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# Status of Child Health in Haryana: A Spatial Analysis

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**Abstract:** *In this article, an attempt has made to analyse the spatial variations of Child Health in Haryana. We take different variables like Diarrhea, Stunted in Children, Under Weight, and Anemia in all 21 districts of Haryana. These are the variables of Child Health Status. In this study, we use Arc GIS 9.3 to show the spatial pattern of the above variables. The SPSS 16 used to correlate the variables. The finding shows that The Districts having stunted among Children have mostly affected by Under Weight problems among children.*

## I. INTRODUCTION

Children are the future of any nation. The responsibility of future development and prosperity depends upon the wisdom and capability of our young generation. The children are prone to a lot of disease which negatively affect their caliber. The developing nations are facing this problem with a high frequency, although these problems are available in all countries with some variations. India is also facing the problem of child disease.

The children are gripped by a lot of disease which constrained their physical as well as mental growth. The major diseases are Anemia, Diarrhea Underweight and stunting. The present study is focused on these diseases in the Haryana state of India. The study covers all the 21 districts. The spatial pattern of these diseases has been analyzed in the present study. The maps are used to show the spatial distribution of these diseases. The maps are made on Arc GIS 9.3. The correlation of these diseases has also been analyzed with the help of SPSS-16. The results have also represented through graphs and diagrams.

Diarrhea is a common situation that involves unusually frequent liquid bowel movements. There are a lot of causes of diarrhea. Diarrhea is uncomfortable and dangerous to the health because it indicates underlying infection and the body is not able to absorb any nutrients due to the problem in bowels.

This is the second largest disease leading cause of death in children under 5 years after pneumonia. Every year diarrhea kills around 525000 children under five. It can be prevented with safe drinking water and adequate sanitation and hygiene. There are near about 1.7 billion cases of children diarrheal disease every year worldwide. Diarrhea is leading cause of malnutrition in children under five years old.

The major causes of diarrhea are severe dehydration, fluid loss, septic bacterial infection, malnutrition and poor hygiene. Stunting is a reduced growth rate in human development. It is a primary malnutrition and recurrent infections like diarrhea and helminthiasis. According to WHO the stunting is for the height for age value to be less than two standard deviations of the WHO child growth standard median. In India the UNICEF survey 2013-2014 shows an Improvement in the status of children malnutrition over the National Family Health Survey-3. Despite this the levels remains high and concern the feeding indicators remains stagnant.

The prevalence for stunting in five children decreased from 48% to 38.7%. A child is considered underweight if the child's weight for age measured is less than the standard deviation from globally accepted reference cut off point or these standard deviations in the case of severe. According to National Family Health Survey-3 there is a decline in prevalence of underweight from 42.5% to 29.4%. the causes of underweight are the child refuses to eat normal quantities because of bowel pain after eating, chronic vomiting, due to genetics and thyroid diseases etc.

Anemia is a condition in which there is a deficiency of blood or red cells or hemoglobin in the blood. The causes of anemia are iron deficiency, lack of vitamins, family history etc. anemia lead to reducing functional capacity and mobility, and quality of life.

### A. Objectives

- 1) To analyse the spatial variations in Diarrhoea, Stunted, Under Weight, and Anaemia in Children in Haryana.

## II. DATA AND METHODOLOGY

The district takes as the unit of study. The data used in present study taken from National Family Health Surveys 2015-2016 and Censuses of India 2011.

