The Alcohol and Breast Cancer Connection:

*Exploring Messaging and Communication Channels that Resonate with Undergraduate Women*
Table of Contents

Project/Study Background and Purpose ............................................................................................................. 1

Methodology .......................................................................................................................................................... 1

  Concept Message/Ad Development .................................................................................................................. 1

  Recruitment ...................................................................................................................................................... 1

  Message Testing ............................................................................................................................................... 1

Data Collection/Analysis ..................................................................................................................................... 2

Results .................................................................................................................................................................. 2

Demographics .................................................................................................................................................... 2

Determining Messages that Resonate ................................................................................................................ 2

  Assessing Key Attributes of the Concept Messages/Ads ................................................................................. 2

  Ranking the Concept Messages/Ads ............................................................................................................... 3

  Testing Revised Messages/Ads ...................................................................................................................... 3

Determining Preferred Communication Channels ............................................................................................ 4

Change in Knowledge, Beliefs and Intentions ...................................................................................................... 4

Implications ........................................................................................................................................................ 4

Project Outputs and Dissemination Plans .......................................................................................................... 5

Media/Knowledge Exchange Presentations/Publications .................................................................................... 5

Summary ........................................................................................................................................................... 5

Acknowledgement .............................................................................................................................................. 6

References ........................................................................................................................................................... 6

Attachment A: Concept Messages/Ads ................................................................................................................ 7

Attachment B: Graphs for Closed-Ended Question Results .............................................................................. 11

Attachment C: Revised Test Posters .................................................................................................................. 16

Attachment D: Final Awareness Message/Ad Posters ...................................................................................... 19

Attachment E: Knowledge/Beliefs/Intentions Pre & Post Results .................................................................. 22
Project/Study Background and Purpose
There is convincing evidence of a causal relationship between alcohol consumption and female breast cancer, but the level of awareness about this dose-response association is low. The window of time when breast tissue proliferation is high and potentially more susceptible to carcinogens, like alcohol, is between menarche and first pregnancy (Liu, Colditz, Rosner et al, 2013). Data suggest that at least 5% of female breast cancer cases can be attributed specifically to alcohol (Cancer Care Ontario, 2014; Liu et al., 2015; Scoccianti, Lauby-Secretab, Bello et al, 2014), but published US data have shown much higher percentages (8.7%-13.8%) of cases attributable to alcohol among women diagnosed between 18-44 years of age (Ekwueme, Allaire, Parish, et al., 2017). These proportions represent a substantial number of avoidable cases and dramatic savings in human suffering and economic burden. Young women at the college and university undergraduate age are at an increased risk for high alcohol exposure. Therefore, it is not only important to increase awareness that the more alcohol a woman consumes over her lifetime the higher her risk for breast cancer, but there is also an elevated risk associated with consumption earlier in life.

This qualitative study set out to answer the following research questions:

1) What kind of messaging about alcohol and breast cancer risk effectively increases awareness and influences attitudes/intentions around alcohol consumption among undergraduate women ages 18-22 years?
2) What is the best way to communicate messages to this target population in today’s environment?

The goals of the project were to develop a public awareness message/ad that would resonate with undergraduate females at Conestoga College (CC), University of Waterloo (UW), and Wilfrid Laurier University (WLU) and identify their preferred communication channels. Change in participant knowledge, beliefs, and intentions about alcohol and breast cancer risk was also assessed as part of this study.

Methodology
Concept Message/Ad Development
Peer Student Health Leaders from UW were recruited to help the project researchers develop conceptual awareness messages/ads. Three concept message/ads were created with the following taglines: 1) “Every drink is a choice”; 2) “How much you drink now matters later”; 3) “Cheers to women making smart choices about alcohol.” (See Attachment A for images of the three concept messages/ads.)

Recruitment
Participants were recruited using notices via campus Facebook groups, residence life email lists, flyers posted on campus, and campus wellness websites and newsletters. For their time, students were offered a complimentary meal and a $20 gift card for either Starbucks or Amazon. Ninety students responded to the call for subjects and completed an on-line screener survey of which 80 met eligibility requirements (age 18-22, enrolled as a student, and identify as someone who consumes alcohol). Ultimately, 31 students (UW= 20; CC=8; WLU= 3) participated across four focus groups. Recruitment took place during the Summer and Fall 2017 semesters.

