

# RISK FACTORS FOR ALCOHOL CONSUMPTION AMONG PRE-ADOLESCENTS IN SASKATOON, SASKATCHEWAN

Kamalpreet Banga  
Cordell Neudorf  
Jennifer A. Cushon  
Sri Krishna Sai Madupalli  
Cheryl L. Waldner

# INTRODUCTION

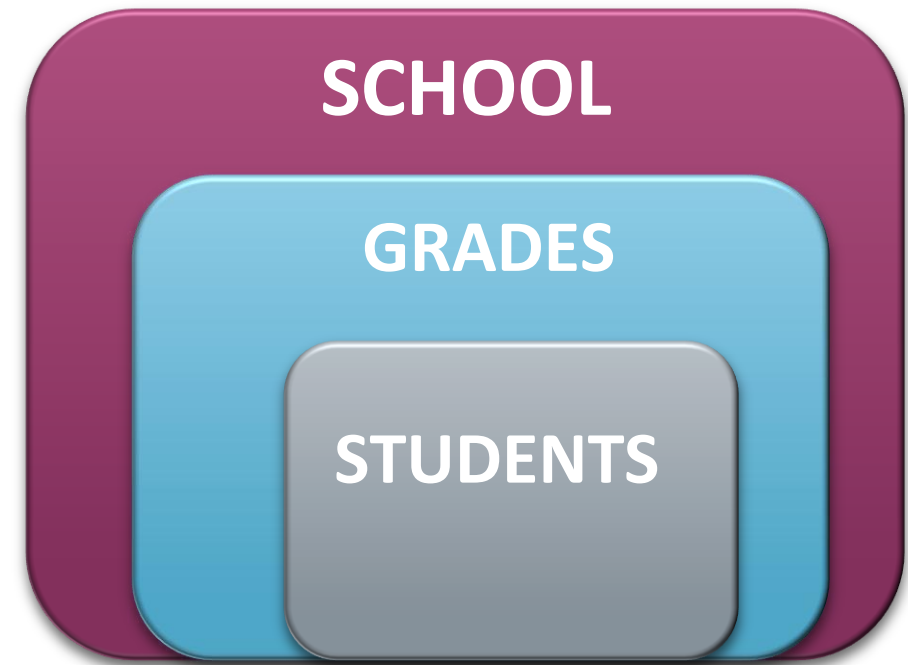
- Alcohol is the third leading contributor to the global burden of disease, injury, and hence health care costs.
- Alcohol Consumption Debut, or the age at which alcohol is first imbibed, is an important indicator of adult drinking habits and health status.
- Smoking is typically considered the “gateway” drug and is closely associated with the timing of alcohol debut.
- *Little information is available on alcohol use among pre-adolescents.*

## RESEARCH QUESTIONS

- To estimate the differences in how likely grade 5 to 8 students were to try alcohol based on
  - School location - rural or urban
  - Socio-economic status (measured by deprivation quintiles)
- To test the association between trying alcohol and various factors
  - Demographic :Age, gender, aboriginal cultural status, and immigrant status
  - Psychosocial: Bullying, suicide ideation, self esteem, depression, anxiety, relationship with friends, living arrangement with parents, parent employment status, and parent child relationship.

## STUDY DESIGN

- Students from 120 schools in 4 school divisions were surveyed using the 2011 Student Health Survey (SHS) adapted from a number of validated sources, including
  - National Longitudinal Survey for Children and Youth.
  - Health behaviour in school-aged children (HBSC) survey (WHO & EUROPE)



## DEPENDENT VARIABLE

In the last year (12 months),  
how often did you drink alcohol?

- I have never drank alcohol
- I have not drank alcohol in the last year
- I have only had a sip of alcohol
- Once a month or less often
- 2 or 3 times a month
- Once a week
- 2 or 3 times a week
- 4 or 5 times a week
- Almost everyday – 6 or 7 times a week

Have never  
tried alcohol

Have tried  
alcohol

## INDEPENDENT VARIABLES

- Deprivation Index
  - Social deprivation: proportion of lone parents, proportion of residents living alone, and marital status
  - Material deprivation: educational attainment, average income, and employment status.
  - Divides population into 5 quintiles.
    - Quintile 1 – least deprived
    - Quintile 5 – most deprived
  - Limitation: Due to small size of the communities, census data on the indicators was not available for rural communities.