### A. Methodology

We take different variables like

- 1) Diarrhoea,
- 2) Stunted in Children,
- 3) Under Weight, and
- 4) Anaemia

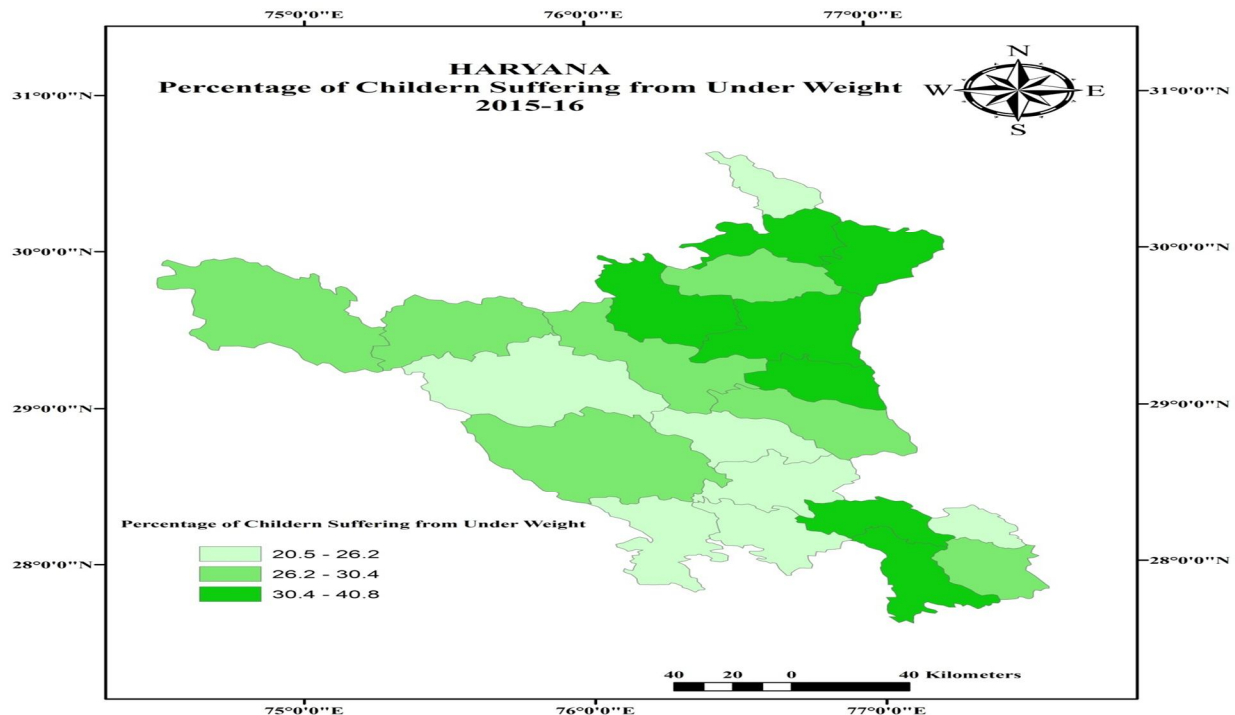
After collecting the data it is arranged, tabulated, calculated and analysed. Results occurred from this calculation is further represented by maps which are prepared by Arc-GIS 9.3. Correlations between all these 4 variables have calculated with the help of SPSS16 software

