

Association of Number of Siblings, Birth Order and Parental Education with Nutritional Status among Meitei-Pangal Adolescents Residing in Urban and Rural Areas of Manipur, Northeast India

Phundreimayum Khalida¹, L. Khiloni², Chingangbam Ritu Chanu³

¹Research Scholar, department of Anthropology, Manipur University, Manipur, India

²Assistant Professor, department of Anthropology, South East Manipur, College, Manipur, India

³Research Scholar, Department of Anthropology, Manipur University & Assistant Professor, Department of Anthropology, Dhanamanjuri University, Manipur, India.

Corresponding Author: Dr L Khiloni

DOI: <https://doi.org/10.52403/ijhsr.20250953>

ABSTRACT

Introduction: Obesity in adolescents has become a growing global health concern affecting millions of adolescents in developed as well as developing countries.

Methods: A community based cross-sectional study was conducted to assess the prevalence of adolescent obesity and to determine the association of number of siblings, birth order and parental education with obesity among Meitei-Pangal rural and urban adolescents of Manipur. A total of 900 adolescents aged 13-18 years were randomly selected from urban and rural schools of Manipur. Structured interview schedule was used to collect data of the participants on birth order, number of siblings, parental education and anthropometric measurements. The data was statistically analyzed using SPSS version 24.

Results: The mean age and BMI of the participants were 15.88 ± 0.25 years and 20.00 ± 0.12 kg/m² in rural adolescents while 15.51 ± 0.32 years and 20.95 ± 0.14 kg/m² in urban adolescents. The results showed that no significant correlation between BMI and birth order of both rural adolescents (p-value=0.436) and urban adolescents (p-value=0.373). No significant correlation between BMI and number of siblings of rural adolescents (p-value =0.274) and urban adolescents (p-value=0.392) were also observed. No statistically significant association between the obesity of adolescents with parental education were also found.

Conclusion: Adolescents' BMI were driven by neither of their number of siblings nor birth order in both rural and urban adolescents.

Keywords: Birth order, siblings, parental education, obesity, adolescents

INTRODUCTION

Obesity is a critical global health issue affecting millions of adolescents in both developed and developing countries. Adolescent obesity is growing very fast and leads to a wide range of health problems regardless of weight during adulthood. It

has become increasingly important to identify the risk factors, predisposing to overweight and obesity from childhood onwards (Viswambharan et al., 2020; Roy et al., 2022).

Obesity is an excessive accumulation of fat in the body resulting in increase in weight

beyond that considered desirable with regard to age, height and bone structure. This fat deposition may be generalized, or may occur preferentially in different adipose tissue compartments. The problem of overweight and obesity has become a serious public health concern throughout the world during the last many decades. The prevalence of overweight and obesity is increasing, and obesity is estimated to be a major leading cause of mortality and morbidity, causing an estimated 2.6 million deaths worldwide and 2.3% of the global burdens of disease (Ezzati et al., 2006; Vinaykumar et al., 2016).

Obesity is associated with the onset of major chronic diseases, leading to complications and also psychosocial problems in adolescents (Rohilla et al., 2014). The magnitude of overweight and obesity is alarmingly high globally. In recent times, there has been an increase in opportunities for adolescents to become obese due to their sedentary lifestyles. (Mathew et al., 2023). Overweight and obesity are now recognized as diseases in their own right, both of which are largely preventable through lifestyle changes. This fact, together with its association with the leading causes of illness and death has been made by obesity, a high precedence of health problem in the World. (Kotian et al., 2010; Saha, 2016).

According to the World Health Organization (WHO), at least 2.8 million people die each year globally from being overweight or obese, and an estimated 35.8 million (2.3%) of global Disability-Adjusted Life Years (DALYs) are caused by overweight or obesity (Karthik & Gopalakrishnan, 2018; Piyali et al., 2023). The prevalence rate of obesity among school-going students is higher in urban areas than students in rural areas (Maiti et al., 2011; Zainab et al., 2022). It is necessary to identify the overweight and obesity in early life due to its short- and long-term association with morbid issues and its influence on young people's

psychosocial development (Brambila-Paz et al., 2022).

The influence of birth order on the circumstance of obesity has also been studied, but the findings are inconsistent in former studies. While some authors showed higher BMI and greater fat mass between first born adolescents (Stettler et al., 2000; Celi et al., 2001; Meller et al., 2025), others have not observed such associations (Li et al., 2007; Wells et al., 2011; Gopinath et al., 2012). Studies have also shown that a larger number of siblings is associated with a lower prevalence of obesity in adolescence, regardless of whether siblings are younger or older (Stettler et al., 2000; Wang et al 2007).