# INDEPENDENT VARIABLES

SOURCE: NATIONAL LONGITUDINAL SURVEY FOR CHILDREN & YOUTH CANADA  
HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) SURVEY (WHO & EUROPE)

## ■ Depression

- 12 item short version of Centre for Epidemiological Studies Depression Scale (CES – D). Scores ranged from 0 – 36
- Minimal (0-11), Moderate (12-20), Severe ( $\geq 21$ )

## ■ Anxiety

- 7 item scale. Scores ranged from 0 – 28
- Low(0–7), Moderate(8-14), High( $\geq 15$ )

## ■ Self-Esteem

- 5 item scale. Scores ranged from 0 – 20
- Low(0-6), Moderate(7-13) , High( $\geq 14$ )

## ■ Quality of relationship with friends

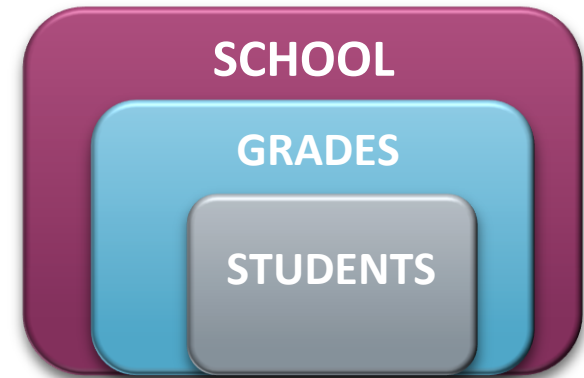
- 4 item scale. Scores ranged from 0 – 20
- Poor(0-6), Moderate (7-13), Good ( $\geq 14$ )

## ■ Bullying

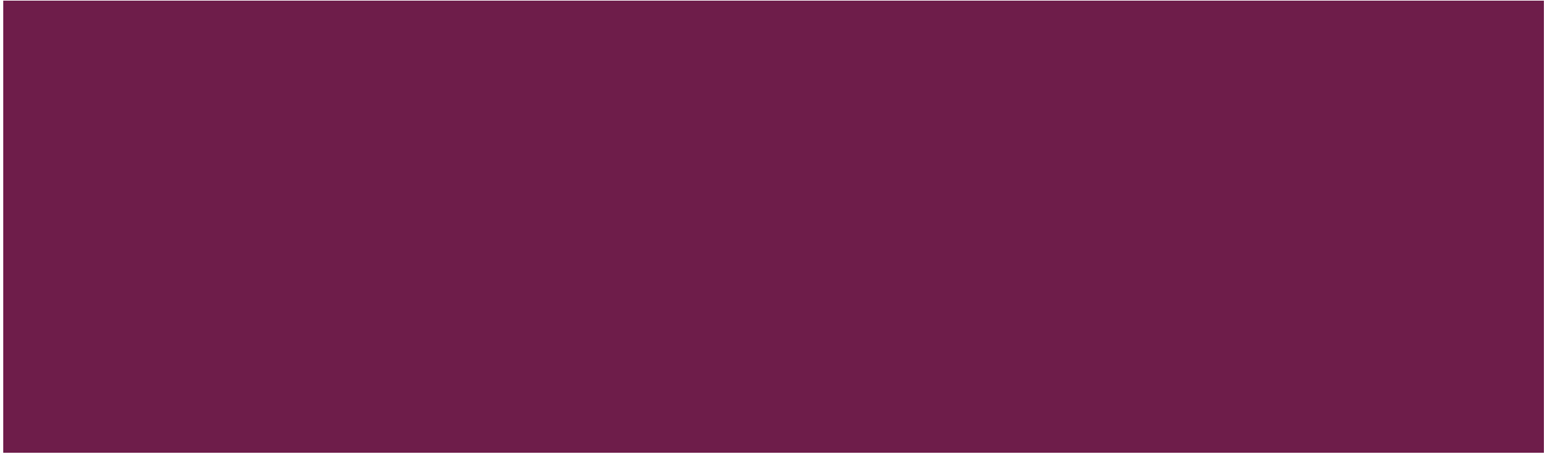
- Adapted from Safe School Survey
- Dichotomous variable constructed to indicate if the student reported having being bullied every week or many times per week.

