

### Web Reference 3: Assessment of biases in the study and strategies used to reduce them

Type of bias	Strategies used to reduce the bias in this study
Selection bias	There was no available sampling frame for the female entertainment workers as they were hard-to-reach. We thus used time-location sampling to recruit the participants. This meant that the participants were recruited using systematic sampling at different times of the day at different entertainment establishments during the venues' operating hours on weekdays and weekends to minimise selection bias.
Attrition bias	<p>For follow-up, the participants were reminded through both a call and a text message (SMS or whatsapp) at least 3 days before the scheduled follow-up date. If they missed the scheduled date and the contact number was still valid, they would be contacted another 3 attempts (different time on different day) via the same mode of communication (both call and text message) before considering them as lost to follow-up. If the contact number was not valid, they would be directly considered as lost to follow-up.</p> <p>In addition, the participants were given reimbursement for each onsite session of the intervention and comparison programme as well as for the questionnaire administration and STI testing during follow-up.</p>
Differential attrition bias	This was unlikely as the follow-up rate of the intervention (70.5%) and comparison group (66.8%) were very similar, with a difference of only 3.7%.
Hawthorn effect	To minimise Hawthorne effect, the behavioural component of the comparison programme consisted of 4 sessions (2 onsite sessions of 20 minutes each and 2 online sessions of 5 minutes each) similar to the intervention programme.
Question-behaviour effect	The exact hypothesis and objectives of the research study were not made known to the participants. Each participant would have to answer the questionnaire twice in the study at baseline and at follow-up. To minimise the question-behaviour effect, a new batch of new participants who were not from the comparison group were recruited for the intervention group.
Social desirability bias	<p>To minimise social desirability bias, the following steps were taken:</p> <ul style="list-style-type: none"> <li>• The peer educators had to reinforce the following before the participant was handed the questionnaire: <ul style="list-style-type: none"> <li>✓ the research team was from the university and had no affiliation with the authority</li> <li>✓ acknowledged difficulties in practising safer sex and stressed that the information collected would be used for programme improvement</li> <li>✓ assured that their responses were anonymous as no personal identifiers (except for contact number) would be collected</li> <li>✓ results of the study would go into developing a programme to help the rest of the female entertainment workers</li> </ul> </li> <li>• Use of frequency-based rather than leading questions in the questionnaire to assess sensitive sexual behaviour</li> <li>• Questionnaire was worded in a non-judgemental manner</li> </ul>
Contamination bias (external from intervention to comparison group)	<p>To minimise contamination between the intervention and the comparison group, the following steps were taken:</p> <ul style="list-style-type: none"> <li>• There was a 3-month period from the end of the follow-up of the comparison group to the start of recruitment of the intervention group to ensure that the comparison participants had left Singapore before we started recruitment for the intervention group. In this way, the comparison participants would not be able to share their experiences related to information on the study and the outcomes with the intervention participants. This would also avoid the situation where the comparison and intervention participants compared the experiences they had received, potentially influencing the intervention participants as the comparison participants had left Singapore by the end of the interval period.</li> </ul>

	<ul style="list-style-type: none"> <li>• Female entertainment workers who had participated in the comparison group would be excluded from participating in the intervention group.</li> <li>• The research team provided separate training to the peer educators at 2 different time periods. For the comparison programme, this was just before the start of recruitment for the comparison group while this was just before the start of recruitment for the intervention group for the intervention programme. This was to prevent the peer educators from divulging any contents of the intervention programme unintentionally to the comparison group to minimise contamination bias. In addition, they were provided with separate standardised manual during the intervention and comparison period respectively and were trained to follow it.</li> </ul>
Contamination bias (internal within intervention group)	<p>Within the intervention group, information sharing between the participants who had undergone the intervention with those who still had not taken the baseline survey was likely to be minimal. This was because an analysis of baseline consistent condom use behaviour within the intervention group did not differ statistically with increasing duration/differing periods of the study.</p>
Outcome assessment bias	<p>To minimise outcome assessment bias, the following steps were taken:</p> <ul style="list-style-type: none"> <li>• The exact study hypothesis and objectives were not made known to the participants. They were informed by the research team that the study was to improve women’s health among the female entertainment workers. Any data collected would go into developing a programme to help the rest of the female entertainment workers. In addition, the participants were assured that their responses were anonymous as no personal identifiers (except for contact number) would be collected.</li> <li>• The study hypothesis and objectives were not made known to the laboratory staff at the national public specialist clinic who handled the biological specimens.</li> </ul>