The study has reported that parents play an important role in shaping their children's health behaviors and weight status. Parental education level has been associated with these outcomes in children (Zecevic et al., 2010; Butte et al., 2014; Muthuri et al., 2016). Most studies support the observation that among children with siblings, older ones are at a lower risk of becoming overweight or obese (Chen & Escarce, 2010; Haugaard et al., 2013; Mosli et al., 2016; Yu et al., 2020).

Therefore, present study aims to assess the prevalence of adolescent obesity and to determine the association of number of siblings, birth order and parental education with obesity among Meitei-Pangal adolescents residing in urban and rural areas of Manipur, Northeast India.

MATERIALS & METHODS

The present study is a community based cross sectional study conducted among Meitei-Pangal adolescents residing in urban and rural areas of Manipur, Northeast India. Data were collected from a total 900 adolescents (451 males and 449 females) of aged 13-18 years from various schools selected through stratified random sampling techniques. Structured schedule was used to collect data of the participants on birth order, number of siblings, parental

education and anthropometric measurements. Before data collection, consent was obtained from the respective authority/ principal of the schools. Written informed consent also obtained from all the subjects. The collected data were entered into MS-Excel and analyzed using SPSS version 24.

RESULT

A total of 900 adolescents, who were aged 13-18 years participated in the study. In this study, mean age of the participants was 15.88±0.25 years in rural adolescents while 15.51±0.32 years in urban adolescents. Table1 compares the mean Age, BMI, BMI centile, Weight, Weight centile, Height and

Height centile of rural and urban adolescents. The overall anthropometric values for rural adolescents were as follows: mean BMI was 20.00±0.12 kg/m², mean BMI centile was 25.87, mean Weight was 53.23±0.37 kg, mean Weight centile was 67.82, mean Height was 159.16±0.36 cm, mean Height centile was 172.91. The corresponding measurements for urban adolescents were 20.95±0.14kg/m² for BMI, 25.85 for BMI centile, 51.86±0.43 kg for Weight, 66 for Weight centile, 157.13±0.39 cm for Height, 171 for Height centile. It showed that in all anthropometric parameters except BMI were higher in rural adolescents than those of urban counterpart.

Table1: Comparison of rural and urban adolescents for different anthropometric parameters

Parameters	Rural	Urban
Age	15.88±0.25	15.51±0.32
BMI	20.00±0.12	20.95±0.14
BMI centile	25.87	25.85
Weight	53.23±0.37	51.86±0.43
Weight centile	67.82	66
Height	159.16±0.36	157.13±0.39
Height centile	172.91	171

Table 2: Number of Siblings and Obesity

No. of total siblings	Urban		Rural	
	Obese N (%)	Non-Obese N (%)	Obese N (%)	Non-Obese N (%)
Less than three	26 (37.14)	92 (27.79)	32 (26.44)	103 (27.25)
Four to Seven	41 (58.57)	221 (66.77)	68 (56.20)	268 (70.90)
Eight and above	3 (4.29)	18 (5.44)	21 (17.35)	7 (1.85)
p-value	0.387		0.000	
Total	70	331	121	378

Table 2 displays the relationship between number of siblings and the prevalence of Obesity. In both the study areas, obesity is more prevalent among the adolescents having four to seven siblings (58.57% in urban; 56.20% in rural), followed by adolescents having less than three siblings

(37.14% in urban; 26.44% in rural). Adolescents with eight and above sibling have the lowest frequency (4.29% in urban and 17.35% in rural). No statistically significant association was found between obesity and their number of siblings in urban population with p-value= 0.387.

Table 3: Parental Educational status and Obesity

Educational Qualification		Urban		Rural	
		Obese N (%)	Non-Obese N (%)	Obese N (%)	Non-Obese N (%)
Father	Illiterate	7 (10)	42 (12.69)	16 (14.95)	38 (9.69)
	Under Matric	23 (32.86)	121 (36.55)	32 (29.91)	131 (33.42)
	Secondary	22 (31.43)	92 (27.79)	22 (20.56)	116 (29.59)
	Under Graduate	16 (22.86)	61 (18.43)	33 (30.84)	92 (23.47)

