Journal of Communication and Management, 2024;3(2):164-172

Journal of Communication and Management

ISSN: 2583-617X (Online)

Journal home page: https://jcoma.com

Research Article **DOI: 10.58966/JCM20243214**

Association of Socio-economic and Media Exposure on Inequality of Micronutrients Intake among Children in Odisha: A District Level Analysis from NFHS-5 (2019-21)

Moatula Ao[1*], Moti Pangkam[2], Rahul Sen[1], Grace Bahalen Mundu[2]

[1]*P.G. Department of Population Studies Fakir Mohan University, Nuapadhi, Balasore-756 089, Odisha, India*
[2]*P.G. Department of Journalism and Mass Communication Fakir Mohan University, Nuapadhi, Balasore-756 089, Odisha, India*

ARTICLE INFO

Article history:
Received: 16 April,, 2024
Revised: 05 May, 2024
Accepted: 27 May, 2024
Published: 20 June,, 2024

Keywords:
Iron, Inequality, Micronutrients, Media, Vitamin A.

ABSTRACT

Micronutrient deficiency is a major contributor to childhood morbidity and mortality in low and middle-income countries, where about 149 million children are affected by stunting and 45 million are wasted and almost half of the deaths are linked to undernutrition. Many children under age five years suffer from micronutrient deficiencies and more than one-third of them suffer from anemia. Therefore, sufficient intake of micronutrients is crucial for maintaining good health and preventing chronic diseases. Thus, the objective of the paper is to understand the contribution of socio-economic and the role of media in the inequality of micronutrient intake among children in Odisha. The study used the National Family Health Survey-5, 2019-21 (NFHS-5) from a sample of 2322 children of 6 to 23 months in Odisha. Statistical techniques such as bivariate and concentration index was used and STATA 17 was used for analyzing the data. Results found that overall, 74 and 29% of children aged 6 to 23 months were consuming food rich in vitamin A and iron. Among the districts, Ragayada and Debagrah districts show the highest and lowest intake of vitamin A, while in terms of iron-rich food, Ragayada and Cuttack show the highest and lowest intake of micronutrients. Socio-economic and demographic factors such as the mother's education, age of the children, social category, religion and wealth index show inequality of micronutrient intake. Media exposure also contributes in inequality of micronutrient intake among children. The study concludes that there is an urgent need to focus on the disproportionate concentration by socio-economic inequality in micronutrient intake to reduce the gap in health outcomes. On the other hand, media can act as a bridge to minimize the inequality of micronutrient-rich food intake for behavioral change among the community and adopt healthy food choices.

INTRODUCTION

'Hidden Hunger' or micronutrient deficiency is a major public health challenge, particularly in developing countries. Though the micronutrients are required in small amounts, however deficiency in any of the micronutrients such as vitamins and minerals, causes severe and life-threatening conditions. Globally, at least 1 in 3 children under five is not growing well due to malnutrition and at least 1 in 2 children under five suffers from deficiencies in vitamins and other essential nutrients (UNICEF, 2019). Micronutrient deficiencies pose significant risks to children's health, emphasizing the urgent need for research and interventions to address inadequate micronutrient intake. It is found that deficiencies in iron and vitamin A are the most common around the world, particularly in children and pregnant women from low- and middle-income countries (WHO, 2009).

Rich food of Vitamins and iron, collectively known as micronutrients, plays a crucial role in maintaining optimal health and preventing chronic diseases (World Health

***Corresponding Author:** Moatula Ao

Address: Department of Population Studies Fakir Mohan University, Balasore, Odisha, India

Email ✉**:** jamirmoatula2@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Organization, 2006). They support essential functions such as cognitive growth, development, and immune system functioning (Rammohan *et al*., 2017). However, children in resource-limited settings often face challenges in accessing diverse and nutrient-rich diets, leading to substantial gaps in their micronutrient intake (Hien *et al*., 2013). Iron deficiency is one of the primary causes of anaemia, which has serious health consequences for both women and children. Severe vitamin A deficiency (VAD) can cause eye damage and is the leading cause of childhood blindness. Micronutrient deficiencies is associated with physical and physiological impairments, including metabolic disorders and reduced immune, endocrine, and cognitive function (Bailey *et al*., 2015; Bird *et al*., 2017), but with nutrition education aids the fight to reduce or eradicate hidden hunger can be achieved (Ibeanu *et al*., 2020). A study in Odisha found that access to nutritional health schemes is an important underlying determinant of undernutrition and it was found significant for most marginalized communities (Saigal, N., & Shrivastava, 2022). also another study in Odisha among the tribal women found that the nutrient intake among the tribal women was much lower than the recommended allowances (Garnaik *et al*., 2019).