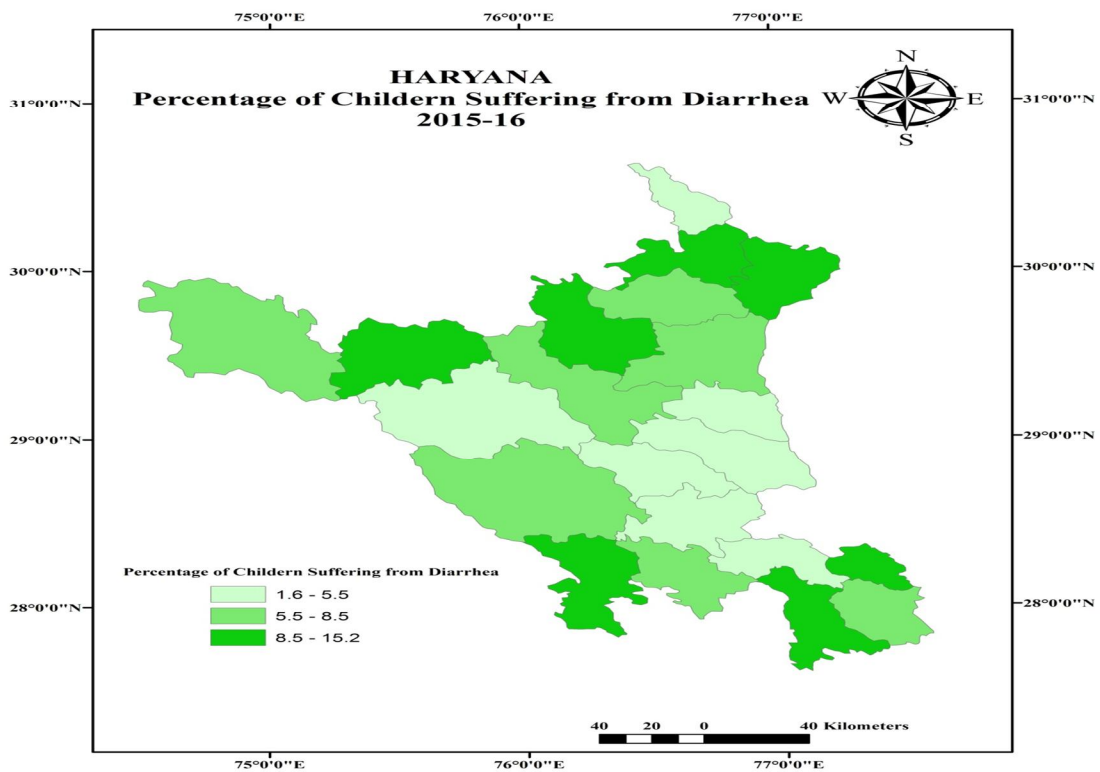
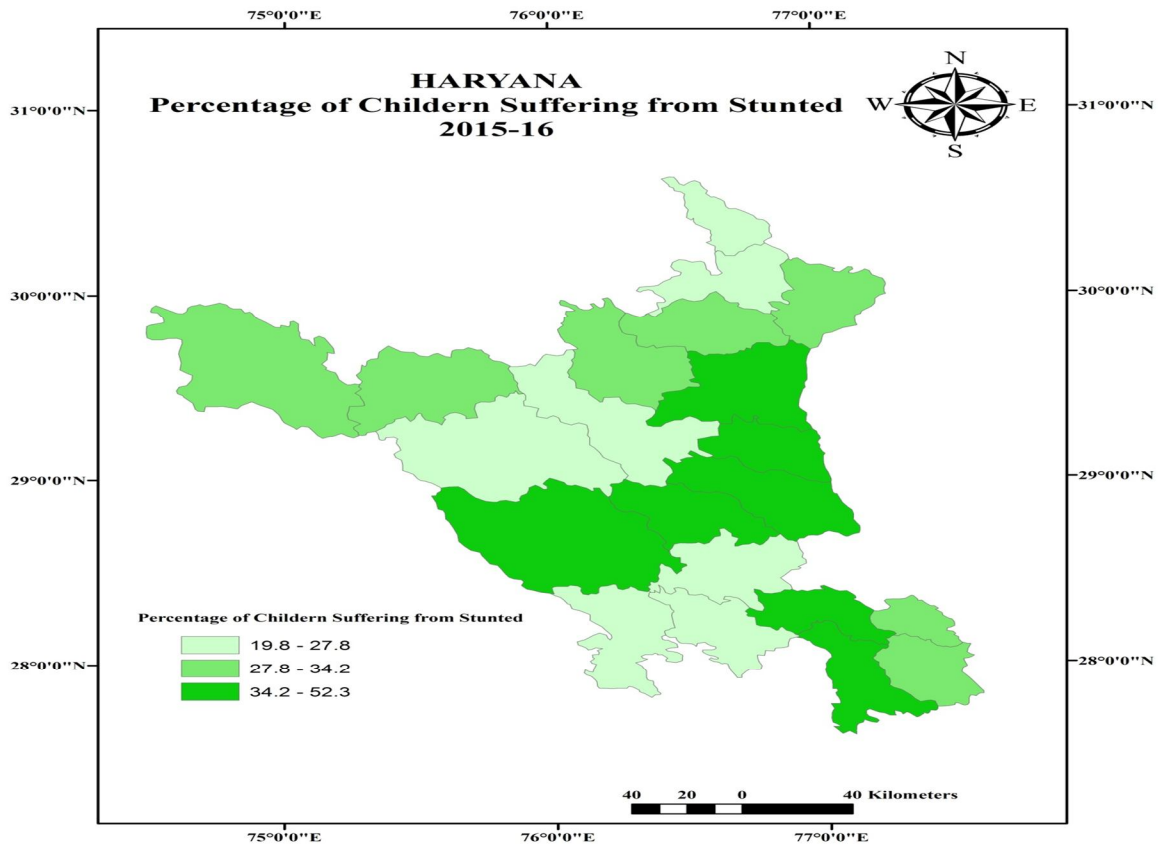
## III. RESULTS AND DISCUSSIONS