## MODEL

- Logistic mixed-effects multivariable regression model
  - Unconditional analysis at  $p < 0.2$  based on Type III Wald test
  - Manual stepwise backward selection at  $p < 0.05$
  - Potential confounders assessed based on  $> 10\%$  change in other significant regression coefficients of interest
  - Biologically relevant two-way interactions at  $p < 0.05$
- Population averaged odds (OR) ratio with 95% confidence intervals and variance partition coefficient (VPC) were calculated









# SIGNIFICANT COVARIATES IN THE FINAL REGRESSION MODEL

\* ARE SIGNIFICANT INTERACTING COVARIATES

## ■ DEMOGRAPHIC FACTORS

- AGE in years (p value <0.0001)
- MALE vs FEMALE (p value <0.0001)
- RURAL vs URBAN (p value = 0.033)
- YEARS LIVED IN CANADA (IMMIGRANT STATUS) (p value = <0.0001)\*

## ■ PSYCHOSOCIAL FACTORS

- ANXIETY (p value = <0.0001)\*
- SELF-ESTEEM (p value <0.0001)
- SUICIDE IDEATION (p value <0.0001)
- SMOKING STATUS (p value <0.0001)
- BULLIED (p value <0.0001)
- RELATIONSHIP WITH FRIENDS (p value = <0.0001)\*

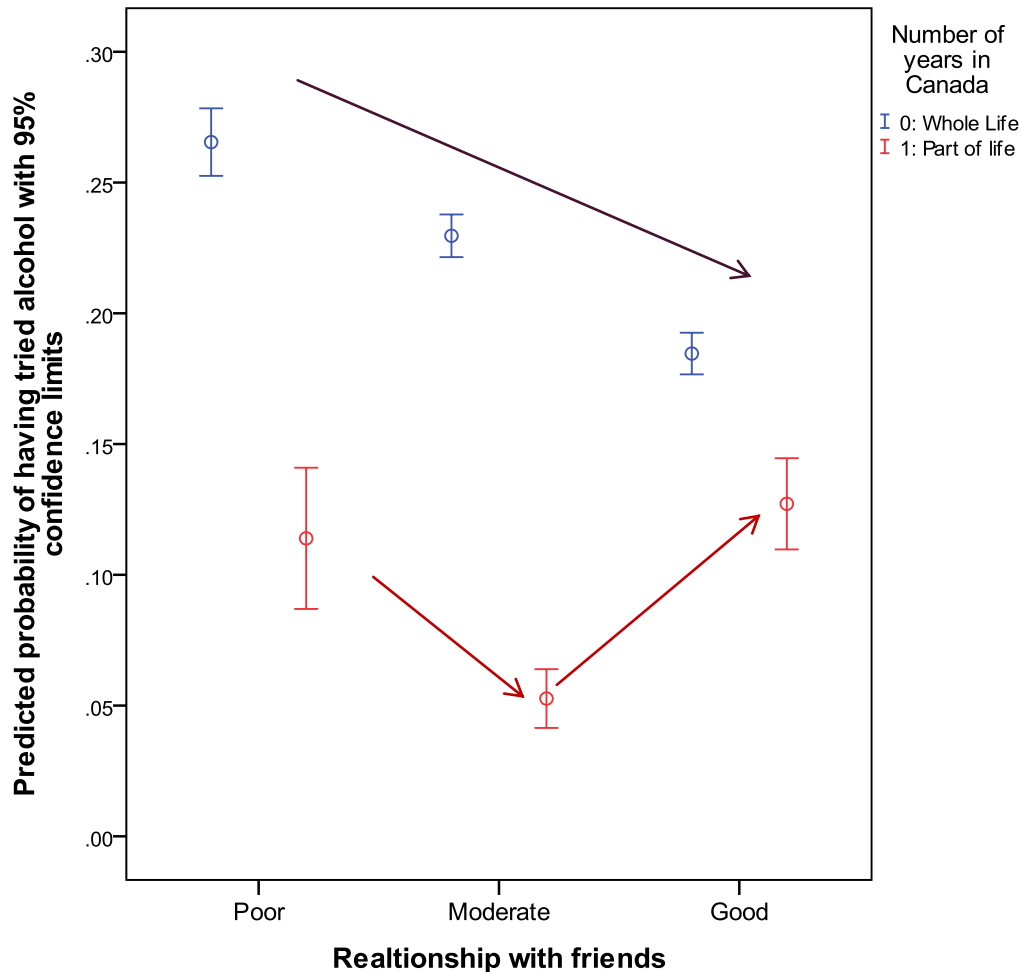
## POPULATION AVERAGED ODDS RATIO (95% CL) FOR THE MAIN EFFECTS COVARIATES IN THE FINAL MODEL