	Post Graduate	2 (2.86)	15 (4.53)	4 (3.73)	15 (3.83)
	p-value	0.771		0.225	
Total		70	331	107	392
Mother	Illiterate	19 (26.76)	82 (24.85)	26 (24.30)	89 (22.70)
	Under Matric	33 (46.48)	161 (48.79)	47 (43.92)	184 (46.94)
	Secondary	15 (21.13)	67 (20.30)	29 (27.10)	91 (23.21)
	Under Graduate	4 (5.63)	19 (5.76)	5 (4.67)	28 (7.14)
	Post Graduate	0	1	0	0
	p-value	0.935		0.815	
Total		71	330	107	392

Table 3 shows the nutritional status in relation with their parental educational status. Among urban adolescents, prevalence of obesity was maximum (32.86%) whose fathers attended up to matriculation followed by those adolescents whose father attended up to secondary education (31.43%) and under Graduate (22.86%). The least are found among the adolescents whose father attend education up Post Graduate (2.86%).

Taking the mother's education, the prevalence of obesity was maximum (46.48%) in adolescents whose mothers were Under Matric, followed by Illiterate (26.76%), Secondary (21.13%), Under Graduate (5.63%) and Post Graduate (0%). The prevalence of non-obese was maximum in adolescents whose father and mother were both under matric (36.55% and 48.79, respectively).

No statistically significant association was found between the obesity of the urban adolescents and their parents' educational

status (p-value = 0.225) and (p-value = 0.815), respectively for father's and mother's educational status.

Among the rural adolescents, the prevalence of obesity was maximum (30.84%) in adolescents whose fathers were Under Graduate, followed by Under Matric (29.91%), Secondary (20.56%), Illiterate (14.95%) and Post Graduate (3.73%). On the other hand, the prevalence of obesity was maximum (43.92%) in adolescents whose mothers were Under Matric, followed by Secondary (27.10%), Illiterate (24.30%), Under Graduate (4.67%) and Post Graduate (0%). The prevalence of non-obese was maximum in adolescents whose fathers and mothers had educational levels under matric (29.59% and 46.94%, respectively). No statistically significant association was found between the obesity and father's (p-value=0.225) and mother's educational status (p-value=0.815) of the rural adolescents.

Table 4: Correlation of BMI with Birth Order and number of siblings

Parameters	*r		p-value	
	Rural	Urban	Rural	Urban
BMI with Birth Order	-0.013	-0.019	0.436	0.373
BMI with no. of siblings	-0.024	-0.036	0.274	0.392

Weak negative correlation was found between BMI and birth order of rural adolescents (r = -0.013, p-value = 0.436 and urban adolescents (r = -0.019, p-value= 0.373) (table 4). Further, weak correlation between BMI and number of siblings of rural adolescents (r = -0.024, p-value = 0.274) and urban adolescents (r = -0.036, p-value = 0.392) were found. The findings

showed that no statistically significant association of BMI with birth order and number of siblings in both rural urban adolescents. This represents that Adolescents' BMI were driven by neither of their number of siblings nor birth order in both rural and urban adolescents

DISCUSSION

In the present study, a total of 900 adolescents from urban and rural schools participated. The mean age of the rural adolescents was 15.88 ± 0.25 years and their mean BMI was 20.00 ± 0.12 kg/m² whereas 15.51 ± 0.32 years and 20.95 ± 0.14 kg/m² were the mean age and BMI of the urban adolescents. The prevalence of overweight and obesity increases daily in Indian adolescents, specifically those living in urban areas. Socioeconomic and behavioural factors play an essential role in developing overweight and obesity risk (Roy et al., 2022). It was observed in the present study, that no statistically significant association was found between obesity and their number of siblings in urban adolescents. Similar result was also reported in a study (El-Shaheed et al., 2023) where no association between adolescents' obesity and number of siblings were found. This came in accordance with a study that did not find any relation between siblings' number and adolescents over weight (Hesketh et al., 2003) and another study reported that no significant effects of having siblings on overweight (Nemecek et al., 2017).

The present study also shows that no significant correlation between BMI and birth order among both rural and urban adolescents. These findings were similar to the study conducted by El-Shaheed et al., (2023), which reported no statistically significant interactions based on sibling birth order, suggesting that adolescent obesity was not driven by whether the sibling was younger or older. Research conducted by Haugaard et al., (2013) and El-Shaheed et al., (2023) observed that no significant link between obesity and firstborn child compared to children born in other birth orders, concluding that a higher risk of obesity is explained by the absence of siblings rather than birth order.