Message Testing
Four focus groups led by a trained facilitator were conducted to evaluate the concept ads with respect to their effect on attention, comprehension, motivation, relevance, and appropriateness. A combination of open and closed-ended questions were used. Subjects were also asked to rank the concept ads on preference and to identify their preferred communication channels to receive the awareness ad. Each group ran for two hours which included a meal, an assessment of baseline knowledge/beliefs/intentions about alcohol and breast cancer risk, message testing, a brief educational session about the relationship between alcohol and breast cancer (conducted by a public health nurse from the Region of Waterloo Public Health and Emergency Services, or a health educator), and a knowledge/beliefs/intentions post-test. The open discussions were audio-recorded. Findings from the focus groups were used to create two improved ads which were evaluated by a fifth focus group comprised of six students from the original study group. Feedback from this group was used to design the final message/ad.
Data Collection/Analysis
Closed-ended question data was collected using TurningPoint Polling™ software. No user identification was connected to the clickers, thus aggregate data were used in the analyses. Smartphones were used to record open discussions which were later transcribed verbatim and reviewed and coded independently by two analysts. The analysis consisted of comparing percentage calculations for closed-ended questions associated with message testing; a thematic analysis of open discussion data; and a difference of proportions analysis using CI of 95% to assess change between baseline and post-education session knowledge, beliefs, and intentions.

Results

Demographics
Participants ranged in age from 18-22 with an average of 20.3 years. There was equal representation from different academic years of study. Fields of study included public health, health studies, engineering, nursing, psychology, and environmental sciences. Twenty-nine percent (29%) lived on-campus and approximately 51.6% and 19.4% lived in off-campus housing or at home with family, respectively.

Determining Messages that Resonate
Participants were presented with the three concept messages/ads, but the order of presentation was changed to control for potential order bias.

Assessing Key Attributes of the Concept Messages/Ads
To answer the first research question, key attributes of the concept ads were assessed using quantitative results from closed-ended questions (see statistical graphs in Attachment B) and qualitative results from the thematic analysis. Two analysts independently coded transcripts and reached consensus on the following themes: design features of ads, credibility, relatability, clarity, emotional response, intention to act, and accessibility of information. Highlights are below.

Attention:
Concept 2 was most memorable (74% and 25% said it was “very memorable” and “not so memorable”, respectively) whereas Concept 1 was least memorable (38% and 62% said it was “very memorable” and “not so memorable”, respectively). Design features: Colour schemes and use of speech bubbles were eye-catching.

Emotional response:
Shock and surprise alcohol is a carcinogen and there is a permanent relationship to breast cancer risk. Use the word “carcinogen” vs. “a causal risk factor” was very impactful: “What’s memorable for me is that alcohol is a carcinogen. I have never heard of alcohol being called that. So when I read that I was shocked.”

Comprehension:
Clarity: The connection between alcohol and breast cancer was not obvious at first. Some messaging was confusing; participants noted difficulty understanding Concept 3 and said it was contradictory in that it discouraged alcohol consumption, but used language positively associated with drinking alcohol, i.e., “cheers.” Design features: Students suggested using a pink colour scheme or including the Breast Cancer Foundation pink ribbon to make connection. One person said, “I always think of the colour pink when I think of breast cancer.”

Motivation:
Participants were more likely to respond to the call to seek out an app to track/monitor drinking (75%) than to visit a website for more information about a standard drink and risk reduction (33%). Intention to act: Students said they were likely to try the Saying When app (from CAMH). They said it was a novel idea and more relevant to their generation: “I like the app, how it’s saying you can track your drinking, reduce your risk. So, it’s helping you think about what you’re drinking, you know, keep track of it, make sure you’re not going overboard.”