Health communication through various media plays a very important role in the dissemination of information on health-related messages and, education, etc. It caters to heterogeneous media consumers using different media vehicles, both traditional and new media platforms, which give people information to improve their health, talks and debates on health issues etc. Media can also play a crucial role in pandemic and epidemic situations, addressing health emergency messages with due responsibility and sensitivity. 27.3% in the age group of 40 to 49 years was reported highest in terms of anxiety developed due to COVID- related news through various mass media and 28% in the age group of 50 to 59 felt panic due to COVID- related news in media (Dhanashree, *et al*. 2021). Therefore, the media should deal with sensitivity while disseminating information to the public. This will also give directions to the government and public in formulating health policies and programmes etc. It is also very important for a person to have the right kind of media exposure to decide on their food habits and intake, as it will help them to balance a healthy lifestyle. Adolescent females who are more exposed to social media, food and beverage content select their food preferences, keeping their body image, which leads to intake of protein and higher-energy beverages (Adiba *et al*. 2020). In another study among U.S. adults found that conflicting information about nutrition topics in the media platforms and those having greater exposure to contradictory information have higher levels of nutrition confusion (Nagler RH, 2014). A study on Hispanic and American Indian children in rural communities reveals that exposure to different forms of electronic media have a significant association with different dietary intake (Vlahovich & Kevin 2014). Thus, excessive use of media predicted lower diet quality score and lower intake of vitamins like zinc, calcium, vitamin c and D. To improve the diet quality and nutritional health, urgent intervention to limit the use of media is needed for adolescents in Saudi Arabia (Mumena *et al*,. 2023). There are also research studies on the media exposure and contextual determinants related to children micronutrients consumption pattern and role of parent's media exposure. Risk of childhood micronutrient deficiency is also a result of lack in maternal education and on the contrary children of educated women have significantly lower rates of micronutrients deficiency. Moreover, parents who lack media exposure also accounts to higher rates of children with micronutrient deficiency (Leykun *et al*., 2024).

Therefore, this research paper aims to contribute to the existing body of knowledge by investigating socio-economic inequalities in micronutrient intake among children aged 6-23 months in Odisha, focusing specifically on vitamin A and iron. By examining the prevalence and association of micronutrient deficiencies and analysing the socio-economic factors that contribute to these disparities. Thus, this study seeks to inform evidence-based interventions and policies that can improve the nutritional status and overall health outcomes of children in Odisha and beyond.

Therefore, the objective of the paper is to analyse the prevalence of micronutrients intake among children in Odisha at the district level and also to analyse the contribution of media and socio-economic inequality in the intake of micronutrients in Odisha.

Odisha- An overview

Odisha state is located between 170 to 48 and 220 to 34 North latitude and 810 to 24 and 870 to 29 East longitude. The State is bounded by the bay in the east, West Bengal in the north-east, Bihar in the north, Madhya Pradesh in the west and Andhra Pradesh in the south. The state has an area of 155,707 km^2 with a population of 42 million (Census 2011) constituting 30 districts. The territory may be divided into four distinct geographical regions: the Eastern Plateau, the Central River Basin, the Eastern Hill Region and the Coastal Belt. Odisha has a coastline of 485 kilometers (301 mi) along the Bay of Bengal in Indian Ocean.

Health status of Odisha

In order to understand the well-being of a country, mortality indicator are often used such as neonatal, postneonatal, and infant mortality rates. As such in Odisha, the infant mortality rate is estimated at 36 per 1,000 live births and the under-five mortality rate (U5MR) is estimated to be 41 per 1,000 live births (NFHS-5). In Odisha, the status of childhood undernutrition shows that 31% under age five years are stunted, or too short for their age, which indicates that they have been undernourished for some time. 18% are wasted, or too thin for their height, which may result from inadequate recent food intake

or a recent illness causing weight loss, and 6% severely wasted with 30% underweight, which takes into account both chronic and acute undernutrition (NFHS-5). Other health status in Odisha such as micronutrient deficiency and anaemia also reflect the health situation, as from the NFHS-5 report it was found that 64% of children age 6-59 months are anaemic which maybe contributed by iron deficiency. Nutritional health problems are a major public health issue and these nutritional deficiencies are a major source of other diseases among children and a major contributor to childhood morbidity and mortality.

Methods

For the study, secondary data of National Family Health Survey-5 (2019-21) has been used. The NFHS-5 provides vital statistics and information on housing amenities, socio-demographic and economic characteristics of respondents, information on maternal health, infant and child health, nutrition, morbidity, as well as domestic violence and adult health problems. It also provides information on HIV/AIDS etc., at the district and state level with wide coverage throughout India. NFHS surveys have been conducted under the stewardship of the Ministry of Health and Family Welfare (MoHFW), Government of India. For the study purpose the study population includes children aged 6–23 months in Odisha with a sample size of 2322 children.

Variables

The dependent variable used in the study is micronutrient intake among 6–23-months children. The micronutrient includes vitamin -A and iron rich food.

