



Straw-related Oral Cavity and Oropharyngeal Injuries in the United States: A NEISS Database Investigation (2014-2023)

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INTRODUCTION

- Oral cavity and oropharyngeal injuries are common in children, often occurring during falls or abrupt movements with objects in the mouth^{1,2}.
- Most injuries are minor, but potential sequelae can include retropharyngeal/mediastinal abscesses, airway compromise, internal carotid artery injury, and prolonged hospitalizations^{1,3}.
- In the literature, oropharyngeal penetrating foreign bodies are often household items such as toothbrushes, pens or pencils and can be made of rigid material such as metal, plastic, or wood^{1,4}.
- The shift toward durable, reusable straws driven by sustainability efforts has raised concerns about oral impalement injuries⁵. Yet, there remains a lack of research specifically addressing the risks posed by non-collapsible rigid plastic and metal straws.
- Objective:** To characterize the demographics, injury patterns, anatomical sites, and patient disposition of straw-related oral cavity and oropharyngeal injuries in the United States.

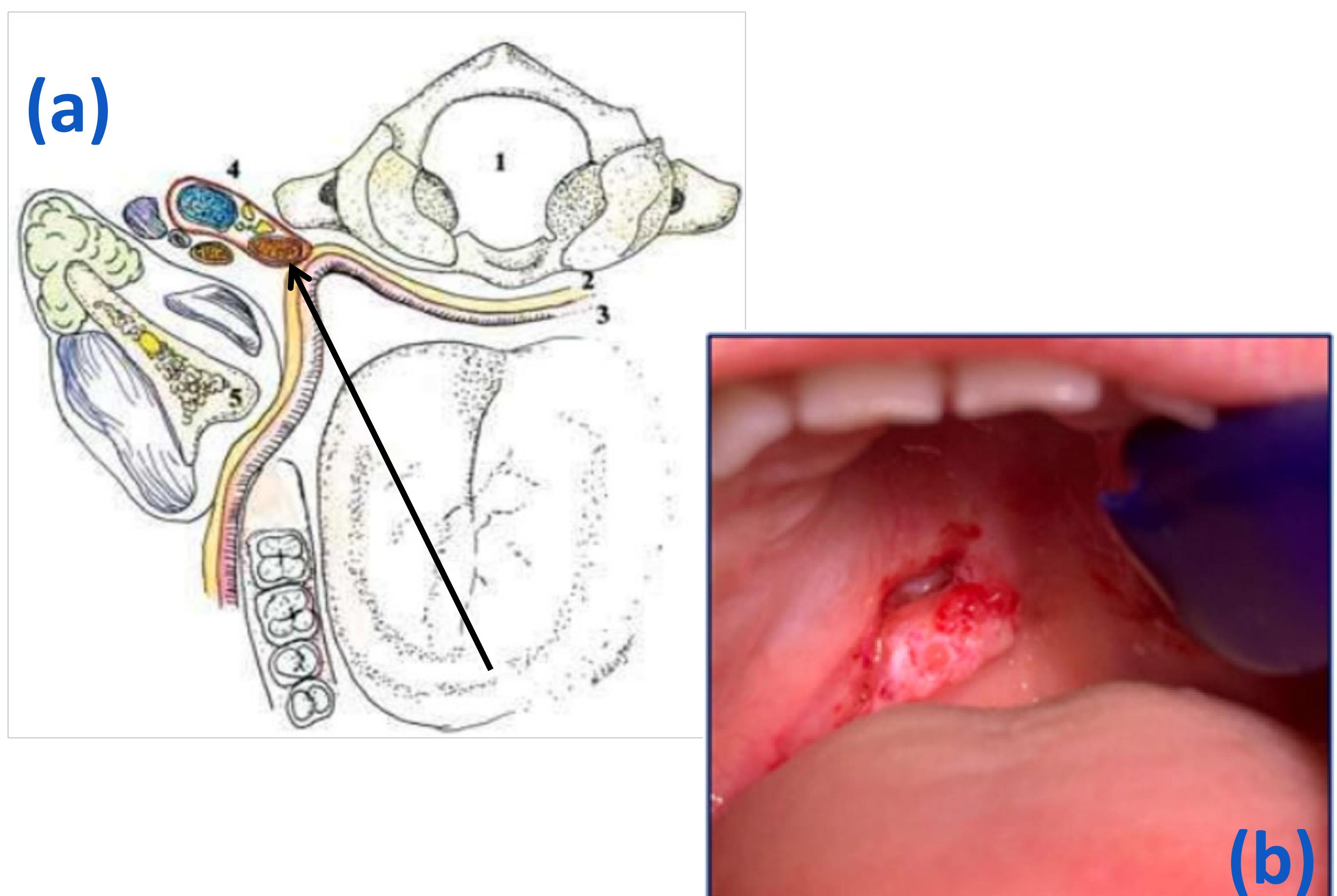


Figure 1: (a) Illustration of an impalement object (arrow) penetrating the carotid sheath via the oral cavity⁷. (Note: 1. Cervical vertebrae 2. Retropharyngeal space 3. Superior constrictor muscle 4. Carotid sheath 5. Mandibular Ramus) (b) Palatal laceration secondary to trauma from a metal drinking straw⁸.

METHODS

- Retrospective National Electronic Injury Surveillance System (NEISS) data (2014-2023) were reviewed, with straw-related oral and oropharyngeal injuries identified by product and anatomical codes and confirmed through narrative review.
- Demographics, diagnosis, injury type, and ED disposition were categorized, with national estimates generated using NEISS sample weights.