Accessibility of Information: Students suggested using the app logo instead of the URL to make it easier to remember when searching on the App Store or Google Play store. Emotional Response: Participants noted the Concept 2 tagline, in particular, created a moment of self-reflection where they did stop and think about how much they drink. One noted, “Yeah, it definitely reminds me of the last time I went out…forces me to think of [it], without even reading anything else.” Credibility: Use of risk statistics, and in particular ones that convey a high enough level of risk, would have made the messages more credible: “I still wish there was, like, how much risk, is it 2% or 50% increase and how worried should I be about how much I drink now?” Some said it needs to be 30% or more to
resonate with them. **Relatability:** Students said they do not drink daily, but more so on weekends and a number of drinks at a time. They were unlikely to be motivated to respond to a message saying drink less than one drink a day to reduce risk, or to stop drinking altogether: “If you think about a university student and a young adult, they more so binge their drinking into a couple days of the week as opposed to something moderate every single day. Like, having a glass of wine every single day isn’t probably the way that they consume their alcohol.”

**Relevance:** Participants were more likely to believe what Concept 2 was telling them (100%) and that it was made for people like them (84%) compared to Concept 3 (84% and 60%) and Concept 1 (74% and 48%). **Relatability:** It is critical to students that messages accurately reflect where, how, or what they drink. They related Concept 1 to a “middle-aged mother who has a glass of wine every night at home.” The Concept 2 image of a young woman in a bar, drinking a mixed drink, and wearing a choker, deemed to be “very in,” was very relatable. Participants further conveyed the importance of the type of alcohol featured: “I feel like when you’re older, in your 30’s, you have a glass of wine. But in the younger age group you usually have a cocktail, or like, you’ll have shots or something.”

**Appropriateness:** Participants were more likely to say Concept 2 reflected the values/traditions of their female undergraduate community (100%) than Concept 1 (55%) or Concept 3 (71%). **Emotional response:** Many participants (43%) had a negative reaction to Concept 1, “Every drink is a choice”—it was seen as “aggressive, blaming, and judgemental.” Students said imposing guilt for choosing to drink would be an inappropriate strategy to promote risk reduction. While the message developers thought it was a message of individual empowerment, the test group likened it to a parent giving a child choice with the underlying message, “you better not mess up!”

**Design feature:** “Confetti” at the top of the posters was disliked. Many cited it made light of a serious nature of the topic: “I feel like I’m still a bit confused on the confetti. I don’t know if that’s just like to signal the party vibe of our generation […] it still is confusing me, because we are still talking about a serious topic.”

**Ranking the Concept Messages/Ads**
Participants definitively preferred Concept 2 with 87.1% saying it was “Most preferred” followed by Concept 3 with 13.3% saying the same. No one selected Concept 1 as most preferred. (For the complete summary of first, second the third preferences see Figure 8 in Attachment B).

**Testing Revised Messages/Ads**
The revised posters incorporated improvements, but they differed sufficiently to allow for testing to confirm which elements were best to include in a final awareness ad. (**See Attachment C for copies of Test Posters A and B.**) The test group determined the following elements from Posters A and B should be incorporated into a final message/ad to attract and educate their peers:

- Lead-in header “Alcohol and breast health” followed by the “How much you drink now matters later” tagline
- Pink tone in the colour scheme to associate with breast cancer
- Photos showing cleavage reinforces the concept of breast health (they did not at all find it offensive)
- The statistic, “8 standard drinks a week, before first pregnancy, may increase breast cancer risk by more than 30%.” This was chosen as it conveys at least 30% increase in risk, and it represents an amount many young women likely consume over a weekend, plus their time of life. The statistic was extrapolated from a prospective study of breast cancer risk and alcohol intake between menarche and first pregnancy (Liu et al., 2013). The study, using National Nurses’ Health Study II data, found the relative risk was 1.34 for those who consumed at least 15g of alcohol/day before first pregnancy compared to non-drinkers. The actual NHS II data collection tool asked about consumption per week, the equivalent being 105g, or approximately 8 standard drinks/week.
- Use of the word “carcinogen”
- Combined information bubble about lifetime dose response and lasting harmful effects from early consumption
- Both photos; each is relevant because of the different ways their peers drink (some identified with the party scene while others were more apt to meet a friend for a drink at a restaurant) and they liked the use of exposed cleavage as it related to breast health and looks the way many peers dress going out
- The call to action inviting them to seek out and download the free app Saying When (produced by CAMH), but to include the actual app logo instead of using URL to download
- Inclusion of the PAD logo (students said it lent credibility to see the ad was sponsored by an organization)
Based on feedback, **two final messages/ads were designed** (see Attachment D). The posters are identical in educational content but each one uses a different photo to appeal to as many students as possible.

