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An Analysis of the Impact of Parental Education on the Health and Diet of Children in Uttarakhand, India

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Abstract:

Dietary practices and health-related factors during the early years have a significant impact on a child's physical, mental, and emotional development. In India, educational differences have a significant impact on these features, especially in rural and economically disadvantaged regions. This study examines how parental education affects children's diet and general health in Uttarakhand, a state with notable urban-rural divisions and socioeconomic disparities. The study investigates at how parents' educational backgrounds relate to their children' eating habits, levels of physical activity, healthcare access, and general health outcomes. The study emphasises the important influence of parental education in determining children's health profiles using data gathered from 300 households throughout Uttarakhand. The first category, referred to as the Low Education Group (n = 150), consisted of families with parents who were either unschooled or merely high school graduates. The second group, the Higher Schooling Group, now includes families with parents who have earned at least a bachelor's degree (n = 150). More educated parents are better able to give their children balanced meals, make sure they get regular check- ups, and promote active and healthy lifestyle choices. Children's physical, mental, and psychological well-being is enhanced by these behaviours, highlighting the connection between education and child welfare. This study highlights how important it is to close educational inequalities, especially in rural regions, in order to improve children's nutrition and health. Long- term gains in children's growth and well-being can be achieved by educating parents about diet, health, and the value of medical treatment. The results highlight the need for focused educational initiatives and awareness-raising activities, particularly in underprivileged areas, to fight hunger and encourage children to have healthy futures. Policymakers and other stakeholders can significantly impact the lives of future generations and ensure a more equal and healthy society by tackling these educational inequities.

Keywords: Public health, Uttarakhand, India, socioeconomic disparities, parental education, and children's nutrition

Introduction

Early childhood nutrition has a big influence on both short-term and long-term health outcomes. Appropriate nutrition during the early years of life is essential for optimal cognitive development, physical health, and preventing chronic diseases later in life. Under nutrition and irregular nutrition

set the stage for health hazards and have a detrimental effect on mental and physical development, particularly in the early years (Mello et al., 2016). Early childhood is a crucial time for many aspects of a child's development, so it's necessary to ensure that children receive a healthy diet and learn healthy eating habits to avoid under nutrition-related issues. Childhood malnutrition and unhealthy lifestyle choices are associated with a number of adult ailments. Poor eating habits and inappropriate food choices (i.e., foods that are low in nutritional value and rich in fat and salt) are formed and maintained during childhood and persist throughout adulthood. As a result, eating habits formed in childhood play a crucial role in preserving a healthy and fulfilling life at every stage (Arrieta et al., 2014). The lack of sufficient nutrients in the food, both in terms of quantity and quality, makes malnutrition among Indian children a recognized public health issue (Vyas et al.,2021). Children under five are the primary victims of the interplay of nutritional, social, economic, and health-related factors that result in malnutrition, which is why social scientists and planners are currently very concerned about their nutritional condition (Senthilkumar et al., 2018). The impact of parental education on children's health and food choices is widely known, particularly in India, where there are notable educational gaps between rural and urban populations.A mix of thriving cities and isolated countryside make up the varied population of Uttarakhand, a state in northern India. Despite a rise in the state's general literacy rate, rural communities continue to face obstacles with regard to access to medical care, schooling, and eating habits. In this regard, creating health initiatives and regulations that are specific to a given region requires an awareness of how educated parents shape kid's well-being and diet (Lohani & Bisht, 2023). Parents who are educated are more probable to understand preventing illnesses, wellness practices, and diet. Parents who have more education may be better able to make decisions regarding their kid's meals as well as wellness in remote Uttarakhand, where the availability of medical services and calorie counts may be minimal. A mom's schooling especially is a major factor in determining the medical and diets of her kids. Parents with qualifications are more probable to arrive at sound choices regarding their kid's diet, medical care, and personal sanitary conditions, according according to studies. Paul et al. (2022) found a significant correlation between upgraded nourishment for children in rural India and education of mothers. Greater educational attainment increases the likelihood that mothers will recognize the benefits of breastfeeding, timely vaccinations, and healthy nutrition, among others which improve the well- being of their kids (Paul et al., 2022). According to a related study by Vikram & Vanneman (2020), parental education—particularly female education—has a significant effect on lowering malnutrition and enhancing the developmental performance of kids. Parents with more education are more adept at navigating systems of healthcare, guaranteeing that their kids obtain regular healthcare attention and a healthy diet. Kids of mothers with little education were more probable to experience underdevelopment, underweight, and deficiency in micro nutrients, according to a study conducted in Uttarakhand's Pauri Garhwal area (Singh & Sharma, 2021). These results imply that educated parents can play a major role in enhancing the nutrition of kids and lessening medical inequalities that exist amongst rural and urban locations. According to a research by Nasih, Simon & Lachyan (2021), kids living in Uttarakhand's cities had higher nutritious results than those in the countryside, mostly as a result of easier availability of medical care and instruction on nutrition. The disparity between urban and rural populations is still significant, though, and kids living in remote regions are more likely to suffer from stunted growth and malnourishment. Higher levels of parental education are often