Another study on meta-analysis showed that both lower birth order and lower number of siblings are associated with increased risk of overweight/obesity. (F.O. Meller

et.al,2018). Another research conducted by Meller et al., (2015) found that not birth order, and number of total siblings, is related to the BMI, fat mass index and fat-free mass index in adolescents. Other studies indicated that having a larger number of siblings was negatively associated with BMI (de Oliveira et al., 2015; Li et al., 2017; Yu et al., 2020). Furthermore, in a population-based cross-sectional study in Japan reported that larger number of order siblings and younger siblings, was negatively associated with overweight (Ochiai et al., 2012).

The present findings also showed that no statistically significant association between the obesity and their parents' educational status. These findings were similar to the study conducted by El-Shaheed et al. (2023), which reported no significant association between parental education and the development of obesity. Another study reported that parents with the educational level- graduation and above with highest household per capita monthly income reflected a higher prevalence of overweight and obesity among adolescents (Roy et al., 2022). Similarly, another study from Colombian and Kenyan sites found that, there were positive association between parents with higher education level and overweight. In contrast, studies from Brazil and USA sites found negative association between fathers with some college education or higher and overweight. (Butte et al,2014; Bilić-Kirin et al,2014; Muthuri et al ,2014; Muthuri et al,2016) Adolescents with higher parental education or healthy eating habits were found to have a lower probability of obesity (Ha et al., 2005; Lee et al., 2021).

CONCLUSION

In the present study, the prevalence of obesity was highest among the Meitei-Pangal adolescents having four to seven-sibling in both rural and urban areas. No statistically significant association was found between obesity and the number of

siblings among adolescents in urban adolescents. No significant correlation was found between BMI and birth order for both rural and urban adolescents. The present finding also showed no statistically significant association between obesity and parental educational status among both rural and urban adolescents.

Declaration by Authors

Acknowledgement: Authors are thankful to all the school authorities and participants for their help and cooperation in the present study.

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Bilić-Kirin, V., Gmajnić, R., Burazin, J., Milčić, V., Buljan, V., & Ivanko, M. Association between socioeconomic status and obesity in children. *Collegium Antropologicum*.2014;38(2):553–558
2. Brambila-Paz, C., Hernandez-Angeles, D. F., Silverio-Murillo, A., & Rodriguez-Tirado, A. Family factors affecting the transition of children from normal weight to obesity in Mexico. *Childhood Obesity*.2022; 18(02):112–11
3. Butte, N. F., Gregorich, S. E., Tschann, J. M., Penilla, C., Pasch, L. A., De Groat, C. L., Flores, E., Deardorff, J., Greenspan, L. C., & Martinez, S. M. Longitudinal effects of parental, child and neighborhood factors on moderate-vigorous physical activity and sedentary time in Latino children. *International Journal of Behavioral Nutrition and Physical Activity*.2014; 11(1): 1-12.
4. Celi, F., Bini, V., De Giorgi, G., Molinari, D., Faraoni, F., Di Stefano, G., Bacosi, M. L., Berioli, M. G., Contessa, G., & Falorni, A. Epidemiology of overweight and obesity among school children and adolescents in three provinces of central Italy,1993-2001: study of potential influencing variables. *European Journal of Clinical Nutrition*. 2003;57(9):1045-1051.
5. Chen, A. Y., & Escarce, J. J. Family structure and childhood obesity, early childhood longitudinal study - kindergarten cohort. *Preventive Chronic Disease*.2010; 7(3): A50.
6. Das, P., Ghosh, K., Bose, A. Chatterjee, D., & Bandyopadhyay, A. R. The Role of Anthropometric Variables in Assessment of Obesity Among Tripuri Women of North-East India. *Papers on Anthropology*.2023; 32(2):59-67.
7. de Oliveira, M. F., Assunção, M. C. F., Schäfer, A. A., de Mola, C. L., Barros, A. J. D, Dahly, D. L., & Barros, F. C. The influence of birth order and number of siblings on adolescent body composition: evidence from a Brazilian birth cohort study. *British Journal of Nutrition*.2015; 114(1):118–25.
8. El-Shaheed, A. A., Moustafa, R. S. I., Sallam, S. F., & Fahmy, R. F. Birth order, number of siblings, parent's education as associated factors of adolescence obesity. *Egyptian Journal of Nutrition and Health*.2023;18(2):1-9.
9. Ezzati, M., Martin, H., Skjod, S., & Hoorn, S. V. Trends in National and State-Level Obesity in the USA after correction for self-report bias: Analysis of Health Surveys. *Journal of the Royal Society of Medicine*.2006; 99(5):250-257.
10. Fernanda Oliveira Meller, Christian Loret de Mola, Maria Cecilia Formoso Assunção, Antônio Augusto Schäfer, Darren Lawrence Dahly, and Fernando Celso Barros. Birth order and number of siblings and their association with overweight and obesity: a systematic review and meta-analysis. *Nutrition Reviews*. 2018; 76(2): 117-124.
11. Gopinath, B., Baur, L. A., Burlutsky, G., Robaei, D., & Mitchell, Socioeconomic, familial and perinatal factors associated with obesity in Sydney school children. *Journal of Pediatrics and Child Health*.2012; 48(1): 44–51.
12. Ha, Y. M., & Yun, S. N. A Study on the Prevalence and Predisposing Factors for Obesity Among Mentally Disabled Children in Korea. *Journal of Korean Soc. Sch. Health*.2005;18: 27–43.
13. Haugaard, L. K., Ajslev, T. A., Zimmermann, E., &Angquist, L., Sorensen, T. I. A. Being an only or last-born child increases later risk of obesity. *PLoS One*.2013; 8: e56357.

