Representativeness of the NSW NSP Enhanced Data Collection

This report was prepared by

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Introduction

The New South Wales (NSW) Needle Syringe Program (NSP) Enhanced Data Collection (NNEDC) provides a systematic snapshot of the NSW NSP client population. The snapshot aspect of the data collection has several benefits, including provision of a mechanism to collect consistent data over the same time-period and the potential to reduce the data collection burden on NSP attendees and services. Further, selected NNEDC data items (gender, age, last drug injected and Indigenous status) are collected according to nationally defined definitions, as specified in the Needle Syringe Program National Minimum Data Collection (NSP NMDC) Data Dictionary (see https://kirby.unsw.edu.au/project/needle-syringe-program-national-minimum-data-collection-nsp-nmdc). These selected NNEDC data items are provided directly to NSP NMDC.

Sample representativeness is the degree to which a sample represents or possesses similar essential characteristics or properties to the underlying or parent population (Kahneman & Tversky, 1972). In the case of the NNEDC, the parent population is attendees at NSW public sector NSP services. Response rates provide a measure of participation and are calculated by dividing the number of respondents by the total number of eligible respondents. Surveys with high response rates are likely to yield representative samples, however the crucial consideration in relation to low or fluctuating response rates, is the degree to which they impact on sample representativeness.

Completion of the NNEDC by NSP attendees is encouraged but not mandatory. Where NSP attendees complete less than four NNEDC questions, respondents are defined as 'declined to participate'. The proportion of NSP attendees who declined to participate in the NNEDC increased from 21% (n=1,238) in 2013 to 33% (n=1,775) in 2016, leading to concerns that inferences drawn from the NNEDC may not represent the wider NSW public sector NSP population. NNEDC response rates, calculated by dividing the number of NSP attendees who participated in the NNEDC by the total number of OOS after excluding repeat attendees, also declined over the same period (from 68% in 2013 to 58% in 2016).

To address the declining response rate and to attempt to increase participation in the NNEDC, in 2017 the first four questions (age, gender, Indigenous status and drug last injected) of the data collection instrument were separated (in column one) and NSP staff encouraged all NSP attendees to complete all four minimum questions.

The aims of this study were to:

1) assess the impact of the amended 2017 NNEDC methodology on the response rate and proportion of NSP attendees who declined to participate;
2) determine the extent of sample bias with respect to NSP attendees who partially completed the NNEDC (first four questions only) compared with those who fully completed the NNEDC in 2017 and;
3) examine what, if any, impact potential sample bias had on the results of the 2017 NNEDC.

Method

The NNEDC was conducted over a two-week period in late February/early March 2017, at approximately 50 NSP services throughout NSW. All NSP attendees who attended participating services were invited to participate. NSP attendees who consented to participate were asked to self-complete complete a minimum of four questions on a one-page data collection instrument covering demographic and drug use characteristics. NSP staff submitted a blank NNEDC form for each occasion of service (OOS) where a client declined to participate. NSP attendees who had previously contributed to the data collection (repeat attendees) were recorded as an OOS, but were excluded from re-contributing to the data collection to avoid skewing the data collection towards frequent NSP attendees.

Response rates were calculated for the following groups, a) NSP attendees who completed a minimum of four NNEDC questions (defined as partial completion) and b) NSP attendees who completed more than four NNEDC questions (defined as full completion). Differences in demographic characteristics (age and gender), drug last injected and geographic location (metropolitan/rural LHD) were assessed among NSP attendees who partially or fully completed the NNEDC and examined using non-parametric rank-sum test and chi-square test for continuous and categorical variables respectively.

Post stratification weightings were applied to adjust for sample bias created due to the over or under representation of sub-populations within the NNEDC sample. A ratio-based approach was used to calculate sampling weights, which were then applied to the subset of respondents who completed four or more questions. Weighted data were used to determine adjusted results for key NNEDC variables, including receptive syringe sharing (RSS). Adjusted and unadjusted results were compared to assess the impact of sample bias using Pearson's χ^2test for independence. Stata Version 14 (Stata Corporation, College Station TX) was used to analyse data. Ethical approvals for the NNEDC were obtained from Sydney LHD Ethics Review Committee (RPAH Zone) and the Aboriginal Health and Medical Research Council (AH&MRC). Site Specific Assessment Forms were completed for all Local Health Districts.