### Determining Preferred Communication Channels

Total consensus was achieved that **social media is the best channel**— *Instagram* was the most commonly mentioned platform followed by Snapchat and Facebook. Participants said **strategically placed posters could also be very useful**, such as locations across campus that are high-traffic areas: outside of lecture halls, inside bathroom stalls, and in campus residence buildings, plus places on- and off-campus where drinking occurs or where alcohol can be purchased. More than half (54.8%) said a **doctor or nurse practitioner**, followed by a **friend/peer (22.6%)**, **mother (16.1%)**, **celebrity (3.2%)**, or other, would have most impact as inter-personal messengers in terms of motivating behavioural change to reduce health risks, such as reducing alcohol consumption to lower risk for breast cancer.

### Change in Knowledge, Beliefs and Intentions

Attending the focus group and educational session resulted in significant changes in knowledge/beliefs and intentions (see Attachment E for pre- and post-assessment response proportions). The correlation between participant responses at pre- and post-assessment was assumed to be 80%. CI’s that do not include 0% are significant.

There was a **significant increase in the proportion of participants who reported:**

- Alcohol consumption (compared to other nutrition and lifestyle factors) had the most significant connection to female breast cancer (57.5-75.7% increase);
- Any amount of alcohol consumption most days increases the lifetime risk of female breast cancer (50.6-71.6% increase);
- Strong scientific evidence exists regarding the connection between alcohol consumption and lifetime risk of breast cancer (39.5-60.4% increase); and
- Knowledge of the connection between alcohol consumption and lifetime risk of breast cancer would influence whether or not they choose to drink and how much they drink now and in the future (16.6-39.0%).

### Implications

The following should be considered **to ensure messages effectively resonate** with the target audience:

- **Immediate clarity about the connection between alcohol and breast health is required;**
- Design features such as colour tone (pink) and how information is arranged (i.e., speech bubbles) is very important to grab their initial attention;
- Relatability is critical when choosing images (e.g., who’s drinking? what are they drinking? where are they drinking? what are they wearing?), framing risk information (e.g., does it relate to how much and when I drink?), and proposing a call to action in an ad (e.g., is it asking me to consider reducing or abstaining?);
- Statistics that quantify relative risk must be used to convey credibility, and they should be significantly large enough, i.e., over 30%, to influence intentions to reduce risk;
- Use words that elicit a more serious emotional response such as the word “carcinogen” instead of “causal factor”; given that students will quickly read a message in passing it is important to use language that will not be misread, i.e., “casual”—which undermines the importance of the issue; and
- Resources/tools featured in messages to assist with reducing risk must be easy to remember and access, such as a free app logos vs. a website URL.

The following tactics are recommended **to best communicate messages** to the target audience:

- Develop messaging that is suitable to post via social media, in particular Instagram;
- Post print ads in strategic locations around campus (outside lecture halls, bathroom stalls, pubs, residence halls) and where alcohol is purchased or consumed off-campus could be very effective;
- Post notices at retail outlets about the risk similar to what is done to warn against drinking while pregnant should be considered; and
- Advocate for campus primary care providers to routinely assess alcohol consumption and share information about the connection between alcohol and breast cancer risk.
The primary target audiences to benefit from learning about this project include campus healthcare providers university and college student health and wellness program managers and student leaders who develop campus-based health campaigns; residence life workers who promote safer student choices while living on campus; and public health units that partner with post-secondary institutions to advance health promotion efforts.