The results of the study have shown that the percentage of all the diseases like Diarrhea, stunting, underweight and Anemia is very high. On an average the 70.95% children are affected by the Anemia and the least children are affected by Diarrhea with the average percentage of 7.5%.

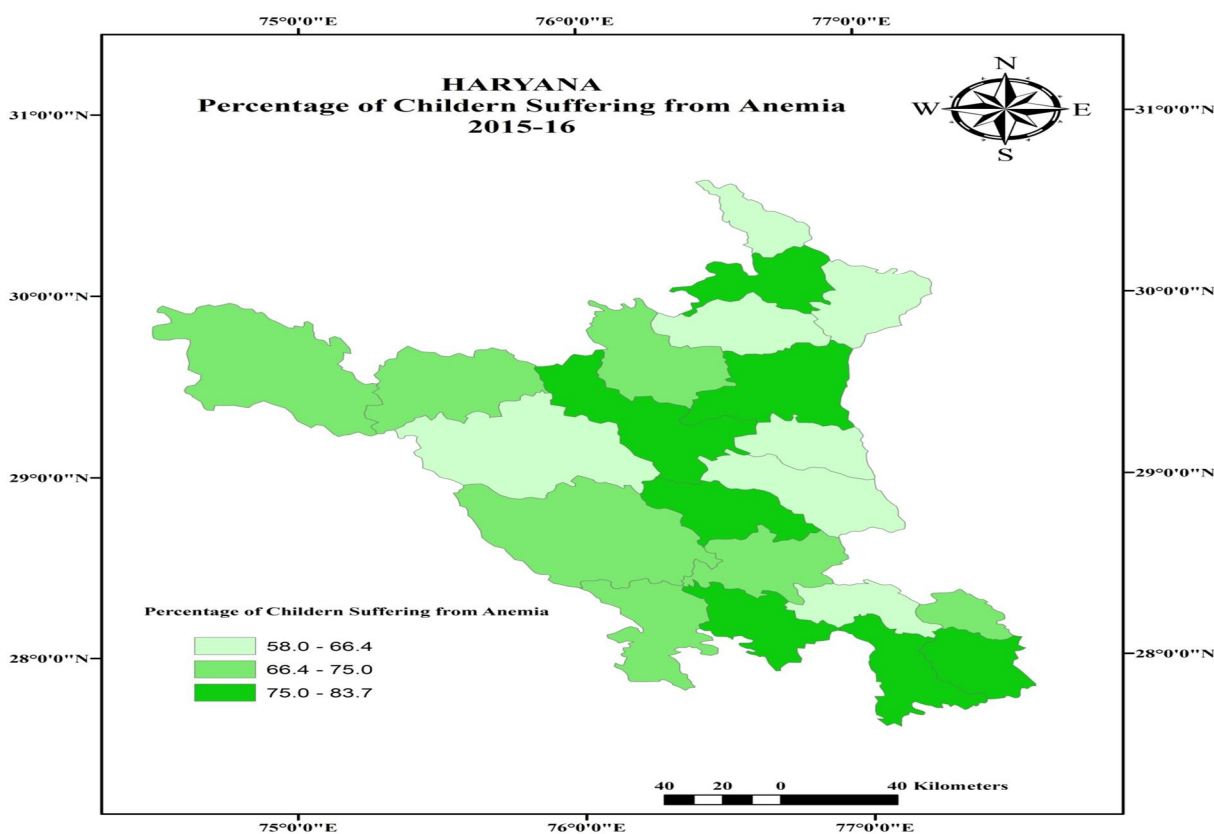
The percentage of children affected by Diarrhea in Haryana is highest in Yamunanagar district with the percentage of 15.2%. After this Mewat and Fatehabad comes with high percentage with 12.7% and 10.9% respectively. The percentage of Diarrhea affected children is very less in the district Sonipat, Panchkula and Jhajjar with the percentage of 1.6%, 2.9% and 3.7% respectively. And the rest districts are moderate. The major causes of high percentage in above districts are lack of health facilities, poverty, severe dehydration and malnutrition.