Variables	OR <sub>PA</sub>	95% Confidence Limits for OR <sub>PA</sub>	
Rural vs Urban	1.31	1.02	1.67
Age in years	1.53	1.41	1.66
Male vs Female	1.79	1.50	2.12
Suicide Ideation (Yes vs No)	1.93	1.36	2.75
Smoking Status (Yes vs No)	<b>9.46</b>	5.53	16.18
Self-Esteem			
• moderate vs low	0.63	0.49	0.81
• high vs low	0.47	0.34	.64

# SIGNIFICANT INTERACTIONS

## NUMBER OF YEARS IN CANADA

## RELATIONSHIP WITH FRIENDS

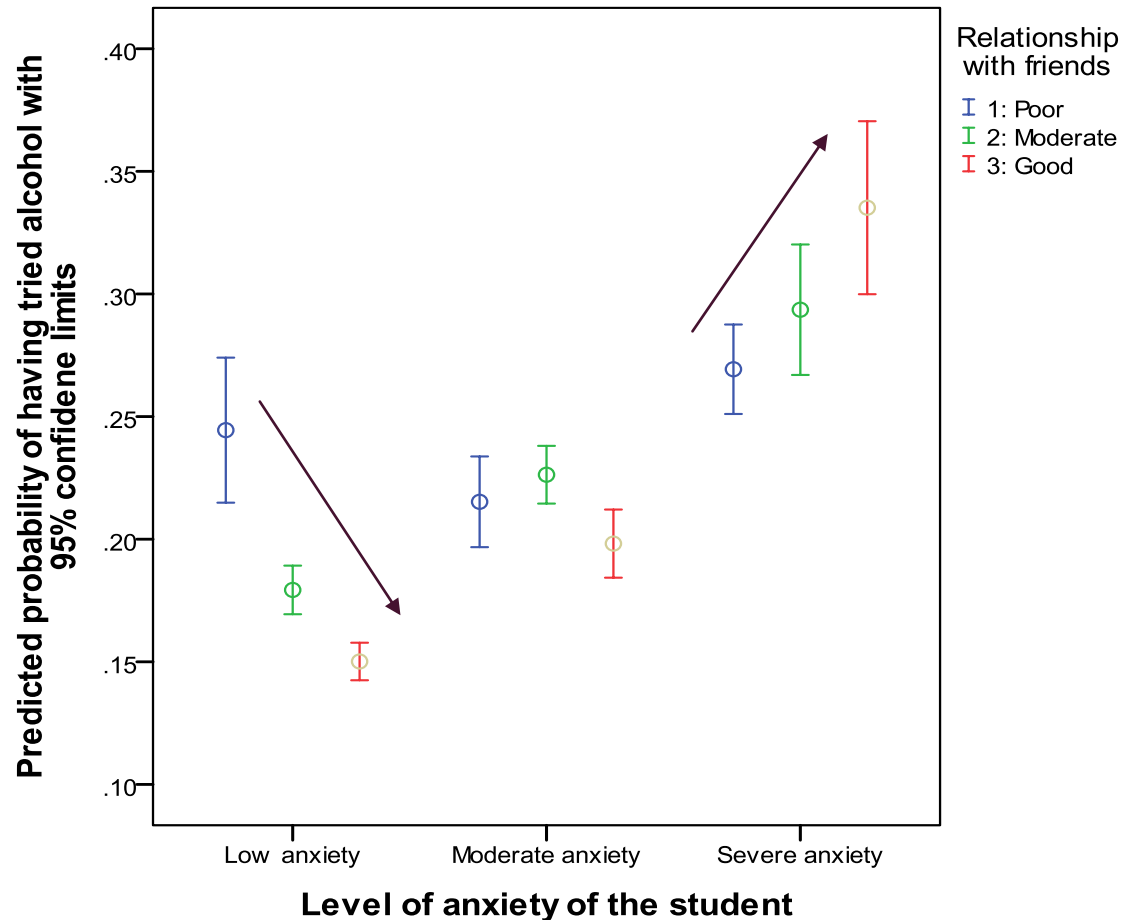


- Among the **Canadian born** students their probability of having tried alcohol decreased with improvement in the relationship with friends.
- However, among **the immigrant students**, their probability of having tried alcohol appeared to decrease initially with improvement in relationship with friends followed by an increase as their relationship with friends improved.