14. Hesketh, T., Qu, J. D. & Tomkins, A. Health effects of family size: cross sectional survey in Chinese adolescents. *Archives of Disease in Childhood*.2003; 88: 467–471.
15. Karthik, R. C., & Gopalakrishnan, S. Evaluation of obesity and its risk factors among rural adults in Tamil Nadu, India. *International Journal of Community Medicine and Public Health*.2018; 5(8): 3611–3617. <https://doi.org/10.18203/2394-6040.ijcmph20183107>
16. Kotian, S., Ganesh, K. S., & Kotian, S. S. Prevalence and determinants of overweight and obesity among adolescent school children of South Karnataka. *Indian Journal of Community Medicine*.2010; 35(1), 176-178.
17. Lee, G. Y., & Um, Y. J. Factors Affecting Obesity in Urban and Rural Adolescents: Demographic, Socioeconomic Characteristics, Health Behavior and Health Education. *International Journal of Environmental Research and Public Health*. 2021; 18: 2405. <https://doi.org/10.3390/ijerph18052405>
18. Li, C., Goran, M. I., Kaur, H., Nollen, N. Ahluwalia, J. S. Developmental trajectories of overweight during childhood: role of early life factors. *Obesity (Silver Spring)*.2007; 15(3):760–771.
19. Li, M., Xue, H., Wang, W., Wang, Y. Increased obesity risks for being an only child in China: findings from a nationally representative study of 19,487 children. *Public Health*.2017; 153: 44–51.
20. Maiti, S., Ali, K. M., De, D., Bera, T. K., Ghosh, D., & Paul, S. A comparative study on nutritional status of urban and rural early adolescent school girls of West Bengal, India. *Journal of Nepal Pediatric Society*. 2011; 31(3): 169-174. doi:10.3126/jnps.v31i3.5352.
21. Mathew, S., D’Souza, J., & Saldanha, P. Prevalence of Overweight and Obesity among Adolescents: A School-Based Preliminary Cross-Sectional Study. *Journal of Health and Allied Sciences*.2023; 13(3): 354-359.
22. Meller, F. O., Assuncao, M. C. F., Schafer, A. A., de Mola, C. L., Barros, A. J. D., Dahly, D. L. & Barro F. C. The influence of birth order and number of siblings on adolescent body composition: evidence from a Brazilian birth cohort study. *British Journal of Nutrition*.2015;114(1):118–125. doi:10.1017/S0007114515001488.
23. Mosli, R. H., Miller, A. L., Peterson, K. E., Kaciroti, N., Rosenblum, K., Baylin A., & Lumeng J. C. Birth order and sibship composition as predictors of overweight or obesity among low-income 4- to 8-year-old children. *Pediatric Obesity*.2016; 11(1):40–46.
24. Muthuri SK, Francis CE, Wachira L- JM, LeBlanc AG, Sampson M, Onyvera VO, Tremblay MS. Evidence of an overweight/obesity transition among school-aged children and youth in sub-Saharan Africa: a systematic review. *PLoS One*. 2014; 9(3):e92846. doi: 10.1371/journal.pone.0092846 PMID:24676350
25. Muthuri, S. K., Onyvera, V. O., Tremblay, M. S., Broyles, S. T., Chaput, J. P., Fogelholm, M., et al. Relationships between Parental Education and Overweight with Childhood Overweight and Physical Activity in 9–11-year-old Children: Results from a 12-Country Study. *PLoS ONE*.2016;11(8): e0147746. doi:10.1371/journal.pone.0147746.
26. Nemecek, D., Sebelesky, C., Woditschka, A., & Voithl, P. Overweight in children and its perception by parents: cross-sectional observation in a general pediatric outpatient clinic. *BMC Pediatrics*.2017;17(1): 212.
27. Ochiai et al. Number of siblings, birth order, and childhood overweight: a population-based cross-sectional study in Japan. *BMC Public Health*.2012;12:766.
28. Rohilla, R., Rajput, M., Rohilla, J., Malik, M., Garg, D., & Verma, M. Prevalence and correlates of overweight/obesity among adolescents in an Urban City of North India. *Journal of Family Medicine and Primary Care*.2014; 3(4):404-408.
29. Roy, P., Chakrabarty, S., Chatterjee, D., & Bharati, P. Prevalence and Factors Associated with Overweight/ Obesity in Adolescent School Girls: A Cross-Sectional Study in Kolkata, India. *Anthropological Review*.2022; 85(2): 147–162.
30. Saha, A., Prevalence of Obesity Among Teenagers in a Higher Secondary School of Birgunj, Nepal. *Indian Journal of Medical Research and Pharmaceutical Sciences*. 2016; 3(7):32-39.

