



**Health inequalities in school children in
Okinawa and the school's role to
improve their health and well-being:
before and after the COVID-19 pandemic**

**Minoru Takakura
Faculty of Medicine
University of the Ryukyus**

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School closure due to the COVID-19 pandemic

- ▶ **School closure in Okinawa**
 - ▶ March (short period), April, May, August (staggered attendance)
- ▶ **The effects of school closure on health in children and adolescents**
 - ▶ **Mental health** ↓ (Nearchou et al, 2020; Loades et al, 2020)
 - ▶ **Physical activity** ↓ (Cachón-Zagalaz et al, 2020)
 - ▶ **Sedentary behaviors (screen time)** ↑ (Stockwell et al, 2021)
 - ▶ **Sleep quality** ↓ (Bates et al, 2020)
- ▶ Some groups, such as low SES groups, seem to be more vulnerable to the burden of the COVID-19 pandemic.



School closure due to the COVID-19 pandemic

- ▶ **The effectiveness of school closure during coronavirus outbreaks**
 - ▶ Data from the SARS outbreak suggest that school closures did not contribute to the control of the epidemic (Viner et al, 2020).
 - ▶ Voluntary behavioral changes, such as telework, had an association with COVID-19 incidence and mortality that was 3 times stronger than that of school closures (Zimmerman & Anderson, 2021).
- ▶ **We should re-realize that schools are very important place** in where the students can go about healthy daily living.



Socioeconomic inequalities in youth health and the school's role

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原 著

小学生の永久歯齲蝕と社会経済因子および学校給食後の 歯みがき時間設定状況との関連

我 部 杏 奈^{*1}, 高 倉 実^{*2}, 宮 城 政 也^{*3}, 喜屋武 享^{*4}

^{*1}伊江村立伊江中学校

^{*2}琉球大学医学部

^{*3}琉球大学教育学部

^{*4}沖縄女子短期大学

Association between Caries of Permanent Teeth, Socio-economic Status and the Time of
Tooth-brushing after School Lunch among Elementary School Students

Anna Gabe^{*1} Minoru Takakura^{*2} Masaya Miyagi^{*3} Akira Kyan^{*4}

The aim of the study was to examine the association between caries, SES, and tooth-brushing program after school lunch in elementary schools.