Vitamin A includes meat and organ meat, fish, poultry, eggs, pumpkin, carrots, sweet potato, dark green leafy vegetables, ripe mango, papaya, cantaloupe and jackfruit. Iron Includes meat and organ meat, poultry, fish or eggs.

The predictor or independent variable used in the study is Child age, child sex, mother education, religion, social category, wealth index, birth order, place of residence, breast feeding status and media exposure.

The Media exposure variable has been constructed based on the information such as Heard family planning message on radio, TV, newspaper/magazine, wall painting or hoarding and heard family planning message on Internet in the last few months (Yes, No). The frequency of exposure to media was constructed using three variables: a) watching TV, b) listening to the radio, and c) reading newspapers. The media exposure was coded as "At least once a week.', Less than once a week.' not at all.'

Statistical Analysis

Cross-tabulations and percentages were used to summarize and present the relationship between variables and Chi-square analysis was performed to examine the associations between the dependent variables and independent variables.

To understand the inequality of micronutrients intake among the children by socio-economic characteristics and media, concentration index was calculated.

For analysing the data Stata 17 statistical software was used and QGIS software was used for thematic mapping to visually represent the spatial distribution of the prevalence of vitamin A and iron intake and mass media exposure in Odisha.

Concentration index

The concentration index is defined as twice the area between the concentration curve and the line of equality (the 45-degree line). So, in the case in which there is no socioeconomic-related inequality, the concentration index is zero. The convention is that the index takes a negative value when the curve lies above the line of equality, indicating disproportionate concentration of the health variable among the poor, and a positive value when it lies below the line of equality. If the health variable is a "bad" such as ill health, a negative value of the concentration index means ill health is higher among the poor. The concentration value lies between -1 to +1 (Kakwani *et al.*, 1977).

Result

Background characteristics of the children 6-23 months in Odisha

Table 1 shows the demographic and socio-economic status of children below 24 months in Odisha. It was found that one-third of the children were under the age of 12 months while more than two-third were in the age group of 12-24 months. By sex of the child, it was found that males constituted 52.76%, and females constituted 47.24% with majority of the children belonged to 2-3rd birth order. Since the study is based on children upto 2 years it was found that almost all the children were still breastfed. By education of the mothers, it was found that 20.76% had no formal schooling, 12.49% of mothers had received incomplete primary education, 55.86% of mothers had received incomplete secondary education, and 2.33% of mothers had received complete secondary education and 8.57% mothers have received higher education. By religion it was found that majority of the children belonged to households of Hindu religion 93.71% while 4.61% belonged to Christian religion and only 1.46% belonged to muslim households. By place of residence 89.66% of the children belonged to rural areas, and 10.34% in urban areas. It was found that one-third of the children belonged to scheduled tribe while a little less than one-third belonged to scheduled caste while OBC constitute one-third and only 13% belonged to other social category. From the wealth index, we can see that most parents were in the poorest category (38.98%), followed by the poorer (24.76%), middle (18.30%), richer (11.76%), and richest (6.20%) categories. Media exposure reflects that more than half of the mothers had high media exposure (55%) while 24% of them had no exposure to mass media.

Table 1: Percentage distribution of demographic and Socio-economic characteristics among children in Odisha.

Characteristics	*Percentage*
Child age in month	
6-8	16.84
9-11	16.24
12-17	32.52
18-23	34.41
Sex	
Male	52.76
Female	47.24
Birth order	
1st	43.45
2-3	48.71
4-5	6.59
6+	1.25
Breastfeeding status	
Not Breastfeed	5.42
Currently Breastfeeding	94.58
Mother Education	
No schooling	20.76
Incomplete primary	12.49
Incomplete secondary	55.86
Complete secondary	2.33
Higher	8.57
Place of Residence	
Urban	10.34
Rural	89.66
Religion	
Hindu	94.35
Muslim	1.97
Christian	3.27
Others	0.41
Social Category	
Schedule caste	20.45
Schedule Tribe	32.91
OBC	33.17
Others	13.46
Wealth Index	
Poorest	38.98
Poorer	24.76
Middle	18.3
Richer	11.76
Richest	6.2
Media Exposure	
No Exposure	24.76
Low Exposure	19.81
High Exposure	55.43

Micronutrient's intake and media exposure among children by district

In the Figures 1 and 2, it is evident that 74% and 29% of children aged 6-23 months were consuming vitamin A and iron food rich. Among the districts, Ragayada and Debagrah districts shows the highest and lowest intake of vitamin A rich food while in terms of iron rich food, Ragayada and Cuttack districts shows the highest and lowest intake of micronutrients.

Figure 3 shows that the differentials of media exposure in Odisha by district. The study found that among the districts, khordah shows the highest percentage in the category of high media exposure (79.84%) while Malkangiri has the lowest percentage in the category of high media exposure in Odisha (25.83%) such as watch TV, listening radio and reading newspaper respectively. In Odisha one-fourth of the mother's had no exposure to watching TV, nor listening to radio neither reading newspaper.