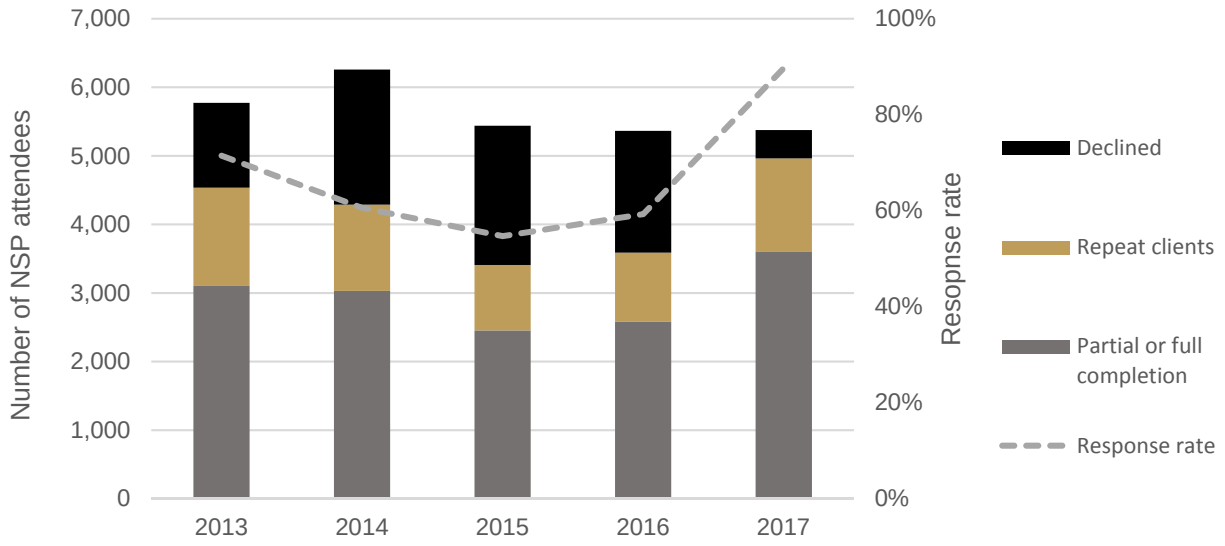
Results

Of the 5,378 occasions of service recorded over the two-week data collection period in 2017, a total of n=2,842 (53%) NSP attendees completed a minimum of four NNEDC questions, while a further n=765 (14%) completed four or less questions. A total of n=1,355 (25%) NSP attendees were repeat attendees and were excluded from all analyses. The remaining n=416 (8%) NSP attendees declined to answer any of the NNEDC questions.

Impact of the amended methodology

The response rates in the 2017 NNEDC were 90% (partial completion) and 71% (full completion). As shown in Figure 1, there was a significant increase in response rate (from 71% in 2013 to 90% in 2017, p-trend<0.001) and a significant decrease in the proportion of NSP attendees who declined to complete the NNEDC (from 21%, n=1,238 in 2013 to 8%, n=413 in 2017, p-trend<0.001) over the period 2013 to 2017.

Figure 1: Number of NNEDC respondents by completion status, 2013 - 2017



Factors associated with partial completion of the NNEDC

Of the n=765 NSP attendees who partially completed the NNEDC in 2017, the majority were men (74%), with a median age of 40 years (range 18 to 73 years). Most respondents (86%) completed the NNEDC at a metropolitan NSP and one in five (20%) reported an Aboriginal or Aboriginal and Torres Strait Islander background. Opioids were the most common drug last injected (44%), followed by stimulants (24%).

As shown in Table 1, in bivariate analysis, full completion of the NNEDC was associated with attendance at a rural or regional NSP (OR 1.77, 95% CI 1.42-2.21, *p*<0.001) and last injecting a stimulant (OR 1.31, 95% CI 1.08-1.60, *p*=0.007) or performance and image enhancing drug (PIED, OR 2.44, 95% CI 1.77-3.36, *p*<0.001). Conversely, NSP clients who reported an Aboriginal or Aboriginal and Torres Strait Islander background were less likely to have completed the NNEDC (OR 0.63, 95% CI 0.52-0.78, *p*<0.001). There were no differences in partial versus full completion of the NNEDC according to gender or age.

