Skipping Breakfast a Boon or Bane on Health - A Systematic Review Analysis

Dr. S. S. Subramanian¹, S. J. Kanimozhiselvi², N. Mohammed Shabeer³, S.Noorunnisha⁴

¹M.P.T (Orthopaedics), M.S (Education), M. Phil (Education), Ph.D (Physiotherapy).

Principal, Sree Balaji College Of physiotherapy, Chennai – 100. Affiliated To (Bharath) University, BIHER, Chennai – 73.

²BPT, MIAP, Tutor in Physiotherapy, Sree Balaji College of Physiotherapy, Chennai – 100 Affiliated To (Bharath) University, BIHER, Chennai – 73.

³B.P.T (III year), Sree Balaji College of Physiotherapy, Chennai – 100. Affiliated To (Bharath) University, BIHER

⁴B.P.T (II year), Sree Balaji College of Physiotherapy, Chennai – 100. Affiliated To (Bharath) University, BIHER

Abstract: <u>Introduction</u>: Breakfast is considered the most important meal of the day, providing the essential nutrient for the day's activities for children and adolescents (kleinman et al 2002;kawafha et al 2013). Breakfast skipping among adolescents and children which lead to lifestyle disorders (Keski-rahkonen et al 2003; Rampersaud et al 2005) <u>Aims and Objectives</u>: To analyse and promote health awareness in the society about the danger of skipping breakfast among children and adolescents. <u>Materials and Methodology</u>: From this systematic review analytical study from more than 30 journals we have studied that how skipping breakfast is harmful to health and it creates dangerous consequences to both children and adolescents in their physical and psychological aspects. <u>Conclusion</u>: Thus, highlighting the impact of health education on diet and its influence on health of human health and how life gets more pronounced were major outcome of this study findings.

Keywords: Unhealthy lifestyle, obesity, overweight, skipping breakfast, cancer, cardiovascular diseases

1. Introduction

Childhood and adolescent is a crucial period that requires adequate nutrition. Breakfast is known as the important meal of the day it provides people with fuel to begin their day. As a person sleeps the body changes from the fed to the fasted state which causes the serum glucagon concentrate to elevate. As a result liver produces glucose by converting glycogen to glucose. When food is consumed fuel Homeostasis is maintained (Hill 1995). In a recent study among 612, 4th grade students 27% have reported they skipped breakfast three or more times a week (Gross et al 2004) Breakfast is considered the most important meal of the day, providing the essential nutrient for the day's activities for children and adolescents (Nicklas et al 1993; kleinman et al 2002;kawafha et al 2013).Breakfast skipping among adolescents and children which lead to lifestyle disorders (Keski-rahkonen et al 2003;Rampersaud et al 2005). Shaw mary E 1998 reports approximately 12% of sample skipped breakfast which was conducted among 699 subjects , 13 year old Australian students , this also showed females skipped breakfast three times more than males . According to a study conducted by Belloc & Berslow 1972 in Alameda (California) nearly 15 % of the samples rarely / never ate breakfast and those who ate breakfast showed significantly better physical health than skippers and in a follow up of 9-1 $\frac{1}{2}$ years , same sample (Berkman & Berslow 1983) found that regular breakfast eaters add lower mortality rates although these findings were not satisfactorily significant . Hasannudin Nuru et al 2015 in a Japan based national dietary survey showed the incidence of missing breakfast averages 14 % in men and 9 % in women while in high school students be found 18 % also miss breakfast and 4 % in elementary school . Findings shows that prevalence of breakfast skipping is higher and it will affect the children health outcome such as increase in BMI and weight gain etc. Among 186 subjects in India (Indore, Madhya Pradesh) who were given questionnaire which included information regarding dietary factors and exercise found higher prevalence of overweight and obesity due to imbalance of diet (Raksha Goyal & Sandeep Julka 2014). The choice of breakfast along with breakfast skipping has a survey among 4487, children of 2-16 years from (United states and Europe) showed that 59 % of students were breakfast skippers and those who consumed breakfast had higher intake of folate and total sugar; low fat and sodium , prevalence of overweight was reduces among breakfast consumers. Breakfast skipping is highly prevalent in many countries including the United States and Europe (10-30%), more common occurrence in the children and adolescents (Rampersaud GC; Pereira MA,2005).

