Technical Appendix to the 2016 SAYCW Provincial Report

The purpose of this appendix is to highlight sections of the report which need more explanation and to discuss how we derived some measures/ variables from the raw data. Information on health related behaviours and conditions in the provincial report are based on descriptive statistics. To assess the influence of single or multiple variables on an outcome, multi-variate analysis and controlling for the confounders are needed.

Subgroups

In addition to frequency counts that were tabulated for individual questions, responses were also analyzed with two different subgroups:-

- Sex: Students were asked "Are you: male/female?" in a demographic question (Q5). No other options were allowed.
- Grade and grade categories: Students were asked which grade are they in. For most sections (except Oral Health, Healthy Weights and Sleep), three grade categories (grade 7-8, 9-10, and 11-12) were used to better understand whether different risk and protective behaviours vary by grade.

Subsets of survey population

Some questions were asked to a subset of the overall survey participants only who answered "yes" to some specific questions. For example, only those students who indicated that they had participated in any kind of sexual activities (i.e., answered "yes" to Q61) were asked further questions on their sexual experiences.

Nutrition

Food Frequency: Students were asked how many times (responses varied from 0 times to 8+ times) they ate certain foods or drank certain beverages in a day. Daily food consumption indicates the sum of times the students consumed foods from each food group on the day before. Food frequency measured in this survey is not directly comparable to Canada's food guide, which uses standardized serving size.[1] A food frequency questionnaire (FFQ) aims to assess the frequency with which food items or food groups are consumed during a specified time period rather than the amount consumed on each occasion and amount consumed in mixed dishes. Therefore, this module tends to underestimate consumption.[2]

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Physical Activity

Physical Activity Level: Students were asked how many minutes and hours they do moderate (Q29) and vigorous (Q30) physical activities (PA) in a day. Based on the reported activities, physical activity level was measured using kilocalories per kilogram of body weight per day (KKD). KKD measurement use Metabolic Equivalents (METs) to allocate a value to each category of physical activity level. MET is an indicator of the average intensity of a student's daily physical activity. Moderate physical activity (such as walking, bike riding, skating etc.) burns 3 to 6 METs, while vigorous intensity physical activity burns more than 6 METs. KKD for this study was calculated using following method:

$$Average\ KKD = \frac{[(\#of\ Vigorous\ hours\ of\ PA\ \times 6METs) + (\#of\ moderate\ hours\ of\ PA\ \times 3METs)]}{7\ Days}$$

Categorization: Based on the average KKD, students were categorized into three physical activity categories

- Inactive (average daily KKDs of less than 3).
- Moderately active (average daily KKDs of 3 or greater but less than 8).
- Active (average daily KKDs of 8 or greater).

Healthy Weights

Body Mass Index: Body Mass Index (BMI) is a ratio calculated using a person's weight (in kilograms) divided by height (in meters squared). BMI estimates whether a child is in a healthy weight range compared to his or her peers. BMI is not a diagnostic tool to determine whether the child has excess fat; further assessment by a trained health professional is needed. [3,4] BMI was calculated according to Center for Disease Control and Prevention guidelines for children and teenagers (2011). [5,6] BMI was categorized according to the BMI-for-age percentile growth chart: [3]

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Normal or Healthy weight	5th percentile to less than the 85th percentile
Overweight	85th percentile to less than 95th percentile
Obese	Equal to or greater than 95th percentile

For children and teens, BMI is an age and sex specific measurement (plotted on a growth chart over time), and is often referred to as BMI-for-age.[3] BMI does not distinguish between excess fat, muscle, or bone mass, so some may be falsely classified as at risk and some may also be missed. Height and weight in the survey is self-reported (Q6 and Q10), therefore, youth may under- or over-estimate their height and weight, which may have resulted in misclassification. Although BMI may not be an accurate indicator of body fat, it is an inexpensive and easy-to-perform method of screening for weight categories that may lead to health problems.