Association of micronutrients intake by background characteristics

Table 2 shows that the percentage of children consuming Vitamin A rich food increases with age from 31.05% (6-8 months) to 87.38% (18-23 months). The chi-square test indicates a statistically significant association between

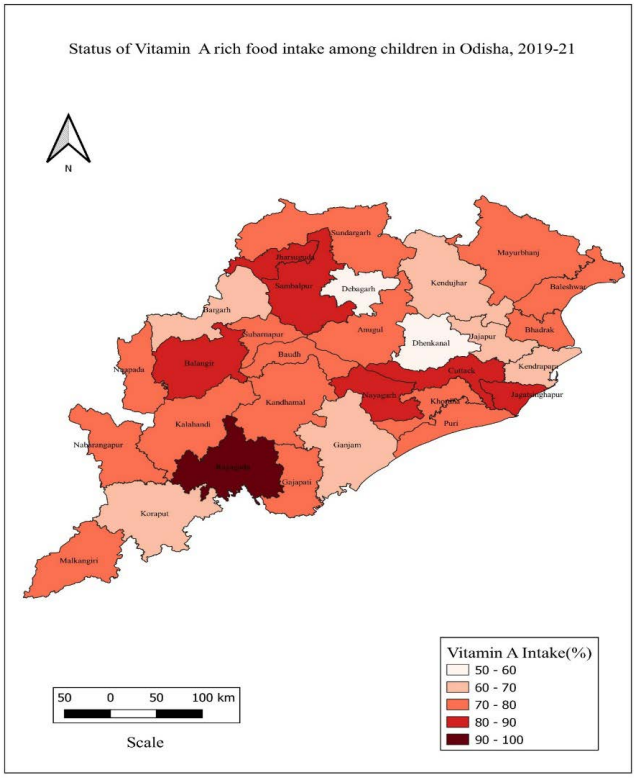

Figure 1: Status of vitamin A rich food intake among children in Odisha by district, NFHS-5 (2019-21)

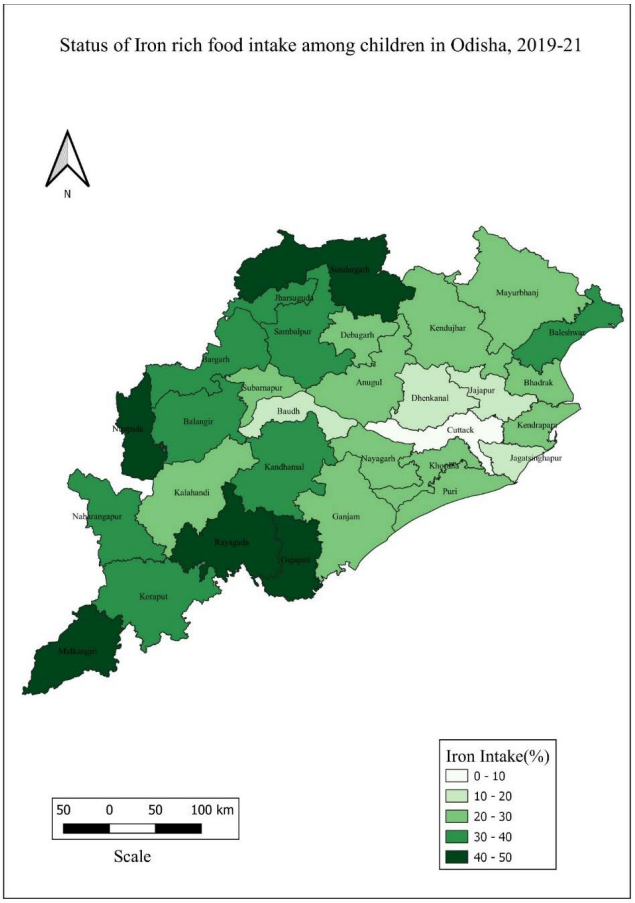

Figure 2: Status of iron rich food intake among children in Odisha by district, NFHS-5 (2019-21)