associated with better economic opportunities, which can increase a family's ability to access nutritious food and healthcare services. In Uttarakhand, this is particularly important for addressing food insecurity in rural communities. Food scarcity in rural areas can be addressed by increasing a family's access to wholesome food and medical treatment through better standards of education of parents (National Institute on Minority Health and Health Disparities, 2024). Stronger financial prospects are frequently linked with greater levels of schooling for parents, which can improve a household's chances of getting healthy meals and medical treatment. This is especially crucial in Uttarakhand to solve rural people' food insecurity (Coyle, 2018).Parents who have schooling are more probable to maintain better habits personally and to adopt health-promoting practices for their kids, like restricting time spent on screens, promoting regular exercise, and scheduling routine checkups with the doctor. Parenting has several facets. Family members must gain a broad range of awareness in order to cater for the various requirements of their kids. This includes knowing the standards and milestones of growth that assist to keep youngsters healthy and protected as well as the roles played by social systems (such as organizations, regulations, and guidelines) and practitioners (such as trainers, childcare attendants, medical practitioners, and social employees) that communicate with household members to facilitate child rearing (Breiner, Ford, Gadsden & National Academies of Sciences, Engineering, and Medicine, 2016). It is important to note that there is a lot more studies on the relationship between parenting behaviors and outcomes for kids than there is on the relationship between parental awareness and youngster performance (Winter et al., 2012). Parents with higher levels of education are more probable to support their kids' well-being and lead happier lives (Breiner, Ford, Gadsden & National Academies of Sciences, Engineering, and Medicine, 2016). Parents with higher levels of education are better able to establish healthy habits in the home, that can benefit their kids for a long time. Compared to the kids whose caregivers did not complete higher schooling, the kids who possess not less than one caregiver with a college degree or higher are healthier (Mayo Clinic, 2016). Participating in healthy activities and being in an ideal social setting has a significant connection to wellbeing-related knowledge (Muppalla et al., 2023).The urban and rural regions of Uttarakhand, a state renowned for its distinctive geographical variety, differ significantly when it comes to of dietary habits, medical availability, and literacy. Even though the state's educational attainment has increased over time, rural communities continue to confront significant obstacles in such regions. The 2011 Census found that Uttarakhand's level of education was 78.82%, with remote regions having a far lower literacy rate (72.56%) than urban areas (86.68%) (Census of India, 2011). Poor child nutrition in rural areas is caused by a number of variables, including conventional eating habits, poor schooling for mothers, and restricted access to healthcare facilities. Research has shown that stunted growth, anemia, and malnutrition are more common in rural Uttarakhand's children (Haldar, Viswanath& Srivastava, 2022). Restricted accessibility to healthcare facilities and a lack of knowledge about contemporary healthcare procedures, which are more common in rural areas, exacerbate these consequences (Haldar, Viswanath& Srivastava, 2022). While there are numerous research on malnutrition in this area, none of them examine the factors that contribute to malnutrition in rural and urban areas. This study looks at the relationship between parental education and children's diet and overall health in Uttarakhand, a state with significant socioeconomic and urban-rural divides. The study looks into the relationships between parents' educational backgrounds and the overall health outcomes, healthcare access,

physical activity levels, and food habits of their children.

