

Preventable Under-5 Mortality in Pekan District, Malaysia (2020-2024): A Retrospective Analysis of Determinants and Patterns

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Introduction

- **Global burden:** In 2021, about 5 million children under five died worldwide, with the majority from preventable causes such as infections, birth complications, and unsafe environments (UNICEF, 2023).
- **SDG Target 3.2:** The World Health Organization (WHO) has set a goal to reduce under-five mortality (U5M) to below 25 per 1,000 live births by 2030 (WHO, 2021).
- **Malaysia's progress:** The country has made notable achievements, reducing U5M to 8.3 per 1,000 live births in 2023 (DOSM, 2024). However, these national averages mask inequalities—rural and semi-urban districts still experience preventable deaths.
- **Local disparities:** Districts like Pekan in Pahang face challenges due to geographic spread, limited access to healthcare, and vulnerable populations such as the Orang Asli communities.
- **Stillbirth & Under-5 Mortality Review (SU5MR):** Introduced by the Ministry of Health (MOH) in 2012, SU5MR identifies avoidable factors, improves health system responsiveness, and guides action plans (MOH, 2012).
- **Study importance:** Analysing Pekan's SU5MR data (2020-2024) helps uncover local risk factors and provides evidence for targeted interventions, aligning with Malaysia's Child Health Strategic Plan 2021-2030 and SDG 3.2.

Objectives

- To determine prevalence of preventable under-5 deaths in Pekan (2020-2024).
- To examine associations between preventability and factors such as child's age, cause of death, maternal age, and parity.

Methods

- **Design:** Retrospective cross-sectional study.
- **Data Source:** SU5MR reviewed cases (2020-2024).
- **Sample:** 96 under-five mortality cases.
- **Variables: Outcome:** Preventability of death. **Independent:** Child's age group, cause of death, maternal age, parity.
- **Analysis:** Descriptive statistics (SPSS v29). Chi-square for categorical variables, t-test for nu-

merical variables. $p < 0.05$ considered significant.



Factor	Preventable (%)	Not Preventable (%)	χ^2	p-value	OR (95% CI)
Maternal Age			3.462	0.177	—
≤19 years	3 (7.9%)	2 (3.4%)			
20-34 years	24 (63.2%)	43 (74.1%)			
≥35 years	11 (28.9%)	13 (22.4%)			
Child Age			8.732	0.033	—
Neonatal Early	9 (23.7%)	31 (53.4%)			Ref
Neonatal Late	5 (13.2%)	6 (10.3%)			2.87 (0.79-10.36)
Post Neonatal	13 (34.2%)	11 (19.0%)			4.06 (1.38-11.93)*
Toddler	11 (28.9%)	10 (17.2%)			3.79 (1.24-11.55)*
Cause of Death			15.391	0.002	—
Perinatal	14 (36.8%)	37 (63.8%)			Ref
Infection	8 (21.1%)	3 (5.2%)			7.05 (1.57-31.60)*
Congenital	8 (21.1%)	13 (22.4%)			1.63 (0.60-4.38)
External Cause	8 (21.1%)	5 (8.6%)			4.23 (1.18-15.09)*
Parity	2.76 ± 1.45	2.39 ± 1.38	t = 1.280	0.205	—

Note: * indicates statistical significance ($p < 0.05$).

Results & Discussion

- Total 38 cases (39.6%) were classified as preventable, while 58 (60.4%) were not preventable.
- **Older children (post-neonatal, toddlers):** higher preventability vs neonates → due to infections, unsafe environments, delayed treatment.
- **Infections & external causes:** mostly preventable through breastfeeding, hygiene, sanitation, and safety measures.
- **Congenital & perinatal causes:** less preventable → linked to biological/medical limitations.
- Previous studies in Malaysia and globally support these patterns (Kamaludin et al., 2018; Mior Mazlan & Zainudin, 2023; UNICEF, 2023; WHO, 2020).

Limitations & Recommendations

- The study was limited by reliance on past records, small case numbers, and being conducted only in Pekan, so results may not reflect other areas.
- Highlights the need to strengthen healthcare services, hygiene, breastfeeding, health-seeking behaviour, and community-based health education.
- Future studies should use larger samples, include multiple districts, and ensure more accurate data collection for stronger and more general findings.

Conclusion

- Nearly half of under-5 deaths in Pekan were preventable.
- Significant associations: child's age and cause of death.
- Need targeted interventions to reduce infection-related deaths and improve post-neonatal/toddler care.
- Findings align with SDG 3.2 and Malaysia's National Child Health Strategic Plan 2021-2030.

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