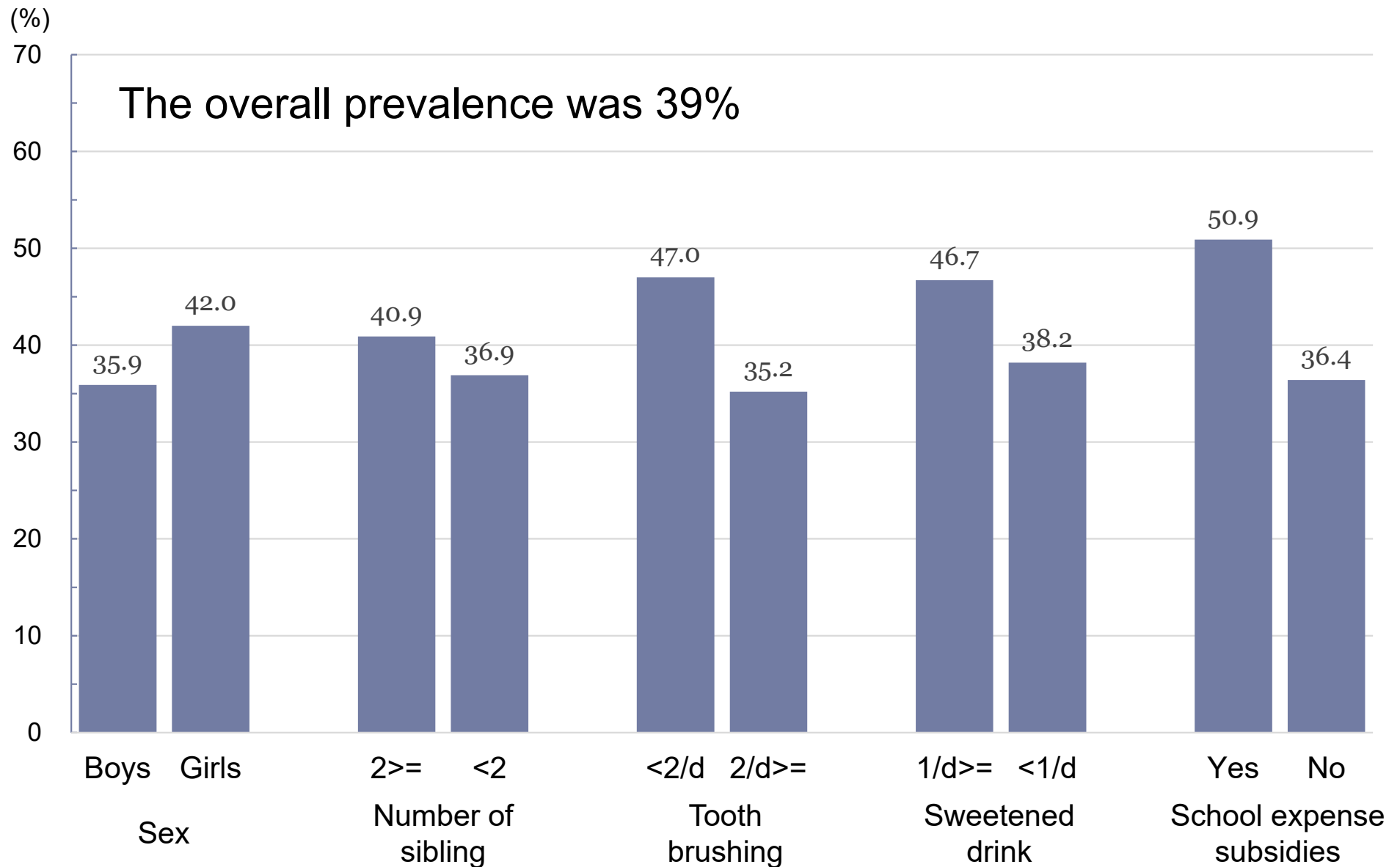
Methods

- ▶ **Study design and setting**
 - ▶ Cross-sectional study in **43 public elementary schools** under the jurisdiction of two regional education boards in Okinawa in 2018
- ▶ **Data collection**
 - ▶ A self-administered questionnaire
 - ▶ Data of dental caries and SES provided by school records
- ▶ **Participants**
 - ▶ **1,248 fifth graders** (aged 11 years) enrolled in the study schools with informed consents from parents
 - ▶ The study protocol was approved by the IRB of the University of the Ryukyus