Project Outputs and Dissemination Plans
Several knowledge exchange and translation outputs to be disseminated were developed as a result of the project:

- **Project video** summarizing project methods, results and recommendations to be accessible to health promotion intermediaries via a link on the PAD website
- **Two awareness posters/ads** to be printed and posted in various campus locations during Winter 2018 semester (health services building, outside lecture halls, residence bulletin boards, campus pub bathroom stalls)
- **A GIF version of the ad created for social media:** it will be available for all participating schools to post and monitor reach at some point during the winter 2018 term
- **Two research posters** (one for PAD and one for UW) will be used to present the study findings at staff meetings and conferences (potentially), and to display at campus health services at UW
- **Promotional items** (i.e., scroll pens and lip balms) with an accompanying palm card displaying information from the awareness poster will be distributed to health care providers, women’s sports teams and clubs, and at student health fairs on campus during the Winter and Spring 2018 semesters

Media/Knowledge Exchange Presentations/Publications
The following opportunities for promotion and knowledge exchange activities are planned or pending:

- **Twitter and Facebook posts** providing links to the project report and video will be sent from PADs accounts. The Ontario Public Health Education (OHPE) and HC Link (a consortium to which PAD belongs) will be asked to promote the links to the report/video in their weekly e-letters.
- PAD is partnering with CCSA to present a **webinar** (February 20, 2018) on post-secondary student perceptions and use of alcohol and other substances to inform developing a framework to prevent and address problem use. The alcohol and breast cancer project will be featured as a potential strategy to affect perceptions and behaviour through making connections between substance use and a health concern of relevance to them.
- **An abstract has been submitted** to the Canadian Public Health Association (CPHA) for an oral or poster presentation at their annual conference in Montreal in May, 2018. The decision is pending.

Summary
The observed low level of awareness among the study population about the relationship between alcohol consumption and lifetime risk of breast cancer confirms the need to develop and disseminate messages on this topic. It was encouraging to discover these young women were very concerned about the connection between alcohol and risk and felt it important to get that message out to their peers. It was particularly interesting and unexpected the “How much you drink now matters later” slogan resonated the most. Typical thinking suggests youth need messages that communicate more immediate connections between cause and effect to resonate, but perhaps those at post-secondary institutions are ready to consider altering behaviour now when connected to a potential future health concern they really care about. The study population indicated that social media, and in particular, Instagram, is the best way to reach them. However, they also saw considerable merit is strategically posting print ads at campus locations such as outside lecture halls, in residences, at campus health services, and bathroom stalls in locations where alcohol is served, to name a few. Mobilizing campus health providers to convey the messages about alcohol and breast cancer may also have a positive effect on student risk reduction behaviour. It is hoped that others who promote women’s health will be inspired by this project to increase awareness about the alcohol and breast cancer connection among their target populations.
Acknowledgement

The PAD and UW project team would like to extend sincere appreciation to the Women’s Xchange for the funding and the Research Ethics bodies at UW and WLU for the approval to do this meaningful and engaging study. Recognition is also due to the Region of Waterloo Public Health and Emergency Services organization for their generosity of public health nurse staff time, and to the staff at Conestoga College Residence Life and the Campus Health and Wellness Centre at Wilfrid Laurier University for their assistance in recruiting subjects for the study.

References


Attachment A: Concept Messages/Ads
Concept 1: Every drink is a choice

**Every drink is a choice.**

**DID YOU KNOW?**

- Alcohol is a **carcinogen** that can cause breast cancer.
- Less than one standard drink every day can increase lifetime risk.
- One **standard drink** is less than you think.

**IF YOU CHOOSE TO DRINK, THINK NO MORE THAN ONE AND BE DONE.**

To learn what “a standard drink” is and how to reduce health risks visit, www.rethinkyourdrinking.ca
Concept 2: How much you drink now matters later

How much you drink now matters later.

DID YOU KNOW?

Alcohol & breast cancer - the more you drink, the greater your lifetime risk.

As little as three standard drinks per week has been shown to increase the risk.

Even if you stop drinking later, drinking patterns now raise your risk forever.

EVERY DRINK, ANYTIME, COUNTS. USE THE FREE "SAYING WHEN" APP TO TRACK YOUR DRINKING AND REDUCE YOUR RISK.

www.sayingwhen.com
Concept 3: Cheers to women making good choices about alcohol

DID YOU KNOW?

Drinking alcohol is a causal risk factor for breast cancer.
The more you drink over your lifetime the greater your risk.
It’s not just heavy drinking — even less than one standard drink a day can increase your risk.