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Mental Health and Well-Being

Self-Esteem: A ten-item Rosenberg Self-Esteem scale[7] was used to estimate self-esteem levels among youth. Response choices for each item varied from strongly agree to strongly disagree**:**

1. On the whole, I am satisfied with myself.	Strongly Disagree	Disagree	Agree	Strongly Agree
2. At times I think I am no good at all.	Strongly Disagree	Disagree	Agree	Strongly Agree
3. I feel that I have a number of good qualities.	Strongly Disagree	Disagree	Agree	Strongly Agree
4. I am able to do things as well as most other people	Strongly Disagree	Disagree	Agree	Strongly Agree
5. I feel I do not have much to be proud of	Strongly Disagree	Disagree	Agree	Strongly Agree
6. I certainly feel useless at times.	Strongly Disagree	Disagree	Agree	Strongly Agree
7. I feel that I'm a person of worth, at least on an equal plane with others.	Strongly Disagree	Disagree	Agree	Strongly Agree
8. I wish I could have more respect for myself	Strongly Disagree	Disagree	Agree	Strongly Agree
9. All in all, I am inclined to feel that I am a failure.	Strongly Disagree	Disagree	Agree	Strongly Agree
10. I take a positive attitude toward myself.	Strongly Disagree	Disagree	Agree	Strongly Agree

Calculated scores were categorized into the following groups: high, moderate or low self-esteem.

Scoring:

Item 1,3,4,7,10: Strongly Disagree=0, Disagree=1, Agree=2, Strongly Agree=3.
Items 2, 5, 6, 8, 9 are reverse scored (i.e. Strongly Disagree=3, Disagree=2, Agree=1 and Strongly Agree=0)

Categorization: There is no standard scale to read the score. The general rule of thumb is "higher the score, higher the self-esteem". Most authors use a "cut off" for binary categorization into low self-esteem and high self-esteem. Bagley et al. (2007) used 21 as a cut for low self-esteem (40 point scale), others use 15 as the cut off (30 point scale) .[8,9] The most commonly used ordinal classification for the interpretation of results is "Moderate" 15-25 and "Low self-esteem" below 15.[10–12] The total score was classified as follows:

26-30: High self-esteem
15-25: Moderate self-esteem
0-14: Low self-esteem

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Substance Use

Tobacco:

Denominator of tobacco use- ever and last month: Students were asked if they had used different tobacco products (cigarette, pipe tobacco, cigarillos, bidis, smokeless tobacco etc.) ever (Q48) and in the past month (Q48a). For analytic purposes, the number of students reporting tobacco use "ever" (N) was used as denominator for both past month and ever use. It was done for two reasons: 1) The number of students who indicated they used tobacco in past month is a subset of "N" (students who said they ever used tobacco); 2) to evaluate what proportion of students who indicated ever having used tobacco had used it within the past month as well.

Drugs and Alcohol:

Drinking past month: Students were asked how many days in the past month they had at least one drink (Q50). One drink of alcohol was defined as a bottle of beer, a glass of wine, a shot of liquor, or a cooler.

Heavy drinking: The SAYCW Youth Health Survey asked students to indicate if they had five or more drinks at any given time (Q51), as defined by Statistics Canada until 2012).[13] To be consistent with current guidelines,[14] the heavy drinking definition was updated by Statistics Canada in 2013 to the following: 'five or more drinks for males' and 'four or more drinks for females'**.** Therefore, our findings underestimate the proportion of female students with heavy drinking habits.

Sexual Health

Sexual Assault: Sexual assault refers to all incidents of unwanted sexual activity.[15] In our survey, students were asked if they ever had sexual relations when they did not want to (including touching, fondling, oral sex, or intercourse). Studies indicate many youth do not fully understand the concept of consent and may not recognize scenarios of sexual assault when they are presented.[16] Hence, students may or may not have understood they are being asked a question about their experience of sexual assault while they were asked whether they had experienced sexual relation when they did not want to (Q64).

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