In India 33.8% adolescents of Aligarh (New Delhi) do not take their breakfast regularly, The rates of breakfast skipping range from 10% to 30% among children in India (Girard BL; Adams J; Metzl JD, 2005). In japan based on national dietary survey says that the skipping breakfast averages 14% men and 9% in women among adolescents, whereas 18% among children (HeatherJ ;Leidy P 2013) . Skipping breakfast among children in North America is16% (Gleason, 1995) and 18% for adolescents (Ringleton;Rhoads,1983) . In Korea 59.1% of children and 34.1% of adolescent skipping breakfast (Choi et al,2003)

2. Materials and Methodology

This review analysis has viewed journals from 1972 to 2017, authentic published sources including pub med, scholar, Medline and Scopus on both positive and negative effects of skipping breakfast in children and adolescent. With more

Volume 6 Issue 9, September 2017 <u>www.ijsr.net</u> Licensed Under Creative Commons Attribution CC BY

International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064 Index Copernicus Value (2015): 78.96 | Impact Factor (2015): 6.391

than 20 research article on ill effects of skipping breakfast and with 12 research articles claiming positive effects of having regular breakfast. Also the words used to search required materials were skipping breakfast, ill effects of not having breakfast, benefits of regular breakfast, junk foods and soft drinks on health, obesity and breakfast skipping, global prevalence of breakfast skipping. The researched findings of published research articles were presented in ascending order on the following items in a tabular format for a better viewing and enhanced grasp of the subject. The subtitles for discussion covered includes

- 1) Benefits of breakfast eating
- 2) Psychological and cognitive effects
- 3) Physiological effects
- 4) Reason for skipping breakfast
- 5) Other reason for skipping breakfast
- 6) Obesity
- 7) Social habits
- 8) Junk foods

3. Discussion

Table of results of systematic reviews on benefits of breakfast and effects on psycho- social aspects, physiological, cognition, food habits and reasons for breakfast

1	Benefit Of Brea	akfast Eating	Authors
	POSITIVE EFFECTS :		 Bellock and
	• "Seven healthy habits"		Breslow,1972
	• Improve absorption of minerals and vitamins, decrease likelihood of obesity and gastrointestinal		Nicklas et al 1993
	disturbance		• Ruxton and
			Kirk, 1997
2	Developing and	Cognitive Effects	• Zang et al 2011.
2	POSITIVE FEFECTS ·	Cogmuve Enects	Pelican:
	Concentration		• Tencan, O'connell 1985
	Attendance		• Galal: Hulett 2003
	Hyperactivity	 Rampersaud et al 	
	 Short time memory and mood 		2005.
	• Unhealthy lifestyle such as smoking, irregular exer	 Hoyland et al 2009 	
	• Inattentive and disruptive	• Smith et al 2010.	
	• The study conducted by showed mixed evidence,	• Wesnes etal 2003;	
	has a positive effect on children's cognitive per	2012	
	attention in a study conducted among 96 adolescer	Widenhorn Muller	
	blood sample also showed there is an improv	etal 2008,	
	attention.	• Pivik et al 2012	
	• Seven studies employed with in subjects acute expension behavior correspondence to a seven behavior correspondence to a more behavior corres	• Coper et al 2011	
	the seven studies showing an advantage of breakfast	• Chang et al 1996	
	the seven studies showing an advantage of breaking	Benton & Jarvis 2007	
			 Beton et al 2007
3	Physiol	logical Effects	
-	NEGATIVE EFFECTS :	• Sookian and	
	• Weight gain		Gemma,2008
	• Disturbance of circadian rhythm lead to reduction	on in exercise capacity, glucose tolerance disorder	• Jackson LW 2013;
	and metabolic disorder	Jenkins DJ 1989.	
	• Hypertension		 Chugani 1998
	• Insulin sensitivity		
	• Diabetes mellitus and cardiovascular diseases		
	• On a PET study indicates that cerebral metabolic		
	as high in children aged 4- 10 years compared w	with adults, this higher rate of glucose utilization	
	there is a change in breakfast pattern which leads t	to reduced cognitive and behavioral outcomes	
4	Reason For Skinning Breakfast		
<u> </u>	• No time (43%)		• Singleton and
	• Not being hungry (42%)		Rhoads, 1982
	• Diet to lose weight		
	• No one to prepare food		
5	Other Reason For Skipping Breakfast		
	Below poverty line		• Bidgood and
	Lack of money and food		Cameron,1992
		Obesity	
6	Positive Effects	Negative Effects	
1	• A study with 423 female students of $7 + $	Skipping breakfast has a modifiable influence on	• Keztyus D et al 2016
	years of age, there is a considerable d	aeveloping abdominal obesity in primary school	• Szjewska H &
	children & adolescents that eating breakfast		• Dela Huntu at al
	is associated with a reduced risk of		• Dela nunty et al
L	a reduced lish of		2013