SHARE WITH ALL THE WOMEN IN YOUR LIFE WHAT A STANDARD DRINK IS AND TIPS FOR LOWERING RISK AT:
Attachment B: Graphs for Closed-Ended Question Results
Women's Xchange $15K Challenge: The Alcohol and Breast Cancer Connection

**Figure 1.** Responses to the question “Have you seen a similar message/advertisement on this topic?” (Women's Xchange Alcohol and Breast Cancer Project, August 2017)

**Figure 2.** Responses to the question “Compared to other health promotion ads you have seen, how memorable is it?” (Women's Xchange Alcohol and Breast Cancer Project, August 2017)
Figure 3. Responses to the question “After seeing this message/ad, how likely are you to … “ (Women’s Xchange Alcohol and Breast Cancer Project, August 2017)

- Visit the website to learn what a standard drink is, how to reduce risk, and share it with other women?
  - 3.2% Very likely
  - 32.3% Somewhat likely
  - 64.5% Not likely
- Try out the app?
  - 12.8% Very likely
  - 61.4% Somewhat likely
  - 25.8% Not likely
- Go to the website to learn what a standard drink is and how to reduce risk?
  - 6.5% Very likely
  - 25.9% Somewhat likely
  - 67.6% Not likely

Figure 4. Responses to the question “How much do you believe what this message is telling you?” (Women’s Xchange Alcohol and Breast Cancer Project, August 2017)

- Cheers to women making good choices about alcohol
  - 19.4% Completely believe
  - 64.4% Partially believe
  - 16.2% Do not believe
- How much you drink now matters later
  - 42.0% Completely believe
  - 58.0% Partially believe
  - 0.0% Do not believe
- Every drink is a choice
  - 12.9% Completely believe
  - 61.4% Partially believe
  - 25.7% Do not believe
Women's Xchange $15K Challenge: The Alcohol and Breast Cancer Connection

Figure 5. Responses to the question “Is this message made for people like you or someone else?” (Women's Xchange Alcohol and Breast Cancer Project, August 2017)

NOTE: Responses for Concept 3: “Cheers to women making good choices about alcohol” based on 30 participants due to missing clicker response.

Figure 6. Responses to the question (Women’s Xchange Alcohol and Breast Cancer Project, August 2017)

NOTE: Responses for Concept 3: “Cheers to women making good choices about alcohol” based on 30 participants due to missing clicker response.
**Figure 7.** Responses to the question “Would others in this community think there is anything offensive about this concept?” (Women's Xchange Alcohol and Breast Cancer Project, August 2017)

NOTE: Responses for Concept 1: “Every drink is a choice” based on 30 participants due to missing clicker response

**Figure 8.** Summary of message ranking from most to least preferred, (Women's Xchange Alcohol and Breast Cancer Project, August 2017)

NOTE: Responses for Concept 3: “Cheers to women making good choices about alcohol” based on 30 participants due to missing clicker response
Attachment C: Revised Test Posters
Alcohol and Breast Health...

How much you drink now matters later.

DID YOU KNOW?

The more you drink over your lifetime, the greater the risk of breast cancer.

8 standard drinks a week, before first pregnancy, may increase breast cancer risk by over 30%.

Even if you stop drinking later, the harmful effects of drinking during your teens and 20's last.

EVERY DRINK, AT ANY TIME COUNTS. USE THE FREE "SAYING WHEN" APP TO TRACK YOUR DRINKING AND REDUCE YOUR BREAST CANCER RISK.

www.sayingwhen.com
Drinking patterns now raise your breast cancer risk forever.

DID YOU KNOW?

Alcohol is a carcinogen that fuels estrogen which drives the growth of breast cancer cells.

8 standard drinks a week, before first pregnancy, may increase breast cancer risk by over 30%.

Even if you stop drinking later, the harmful effects of drinking during your teens and 20's last.

Attachment D: Final Awareness Message/Ad Posters
Alcohol and Breast Health...

How much you **drink** now matters **later**.