If we talk about stunted children in Haryana, then the condition is also poor. On an average the 32.35% children of Haryana are stunted. The reason of this stunting is malnutrition. The districts in which the maximum children are affected by stunting are Mewat(52.3%) Panipat (44.6%) and Gurgaon (41.2%). The lowest percentages of affected children are the district Ambala 19.8%, Panchkula 21.5%, and Jhajjar 22.3%. The rest districts are moderate in no. of stunted children.









Source: National Family Health Survey – 4, 2015 -16

In case of underweight children in Haryana, 29.19% children are underweight on an average. The major cause of underweight is malnutrition, bowel pain after eating, chronic vomiting and diarrhea etc. The district Panipat is recorded with maximum percentage of underweight children with 40.8%. After this, Kaithal 37.5% and Ambala 32.9% are at 2<sup>nd</sup> and 3<sup>rd</sup> number. Despite this the district Faridabad 20.5%, Jhajjar 21% and Rewari has recorded lowest percentage.

In case of Anemia the conditions are worst in Haryana. In Haryana 70.95% children are anemic. The anemia is a situation which is caused by lack of iron, vitamins and family history etc. the anemic children resulting in reducing functional capacity and quality of life. The Mewat district has most critical situation with 83.7% anemic children population, Rewari and Jind comes after Mewat with 77.8% and 76.6% anemic children. On the other hand the least no. of anemic children is in Yamunanagar (58%), Sonipat (58.6%) and Kurukshetra district with 63.3%. but this is also very high rate. Other all districts are under moderate percentage of anemic children.

CORRELATIONS MATRIX OF CHILD HEALTH				
	Diarrhea	Stunted	Under Weight	Anemia
Diarrhea	1	0.018	0.269	0.206
Stunted		1	.619**	0.082
Under Weight			1	-0.053
Anemia				1

Correlation is significant at the 0.01 level (1-tailed).

#### IV. CONCLUSION

The correlation matrix shows that the Diarrhea among Children of Haryana is positively associated with Under Weight and Anemia problems among Children. However no significant associated with Stunted. In case of Stunted among Children of Haryana are

positively and significantly associated with Under Weight among children. The Districts having stunted among Children have mostly affected by Under Weight problems among children. The results of the above study reveals that the health related issues among children are very critical in Haryana. The huge numbers of children are underweight, stunted and anemic and diarrhea affected. In the district Ambala, Mewat, Jind, Kaithal, Panipat, Gurgaon, Fatehbad and Yamunanagar have very pathetic conditions of children health. Whereas Faridabad, Jhajjar, Kurukshetra and Sonipat have conditions better than above districts, but these are not enough. There is a great need of concern regarding the issue of children health in Haryana. Government should start some programs related to eradication of Diarrhea and anemia from the state. The government can start community awareness program for far inhabited rural areas, so that the people get aware of scientific solution of the health issues which are faced by them. The iron vaccines and tablets should also be provided by government to poor people of the state. With these affective steps there will be a positive impact on the health of children of Haryana. The other states can also apply these steps to eradicate health problems among children.