Volume 6 Issue 9, September 2017

www.ijsr.net

Licensed Under Creative Commons Attribution CC BY

International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064 Index Copernicus Value (2015): 78.96 | Impact Factor (2015): 6.391

-			1
	becoming overweight or obese and		
	reduction in BMI		
7.	Social Habits		
	NEGATIVE EFFECTS :		• Szjewska H 2010 &
	• Systematic review conducted on 9 – 13 year	Rampersaud GC etal	
	youth with lower socio economic status, la	2005	
	higher energy intake, unhealthy eating habits		
	and alcohol use.		
8	Junk Food		
	Positive Effects	Negative Effects	
	• A study conducted among children of age	• According to a study conducted on 12-13 years on	• Dorthea Kesztyus et
	9-13 years and adoloscents of age 14-18	84 school 3159 students by migration background,	al 2017
	years 31 % were breakfast skippers.	living with a single parent, female gender, having	• Deshmukh – Tasker
	children who habitually consume breakfast	a percentage of body fat at or above 95 percentage	tal 2010
	are more likely to Have favorable nutrient	, the consumption of soft drinks and high levels of	
	intakes including higher intake of dietary	screen media use are positively correlated with	
	fibers, total carbohydrate and lower total	children skipping breakfast	
	fat and cholesterol	11 0	

4. Suggested Preventive Means of Skipping Breakfast

- 1) Different seminars and workshop arranged by the institutions regarding food and nutrition.
- 2) The department of food science can play vital role regarding nutrition by launching different training seasons and rising awareness campaign.
- 3) There should be a subject in syllabus that deals with food and nutrition in all undergraduate curriculum.

5. Conclusion

- 1) From this systematic review analytical study from more than 50 journals we have studied that how skipping breakfast is harmful to health and it creates dangerous consequences to both children and adolescents in their physical and psychological aspects.
- 2) Thus, highlighting the impact of health education on diet and its influence on health of human life gets more pronounced as major outcome of this study findings. Also the influence on health and disease with breakfast skipping, nature of diet consumed, future citizen are emerging with more vulnerability to various diseases, health disorder and huge economical influence. Hence need of this study with Government, NGOS, society should get more informed and practice healthy living style a major thrust of this research report.