**DID YOU KNOW?**

- Alcohol is a **carcinogen** that fuels estrogen which drives the growth of **breast cancer** cells.
- 8 standard drinks a week, before first pregnancy, may **increase** breast cancer risk by over 30%.
- The more you drink over your **lifetime** the greater the **risk** — **harmful effects** of drinking in your teens and 20’s last.

**EVERY DRINK, AT ANY TIME COUNTS. USE THE FREE “SAVING WHEN” APP TO TRACK YOUR DRINKING AND REDUCE YOUR BREAST CANCER RISK.**
Alcohol and Breast Health...

How much you drink now matters later.

DID YOU KNOW?

Alcohol is a carcinogen that fuels estrogen which drives the growth of breast cancer cells.

8 standard drinks a week, before first pregnancy, may increase breast cancer risk by over 30%.

The more you drink over your lifetime the greater the risk — harmful effects of drinking in your teens and 20’s last.

Every drink, at any time counts. Use the free “Saying When” app to track your drinking and reduce your breast cancer risk.
Attachment E: Knowledge/Beliefs/Intentions Pre & Post Results
### Table 1. Summary of responses to pre- and post-test questions about knowledge/beliefs about lifestyle and female breast cancer risk and behavioural intentions (Women’s Xchange Alcohol and Breast Cancer Project, 2017)

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
<th>Pre-assessment</th>
<th>Post-assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which of the following nutrition or lifestyle factors do you think has the most significant connection to female breast cancer?</td>
<td>Diet high in fats and low in fruits and vegetables 22.7%</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of exercise</td>
<td>3.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>Tobacco consumption</td>
<td>25.9%</td>
<td>6.5%</td>
</tr>
<tr>
<td></td>
<td>Alcohol consumption</td>
<td>6.5%</td>
<td>83.9%</td>
</tr>
<tr>
<td></td>
<td>Unsure</td>
<td>42.0%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Please select the statement that best reflects your belief about the relationship between alcohol consumption and lifetime risk of female breast cancer.</td>
<td>Alcohol has no impact on the risk 12.8%</td>
<td>0.0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Consuming alcohol is a protective factor and decreases the risk</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td><strong>Any amount of alcohol consumption most days, increases the risk</strong></td>
<td><strong>25.8%</strong></td>
<td><strong>96.8%</strong></td>
</tr>
<tr>
<td></td>
<td>Only heavy alcohol consumption increases risk (3 or more drinks per day most days)</td>
<td>38.8%</td>
<td>3.2%</td>
</tr>
<tr>
<td></td>
<td>Unsure</td>
<td>22.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>What do you think is the current level of <strong>scientific evidence</strong> connecting alcohol consumption and lifetime risk of breast cancer?</td>
<td>No evidence</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>Some evidence, but inconclusive</td>
<td>80.7%</td>
<td>29.0%</td>
</tr>
<tr>
<td></td>
<td><strong>Strong evidence</strong></td>
<td><strong>12.9%</strong></td>
<td><strong>71.0%</strong></td>
</tr>
<tr>
<td></td>
<td>Unsure</td>
<td>6.4%</td>
<td>0.0%</td>
</tr>
<tr>
<td>If I thought that consuming alcohol is a risk factor for developing breast cancer over my lifetime...</td>
<td>It would not influence whether or not I choose to drink or how much because there are other lifestyle behaviours I could do to reduce the risk more.</td>
<td>19.3%</td>
<td>6.5%</td>
</tr>
<tr>
<td></td>
<td>It might influence whether or not I choose to drink, or how much, in the future when I’m older, but not now.</td>
<td>29.1%</td>
<td>9.7%</td>
</tr>
<tr>
<td></td>
<td><strong>It would influence whether or not I choose to drink, or how much, now and in the future.</strong></td>
<td><strong>51.6%</strong></td>
<td><strong>83.9%</strong></td>
</tr>
<tr>
<td>If alcohol consumption in fact increases the risk for breast cancer, the only way to reduce that risk would be to completely abstain from alcohol.</td>
<td>True</td>
<td>25.7%</td>
<td>45.2%</td>
</tr>
<tr>
<td></td>
<td>False</td>
<td>74.3%</td>
<td>54.8%</td>
</tr>
</tbody>
</table>

**NOTE:** May not add to 100% due to missing clicker responses