# SIGNIFICANT INTERACTIONS

## RELATIONSHIP WITH FRIENDS

## ANXIETY LEVELS

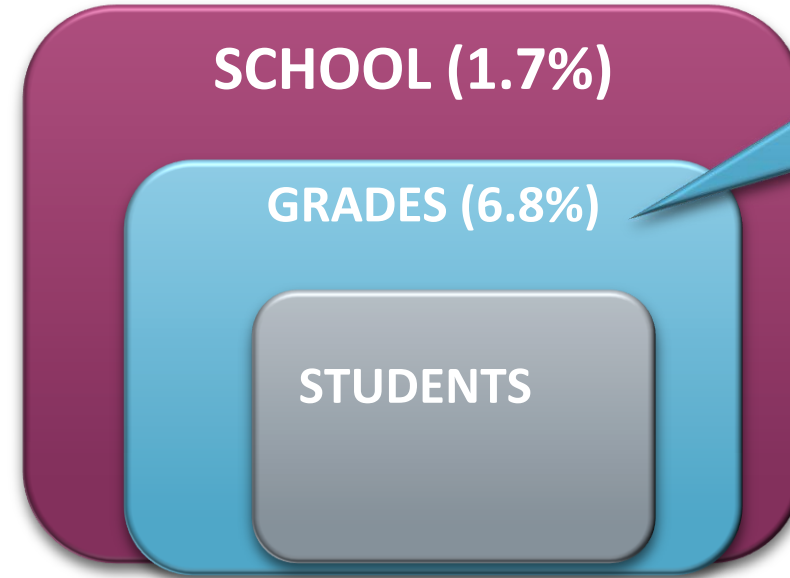
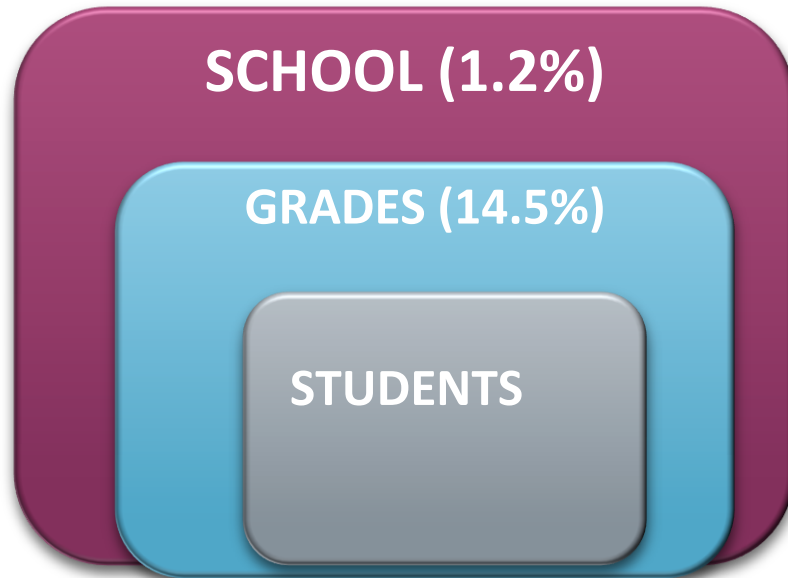


The effects of relationship with friends are reversed in combination with anxiety.

This moderating effect of relationship with friends on anxiety and high risk behaviour needs to be explored further among the pre-adolescents.

# VARIANCE PARTITION COEFFICIENT NULL MODEL

# FINAL MODEL



Reduction  
of 50% of  
unexplained  
variance

## DISCUSSION

- The legal age for alcohol consumption in Saskatchewan is 19 years.
- 2004 Canadian Addiction Survey (CAS) reported that median age of alcohol debut was 15.6 years. However, in our study 22.7% of aged 9 – 13 students have tried alcohol.
- **Students are making alcohol debut at a much younger age.**
- **Rural students** were more likely to have tried alcohol.
- **Males** had almost twice the odds of having tried alcohol
- Psychosocial factors like suicide ideation, low self-esteem, bullying, anxiety, relationship with friends were significantly associated with having tried alcohol.
- Having tried smoking increased the odds of having tried alcohol by **9.5 times**.
- **Deprivation quintiles** used as a proxy measure for the socio-economic status of students in urban schools **was not associated with having tried alcohol (p=0.99)**.



## CONCLUSIONS

- Alcohol, like smoking is a gateway drug that can lead to further substance abuse and affect health and education outcomes.
- Immigrant pre-adolescents emerged as a high risk group in our study. Effects of acculturation needs to be explored further.
- ***Grade-specific, school-based targeted interventions are recommended to prevent alcohol debut among pre-adolescent.***

# ACKNOWLEDGEMENT

College of Graduate Studies, University of Saskatchewan

Western Region Training Centre (WRTC), School of Public Health, U of Saskatchewan

Canadian Association for Health Services Research

Saskatoon Health Region

# THANKS

