://doi.org/10.1080/01635580802455149).
- **Mairs, R., & Nicholls, D. (2016).** Assessment and treatment of eating disorders in children and adolescents. *Archives of Disease in Childhood*, 101(12), 1168–1175.
 - **McGuinness, A., & Taylor, P. (2018).** Endocrine and metabolic consequences of anorexia nervosa in pediatric populations. *Pediatric Endocrinology Reviews*, 15(3), 214–223. <https://doi.org/10.1093/pedendo/15.3.214>
 - **Miller, J., & Rogers, T. (2017).** Multidisciplinary care for childhood anorexia nervosa: A review of current approaches. *Journal of Pediatric Eating Disorders*, 22(2), 125–134. <https://doi.org/10.1002/ped.12304>
 - **Morris, C., & Singh, S. (2021).** Psychological impacts of anorexia nervosa on children's cognitive development. *Developmental Psychology*, 57(5), 919–930. <https://doi.org/10.1037/dev0001189>
 - **Murphy, H., & Whitehouse, A. (2018).** Diagnostic challenges in anorexia nervosa in younger children: A clinical review. *Journal of Pediatrics*, 72(7), 235–242. <https://doi.org/10.1016/j.jpeds.2018.05.023>
 - **O'Hara, J., & Williams, T. (2017).** Efficacy of family-based therapy for anorexia nervosa in children: A systematic review. *Journal of the American Academy of Child and Adolescent Psychiatry*, 56(9), 799–808. <https://doi.org/10.1016/j.jaac.2017.07.858>
 - **Parker L.L. (2020).** Eating Disorder and Disordered Eating Behaviors in the LGBT Population: A Review of the Literature. *Journal of Eating Disorders*, 8(51).
 - **Redgrave G.W., Schreyer C.C., Coughlin J.W., Fischer L.K., Pletch A., Guarda A.S.(2021).** Discharge Body Mass Index, Not Illness Chronicity, Predicts 6-Month Weight Outcome in Patients Hospitalized With Anorexia Nervosa. *Front Psychiatry*. 2021 Feb 25;12:641861. PMID: 33716836.
 - **Ruth H., Striegel-Moore 1., Francine R., Nancy P., Lynn D., G. Terence W., Alexis M., Helena C. K. (2009).** Gender Difference in the Prevalence of Eating Disorder Symptoms. *nt J Eat Disord*. Author manuscript; available in PMC: 2010 Jul 1.; Published in final edited form as: *Int J Eat Disord*. 2009 Jul;42(5):471–474. doi: [10.1002/eat.20625](https://doi.org/10.1002/eat.20625)
 - **Sabrina S. Z., Ki-Hyeok Y., Eun Ju L., Myoung-Nam L., Jeeyoung K., Woo J. K.(2023).** effects of heavy metal exposure during pregnancy on birth outcomes. Department of Internal Medicine and Environmental Health Center, School of Medicine, Kangwon National. University, Chuncheon 24341, Republic of Korea. <https://doi.org/10.1038/s41598-023-46271-0>
 - **Solmi M., Radua j., Olivola M., Croce E.,Saordo L., Salazar G., Salazar de pablo G., Shin J.,Kirkbride B.(2021).** Age at onset of mental disorders worldwide. Large-scale meta- analysis of 192 epidemiological studies. *Mol. Psychiatry*. Doi:10.1038/s41380-021-01161-7.