RESULTS

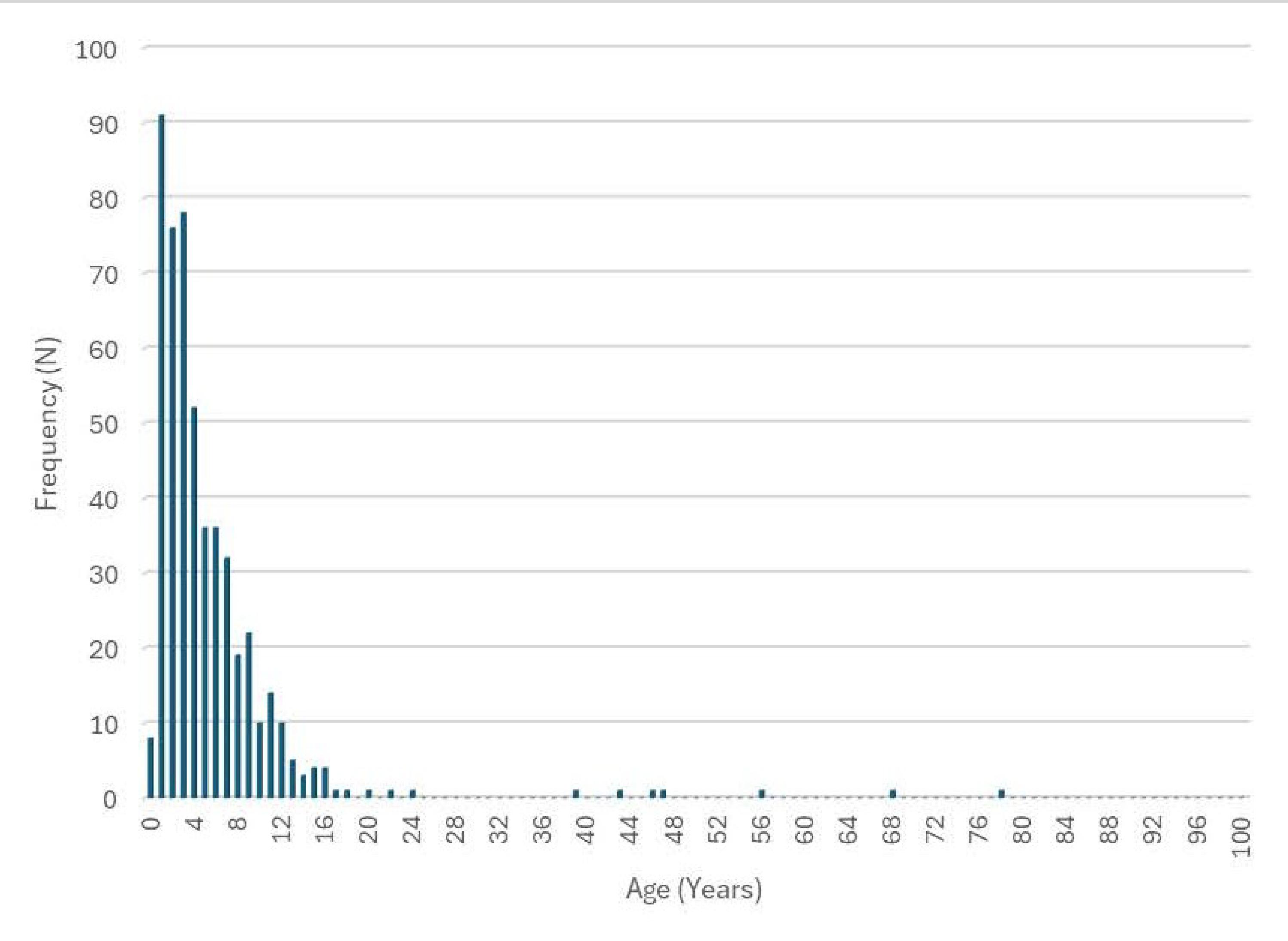


Figure 2: Age Distribution of Straw-related Oral Cavity and Oropharyngeal Injuries. Bar graph showing the number of reported injuries by age in years from 2014 to 2023.