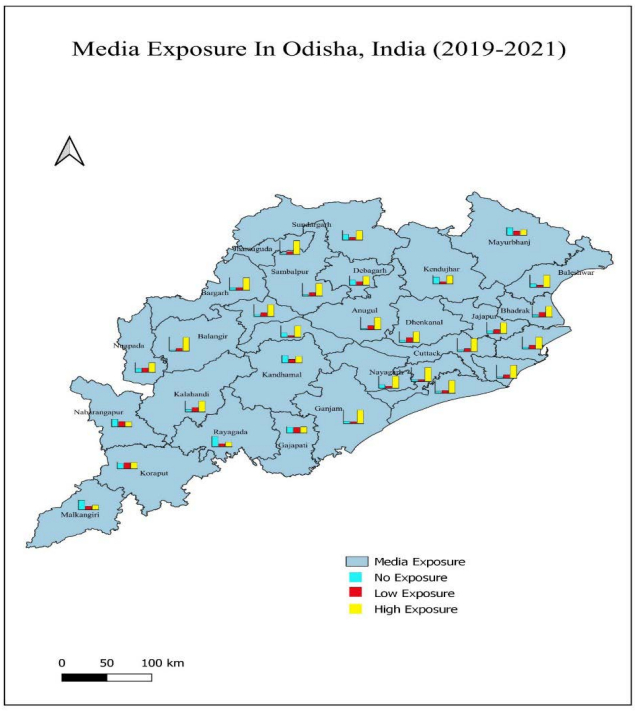

Figure 3: Media exposure among mothers' in Odisha by district, NFHS-5 (2019-21)

age and Vitamin A rich food consumption (p= 0.00). Similarly, the percentage of children consuming Iron rich food also increases with age, from 5.28% (6-8 months) to 40.23% (18-23 months). The chi-square test shows a significant association between age and Iron rich food consumption (p=0.00). There is no significant difference in the percentage of children consuming Vitamin A rich food between males (74.17%) and females (73.35%). However, Iron rich food intake shows statistically significant association with sex, with male child shows higher percentage of iron rich food intake compared to female child (p=0.015). Children who are currently not breastfed shows significantly higher percentage of consuming Vitamin A rich food compared to those who are currently breastfeeding (p=0.054). Similarly, iron rich food intake is significantly higher among children who are currently not breastfed (38.41%) compared to those who are breastfeeding (27.31%). By mother's education the consumption of Vitamin A rich food was not found statistically significant while among iron rich food it was found statistically significant (p=0.00). Children whose mothers had no schooling (35.83%) or incomplete primary education (24.52%) had lower consumption of iron rich food compared to those whose mothers had higher education levels. The percentage of children consuming vitamin A rich food is slightly higher in urban areas (75.42%) compared to rural areas (73.53%), but the difference is not found statistically significant. The study found significant association with consumption of iron rich food intake with religion (p = 0.002). Children belonging to Christian households (43.3%) have the highest consumption, followed by Hindu children (27.47%), Muslim children (24.27%), and others (23.49%). There is no significant association between social category and the consumption of Vitamin A rich food. However, for Iron rich food, there is a significant association with social category (p= 0.00). Schedule Tribe children (35.94%) have the highest consumption, followed by Schedule Caste children (27.9%), OBC children (24.57%), and others (19.88%). By wealth index it was found statistically significant with iron rich food intake (p=0.00). Children from the poorest wealth index (34.21%) have the lowest consumption, while children from the richest wealth index (16.56%) have the highest consumption of iron rich food whilst the study did not find any significant association between wealth index and the consumption of Vitamin A rich food.

Inequality in micronutrient intake among children (Concentration index)

Table 3 shows the concentration index for the micronutrient intake among children in Odisha. Inequality in vitamin A rich food intake is highest by age followed by birth order while for iron rich food the inequality is found highest by age and wealth index. Age is found highest contributor of inequality in micronutrients intake and this is indicated by a positive concentration value of 0.124 and 0.230 for

Table 2: Micronutrient intake (Vitamin A and Iron) by background characteristics in Odisha

Characteristics	*Vitamin A Rich food*	*chi2*	*p value*	*Iron Rich Food*	*Chi2*	*p value*
Age in month						
6-8	31.05	486.23	0.00	5.28	180.73	0.000
9-11	69.48			16.7		
12-17	83.38			32.14		
18-23	87.38			40.23		
Sex						
Male	74.17	0.71	0.399	26.36	5.96	0.015
Female	73.35			29.71		
Birth order						
1st	72.6	1.93	0.586	27.47	1.42	0.700
2-3	75.39			28.24		
4-5	69.9			29.31		
6+	72.41			25.01		
Breastfeeding status						
Not Breastfeed	80.18	3.71	0.054	38.41	4.13	0.042
Currently Breastfeeding	73.43			27.31		
Mother Education						
No Schooling	74.82	5.29	0.258	35.83	35.26	0.000
Incomplete Primary	70.51			24.52		
Incomplete Secondary	73.61			27.87		
Complete secondary	87.39			22.58		
Higher	73.87			19.03		
Place of Residence						
Urban	75.42	0.041	0.84	21.31	2.37	0.123
Rural	73.53			28.98		
Religion						
Hindu	73.95	1.29	0.73	27.47	15.00	0.002
Muslim	68.5			24.27		
Christian	72.13			43.3		
Others	77.2			23.49		
Caste						
Schedule Caste	73.26	0.77	0.855	27.9	44.10	0.000
Schedule Tribe	73.9			35.94		
OBC	73.46			24.57		
Others	74.92			19.88		
Wealth Index						
Poorest	73.77	2.78	0.594	34.21	38.75	0.000
Poorer	71.78			25.83		
Middle	74.24			26.1		
Richer	73.11			24.15		
Richest	79.94			16.56		
Media Exposure						
No Exposure	73.26	0.14	0.928	35.36	22.49	0.000
Low Exposure	74.47			27.38		
High Exposure	73.78			25.24		
Total	74.36			29.29		