Factors associated with completion of the NNEDC in bivariate analysis were also significantly associated in the multivariate analysis. Compared to NSP clients who attended an NSP in a metropolitan location, NSP clients who attended a rural or regional NSP were significantly more likely to fully complete the NNEDC (AOR 5.02; 95% CI 3.53-7.12; *p*<0.001). Drug last injected was also

associated with full completion of the NNEDC, with NSP clients who reported last injecting a stimulant (AOR 1.23; 95% CI 1.00-1.51; *p*=0.048) or PIED (AOR 3.06; 95% CI 2.14-4.37, *p*<0.001) significantly more likely to have completed the NNEDC compared to NSP clients who reported last injecting an opioid. NSP clients who reported an Aboriginal or Aboriginal and Torres Strait Islander background were also significantly less likely to have fully completed the NNEDC (AOR 0.63; 95% CI 0.51-0.79, *p*<0.001) compared to respondents who did not report an Aboriginal background.

Post stratification weighting of data

Post stratification weightings were applied to adjust for sample bias among those who partially completed the NNEDC and did not provide any information on key risk behaviours (RSS and frequency of injection). After adjustment, the proportion of NSP attendees who reported injecting daily or more frequently was 50% (n=1,377), however there was no significant difference observed between the weighted and unweighted results for daily or more frequent injection (50% vs 49% respectively, p=0.637). Similarly, in adjusted analysis, the proportion of NSP attendees who reported RSS was 20% (n=506) and there was no significant difference observed between weighted and unweighted results (20% vs 20%, p=0.849).

Discussion

This study demonstrated that the amended NNEDC methodology implemented in 2017, resulted in a significant decrease in the proportion of NSP attendees who declined to participate in the NNEDC and a significant increase in the response rate.

Although we identified sample bias with respect to respondents who partially completed the NNEDC compared to those who fully completed the NNEDC, weighted analysis demonstrated that this bias had no significant impact on NNEDC findings with respect to the key risk behavior variables, frequency of injection and receptive syringe sharing.

It is recommended that the amended methodology, where all NSP attendees are encouraged to complete the first four questions of the NNEDC is implemented in future rounds of data collection. It is also recommended that participating NSPs are made aware of the potential for sample bias and that NSP attendees in metropolitan LHDs, those who report an Aboriginal or Aboriginal and Torres Strait Islander background or NSP attendees who report the injection of opioids are encouraged to fully participate in the NNEDC.

Reference

Kahneman, D., & Tversky, A. (1972). Subjective probability: A judgment of representativeness. Cognitive Psychology, 3(3), 430-454.

Table 1: Factors associated with full completion of the NNEDC in 2017

Variable	NNEDC sample (n=3,607)	Full completion (n=2,842)	Partial completion (n=765)	Univariate analysis		Multivariate analysis	
				OR (95% CI)	*p* value	OR (95% CI)	*p* value
Gender (%)							
Male (reference)	2,666 (74)	2,089 (74)	577 (75)	--			
Female	882 (24)	709 (25)	173 (23)	1.13 (0.94-1.37)	0.201		
Age (quartiles, %)							
<30 years (reference)	545 (15)	454 (16)	91 (12)	--			
30-39 years	1,067 (30)	859 (30)	208 (27)	0.83 (0.63-1.09)	0.172		
40-49 years	1,108 (31)	921 (32)	187 (24)	0.99 (0.75-1.30)	0.927		
>49 years	710 (20)	584 (21)	126 (26)	0.93 (0.69-1.25)	0.626		
Location (%)							
Metropolitan (reference)	2,859 (79)	2,202 (77)	657 (86)	--		--	
Regional/remote	748 (21)	640 (23)	108 (14)	1.77 (1.42-2.21)	<0.001	5.02 (3.53-7.12)	<0.001
Aboriginal background (%)							
No (reference)	2,755 (76)	2,310 (81)	445 (58)	--		--	
Yes	669 (19)	513 (18)	156 (20)	0.63 (0.52-0.78)	<0.001	0.63 (0.51-0.79)	<0.001
Drug last injected (%)							
Opioids (reference)	1,606 (45)	1,272 (45)	334 (44)	--		--	
Stimulants	1,122 (31)	935 (33)	187 (24)	1.31 (1.08-1.60)	0.007	1.23 (1.00-1.51)	0.048
Performance & image enhancing drugs	494 (14)	446 (16)	48 (6)	2.44 (1.77-3.36)	<0.001	3.06 (2.14-4.37)	<0.001
Other drugs	169 (5)	157 (6)	12 (2)	3.44 (1.89-6.25)	<0.001	3.25 (1.77-5.99)	<0.001