31. Stettler, N., Tershakovec, A. M., Zemel, B. S., Leonard, M. B., Boston, R. C., Katz, S. H., & Stallings, V. A. Early risk factors for increased adiposity: a cohort study of African American subjects followed from birth to young adulthood. *American Journal of Clinical Nutrition*.2000; 72(2): 378–383.
 32. Vinaykumar, S., Dhanwadkar, S. S., & Joji, P. Association between body mass index and blood pressure among children age group 5 to 15 years in a tertiary care centre: a descriptive study. *International Journal of Contemporary Pediatrics*.2016; 3(3):1055-1063.
 33. Viswambharan, J. K., Bina, T. & Raphael, L. Prevalence and determinants of obesity among adolescent school children of North Kerala. *International Journal of Community Medicine and Public Health*.2020; 7(8): 3142–3148.
 34. Wang, H., Sekine, M., Chen, X., Kanayama, H., Yamagami, T., & Kagamimori, S. Sibsize, birth order and risk of overweight in junior high school students in Japan: results of the Toyama Birth Cohort Study. *Preventive Medicine*.2007; 44(1): 45–51.
 35. Wells, J. C. K., Hallal, P. C., Reichert, F. F., Dumith, S. C., Menezes, A. M., & Victora, C. G. Associations of birth order with early growth and adolescent height, body composition, and blood pressure: prospective birth cohort from Brazil. *American Journal of Epidemiology*.2011; 174(9): 1028–1035.
 36. Yu, T., Chen, C., Jin, Z., Yang, Y, Jiang, TY., Hong, L., Yu, X., Mei, H., Jiang, F, Huang, H., Liu, S., & Jin, X. Association of number of siblings, birth order, and thinness in 3- to 12-year-old children: a population-based cross-sectional study in Shanghai, China. *BMC Pediatrics*.2020;20(1):367. <https://doi.org/10.1186/s12887-020-02261-z>
 37. Zainab, Y., Noreen, S., Rizwan, B., Ume Farwa, S., Abbas, W., Naveed, J., Tariq, A., Babar, S., & Ali, M. Assessment of Nutritional Status and Dietary Practices Among School-Going Adolescents in Rural and Urban Area: A Comparative Study. *Pakistan Journal of Health Sciences*.2022; 3(06): 31-35.
 38. Zecevic, C. A., Tremblay, L., Lovsin, T., & Michel, L. Parental influence on young children's physical activity. *International Journal of Pediatrics*.2010; 468526. doi: 10.1155/2010/468526.
- How to cite this article: Phundreimayum Khalid1, L. Khiloni, Chingangbam Ritu Chanu. Association of number of siblings, birth order and parental education with nutritional status among Meitei-Pangal adolescents residing in urban and rural areas of Manipur, Northeast India. *Int J Health Sci Res*. 2025; 15(9):464-471. DOI: [10.52403/ijhsr.20250953](https://doi.org/10.52403/ijhsr.20250953)
