Prevalence and Risk Factors of Pediatric Obesity in Urban and Rural Areas of Iraq: A Comparative Study Using Parental Surveys

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Abstract

Objectives: To estimate prevalence rates of overweight and obesity among children aged 6 to 12 in urban and rural Iraqi communities, and to identify independent risk factors for pediatric obesity by parental surveys.

Methods: The weight status of children in Iraq was examined in this research through a cross-sectional survey that took place from February to April 2025. The survey was directed to parents of children aged 6-12 years. Out of 170 initial invitations, 150 parents (75 from urban areas and 75 from rural areas) eventually participated after 20 respondents were dismissed for incomplete responses or non-provision of anthropometric data. The children's Body Mass Index (BMI) was determined and classified according to the height and weight given by their parents. Besides that, we collected thorough information particularly on age, gender, and various risk factors like screen time, physical activity, and weekly intake of fast food, soft drinks, fruits, and vegetables, family history and sleep duration. The processing and analysis of the data were done using SPSS version 28 and included descriptive statistics, chi-square tests, independent t-tests, and multivariate logistic regression. Significance was set at $p<0.05$.

Results: In general, 18.7% of the sample were obese while 21.3% of them were at the overweight level. There was a significant obesity prevalence in urban children (24.0% urban vs. 13.3% rural; χ^2 p=0.04). Urban children had higher BMIs (mean±SD 19.2±3.8 vs. 17.1±3.2; $p<0.001$), more screen time per day (3.1±1.2 h vs. 2.0±1.0 h; $p<0.001$), and less physical activity hours weekly (3.2±1.6 h vs. 5.1±2.0 h; $p<0.001$). In multivariate logistic regression adjusting for income and parental education, obesity was independently predicted by increased screen time (aOR per 1 h/day = 1.38, 95% CI 1.05–1.82, p=0.02), decreased physical activity (aOR per 1 h/week = 0.85, 95% CI 0.75–0.97, p=0.015), positive family history (aOR = 2.12, 95% CI 1.05–4.28, p=0.036), and living in an urban area (aOR = 1.89, 95% CI 1.01–3.54, p=0.047).

Conclusion: The greater part of Iraqi school-age children is weighed above normal or can be classified as obese, with urban children having a greater burden. Modifiable lifestyle factors, particularly time spent on screens, inactivity, and poor nutrition, along with family history, must be targeted. This situation calls for the application of public health programs designed for the urban types of environment and families.

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Keywords: Pediatric Obesity, Iraq, Urban-Rural, Screen Time, Physical Activity, Parental Survey

Introduction

Based on recent statistical analyses, a very significant rise in global childhood overweight and obesity rates has been reported, highlighting that there are marked differences among various regions (Zhang *et al*., 2024) [2]. Moreover, monitoring data collected from all over the world suggests that obesity is spreading very fast, especially in the case of some low- and middle-income countries. Such a change is not only taking away the health benefits that have been historically enjoyed but also making the young ones suffer from the dual problem of being undernourished and overnourished at the same time (NCD-RisC, 2024) [1]. Reviews of scientific literature on the issue have now come to the conclusion that childhood obesity is no longer a problem that needs to be dealt with strictly as a clinical case.

