**LIST Project Data Analysis Plan**

**Overall Analysis:**

Section A (knowledge), B (attitudes/stigma), C (help-seeking attitudes), D (general health), and E (perceived stress):

For knowledge outcome (Section A), each correct answer will receive a score of 1, an incorrect answer, including “Don’t know” answer will receive a score of 0. The total knowledge score is 20 and each participant’s is between 0 and 20.

For attitudes/stigma outcome (Section B), each statement will have a score range of 1-7 on the Likert scale. Higher scores indicate more positive attitudes. Each participant will receive a total score between 7 (lowest score) and 84 (highest score).

For attitudes towards help-seeking section (Section C), there are 5 Likert scale statements with each response assigned a value between 1 and 7. Higher scores indicated more positive attitudes. Each participant will receive a total score of between 5 (lowest score) and 35 (highest score).

For general health outcome (Section D), there are 12 Likert scale statements with each response assigned a value between 0 and 3. Higher scores indicated more severe health concerns. Each participant will receive a total score of between 0 (lowest score, more positive health) and 36 (highest score, more negative health).

For perceived stress outcome (Section E), there are 10 Likert scale statements with each response assigned a value between 0 and 4. Higher scores indicated more perceived stress. Each will receive a total score of between 0 (lowest score, less perceived stress) and 40 (highest score, more perceived stress).

The following analysis applies to the intervention group only, not the control group. Preliminary analysis includes the following for knowledge, attitudes/stigma, help-seeking attitudes, general health, and perceived stress respectively:

* Conduct descriptive analysis including the mean score with standard deviation for each of the listed outcome, using pre-test data, post-test data, follow-up data respectively. If the institution has both intervention and control group data, please collapse them for the descriptive analysis.
* Conduct descriptive analysis including the mean score with standard deviation for each of the listed outcome by gender; by student type (international or Canadian); by previous mental health training experience; by receiving previous mental health care respectively, using pre-test data, post-test data, and follow-up data respectively. If the institution has both intervention and control group data, please collapse them for the descriptive analysis.
* Conduct the paired samples t-test between pre-test and post-test in general for mean differences at 2-time points (note: we don’t need results based on question by question analysis at this stage). Cohen’s effect sizes d will be calculated.
* Conduct the one-way repeated measures of ANOVA with pre-test, post-test, and follow-up data for mean differences at 3-time points. Cohen’s effect sizes d will be calculated.
* Conduct the Analysis of Covariances on mean differences between gender at pre-test and post-test, using pre-test scores as the covariates, post-test scores as dependent variable, gender as the fixed factor.
* Conduct two-way repeated measures ANOVA (split-plot ANOVA; or mixed design ANOVA) using 3-time data (pre-test, post-test, and follow-up) for gender differences. Please use 3 levels of within-subject factor, and the between-subject factor is gender. Further post-hoc analysis will be conducted.
* Conduct the Analysis of Covariances on mean differences between international students/visa students and Canadian students between pre-test and post-test, using pre-test scores as the covariates, post-test scores as the dependent variable, and student type as the fixed factor.
* Conduct the Analysis of Covariances on mean differences between participants who previously received mental health training and those who did not (received previous mental health training or not) between pre-test and post-test, using pre-test scores as the covariates, post-test scores as the dependent variable, and previous mental health training as the fixed factor.
* Conduct two-way repeated measures ANOVA (split-plot ANOVA; or mixed design ANOVA) using 3-time data (pre-test, post-test, and follow-up) for “received previous mental health training or not” differences. Please use 3 levels of within-subject factor, and the between-subject factor is “received previous mental health training or not”. Further post-hoc analysis will be conducted.
* Conduct the Analysis of Covariances on mean differences between participants who received mental health care or whose family members receiving mental health care and participants who did not receive mental health care or whose family members didn’t receive mental health care between pre-test and post-test, using pre-test scores as the covariates, post-test scores as the dependent variable, and previous mental health care as the fixed factor.
* Conduct two-way repeated measures ANOVA (split-plot ANOVA; or mixed design ANOVA) using 3-time data (pre-test, post-test, and follow-up) for “previous mental health care” differences. Please use 3 levels of within-subject factor, and the between-subject factor is “previous mental health care”. Further post-hoc analysis will be conducted.

If data includes both intervention and control group, then please conduct the following further analysis in addition to the above analysis:

* Conduct the Analysis of Covariances on mean differences between the intervention and control group on knowledge, attitudes/stigma, help-seeking attitudes, general health, and perceived stress respectively between pre-test and post, using pre-test scores as the covariates, post-test scores as the dependent variable, and intervention type (intervention group or control group) as the fixed factor.
* Conduct two-way repeated measures ANOVA (split-plot ANOVA; or mixed design ANOVA) using 3-time data (pre-test, post-test, and follow-up) for differences between the intervention and control group. Please use 3 levels of within-subject factor, and the between-subject factor is intervention type. Further post-hoc analysis will be conducted. Please repeat this analysis for each one of the outcomes respectively: knowledge, attitudes/stigma, help-seeking attitudes, general health, and perceived stress.