vitamin A and iron intake, indicating a disproportionate concentration among older children. Another reason could be because majority of the children were still breastfed which reduces the consumption of micronutrient rich food. Sex of the child shows a negative value of -0.005 for vitamin A intake indicating a disproportionate concentration among male child while a positive value of 0.039 indicates a disproportionate concentration of iron rich food intake among female child. In terms of birth order a positive value of 0.008 and 0.018 for vitamin A and iron rich food indicating a disproportionate concentration among high birth order. Whilst breastfeeding status shows a negative value indicating a disproportionate concentration of micronutrient intake among children who are currently not breastfed. It is quite surprising to find out that mother's education shows a negative concentration index for micronutrient intake which indicates a disproportionate concentration among children belonging to mothers' of less education. By place of residence a disproportionate concentration of vitamin A rich food intake among urban children whilst a positive value of concentration index for iron rich food intake indicates a disproportionate concentration among children belonging to rural area. By religion it shows a positive concentration value for vitamin A rich food and iron intake indicating a disproportionate concentration among children belonging to Christian and other religion. By caste it shows a negative concentration value of -0.002 and -0.080 for vitamin A and iron intake, indicating a disproportionate share of micronutrients intake among SC and ST children.

By wealth index it shows a negative value of -0.001 and -0.108 for vitamin A and iron rich food intake, it indicates a disproportionate concentration of vitamin A and iron amongst the poor. Media exposure also contribute in inequality of vitamin A and iron rich food. A positive value of concentration of 0.0024 for vitamin A rich food intake indicates disproportionate concentration amongst the high media exposure which indicates that media is also playing a role in changing food behaviour among the population. Whilst a negative concentration value of -0.077 for iron rich food intake indicates disproportionate concentration amongst the low media exposure.

Table 3: Concentration indices for micronutrient intake among children by various background characteristics in Odisha

Characteristics	*vitamin A*	*Iron*
Age(month)	0.124	0.230
Sex	-0.005	0.039
Birth order	0.008	0.018
Breastfeeding status	-0.005	-0.015
Mother Education	-0.004	-0.087
Place of Residence	-0.001	0.015
Religion	0.002	0.024
Caste	-0.002	-0.080
Wealth Index	-0.001	-0.108
Media Exposure	0.0024	-0.077

Discussion

The study is an attempt to understand media exposure and socio-economic inequalities in micronutrient intake, specifically Vitamin A and Iron, among children aged 6-23 months in Odisha at the district level. Overall, the intake of vitamin A rich food is quite high while the intake of iron rich food intake was low (74% and 29% respectively) indicating that most likely the children may suffer from anaemia as the intake of iron rich food is quite low, other studies in Bangladesh complements our study as one-third of the pre-school children were anaemic (Ahmed *et al*., 2016). The findings of this study provide valuable insights into the prevalence and distribution of micronutrient deficiencies and highlight the importance of addressing these disparities to improve the overall health and well-being of children in the region. One of the major contributing factors for high prevalence of micronutrient deficiencies are low intake of dense food, purchasing power resulting from ever increasing food prices (Arlappa *et al*,2011).

So, understanding the two key micronutrients—vitamin A and iron—among children under age 2 years in their daily diet is essential to identify any deficiencies in micronutrient rich food. (NFHS-5).

Assessing the inequality in micronutrient intake is important for any policy makers and planners and this study is an attempt to understand the inequality by socio-economic and media exposure among children in Odisha. Our study found socio-economic factors contribute majorly in terms of inequalities of micronutrients. Other studies found that wealth index contributes in inequality in intake of micronutrients favouring richer children (Srivastava & Kumar 2021; Ao & Lhungdim, 2014, p.72), whereas our study found quite a contrasting result indicating concentration of micronutrients intake among the poorer children, similarly, mothers' education found a disproportionate concentration of micronutrients intake among less educated mothers. Therefore, in terms of food consumption, regional factors may play an important role as food choices vary by region and culture, attitudes, perceptions, beliefs, and behavior towards food choice (Samaddar *et al*., 2020). As our study found that there is a disproportionate concentration of micronutrients intake among children belonging to poorer, lower educated mothers, Christian/other religion and belonging to SC and ST.