On the contrary, it is increasingly recognized that the problem is connected to factors that operate on a much wider scale such as urbanization, food system changes, sedentarism and economic transitions (Lister *et al*., 2023) [3]. As for the Middle East, there are systematic studies that show the issue of childhood overweight and obesity is getting more serious very fast. Among the possible causes are the increasing consumption of high-calorie foods, lack of physical activities and reliance on transport in the case of going to school and other similar places (Alruwaili *et al*., 2024; UNICEF MENA, 2024) [11]. Studies conducted in neighbouring and similar countries in the region, like Saudi Arabia and Iran, point out the crucial role of urban settings, excessive screen time, and dietary changes in the incidence of childhood obesity. Consequently, the findings call attention to the immediate requirement of establishing strong national surveillance systems and implementing customized public health programs (AlEnazi *et al*., 2023; Toorang *et al*., 2025) [12]. Iraq has limited, population-representative, recent data on child obesity, and local surveys and reviews point to a worrying increase in overweight and obesity among school-age children, albeit with varied estimates across governorates and age groups (Subhi *et al*., 2024; Sulaiman & AlAni, 2024). From the urbanicity point of view, this is beginning to weigh as a relevant determinant whereby systematic country-level work has shown that place of residence is related to differential risks for obesity that often reflect differing food environments, physical-activity opportunities, and socioeconomic patterns (Crouch *et al*., 2023; Contreras *et al*., 2021). Generally accepted behavioral factors that result in child obesity include excess screen time, low physical activity, frequent fast-food consumption along with sugar-sweetened beverages intake, poor fruit and vegetable intake, short sleeping hours, and parental history of obesity, many of them modifiable. (Haghjoo *et al*., 2022; Nagata *et al*., 2023; Liberali *et al*., 2020) [13, 10]. Despite these global and regional data, there remains a gap in rigorous community-level comparative data within Iraq that simultaneously measure parental reports of anthropometry and a standard set of behavioral risk factors; this gap impedes locally tailored prevention strategies. (Kareem, 2025; Kadhim, 2023). A focused urban-rural comparative cross-sectional study can be done using a parental questionnaire for an efficient estimation of prevalence and for an early identification of risk profiles, thereby yielding evidence for use in public-health planning with minimal cost. (Bhutta *et al*., 2023; Padgett *et al*., 2024) [4, 7]. Hence, a cross-sectional parental survey was done for children aged 6–12 years in selected urban and rural communities in Iraq within February–April 2025 for overweight and obesity prevalence estimation and for behavioral and familial risk factor examination—with the hypotheses (1) that urban residence would be associated with a higher prevalence of obesity and (2) that greater screen time in combination with lesser physical activity would be independently associated with obesity (Study aims/hypotheses statement; supported implicitly by the literature above). The findings are to be used as priorities for prevention locally, including community and school interventions, family education, and policy intervention targeting obesogenic food environments. (Bhutta *et al*., 2023; UNICEF MENA, 2024) [4].

Methods

Study design and setting:

Cross-sectional analytical study conducted in Iraq between 1 February and 30 April 2025 in purposively sampled urban and rural communities representative of local socio-economic variation.

Population and sample:

Target population: children aged 6–12 years. We approached 170 parents; 20 respondents were excluded for missing or implausible anthropometric data, leaving an analyzed sample of N=150 children (75 urban, 75 rural).

Sampling Methodology:

A multi-stage stratified random sampling approach was employed to ensure a representative community sample. The process unfolded in three stages:

- **Stage 1:** Governorate Selection. Two governorates were purposively chosen to capture a mix of urban and rural populations.
- **Stage 2:** Cluster Stratification and Selection. Within each governorate, clusters (comprising neighborhoods or villages) were first stratified based on socio-economic status. A random selection of clusters was then drawn from each stratum.
- **Stage 3:** Household and Participant Selection. From within the selected clusters, households with eligible children were randomly identified using either pre-existing local registries or a systematic door-to-door sampling method. Only one child per household was enrolled in the study. This multi-stage design was adopted to optimally balance logistical feasibility with the need for population representativeness.

Data Collection Instrument:

The study utilized a comprehensive parental questionnaire, structured into four main sections:

1. **Informed Consent:** To ensure ethical compliance.
2. **Demographic Profile:** Capturing data on the child's age and gender, parental education and occupation, and household income bracket.
3. **Anthropometric Data:** Parent-reported measurements of the child's height (in centimeters) and weight (in kilograms), with a provision to specify if weight was reported in pounds.
4. **Risk Factor Assessment:** A detailed module evaluating key health and lifestyle variables, including:
   - Average daily screen time.
   - Weekly hours of physical activity.
   - Dietary habits, specifically the weekly frequency of fast-food consumption, servings of sugary drinks, and servings of fruits and vegetables.
   - Family history of obesity.
   - Average nightly sleep duration.

Prior to full deployment, the questionnaire was piloted with a group of 12 parents to assess clarity and estimate completion time, which averaged 8-10 minutes.

Outcomes and Definitions:

BMI was unusually calculated from the height and weight as reported by the parents. For classification purposes, age-appropriate BMI thresholds approximated for the age range of 6 to 12 years were applied to categorize the children into Underweight, Normal, Overweight, or Obese. The decision to use these numeric cut points, which approximate the percentiles used in growth charts, was to ease comparability and simplification on a parental-report survey.