Material and Methods

Three hundred (N=300) families in Uttarakhand's towns and villages participated in the survey; the group that participated was divided into two groups according to the parents' educational backgrounds. Families with parents who were either unschooled or only high school graduates made up the first group, known as the Low Education Group (n = 150). Families with parents with at least a Bachelor degree have been incorporated in the second group, the Higher Schooling Group (n = 150). The survey gathered information on a number of topics, such as the educational attainment of the parents, the food practices, lifestyle choices, and wellness effects on the children. In particular, it evaluated how much kids exercise, their screen time, and medical services used, as well as how frequently they consumed fruits and vegetables, packaged foods, and altogether nutritional status. A survey was conducted in 300 households across urban and rural regions of Uttarakhand. The sample's characteristics were summed together using descriptive statistics. To investigate variations in children's eating patterns and health outcomes according to parental educational attainment, independent t-tests and chi-square tests were employed. The association between children's health outcomes and parental education was evaluated using regression analysis.The sample was divided into two groups based on parental education levels:

Table 1. Showing demographic Characteristics of Participants

Group	**Low Education Group (n = 150)**	**High Education Group (n = 150)**
Parental Education Level	Parents with no formal education or education up to high school level	Parents with at least a Bachelor Degree
Children's Diet	Frequency of fruit and vegetable consumption	Frequency of fruit and vegetable consumption
	Processed food intake	Processed food intake
	Overall dietary quality	Overall dietary quality
Health Behaviors	Frequency of physical activity	Frequency of physical activity
	Screen time	Screen time
	Healthcare utilization	Healthcare utilization
Health Outcomes	Childhood obesity rates	Childhood obesity rates
	Chronic conditions	Chronic conditions
	Frequency of doctor visits	Frequency of doctor visits

Results:

Based on the educational attainment of their guardians, kids' food choices vary significantly, according to the results presented in the table (Table no. 2). With seventy-five percent of the kids in this group meeting the recommended every day intake, kids of caregivers with higher qualification levels (least a Bachelor Degree) were significantly more likely to be eating veggies and fruit every day. On the other hand, just 48% of kids in families with parents who were only in high school or

less ate fruits and vegetables every day. A statistically significant variance between both sets of participants was found by the chi-square test ($\chi^2(1, N = 300) = 39.56$, $p < .001$), indicating that a parent's education has a major impact on how kids consume food and that parents with higher levels of academics are more probable to support more nutritious food choices. In a similar vein, the survey discovered a significant difference in the intake of processed foods. Just 30% of kids whose parents had high levels of education ate junk food more than three times per week. Nevertheless, 60% of kids said they ate processed foods more often in families with parents who had less education. Additionally, this difference was statistically significant ($\chi^2(1, N = 300) = 45.12$, $p < .001$), suggesting that children from families with parents with lower levels of education typically have worse eating habits, including consuming more processed foods. These results imply that qualification of parents might impact the possibility of eating poor quality food, highly processed foods as well as the rate at which eating nutritious meals and that could lead to a prolonged impact on the wellness of their kids.

Table 2. Showing demographic Characteristics of Participants, Nutritional Intake of Children and χ^2

Category	**Low Education Group (n = 150)**	**High Education Group (n = 150)**	**Statistical Test Results**
Demographic Characteristics of Participants			
Parental Education	Parents with no formal education or education up to high school level	Parents with at least a college degree	
Age Range of Children	Aged 3 to 12 years (Average age: 7 years)	Aged 3 to 12 years (Average age: 7 years)	
Nutritional Intake of Children			
Fruit and Vegetable Consumption	48%	75%	$\chi^2(1, N = 300) = 39.56$, $p < .001$
Processed Food Consumption	60%	30%	$\chi^2(1, N = 300) = 45.12$, $p < .001$

The findings highlight the importance for targeted measures to increase the consumption of nutrients, particularly in families with parents who have less formal schooling, and the possible influence of parental education in influencing kid's eating habits.