The study found that media exposure contributes in inequality of micronutrients intake among the children in consuming vitamin A rich food. Other such studies found that mass media is an effective means of communicating health messages in changing the behavioural attitude towards healthy food practices especially through underserved rural area (Viswanath 2007; Malhotra 2013).

Other studies found use of mobile phone technologies for disease prevention and health promotion, social media messaging and mobile phone text messaging encourages adults, pregnant women and new mothers to modify their health-related attitudes, practices, and behaviours (Evans, et. al., 2012; Vander Wyst KB *et al*., 2019). Thus, social media can play a significant role in health promotion as it is a platform where a user can easily access to various health related promotion and campaigns, health professionals and individuals can share credible information related to health issues and various health awareness messages.

The study found district wise differentials in terms of micronutrients intake as it was found that overall, 74% and 29% of children aged 6-23 months were consuming food rich in vitamin A and iron. Among the districts, Ragayada and Debagrah districts show the highest and lowest intake of vitamin A while in terms of iron rich food Ragayada and Cuttack shows the highest and lowest intake of micronutrients. Micronutrient deficiencies is a major public health issue and such deficiencies such as vitamin and minerals, particularly of folate, iron, vitamin A, and zinc, affect 50% of all preschool aged children (WHO, 2023).

Conclusion

Micronutrients are crucial for maintaining good health, development, growth and preventing chronic disease. If the micronutrient food is not taken in sufficient amount, then it can lead to health problem; such as Iron deficiency which is one of the primary causes of anaemia. Vitamin A is an essential micronutrient for the immune system and plays an important role in maintaining the epithelial tissue in the body. Severe vitamin A deficiency (VAD) can cause eye damage and is the leading cause of childhood blindness. VAD also increases the severity of infections such as measles and diarrhoeal disease in children and slows recovery from illness. VAD is common in dry environments where fresh fruits and vegetables are not readily available (NFHS-5, Reports).

Our study revealed that there is social-economic inequality in consumption of micronutrient intake, so necessary step is for targeted interventions and policy measures to address these disparities and ensure equitable access to essential micronutrients. To effectively combat micronutrient deficiencies, comprehensive strategies are required. These should include improving access to diverse and nutrient-rich foods through promoting nutrition education and Improve the ICDS scheme so as to reach all the household mainly those belonged to rural areas where accessibility is at stake. Media can play as a game changer in changing the behavioural attitude toward health diet practice in reducing the inequality of micronutrients intake among children. Social media can also change the behaviour among caregivers and communities, strengthening healthcare systems to ensure early detection and treatment of deficiencies. Therefore, there is a need to strengthen health communication for nutrition education and adapting consumption of a healthy diet containing diverse foods to combat any micronutrient deficiencies in Odisha.

References

1. Ahmed, F., Prendiville, N., & Narayan, A. (2016). Micronutrient deficiencies among children and women in Bangladesh: progress and challenges. *Journal of nutritional science*, 5, e46. https://doi.org/10.1017/jns.2016.39
2. Adiba, C., Pradigdo, S. F., & Kartasurya, M. I. (2020). Association between social media exposure to food and beverages with nutrient intake of female adolescents. *Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal),* 15(4).
3. Arlappa,N *et al*(2011).Micronutrinet deficiency among rural children of west Bengal ,India.*Annals of Human Biology,* Vol.38(3),281-289.
4. Ao, M & Lungdhim, H (2018). Differentials and inequality in the intake of micronutrients among children. In De, U.K & Ghosh, B.N (Eds), Deprivation, Development, and Empowerment of Women in India (North-East Perspectives) (Chapter 3, pp. 55-75), Bookwell Publications, Delhi
5. Bailey R, West Jr. K, Black R (2015). The epidemiology of global micronutrient deficiencies. Ann Nutr Metab. 66(S2):22-33. doi: https://doi.org/10.1159/000371618
6. Bird JK, Murphy RA, Ciappio ED, McBurney MI (2017). Risk of deficiency in multiple concurrent micronutrients in children and adults in the United States. Nutrients. 9(7):E655. Doi: https://doi.org/10.3390/nu9070655
7. Dhanashree, Garg H, Chauhan A, Bhatia M, Sethi G, Chauhan G. Role of mass media and its impact on general public during coronavirus disease 2019 pandemic in North India: An online assessment. Indian J Med Sci. 2021 May 29;73(1):21–5. doi: 10.25259/IJMS_312_2020. PMCID: PMC8219014.
8. Evans, W. D., Wallace, J. L., & Snider, J. (2012). Pilot evaluation of the text4baby mobile health program. *BMC public health*, 12, 1-10. https://doi.org/10.1186/1471-2458-12-1031
9. Garnaik, D., Devadarshini, C., & Jena, D. (2019). Nutritional status of tribal women of Kandhamal district, Odisha. *The Pharma Innovation Journal*, 8(11). 105-107
10. Hien, N. N., Kam, S., & Nutbeam, D. (2013). Understanding the association between socio-economic status and physical health: A multi-dimensional approach using the Vietnam National Health Survey. *BMC Public Health*, 13(1), 1-10.
11. IIPS and Macro International. National Family Health Survey (NFHS-5), 2019–21. International Institute for Population Sciences, Mumbai, 2021.
12. Ibeanu, V. N., Edeh, C. G., & Ani, P. N. (2020). Evidence-based strategy for prevention of hidden hunger among adolescents in a suburb of Nigeria. BMC public health, 20, 1-10.
13. Kakwani, N.C., A. Wagstaff, and E. Van Doorslaer (1977). Socio-economic inequalities in health: Measurement, computation and statistical inference. *Journal of Econometrics*. (1): p. 87-104
14. Leykun Getaneh Gebeye, Eskezeia Yihunne Dessie, Jemal Ayalew Yimam. Predictors of micronutrient deficiency among children aged 6-23 months in Ethiopia: a machine learning approach. (2024).
15. Mumena WA, Alnezari AI, Safar HI, Alharbi NS, Alahmadi RB, Qadhi RI, Faqeeh SF, Kutbi HA. Media use, dietary intake, and diet quality of adolescents in Saudi Arabia. Pediatr Res. 2023 Aug;94(2):789-795. doi: 10.1038/s41390-023-02505-5. Epub 2023 Feb 7. PMID: 36750738; PMCID: PMC9903280
16. Nagler RH. Adverse outcomes associated with media exposure to contradictory nutrition messages. J Health Commun. 2014;19(1):24-40. doi: 10.1080/10810730.2013.798384. Epub 2013 Oct 11. PMID: 24117281; PMCID: PMC4353569.
17. Malhotra, N. Inadequate feeding of infant and young children in India: Lack of nutritional information or food affordability?. Public