Statistical analysis:

Statistical analyses were done in SPSS version 28 (final analysis report) and replicated in exploratory Python (for table production). Descriptive statistics (frequencies, means, SDs) were calculated. Chi-square tests of independence were performed for categorical comparisons, while independent samples t-tests were conducted for continuous variables between two groups. Multivariable logistic regression investigated the independent predictors of obesity (dependent variable: obese vs. non-obese). Independent variables entering the model included screen time (hours per day), physical activity (hours per week), fast food frequency, sugary drinks, fruit/veg servings, sleep duration (in hours), family history (categorical: yes vs. no), residence (urban=1), and dummy variables for household income and parental education. A p-value less than 0.05 considered a two-tailed test of significance. Results are presented as adjusted odds ratios (aOR) with 95% confidence intervals.

Results

A total of 170 parental questionnaires were collected. After data cleaning (removal of records with missing or implausible height/weight, n = 20), the analytic sample comprised N = 150 children (75 urban, 75 rural). Descriptive and inferential analyses are reported below.

Table 1: Socio-demographic characteristics of study participants by residence (N = 150)

Table 1a: Categorical variables (counts and percent)

Variable	Category	Urban (n = 75)	Rural (n = 75)	χ^2 / p
Child sex	Male	39 (52.0%)	41 (54.7%)	χ^2 p = 0.75
	Female	36 (48.0%)	34 (45.3%)	
Parental education	College	31 (41.3%)	16 (21.3%)	χ^2 p = 0.02
	Secondary	30 (40.0%)	33 (44.0%)	
	Primary	10 (13.3%)	18 (24.0%)	
	No formal	4 (5.3%)	8 (10.7%)	
Parental occupation	Professional	24 (32.0%)	12 (16.0%)	χ^2 p = 0.03
	Skilled	28 (37.3%)	24 (32.0%)	
	Manual	16 (21.3%)	28 (37.3%)	
	Unemployed/Other	7 (9.4%)	11 (14.7%)	
Household income	High	22 (29.3%)	10 (13.3%)	χ^2 p < 0.001
	Medium	38 (50.7%)	30 (40.0%)	
	Low	15 (20.0%)	35 (46.7%)	
Family history of obesity	Yes	28 (37.3%)	19 (25.3%)	χ^2 p = 0.09
	No	47 (62.7%)	56 (74.7%)	

Urban and rural groups were similar in sex distribution. Urban households had significantly higher parental education and income levels; family history of obesity was more common in urban children but did not reach conventional significance.

Table 1b: Continuous variables (mean ± SD) and between-group comparison

Variable	Urban: mean (SD)	Rural: mean (SD)	t-test p
Child age (years)	9.10 (1.90)	9.30 (1.80)	p = 0.55
BMI (kg/m²)	19.20 (3.80)	17.10 (3.20)	p < 0.001
Screen time (hours/day)	3.10 (1.20)	2.00 (1.00)	p < 0.001
Physical activity (hours/week)	3.20 (1.60)	5.10 (2.00)	p < 0.001
Sleep (hours/night)	8.80 (0.70)	9.10 (0.60)	p = 0.02

Urban children had significantly higher mean BMI and screen time and significantly lower physical activity than rural children. Sleep duration was slightly lower in urban children (statistically significant but clinically small).

Table 2: BMI category distribution by residence (N = 150)

BMI category	Total n (%)	Urban n (%)	Rural n (%)	χ^2 / p
Underweight	5 (3.3%)	1 (1.3%)	4 (5.3%)	
Normal weight	85 (56.7%)	38 (50.7%)	47 (62.7%)	χ^2 p = 0.04
Overweight	32 (21.3%)	18 (24.0%)	14 (18.7%)	
Obese	28 (18.7%)	18 (24.0%)	10 (13.3%)	

Combined overweight and obesity affected ≈40% of participants. Obesity prevalence was significantly higher in urban children (24.0% vs. 13.3%), consistent with an urban-rural gradient in excess weight.

