

INTRODUCTION

- Pit and fissure caries in primary second molars (PrSM) may indicate increased susceptibility in permanent first molars (PeFM).
- Tooth-specific disease patterns may better predict PeFM caries risk than generalized risk models, though the predictive value of primary molar caries remains underexplored.
- Only **12% of patients** met ideal clinical and behavioral criteria, while an additional **11.5% demonstrated similar favorable profiles**, despite initial primary molar caries.
- Understanding this relationship may support earlier prevention methods and modification of risk patterns during critical developmental periods.

OBJECTIVE

To evaluate the association between pit and fissure health in PrSMs and health of PeFMs with consideration of behavioral risk factors.

METHOD

Study Design: Retrospective chart review of 200 pediatric patients aged 8–10 years
Inclusion Criteria: Patients with complete dental records, including caries status of primary second molars and permanent first molars.
Caries Assessment: Primary second molars (#A, J, K, T) and permanent first molars (#3, 14, 19, 30) were evaluated.

- Caries status recorded as present (≥1) or absent (0).
- Presence of sealants on PeFMs was documented.

Behavioral Risk Factors: Four primary risk factors were assessed:

- Plaque presence (gauze wipe)
- Nighttime brushing
- Recall compliance (timely vs late)
- Juice consumption in between meals

Risk Stratification: Based on combinations of behavioral risk factors and corresponding caries outcomes.
Outcome Measures: Association between pit and fissure health in primary second molars vs permanent first molars.

RESULTS

Data obtained from 200 patients: 106 females and 94 males. Based on the risk stratification measures, there were **24 “Ideal Patients”** (presented for timely recalls with no PrSM or PeFM caries, negative gauze wipe, no in-between meal juice intake, and positive nighttime brushing).

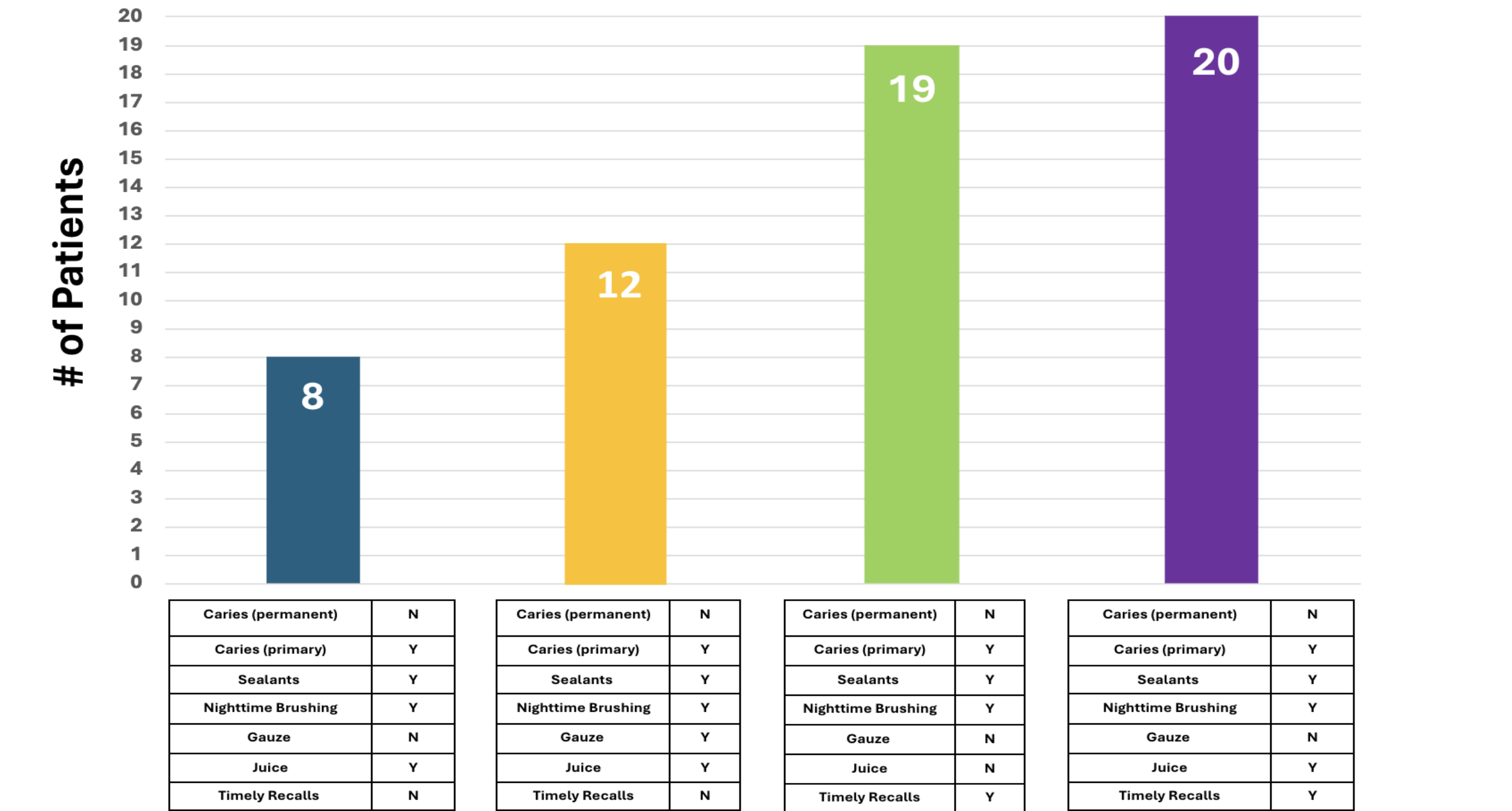


Figure 1. Caries-free permanent first molars with sealant presence across varying behavioral risk factors (59 low-risk patients)



Figure 2. Permanent first molar caries associated with absence of sealants across varying behavioral risk factors (32 high-risk patients)

DISCUSSION

- PeFM caries risk appears **multifactorial** - behavioral factors influence outcomes.
- PrSM caries may indicate increased susceptibility; however, **disease progression is modifiable** - outcomes are not solely impacted by prior caries experience.
- A **clear association** was observed between **lack of nighttime brushing, positive gauze wipe, and increased PeFM caries risk**, suggesting these behaviors may act synergistically.
- There were **no** caries free PeFM patients presenting with all four behavioral risk factors - reinforcing the **cumulative effect** of the risk factor burden.
- Conversely, patients with **sealants and caries-free PeFMs rarely exhibited multiple high-risk behaviors simultaneously**, suggesting clustering of protective behaviors and/or successful intervention.
- **Sealants** are notably the **most consistent protective factor**, with caries-free PeFMs seen, even in patients with multiple behavioral risk factors.
- Notably, patients **lacking sealants and nighttime brushing** consistently presented with **both** plaque and excessive juice exposure, suggesting these **risk factors tend to occur together**.

CONCLUSIONS

- PeFM caries risk is **modifiable**.
- Patients with multiple behavioral risk factors did not demonstrate favorable outcomes without intervention.
- **Plaque and dietary habits** appear to be **persistent, coexisting risk factors**.
- A subset of patients showed improvement in risk profile over time, suggesting a **positive impact of clinical intervention and patient education**.
- No significant gender differences were observed – suggesting that caries risk may be **more behavior-driven** than gender-associated.
- Sealants play a critical role in preventing disease, regardless of behavior risk.
- **Primary prevention** does not only protect teeth—it **may also change behavior**. Understanding how and when this shift occurs warrants further study.

REFERENCES

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