Health Nutr. 16, 1723–1731 (2013).
18. Ministry of Health and Family Welfare, Government of India. (2020). National Family Health Survey (NFHS-5) State Fact Sheet, Odisha. Retrieved from http://rchiips.org/NFHS/NFHS-5_FCTS/OD.pdf
19. Rammohan, A., Pritchard, B., Dibley, M. J., & Forsyth, S. J. (2017). Maternal education inequalities in nutritional outcomes among malnourished children: A birth cohort study. Archives of Disease in Childhood, 102(12), 1110-1117.
20. Saigal, N., & Shrivastava, S. (2022). Access to nutrition in Odisha. *South Asia Research*, 42(1), 109-120.
21. Samaddar, A., Cuevas, R. P., Custodio, M. C., Ynion, J., Ray, A., Mohanty, S. K., & Demont, M. (2020). Capturing diversity and cultural drivers of food choice in eastern India. International *Journal of Gastronomy and Food Science*. 22, 100249.
22. Srivastava, S., & Kumar, S. (2021). Does socio-economic inequality exist in micro-nutrients supplementation among children aged 6–59 months in India? Evidence from National Family Health Survey 2005–06 and 2015–16. *BMC Public Health*, 21, 1-12.
23. UNICEF. (2019). The State of the World's Children 2019: Children, Food and Nutrition. 3 United Nations Plaza, New York, NY 10017, USA
24. Vander Wyst, K. B., Vercelli, M. E., O'Brien, K. O., Cooper, E. M., Pressman, E. K., & Whisner, C. M. (2019). A social media intervention to improve nutrition knowledge and behaviors of low income, pregnant adolescents and adult women. *PloS one*, 14(10), e0223120. https://doi.org/10.1371/journal.pone.0223120
25. Viswanath, K., Ramanadhan, S. & Kontos, E. Z. Mass Media. in Macrosocial Determinants of Population Health 275–294 (Springer New York, 2007). https://doi.org/10.1007/978-0-387-70812-6_13.
26. Vlahovich, Kevin. "Evaluation of the Association Between Exposure to Different Forms of Electronic Media with Dietary Intake and Body Mass Index Percentile in Hispanic and American Indian Pre-Schoolers in Rural New Mexico." (2014).
27. World Health Organization. (2009). Global prevalence of vitamin A deficiency in populations at risk 1995-2005: WHO global database on vitamin A deficiency. Geneva: World Health Organization.
28. World Health Organization (WHO). (2023). Accessed on 28.04.2024. https://www.who.int/news/item/29-05-2023-new-wha-resolution-to-accelerate-efforts-on-food-micronutrient-fortification.

HOW TO CITE THIS ARTICLE: Ao, M., Pangkam, M., Sen, R., Mundu, G. B. (2024). Association of Socio-economic and Media Exposure on Inequality of Micronutrients Intake among Children in Odisha: A District Level Analysis from NFHS-5 (2019-21). *Journal of Communication and Management*, 3(2), 164-172. DOI: 10.58966/JCM20243214