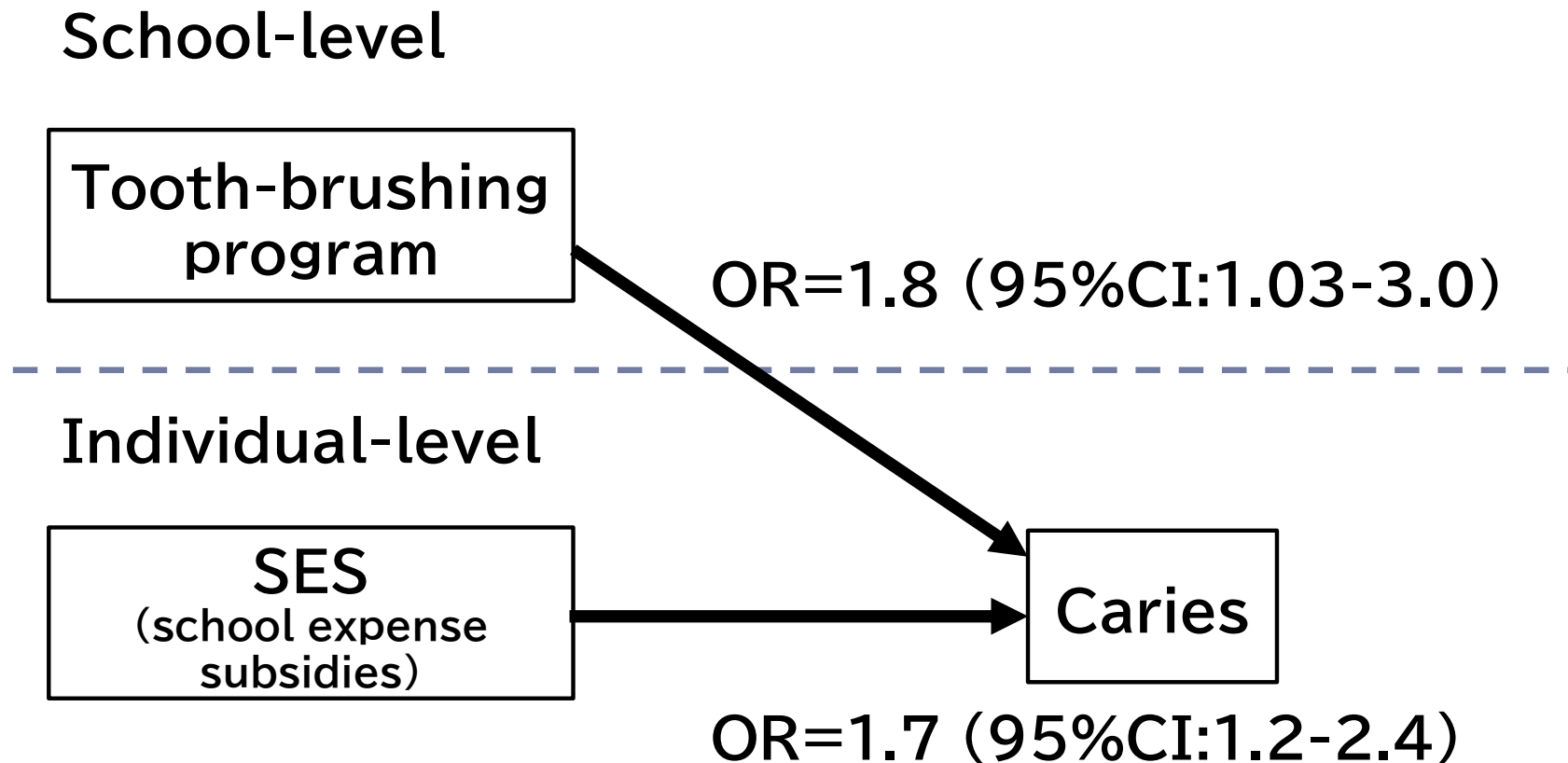
Measures

- ▶ **Dental caries**
 - ▶ **DMF (decayed, missing, filled teeth) ≥ 1**
 - ▶ **DMF = 0**
- ▶ **Socioeconomic status (SES)**
 - ▶ **Received school expense subsidies (low SES)**
 - ▶ **Not received school expense subsidies (High SES)**
- ▶ **Tooth-brushing time after school lunch**
 - ▶ **Yes/No**