References

- Adolphus K, Lawton CL & Dye L (2013) The effects of breakfast on behavior and academic performance in children and adolescents. Frontiers in Human Neuroscience 7 425
- [2] Benton D., Jarvis M. (2007). The role of breakfast and a mid-morning snack on the ability of children to concentrate at school. Physiol. Behav. 90, 382–385 10.1016/j.physbeh.2006.09.029[PubMed] [Cross Ref]
- [3] Benton D., Maconie A., Williams C. (2007). The influence of the glycaemic load of breakfast on the behaviour of children in school. Physiol. Behav. 92, 717–724

10.1016/j.physbeh.2007.05.065[PubMed] [Cross Ref]

- [4] Chugani H. T. (1998). A critical period of brain development: studies of cerebral glucose utilization with PET. Prev. Med. 27, 184–188 10.1006/pmed.1998.0274 [PubMed] [Cross Ref]
- [5] Cooper S. B., Bandelow S., Nevill M. E. (2011). Breakfast consumption and cognitive function in adolescent schoolchildren. Physiol. Behav. 103, 431– 439 10.1016/j.physbeh.2011.03.018 [PubMed]
- [6] De la Hunty A., Gibson S., Ashwell M. (2013). Does regular breakfast cereal consumption help children and adolescents stay slimmer? A systematic review and meta-analysis. Obes. Facts 6, 70–85 10.1159/000348878 [PubMed] [Cross Ref]
- [7] Deshmukh-Taskar P. R., Nicklas T. A., O'Neil C. E., Keast D. R., Radcliffe J. D., Cho S. (2010). The relationship of breakfast skipping and type of breakfast consumption with nutrient intake and weight status in children and adolescents: the National Health and Nutrition Examination Survey 1999-2006. J. Am. Diet. Assoc. 110, 869–878 10.1016/j.jada.2010.03.023 [PubMed] [Cross Ref]
- [8] Dorothea Kesztyüs,^{X^{#1,2}} Meike Traub,^{#1} Romy Lauer,¹ Tibor Kesztyüs,³ and Jürgen Michael Steinacker Skipping breakfast is detrimental for primary school children: cross-sectional analysis of determinants for targeted prevention. Published online 2017 Mar
- 14. doi: 10.1186/s12889-017-4169-z
 [9] Flavia Fayet-Moore,^{1,*} Jean Kim,² Nilani Sritharan,³ and Peter Petocz⁴ Impact of Breakfast Skipping and Breakfast Choice on the Nutrient Intake and Body Mass Index of Australian ChildrenPublished online 2016 Aug 10. doi: 10.3390/nu8080487
- [10] Gross SM¹, Bronner Y, Welch C, Dewberry-Moore N, Paige DM. Breakfast and lunch meal skipping patterns among fourth-grade children from selected public schools in urban, suburban, and rural Maryland . 2004 Mar;104(3):420-3.
- [11] Gupta N, Goel K, Shah P, Misra A. Childhood Obesity in Developing Countries: Epidemiology, Determinants, and Prevention. Endocrine Rev.2012;33(1):48–70.
- [12] Hasanuddin Nuru, Fardiana MamangImpact of breakfast skipping toward children health: a review
- [13] Heather J. Leidy P. The Benefits of Breakfast Consumption to Combat Obesity and Diabetes in Young People. American J Lifestyle Med. 2013;7.

