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Comparison of developmental age with chronological age of 24 months old children of peri-urban areas of Karachi in ACT study

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Early neurodevelopment of child sets stage for later achievements in life. Developed countries have embarked many programs upon it but in order to tailor these programs age wise for children in LMICs, enough data is required. This study aims to find the developmental age and its correspondence with chronological age of 24 months old children residing in peri-urban areas of Karachi, Pakistan. We administered Bayleys scale of infant development BSID III on 506 children enrolled in AMANHI study at Ibrahim hyderi research center for the assessment of their cognitive, language and motor development, from the duration of February 2017 till June 2018. The developmental age was derived from the raw scores attained on various subscales of BSID III. Paired t-test was ran to assess any significant difference in a child's chronological and developmental age at five subscales of BSID III. The data has reported mean difference in months with 95% Confidence Interval (CI). All the analysis was conducted using STATA 15. The mean chronological age (in months) was 24.2, while mean developmental age at all five sub-scales was 18.9 (cognitive), 20.8 (receptive communication), 20.24 (expressive communication), 21.2 (fine motor) and 19.4 (gross motor). We found a statistical significant difference in children's chronological and developmental age in subscales of cognition (5.3, 4.9-5.5), receptive communication (3.3, 3-3.7), expressive communication (3.9, 3.5-4.3), fine motor (3, 2.6-3.3) and gross motor skills (4.7, 4.3-5.1). The current data shows that these children lag behind in all learning areas. These findings can be used to further uncover the factors that are responsible for these developmental delays.

Antioxidant, antimicrobial and antiproliferative activities-based comparative study of peel and flesh polyphenols from kiwifruit *(Actinidia chinensis)*

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Kiwifruit, abundant in vitamin C, phenolics and other nutritional elements, is called 'the king of fruits. This study evaluated the polyphenolic composition and biological activities of peel and flesh of kiwifruit *(Actinidia chinensis)*. As a result, the pericarp, the waste of kiwifruit, was found to be more abundant in polyphenols and flavonoids than flesh, with the contents of 12.8 mg/g and 2.7 mg/g, respectively. LC/MS analysis revealed that the contents of catechin, quercetin and epigallocatechin (the main polyphenols in kiwifruit) in peel were significantly higher than that in flesh. Additionally, kiwifruit peel polyphenols showed much more potent antioxidant activity than flesh polyphenols, as evidenced by the higher DPPH, ABTS radical scavenging, hydroxyl ion reducing and ion chelating ability. In the same way, the antibacterial activity of peel polyphenols against Gram-negative *Escherichia coli* and Gram-positive *Listeria monocytogenes* and *Staphylococcus aureus* was evidently higher as compared to flesh polyphenols. Moreover, the proliferation of HepG2 cells was time- and dose-dependently inhibited by kiwifruit polyphenols, with 170 μg/mL and 291 μg/mL of IC50 values for peel and flesh polyphenols at 72 hours of treatment time, respectively. Taken together, kiwifruit peel with higher contents of phenolics and flavonoids exerts more potent antioxidant, antibacterial and anticancer activity than flesh. Our study provides scientific evidences for the development of kiwifruit (especially peel)-based novel natural products with excellent bioactivities.

Notes:

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