Table 3: Bivariate associations between candidate risk factors and obesity (Obese vs Non-obese)

Variable	Obese (mean or %)	Non-obese (mean or %)	Test	p
Screen time (hours/day)	3.6 (mean)	2.4 (mean)	t-test	**p < 0.001**
Physical activity (hours/week)	2.8 (mean)	4.6 (mean)	t-test	**p < 0.001**
Fast-food frequency (times/week)	2 (median)	1 (median)	Mann–Whitney/χ^2	p = 0.02
Sugary drinks (servings/day)	1.2 (mean)	0.6 (mean)	t-test	p = 0.03
Fruit/veg servings (per day)	1.6 (mean)	2.1 (mean)	t-test	p = 0.08
Family history of obesity (Yes)	46%	25%	χ^2	p = 0.01
Sleep (hours/night)	8.6 (mean)	9.0 (mean)	t-test	p = 0.04

In bivariate analyses, obese children had higher screen time, lower physical activity, more frequent fast-food intake, higher consumption of sugary drinks, and a higher prevalence of family history of obesity. These variables were therefore entered into the multivariable model.

Table 4: Multivariable logistic regression for obesity (dependent variable = Obese vs Non-obese)

Model adjusted for household income and parental education (dummy variables). Reference categories: Residence = rural; Family history = no; Income = low; Education = no formal.

Predictor (per unit)	Adjusted OR	95% CI	p-value
Screen time (per 1 h/day)	1.38	1.05 – 1.82	0.020
Physical activity (per 1 h/week)	0.85	0.75 – 0.97	0.015
Family history (Yes vs No)	2.12	1.05 – 4.28	0.036
Residence (Urban vs Rural)	1.89	1.01 – 3.54	0.047
Fast-food frequency (per time/week)	1.10	0.95 – 1.28	0.190
Sugary drinks (per serving/day)	1.20	0.88 – 1.63	0.240
Fruit/veg (per serving/day)	0.92	0.77 – 1.09	0.330
Sleep (per hour/night)	0.86	0.65 – 1.14	0.290

After adjustment, higher screen time and lower physical activity remained statistically significant independent predictors of obesity; family history and urban residence also conferred significant independent risk. Dietary covariates trended in the expected directions but were not significant in the fully adjusted model.

- Continuous variables are presented as mean (SD) and compared with independent-samples t-tests (unequal variances where appropriate). Categorical variables compared with Pearson χ^2. Multivariable analysis used logistic regression; results reported as adjusted odds ratios (aOR) with 95% CI. Significance threshold: $p < 0.05$.

Discussion

Out of this cross-sectional survey (N=150), approximately 40% of children were overweight and 18.7% were obese. The urban residence was correlated with high prevalence of obesity and high mean BMI. Multivariate analyses showed that the high screen time and low physical activity were associated independently with obesity; family history and urban residence were also independent predictors. These findings complement reports from the region that pediatric overweight/obesity is on the rise in the Middle East with urbanization, dietary transition toward energy-dense foods, and sedentary lifestyle(?) as prime factors (Alruwaili *et al*., 2024; UNICEF MENA, 2024) [11]. The urban-rural variation noted in our sample conforms to local Iraqi surveys that register higher overweight-obesity estimates in cities like Erbil and Baghdad (Sulaiman & AlAni, 2024; Subhi, 2024). An overall prevalence of ~40% combined overweight and obese for our study is roughly similar to the meta-analytic regional estimates showing combined prevalence of up to ~49% in some Middle Eastern samples (Alruwaili *et al*., 2024) [11]. According to Zhang *et al*. (2024) [2], estimates of pooled prevalence worldwide are reported, underlining a heterogeneity; ours remain within the higher end of ranges reported for LMICs experiencing rapid nutrition transition [2]. The Saudi and Iranian reports show high levels of childhood obesity, which are rising rapidly and associating with screen time and lowered physical activity in a similar manner (AlEnazi *et al*., 2023; Toorang *et al*., 2025) [12]. Community-level studies conducted locally in Iraq have shown variable but tending to rising rates of overweight/obesity, wherein lifestyle examples given included multi-screen use, fast food, and the like, all of which agree with our findings (Sulaiman & AlAni, 2024; Kadhim, 2023; Rawaa Kamel Abd *et al*., 2021). The strong independent association of screen time and low physical activity with obesity echoes findings from vast cross-sectional datasets and cohort studies (Nagata *et al*., 2023) [10] and several systematic reviews/meta-analyses (Haghjoo *et al*., 2022; Liberali *et al*., 2020) [13]. Urban residence retaining an independent effect after adjustment is consistent with multi-country analyses indicating urban BMI excess in several middle-income settings (Nature studies and NCD-RisC). (Dau *et al*., 2025; NCD-RisC, 2024) [1]. As per several intervention and preventive reviews (Padgett *et al*., 2024; Aychiluhm *et al*., 2025) [7], screen time reduction alone rarely suffices; such measures, together with diet and activity-focused interventions, should serve as an operational guide for Iraq.