Volume 6 Issue 9, September 2017

<u>www.ijsr.net</u>

Licensed Under Creative Commons Attribution CC BY

- [14] Hill, G. M. (1995). The impact of breakfast especially ready-to-eat cereals on nutrient intake and health of children. Nutrition Research, 15(4), 595-613.
- [15] Howden JA, Chong YH, Leung SF, et al. Breakfast practices in the Asian region. Asia Pacific J Clin Nutr. 1993;2:77-84.
- [16] Hoyland, A., Dye, L., & Lawton, C. L. (2009). A systematic review of the effect of breakfast on the cognitive performance of childrenand adolescents. Nutrition Research Reviews, 22, 220–243.
- [17] Kalff, A. C., Kroes, M., Vles, J. S. H., Hendriksen, J. G. M., Feron, F. J. M., Steyaert, J., et al. (2001). Neighbourhood level andindividual level SES effects on child problem behaviour: A multilevel analysis. Journal of Epidemiology & Community Health, 55, 246–250.
- [18] Katie Adolphus,^{*} Clare L. Lawton, and Louise DyeThe effects of breakfast on behavior and academic performance in children and adolescents Published online 2013 Aug 8. Prepublished online 2013 Jun 25. doi: 10.3389/fnhum.2013.00425
- [19] Keski-Rahkonen, A., Viken, R. J., Kaprio, J., Rissanen, A., & Rose, R. J. (2004). Genetic and environmental factors in breakfast eating patterns and Behavior Genetics, 34, 503–514
- [20] Kesztyüs D, Traub M, Lauer R, Kesztyüs T, Steinacker JM. Correlates of longitudinal changes in the waist -toheight ratio of primary school children: Implications for prevention. Prev Med Reports. 2016;3:1–6. doi: 10.1016/j.pmedr.2015.11.005. [PMC free article] [PubMed] [Cross Ref]
- [21] Mariza YY, Kusumastuti AC. Hubungan antara kebiasaan sarapan dan kebiasaan jajan dengan status gizi anak sekolah dasar di kecamatan pedurungan kota semarang. Journal of Nutrition College. 2013;2(1):207-213.
- [22] Nicklas TA, Bao W, Webber LS, Berenson GS. Breakfast consumption affects adequacy of total daily intake in children. J Am Diet Assoc. 1993;93(8):886– 91. doi: 10.1016/0002-8223(93)91527-W. [PubMed][Cross Ref]
- [23] Pereira MA, Erickson E, McKee P, et al. Breakfast Frequency and Quality May Affect Glycemia and Appetite in Adults and Children. The Journal of Nutrition. 2011;(141):163S–8S.
- [24] Pivik R. T., Tennal K. B., Chapman S. D., Gu Y. (2012). Eating breakfast enhances the efficiency of neural networks engaged during mental arithmetic in school-aged children. Physiol. Behav. 106, 548–555 10.1016/j.physbeh.2012.03.034 [PubMed] [Cross Ref]
- [25] Raksha Goyal and Sandeep Julka Impact of breakfast skipping on the health status of the population Indian J Endocrinol Metab. 2014 Sep-Oct; 18(5): 683–687.
- [26] Rampersaud, G. C., Pereira, M. A., Girard, B. L., Adams, J., & Metzl, J. D. (2005). Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. Journal of The American Dietetic Association, 105(5), 743-760
- [27] Rose, B. M., Holmbeck, G. N., Coakley, R. M., & Franks, E. A. (2004). Mediator and moderator effects in developmental and behavioral pediatric research. Journal of Developmental and Behavioral Pediatrics, 25, 58–67.
- [28] Shaw ME. Adolescent breakfast skipping : an australian study. Adolescence. 1998;33(132):851–61.[PubMed]

[29] Szajewska H., Ruszczynski M. (2010). Systematic review demonstrating that breakfast consumption influences body weight outcomes in children and adolescents in Europe. Crit. Rev. Food Sci. Nutr. 50, 113–119

10.1080/10408390903467514 [PubMed] [Cross Ref]

- [30] Wesnes K. A., Pincock C., Richardson D., Helm G., Hails S. (2003). Breakfast reduces declines in attention and memory over the morning in schoolchildren. Appetite 41, 329–331 10.1016/j.appet.2003.08.009 [PubMed] [Cross Ref]
- [31] Wesnes K. A., Pincock C., Scholey A. (2012). Breakfast is associated with enhanced cognitive function in schoolchildren. An internet based study. Appetite 59, 646–649 [PubMed]
- [32] Widenhorn-Muller K., Hille K., Klenk J., Weiland U. (2008). Influence of having breakfast on cognitive performance and mood in 13- to 20-year-old high school students: results of a crossover trial. Pediatrics 122, 279–284 10.1542/peds.2007-0944 [PubMed] [Cross Ref]

Volume 6 Issue 9, September 2017 <u>www.ijsr.net</u> Licensed Under Creative Commons Attribution CC BY