Table Showing Child Health in Haryana

	District	Diarrhoea	Stunted	Under Weight	Anemia
1	Ambala	9	19.8	32.9	75.1
2	Bhiwani	7.9	35.1	26.9	74.8
3	Faridabad	8.9	29.7	20.5	75
4	Fatehbad	10.9	28.5	30	70.5
5	Gurgaon	5	41.2	30.6	66.2
6	Hisar	5.5	25.6	23.5	66.4
7	Jhajjar	3.7	22.3	21	70.9
8	Jind	7.9	26	29.3	76.6
9	Kaithal	9.7	33.6	37.5	68
10	Karnal	5.8	41	32.5	75.5
11	Kurukshetra	8.3	31.9	27.1	63.4
12	Mahendragarh	9.4	23.5	26.1	73.7
13	Mewat	12.7	52.3	40.2	83.7
14	Palwal	8.5	34	27.5	75.2
15	Panchkula	2.9	21.5	26.2	66.4
16	Panipat	4.3	44.6	40.8	65.5
17	Rewari	6.9	27.8	23	77.8
18	Rohtak	5.3	36.6	25.2	76.3
19	Sirsa	8.1	34.2	30.1	72.4
20	Sonipat	1.6	40.2	30.4	58.6
21	Yamunanagar	15.2	30	31.8	58

Source: National Family Health Survey – 4, 2015 -16

## REFERENCES

- [1] Alkire S, Santos ME. Acute Multidimensional Poverty: A New Index for Developing Countries. United Nations Development Programme Human Development Reports Research Paper 2010.
- [2] Aysel Vehapoglu et al, (2014). "Hematological Indices for Differential Diagnosis of Beta Thalassemia Trait and Iron Deficiency Anemia". Anemia, Vol 2014, Article ID 576738, pp: 1-7.
- [3] Bergeron G, Castleman T. Program responses to acute and chronic malnutrition: divergences and convergences. Adv Nutr. 2012;3:242-9.
- [4] Bhardwaj, Raj Kumar, (2013). "A bibliometric study of literature on celiac disease". Library Philosophy and Practice (e-journal). Paper 1058. [Last Accessed 2014 May 19].
- [5] Bread for the World Institute. 2015. Global Hunger Report: When Women Flourish. We can end Hunger. Washington, DC.
- [6] Choice Study Group, Multicenter, randomized double-blind clinical trial to evaluate the efficacy and safety of a reduced osmolarity oral rehydration salts solution in children with acute diarrhea, Pediatrics, 107 (2001), 613–618.
- [7] Dasgupta R, Sinha D, Yumnam V. Programmatic response to malnutrition in India: Room for more than one elephant? Indian Pediatr. 2014;51:863-8.