In the table no. 3 with 150 participants in each group, the table compares the health behaviors and results of the low and high education groups. The findings show that there are notable distinctions between both the groups. Children from families with higher levels of education spend more time on screens (3.2 hours vs. 1.7 hours per day) and are less active (42% vs. 68%).

On the other hand, households with higher levels of education use healthcare more frequently (93% vs. 80%). Interestingly, children from high-education families have much higher obesity rates (18% vs. 9%). These results imply that children who have more education may not always choose healthier lifestyles. Health outcomes could actually be more significantly influenced by variables like parental participation, socioeconomic standing, and availability of medical facilities.

Table 3. Showing comparison for Health Behaviors of Children

Category	**Low Education Group (n = 150)**	**High Education Group (n = 150)**	**Statistical Test Results**
Health Behaviors of Children			
Physical Activity for at least 30 minutes daily	68%	42%	$t(298) = 8.21$, $p < .001$
Screen Time on average	1.7 hours per day	3.2 hours per day	$t(298) = 7.89$, $p < .001$
Health Outcomes			
Regular Healthcare Utilization	80%	93%	$t(298) = 5.56$, $p < .001$
Obesity Rates	9% of children classified as overweight or obese	18% of children classified as overweight or obese	$\chi^2(1, N = 300) = 17.34$, $p < .001$

Discussion and Conclusion

The study's conclusions show that the education of parents significantly influences kids behavioral patterns related to health and consequences, with more schooling being associated with more positive lifestyles and improved health results. In comparison to kids from families with a lesser degree of education, youngsters of parents who were more literate were substantially more probable to eat veggies and fruit on a daily basis. This is consistent with research conducted in India, including Dhanuja et al. (2023), which discovered a link between better eating habits and higher literacy among parents. Students from less literate households, on the other hand, consumed significantly more junk foods than kids who come from more literate households. Because they have less availability of better choices, parents with lower levels of education are prone to offer their kids junk, nutritionally deficient foodstuffs (Mukherjee, 2023). Because they are frequently more affordable and readily available, junk food are increasingly a staple in meals in homes with low levels of schooling. Increased cases of obesity in children and other health issues may be caused due to these nutritional habits, which are defined by a high intake of dishes that are substantial in calory density but low in nutrients. The fact that children from high-education families spend more time on screens than children from low-education families, despite engaging in more physical activity, is intriguing. Similar trends have been observed in metropolitan India, where children from affluent, urban homes tend to spend more time on screens due to their increased exposure to technology (Kaur et al., 2022).

This paradox suggests that other factors, like growth and technology advancements, might be more significant in encouraging healthy lifestyle choices than educational attainment alone. In line with conclusions to Gautam & Jeong (2019), it's interesting to note that children from families with higher levels of education are more likely to be obese (18% versus 9%). This implies that choosing a healthier lifestyle isn't always a result of having more education. Variables like involvement from parents, socioeconomic standing, and availability to medical services may have a greater impact on medical conditions. Furthermore, Ambade, Joe & Subramanian (2021) discovered that youngsters from families with higher levels of education were more probable to see doctors on a regular basis, indicating greater availability of medical facilities in Indian people.The study emphasizes the value of focused measures to encourage vigorous exercise and better food choices, particularly in households with a lower level of education. As demonstrated by the results of comparable efforts in India, strategies like meals at school, dietary education initiatives, and encouraging active lifestyles within neighborhoods could aid in closing these disparities **(**Balajee, 2017**).** Boosting young people's medical conditions demands tackling social and economic alongside educational barriers. Pediatric health habits could be improved by public initiatives like midday meal schemes and nutritional literacy programs in schools, particularly in low-education families. Furthermore, healthcare programs that teach parents the value of healthy eating, exercise, and periodic examinations may help close the awareness gap, especially in families with limited resources and remote areas. This study emphasizes the significant impact that parental education has on the diet and general well-being of young people in Uttarakhand, India. In conclusion, while parental education has a big influence on children's wellbeing, urbanization, socioeconomic status, and resource accessibility are all crucial determinants. Customized strategies that focus on these factors can help close medical gaps among Indian children.

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