The prevalence of caries in children by sociodemographic variables



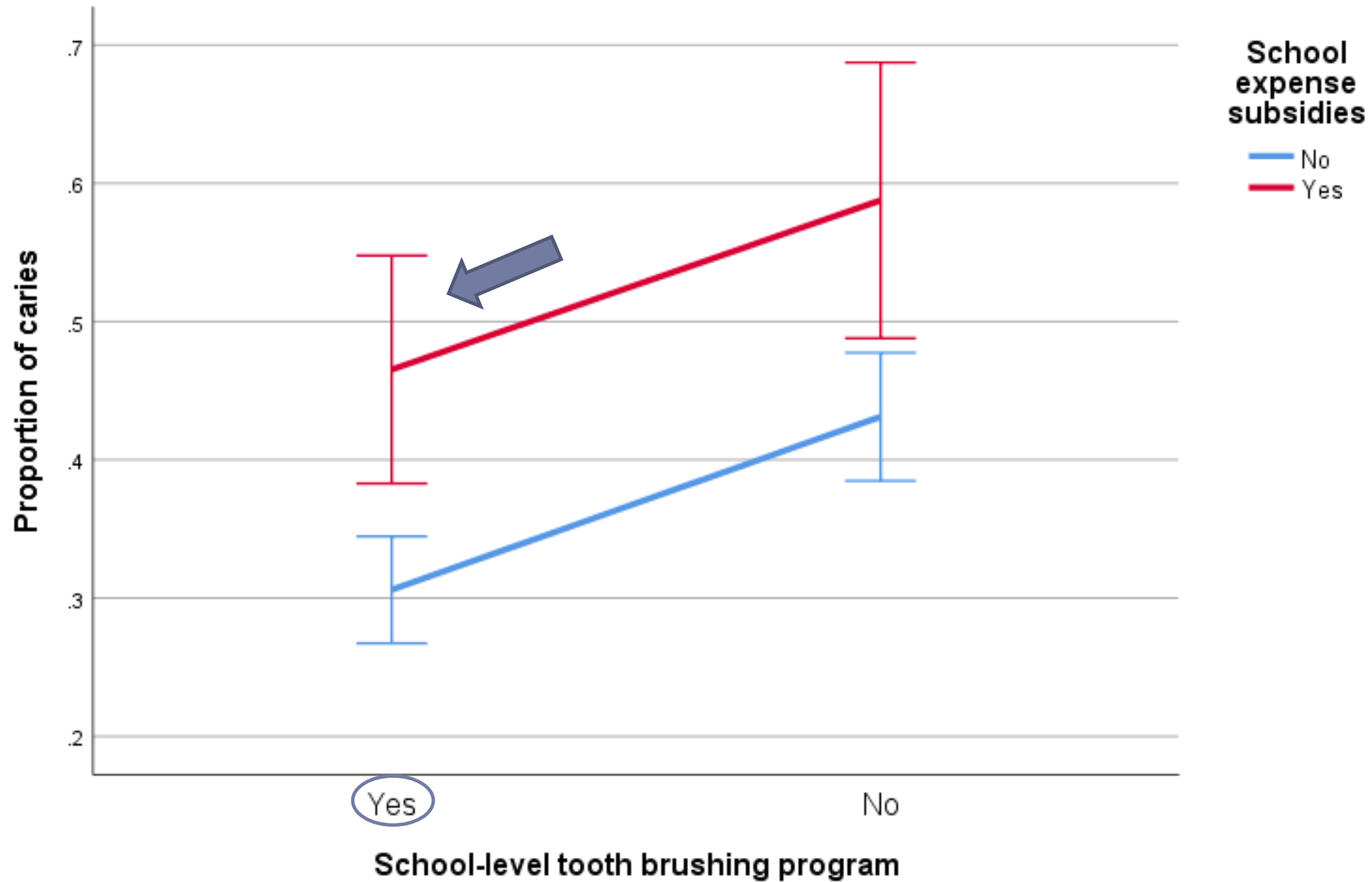
The result of multilevel logistic regression analysis



Adjusted for individual- and school-level covariates and school clustering effects

Prevalence of caries by SES and school-level tooth-brushing

Proportion and 95% confidence interval



Conclusion

- ▶ The tooth-brushing program after school lunch has an independent association with dental caries among school children.
- ▶ School-level activities might have contextual effects on individual health over and above individual-level characteristics, such as SES and health-related behaviors.
- ▶ Although it is difficult to change SES by individual efforts, school-level activities can play the important role in promoting health and well-being among children and adolescents.