- [8] Dasgupta R, Yumnam V, Ahuja S, Roy S. The Conundrum of continuum of care: Experiences from the NRC model, Madhya Pradesh. Oral presentation at the South Asia Conference on Policies and Practices to Improve Nutrition Security, SAC-OP-07-05; 2014 July 30-31, New Delhi, India. Available from: <http://www.nutritioncoalition.in/thematic-oral-presentations>. Accessed June 16, 2014.
- [9] Department of Child and Adolescent Health and Development, Reduced osmolarity oral rehydration salts (ORS) formulation: report from a meeting of experts jointly organized by UNICEF and WHO, Tech. Report WHO/FCH/CAH/01.22, World Health Organisation, New York, 18 July 2001.
- [10] Department of Child and Adolescent Health and Development, World Health Organisation, Technical updates of the guidelines in integrated management of childhood illnesses. Evidence and recommendations for further adaptations, tech. report, 2005.
- [11] Express Health News Bureau. Civil Society appeals to policymakers to declare malnutrition as a medical emergency.
- [12] Groneberg-Kloft B, Scutaru C, Dinh QT, Welte T, Chung KF, Fischer A, et al. "Inter-disease comparison of research quantity and quality: Bronchial asthma and chronic obstructive pulmonary disease". *Journal of Asthma* 2009; 46:147-52. 13.
- [13] Gupta and Adarsh Bala (2013), "Alzheimer's disease Research in India: A Scientometric Analysis of Publications Output during 2002-11," *Research in Neurology: An International Journal*, (2013), Article ID 204542.
- [14] Gupta B.M., Ritu Gupta and Ahmed. M. "Mouth Cancer Research: A Quantitative Analysis of World Publications, 2003-12". *DESIDOC Journal of Library & Information Technology*, Vol. 34, (3), pp. 232-240.
- [15] Gupta BM, Bala A (2013), "Bone Marrow Research in India: A Scientometric Study, 2003-12". *Journal of Bone Marrow Research*, 1: 108.
- [16] Gupta R, Tiwari R, Ammed KM. "Dengue research in India: A Scientometric analysis of publications, 2003-12". *International Journal of Medicine and Public Health*, 2014; 4:1-8.
- [17] H. Baqui, R. E. Black, S. El Arifeen, M. Yunus, K. Zaman, N. Begum, et al., Zinc therapy for diarrhoea increased the use of oral rehydration therapy and reduced the use of antibiotics in Bangladeshi children, *J Health Popul Nutr*, 22 (2004), 440-442.
- [18] International Food Policy Research Institute. 2014. *Global Nutrition Report 2014: Actions and Accountability to Accelerate the World's Progress on Nutrition*. Washington, DC.
- [19] International Institute for Population Sciences (IIPS) and Macro International. 2007. *National Family Health Survey (NFHS-3)*, 2005-06; I:273.
- [20] J. Bryce, C. Baschi-Pinto, K. Shibuya, R. E. Black, and the WHO Child Health Epidemiology Reference Group, WHO estimates of the causes of death in children, *Lancet*, 365 (2005), 1147-1152.
- [21] Jeyshankar and Rameshbabu (2013). "Scientometric Analysis of Leukemia Research Output (1960-2011): An Indian Perspective". *Asia Pacific Journal of Library and Information Science*. Vol.3, (2).
- [22] Klaewsongkram J, Reantragoon R. "Asthma research performance in AsiaPacific: A bibliometric analysis by searching pubmed database". *Journal of Asthma*, 2009; 46:1013-20.
- [23] N. Alam, S. A. Sarker, M. A. Wahed, M. Khatun, and M. M. Rahaman, Enteric protein loss and intestinal permeability changes in children during acute shigellosis and after recovery: effect of zinc supplementation, *Gut*, 35 (1994), 1707-1711.
- [24] N. Bhandari, S. Mazumder, S. Taneja, B. Dube, R. C. Agarwal, D. Mahalanabis, et al., Effectiveness of zinc supplementation plus oral rehydration salts compared with oral rehydration salts alone as a treatment for acute diarrhea in a primary care setting: a cluster randomized trial, *Pediatrics*, 121 (2008), e1279-e1285.
- [25] Nensson, A. R., Goodnight, L. T and Dubois, R. W. (2003). "Anemia: not just an innocent bystander?". *Archives of Internal Medicine*, 163(12): 1400-1404.
- [26] Prakash V Kotecha, (2011). "Nutritional Anemia in Young Children with Focus on Asia and India". *Indian Journal Community Medicine*. Jan-Mar; 36(1): 8-16
- [27] Press Trust of India. Centre to collaborate with Ramdev in finding cure of malnutrition: Union Minister Juel Oram. Available from: <http://www.news18.com/news/uttarakhand/centre-to-collaborate-with-ramdev-in-finding-cure-of-malnutrition-union-minister-juel-oram-781345.html>. Accessed August 20, 2015.
- [28] R. Aggarwal, J. Sentz, and M. A. Miller, Role of zinc administration in prevention of childhood diarrhea and respiratory illness: a meta-analysis, *Pediatrics*, 119 (2007), 1120-1130.
- [29] R. Bahl, A. Baqui, M. K. Bhan, S. Bhatnagar, R. E. Black, A. Brooks, et al., Effect of zinc supplementation on clinical course of acute diarrhea. Report of a Meeting, New Delhi, 7-8 May 2001, *J Health Popul Nutr*, 19 (2001), 338-346.
- [30] R. Bahl, N. Bhandari, M. Saksena, T. Strand, G. T. Kumar, M. K. Bhan, et al., Efficacy of zinc-fortified oral solution in 6 to 35 month old children with acute diarrhea, *J Pediatr*, 141 (2002), 677-682.
- [31] R. E. Black, Therapeutic and preventive effects of zinc on serious childhood infectious diseases in developing countries, *Am J Clin Nutr*, 68 (1998), 476S-479S.
- [32] Rapid Survey on Children 2013-2014. India Factsheet. Provisional. Ministry of Women and Child Development. Government of India. Available from: [http://wcd.nic.in/issnip/National\\_Fact%20sheet\\_RSOC%20\\_02-07-2015.pdf](http://wcd.nic.in/issnip/National_Fact%20sheet_RSOC%20_02-07-2015.pdf). Accessed August 29, 2015
- [33] S. Bhatnagar, R. Bahl, P. K. Sharma, G. T. Kumar, S. K. Saxena, and M. K. Bhan, Zinc with oral rehydration therapy reduces stool output and duration of diarrhea in hospitalized children: a randomized controlled trial, *J Pediatr Gastroenterol Nutr*, 38 (2004), 34-40.
- [34] Steinmetz, H. T. (2012). "The role of intravenous iron in the treatment of anemia in cancer patients". *Therapeutic Advances in Hematology*, 3: 177-191. 5. <http://www.healthline.com/> [Last accessed 2014 June 05].
- [35] Subramanyam, K. 1993. "Bibliometric Study of Research Collaboration: A Review." *Journal of Information Science*, 6 (1): 33-38.
- [36] Virender Chhachhiya, "Spatial Analysis of Household Amenities in Rajasthan", *International Journal of Science and Research (IJSR)*, Volume 5 Issue 11, November 2016, 1063 – 1066. <https://www.ijsr.net/archive/v5i11/v5i11.php>
- [37] Suman Chauhan & Chhachhiya Virender (2016) "Spatial Pattern of Sex Composition in Haryana, 2011" *International Journal of Interdisciplinary Research in Science Society and Culture(IJRSSC)* Vol: 2, Issue:1, pp. 424 – 432 (June Issue), 2016 ISSN: (P) 2395-4345, (O) 2455-2909 © IJRSSC [www.ijrssc.in](http://www.ijrssc.in).
- [38] Virender chhachhiya. (2017); impact of household amenities on child health in rajasthan: an analysis. *Int. J. Of adv. Res.* 5 (6). 1587-1600 [issn 2320-5407]. [www.journalijar.com](http://www.journalijar.com)