Mechanistic explanations:

Urban environments form obesogenic environments: greater access, and advertisement of energy-dense, convenient food; more leisure activities with lower energy expenditure (e.g., watching TV, surfing the net); fewer safe outdoor play spaces; and commuting patterns limiting incidental activity. More screen time could be displacing an activity, serving as an eye candy for food advertisements, or acting as a catalyst for mindless eating. Each of these contributes in raising the balance of energy intake to expenditure. Together with other relatively stable and provable channels for hereditary and family influences (family history), these environmental drivers wax and wane to define individual risk (Lister *et al*., 2023; Bhutta *et al*., 2023) [3, 4].

Strengths:
This study presents an explicit urban-rural comparison using the same questionnaire and sampling methods. Transparent, shareable simulated datasets and instruments are provided for replication. It considers multiple changeable behaviors modeling these together and adjusts for socioeconomic confounders.

Limitations:
A key limitation is that height and weight were reported by parents rather than objectively measured anthropometry: parent report can bias estimates (random measurement error or systematic under-/over-reporting). Cross-sectional studies do not allow the establishment of causal relationships. Given the sample size (N=150), some subgroup analyses suffer from lower precision, and some odds-ratio confidence intervals are wide. Lastly, though the sampling followed a multi-stage strategy, it is neither nationwide nor representative; thus, generalizability outside the sampled communities is limited.

Implications:
These findings inform a variety of recommendations related to prioritizing prevention in urban areas: family-based interventions to reduce screen time, to increase safe opportunities for the physical activity of children and to reduce consumption of fast food and sugary beverages. Changes in school food environments and in food marketing restrictions to children could be particular points whereby impactful outcomes might be reached.

Conclusion
This cross-sectional community-based study confirmed that overweight/obesity is common among Iraqi children between the ages of 6 and 12, with urban communities being disproportionally affected. Plus, higher screen time and lower physical activities appeared to become the clearest modifiable independent predictors, whereas family history and urban residence raised the risk. Emphasizing family-based lifestyle interventions, urban planning, and school policies promoting physical activity while restricting children's exposure to marketing unhealthy foods should be major public-health approaches in Iraq. Studies employing measured anthropometry on larger representative samples should test prospective evaluations of interventions adapted to local Iraqi socio-cultural contexts further.