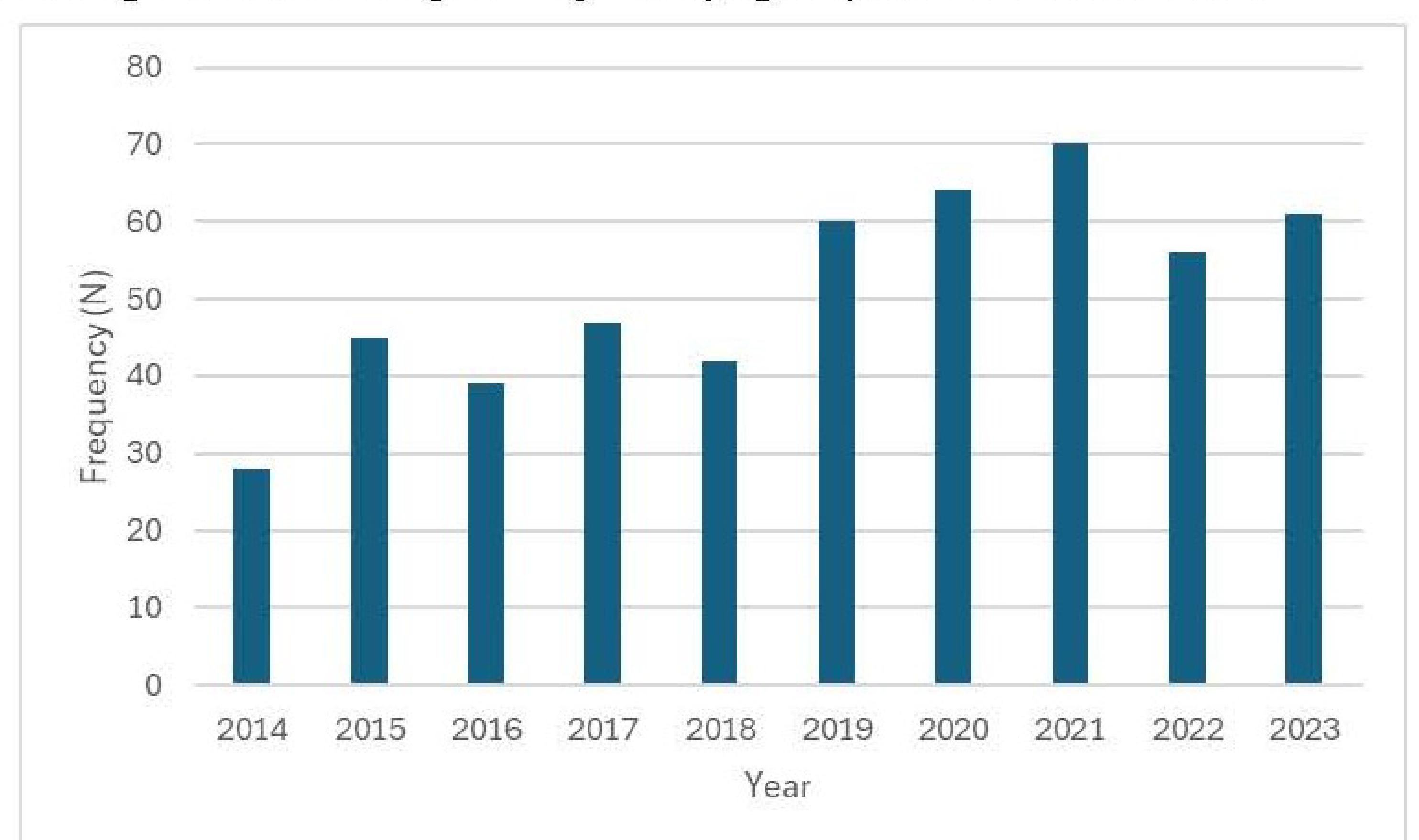


Figure 3: Annual Incidence of Straw-related Injuries in the Emergency Departments (2014-2023). Bar graph showing the yearly count of straw-related oral cavity and oropharyngeal injuries reported in the NEISS database.

Diagnosis	N	% Total
Contusions, Abrasions	93	18.16
Hematoma	1	0.20
Laceration	293	57.23
Dental Injury	16	3.13
Internal Injury	3	0.59
Puncture	91	17.77
Hemorrhage	11	2.15
Avulsion	4	0.78

Table 1: Injury Type: Categorization of oral cavity and oropharyngeal injuries caused by drinking straws.

RESULTS/DISCUSSION

- Most injuries occurred in children ages 1-4, reflecting early ambulation, immature motor control, and oral exploratory behaviors. Home settings were the most common location, emphasizing the importance of caregiver supervision.
- Between 2014-2023, 512 cases met our inclusion criteria with a national estimate of approximately 12,000 ED visits over the 10-year period.
- Injuries increased after 2014, which may be related to a rise of reusable metal and hard plastic straws⁶. Rigid straws pose a greater risk of penetration compared to flexible, collapsible straws, though NEISS data lack granularity to shed light on how material type is implicated in injury type.
- White patients were most frequently reported, but incomplete race data (>30% missing) limits interpretation. Differences may reflect population demographics, ED access disparities, or sampling bias.
- Most cases were minor soft tissue injuries, but 3.3% required admission. Rigid straws pose serious potential risks like carotid artery injury or stroke. CT angiography should be considered in penetrating injuries of the oropharynx.

CONCLUSION

- Straw-related injuries are an important cause of pediatric ED visits, with the greatest burden in children aged 1-4 and most incidents occurring in the home; while often minor, some involve deeper structures with neurovascular risks.
- Injury trends raise concern about rigid reusable straws, underscoring the need for preventative strategies such as caregiver education, safety-focused product design, and age-appropriate use guidelines.

ACKNOWLEDGMENTS

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REFERENCES