- [39] Virender chhachhiya. (2016); mapping of availability of household amenities to measure social exclusion in haryana. Int. J. Of adv. Res. 4 (10). 1118-1124] (issn 2320-5407). [www.journalijar.com](http://www.journalijar.com)
- [40] Virender chhachhiya. (2016); crime in chandigarh: geographical analysis. Int. J. Of adv. Res. 4 (10). 1330-1343] (issn 2320-5407). [www.journalijar.com](http://www.journalijar.com)
- [41] Virender chhachhiya. (2016); child health in india: a study of rajasthan. Int. J. Of adv. Res. 4 (10). 1369-1380] (issn 2320-5407). [www.journalijar.com](http://www.journalijar.com)
- [42] Z. A. Bhutta, R. E. Black, K. H. Brown, J. M. Gardner, S. Gore, A. Hidayat, et al., Prevention of diarrhea and pneumonia by zinc supplementation in children in developing countries: pooled analysis of randomized controlled trials, J Pediatr, 135 (1999), 689–697.
- [43] Z. A. Bhutta, S. M. Bird, R. E. Black, K. H. Brown, J. M. Gardner, A. Hidayat, et al., Therapeutic effects of oral zinc in acute and persistent diarrhea in children in developing countries: pooled analysis of randomized controlled trials, Am J Clin Nutr, 72 (2000), 1516–1522.
- [44] Z. A. Bhutta, S. Q. Nizami, and Z. Isani, Zinc supplementation in malnourished children with persistent diarrhea in Pakistan, Pediatrics, 103 (1999), e42.
- [45] <http://www.medicinenet.com/script/main/art.asp?articlekey=2985>
- [46] <http://www.who.int/mediacentre/factsheets/fs330/en/>





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