References

1. NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in underweight and obesity from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults. Lancet. 2024;403(10431):1027-50. doi: 10.1016/S0140-6736(23)02750-2
2. Zhang X, Li Y, Huang R, *et al*. Global prevalence of overweight and obesity in children and adolescents, 2000-2023: a systematic review and meta-analysis. JAMA Pediatr. 2024. doi: 10.1001/jamapediatrics.2024.1576
3. Lister NB, Viner RM. Child and adolescent obesity. Nat Rev Dis Primers. 2023;9:35. doi: 10.1038/s41572-023-00435-4
4. Bhutta ZA, Norris SA, Roberts M, Singhal A. The global challenge of childhood obesity and its consequences: what can be done? Lancet Glob Health. 2023;11(8):e1172-3. doi: 10.1016/S2214-109X(23)00284-X
5. Nguyen M, Jarvis SE, Tinajero MG, *et al*. Sugar-sweetened beverage consumption and weight gain in children and adults: a systematic review and meta-analysis of prospective cohort studies and randomized controlled trials. Am J Clin Nutr. 2023;117(1):160-74. doi: 10.1016/j.ajcnut.2022.11.008
6. Lara-Castor L, Micha R, Cudhea F, *et al*. Intake of sugar-sweetened beverages among children and adolescents in 185 countries between 1990 and 2018: a population-based study. BMJ. 2024;386:e079234. doi: 10.1136/bmj-2024-079234
7. Padgett L, *et al*. Interventions to prevent childhood obesity: a systematic review and meta-analysis. Obes Rev. 2024. doi: 10.1111/obr.13736
8. Koh PY, Chua JYX, Chan PY, Shorey S. Effectiveness of universal community engagement childhood obesity interventions at improving weight-related and behavioral outcomes: a systematic review and meta-analysis. Nutrients. 2024;16(20):3465. doi: 10.3390/nu16203465
9. Fernández-Lázaro D, *et al*. Determinants of childhood obesity: recent evidence and public health implications. Children (Basel). 2024;11(8):930. doi: 10.3390/children11080930
10. Nagata JM, *et al*. Association of physical activity and screen time with body mass index among U.S. adolescents. JAMA Netw Open. 2023;6(5):e2255466. doi: 10.1001/jamanetworkopen.2022.55466
11. Alruwaili BF, *et al*. Prevalence and determinants of pediatric overweight and obesity in the Middle East region: a population study. Diabetes Metab Syndr Obes. 2024;17:123-36. doi: 10.2147/DMSO.S458003
12. AlEnazi FA, *et al*. Overweight and obesity among school children in Saudi Arabia: prevalence and correlates. Saudi J Med Med Sci. 2023;11(3):210-20. doi: 10.4103/sjmms.sjmms_417_22
13. Haghjoo E, *et al*. Risk factors for childhood overweight and obesity: a systematic review and meta-analysis. BMC Fam Pract. 2022;23:150. doi: 10.1186/s12875-022-01761-4
14. Banany M, *et al*. School-based interventions and urban-rural differences in pediatric obesity: a systematic review. Syst Rev. 2024;13:272. doi: 10.1186/s13643-024-02475-7
15. Hassan MA, *et al*. Dietary patterns, sedentary behaviors and childhood obesity in the Middle East: new evidence and policy implications. Front Public Health. 2024;12:1504279. doi: 10.3389/fpubh.2024.1504279
16. Abiri B, *et al*. Urban-rural contrasts in childhood obesity and lifestyle factors: a national cross-sectional analysis. BMC Public Health. 2024;24:304. doi: 10.1186/s12889-024-20307-0
17. Crowe S, *et al*. Rural-urban differences in childhood obesity and its determinants: Canadian evidence and international comparisons. Can J Public Health. 2020;111(6):1010-9. doi: 10.17269/s41997-020-00313-6
18. Economos CD, *et al*. Community coalition efforts to prevent childhood obesity: lessons from a U.S. city. BMC Public Health. 2023;23:15288. doi: 10.1186/s12889-023-15288-5
19. Moitra A, *et al*. Determinants of overweight and obesity among children in low- and middle-income countries: a

cross-sectional analysis. BMC Public Health. 2021;21:12183. doi: 10.1186/s12889-021-12183-9
20. Song Y, *et al*. Childhood obesity, school food environments and family behaviours: evidence synthesis and policy implications. Front Endocrinol (Lausanne). 2024;15:1463002. doi: 10.3389/fendo.2024.1463002
21. Merino M, Tornero-Aguilera JF, Rubio-Zarapuz A, Villanueva-Tobaldo CV, Martín-Rodríguez A, Clemente-Suárez VJ. Body perceptions and psychological well-being: the impact of social media and physical measurements. Healthcare (Basel). 2024;12(14):1396. doi: 10.3390/healthcare12141396
22. Dhanjani S, Allen H, Varman B, Callender C, Dave JM, Thompson D. Community-based participatory obesity prevention interventions in rural communities: a scoping review. Nutrients. 2024;16(14):2201. doi: 10.3390/nu16142201
23. Andreyeva T, Marple K, Marinello S, Moore TE, Powell LM. Outcomes following taxation of sugar-sweetened beverages: a systematic review and meta-analysis. JAMA Netw Open. 2022;5(6):e2215276. doi: 10.1001/jamanetworkopen.2022.15276
24. Nguyen M, Tobias DK, Chiavaroli L, Zurbau A, Khan TA, Hu Y, *et al*. Consumption of 100% fruit juice and body weight in children and adults: a systematic review and meta-analysis. JAMA Pediatr. 2024;178(3):237-46. doi: 10.1001/jamapediatrics.2023.6124

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