Please note that we didn’t include student who read Transitions at pre-test for the analysis. We did not conduct analysis between first year students and students at other years because we assume we didn’t have many students from other years. The decision whether we will conduct further analysis will be made until we see data from all participating institutions. we don’t compare differences among participants who took different mental health training at pre-test; or among participants who are enrolled in different programs for the same reasons as for the other year students’ analysis.

**Further analysis for section C: Help-seeking – Talking about Mental Health outcome**

For “Talking about Mental Health” subsection, please conduct the following analysis:

* Calculate the percentage of each response category at two-time points (pre-test and follow-up): didn’t have a mental health problem or concern; waiting to see a health professional; spoke to a health professional; opted not to speak to a health professional.
* Collapse these three categories into one: waiting to see a health professional; spoke to a health professional; opted not to speak to a health professional. Please name this new category as: had a mental health problem and concern.
* Create a 2\*2 contingency table to compare the number of participants who didn’t have a mental health problem or concern versus the number of participants who had a mental health problem or concern between pre-test and follow-up. A 2\*2 contingency table analysis (Pearson Chi-Square) will be conducted. The contingency table will look like the following:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | Time points | | Total |
| Pre-test | Follow-up |
| MH prob | yes |  |  |  |
| no |  |  |  |
| Total | |  |  |  |

* Collapse these two categories into one: waiting to see a health professional; and spoke to a health professional. Please name this new category as: seeking help from a health professional.
* Create a 2\*2 contingency table to compare the number of participants who sought/is seeking help from a health professional versus the number of participants who opted not to see a health professional between pre-test and follow-up. A 2\*2 contingency table analysis (Pearson Chi-Square) will be conducted. The contingency table will look like the following:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | Time points | | Total |
| Pre-test | Follow-up |
| Seeking help from  a health professional | yes |  |  |  |
| no |  |  |  |
| Total | |  |  |  |

* Conduct the Analysis of Covariances between participants who didn’t have a mental health problem or concern and participants who had a mental health problem or concern on knowledge and attitudes outcomes respectively. If all 3-time points data are available, use 3 levels of within-subject factor. Further post-hoc analysis is needed.

**Further analysis for Section C: help-seeking resources subsection**

Please conduct the following analysis:

* Calculate the number of participants who checked the box for the 3 responses respectively: asked for help; wanted to but did not ask for help and sought help; did not feel the need to ask for help, from each of the listed resources (e.g., mother/father, sibling, another relative, etc.).
* Calculate the total number of participants who asked for help at pre-test and follow-up regardless of from whom they asked for help
* Calculate the total number of participants who wanted to but did not ask for help at pre-test and follow-up regardless of from whom they asked for help
* Create a 2\*2 contingency table to compare the number of participants who asked for help regardless of resources versus the number of participants who wanted to but did not ask for help between pre-test and follow-up. A 2\*2 contingency table analysis (Pearson Chi-Square) will be conducted. The contingency table will look like the following:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | Time points | | Total |
| Pre-test | Follow-up |
| Seeking help | Yes |  |  |  |
| Wanted but no |  |  |  |
| Total | |  |  |  |

Please note that we don’t factor in the response “Do not feel the need to ask for help” for analysis because we can’t determine participants did not feel the need to ask for help either because they did not have any mental health problems/concerns, or they didn’t feel like asking for help although they had mental health problems/concerns.

In addition, for Section C, please conduct the multiple regression analysis (stepwise) to observe whether help-seeking attitudes are predicted by knowledge and attitudes towards mental illness/stigma, using help-seeking attitude scores as the dependent variable and knowledge and stigma scores as independent variables (predictors).

**Further analysis for Section A (knowledge) and B (attitudes/stigma)**

Besides the overall analysis (please refer to the Overall Analysis plan above), please conduct the linear regression analysis, using the attitudes/stigma scores as the dependent variable, and the knowledge scores, gender and student type (international student or Canadian students) as the independent variable. This test will repeat 3 times, using pre-test scores, post test scores and follow-up scores respectively. When factoring in gender, please only factor in: male=0; female=1, and leave out other categories. When factoring in student type, please factor in: international student/visa student=1; others=0. We conduct this analysis using only the intervention group data, NOT the control group data.

**Further analysis for Section D: general health outcome**

Besides the overall analysis (please refer to the Overall Analysis plan above), please conduct the multiple regression analysis (stepwise), using the general health scores as the dependent variable, and the knowledge, stigma, help-seeking attitudes scores, gender and student type (international student or Canadian students) as the independent variables. This test will repeat 3 times, using pre-test scores, post test scores and follow-up scores respectively. When factoring in gender, please only factor in: male=0; female=1, and leave out other categories. When factoring in student type, please factor in: international student/visa student=1; others=0. We conduct this analysis using only the intervention group data, NOT the control group data.

**Further analysis for Section E: perceived stress outcome**

Besides the overall analysis (please refer to the Overall Analysis plan above), please conduct the multiple regression analysis (stepwise), using the perceived stress scores as the dependent variable, and the knowledge, stigma, help-seeking attitudes, general health scores, gender and student type (international student or Canadian students) as the independent variables. When factoring in gender, please only factor in: male=0; female=1, and leave out other categories. When factoring in student type, please factor in: international student/visa student=1; others=0. This test will repeat 3 times, using pre-test scores, post test scores and follow-up scores respectively. We conduct this analysis using only the intervention group data, NOT the control group data.