

Interviewer gender and self-reported sexual behavior and mental health among male military personnel

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Abstract

Objectives To determine whether self-reported sexual behavior and mental health varied by interviewer gender in a population of male military personnel.

Methods Eight male and six female data collectors verbally administered structured interviews to 474 male Dominican military personnel stationed at border crossing zones in the Dominican Republic. Measurements included sexual behaviors and mental health.

Results Respondents were less likely to report oral and vaginal sex to male interviewers, and were more likely to report sexual coercion and alcohol abuse to male interviewers. Respondents were more likely to report depression and post-traumatic stress disorder to female interviewers.

Conclusion Interviewer gender influenced the prevalence of sexual behaviors and mental health, which carries implications for future research in military personnel.

Keywords Questionnaire · Military · Interviewer · Gender · Sexual risk · Mental health

Introduction

Structured behavioral questionnaires are used in Biological and Behavioral Surveillance Surveys (BBSS) when screening military personnel for risk behaviors. Results from behavioral questionnaires are used to directly inform HIV prevention programs and strategies to help focus scarce resources available for prevention programming, particularly when resources are targeted at military personnel, a population which is often considered to be at risk for HIV and STI infections. Verbal, face-to-face modes of questionnaire administration are common in developing countries (Langhaug et al. 2010), and interviewer attributes such as gender may affect respondents' self-reporting of sensitive information.

Research examining effects of interviewer gender in face-to-face modalities of questionnaire administration remains limited (Pollner 1998; Heeb and Gmel 2001; Davis et al. 2009). While there is evidence that men may be more likely to disclose sensitive information to female interviewers (Dindia and Allen 1992; Pollner 1998), it is unclear whether interviewer gender affects self-reported sexual behavior and mental health, particularly for military personnel in developing countries. We evaluated whether interviewer gender was associated with self-reported sexual behavior and mental health symptoms in a sample of active duty male military personnel in the Dominican Republic (DR) who were stationed at border crossing zones.

Methods

The data were collected as part of a baseline assessment to inform programming for DR military personnel stationed at border crossing zones along the DR's western border with

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Haiti. A stratified (by base) systematic random sample of survey participants were interviewed by the next available interviewer on the data collection team. Among personnel who were systematically and randomly selected from personnel lists within each base, a response rate of 99% was achieved for a sample size of 498. The majority of respondents (95%) were male. Analyses were restricted to the 474 male respondents sampled across 12 bases (on average, 40 per base) as the number of females interviewed was too small to provide adequate numbers for comparison by gender. All interview participants were Dominican military personnel aged 18 years or over.

The full questionnaire included items measuring demographic and military characteristics, mental health, alcohol abuse, questions about respondents' knowledge, attitudes, risk behaviors, HIV prevention messaging exposure, and STI/HIV health services accessibility. For the purposes of this study, we focused on questions measuring sexual risk behaviors and mental health. Questions were translated into Spanish by an official translator, and back-translated into English by the study team for accuracy. Interviews were conducted by one member within a team of data collectors (8 male and 6 female) who underwent a 2-day training to administer verbal, face-to-face interviews. Interviewers were native to the DR, spoke Spanish as their first language, and were uniformed medical personnel. Interviews were verbally administered and took place in private locations on each base. The assessment was approved by the Western Institutional Review Board as well as a local ethics review panel in the Armed Forces of the Dominican Republic.

Sexual behavior

A series of self-reported sexual behaviors over the preceding 12 months were measured. Respondents reporting sex with ≥ 1 commercial sex worker (CSW) were classified as having sex with a CSW, and respondents reporting sex with > 1 sexual partner were classified as having multiple sexual partners. We assessed participants' engagement in sexual acts over the past 12 months (vaginal, oral, anal sex) with a corresponding measure of condom use frequency using a 4-point Likert scale ranging from never (1) to always (4). Respondents who reported masturbating ≥ 1 time during the past week were classified as having recently masturbated. The Sexual Coercion Scale (SCS), a 7-item portion of the revised Conflict Tactics Scale (CTS2), was used to classify respondents who engaged in sexual coercive behavior during the past 12 months (Straus et al. 1996).

Mental health

Measures of mental health included depression, post-traumatic stress disorder (PTSD), alcohol abuse and alcohol

dependency. Depression was assessed using a 6-month recall period with the Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al. 2001) which defines a probable major depressive episode (MDE) for those scoring positive on a screening question (anhedonia or feeling down/depressed/hopeless) in addition to ≥ 4 symptoms (Kroenke et al. 2001). We measured PTSD using Breslau's 7-item screen for PTSD, where ≥ 4 symptoms classified a respondent with probable PTSD (Breslau et al. 1999). We also measured alcohol abuse and dependency using the Rapid Alcohol Problems Screen 4-Quantity Frequency (RAPS4-QF), where a score ≥ 1 on the 6-item RAPS4-QF indicated probable alcohol abuse, and a score ≥ 1 on the 4-item RAPS4 indicated probable dependency (Cherpitel 2002).

Data analysis

Data were analyzed using STATA 10 statistical software (2007). Chi-squared statistics and 2-tailed *t* tests were used to test for bivariate relationships. Regression analyses were used to adjust for the potentially confounding effect of length of interview, which varied by interviewer gender. We initially tested whether the odds of reporting a sexual behavior or the odds of a probable mental health problem were higher for a given interviewer's gender (Table 1). Following this set of analyses, we tested whether some of these differences may have reflected differences in scale reporting (e.g. reporting no symptoms in a scale, all symptoms in a scale, or more frequent symptoms within a scale) (Table 2). Floor and ceiling effects for select scales were analyzed by creating dichotomous variables representing the minimum (floor) and maximum (ceiling) values within scales compared to all other responses. Logistic regression was used to obtain the odds ratio (OR) for variables with dichotomous outcomes. If a significant association was detected (at $p < 0.05$), analyses were then adjusted for potential confounders and the adjusted odds ratio (aOR) was estimated.

Results

In total, 269 respondents were interviewed by males and 205 were interviewed by female interviewers. On average, respondents were 30.8 years of age (range 18–64). There were no appreciable differences in age, rank, marital status, nor income across interviewer genders. Interviews conducted by males were 1.8 min longer, thus length of interview (in minutes) was controlled for in subsequent analyses.

Sexual behavior

Respondents interviewed by a male interviewer were more likely to report sexual coercion (aOR = 1.8, 95% CI

Table 1 Self-reported sexual behavior and mental health by interviewer gender among military personnel stationed along border crossing zones in the Dominican Republic (2008–2009), *n* = 474

	Male interviewer (<i>n</i> = 269) (%)	Female interviewer (<i>n</i> = 205) (%)	OR	95% CI	<i>p</i> value	aOR ^{a,b}	95% CI	<i>p</i> value
Sexual behavior								
Sex with CSW	19.0	19.8	0.95	0.6–1.52	0.83	–	–	–
Oral sex	56.9	74.6	0.45	0.30–0.67	<0.001	0.38	0.25–0.57	<0.001
Anal sex	4.8	8.8	0.53	0.25–1.10	0.09	–	–	–
Vaginal sex	72.9	90.2	0.29	0.17–0.50	<0.001	0.27	0.15–0.47	<0.001
Sex with multiple partners	38.1	38.6	0.98	0.67–1.40	0.9	–	–	–
Sexual coercion	18.2	10.2	1.95	1.13–3.37	0.02	1.78	1.01–3.12	0.046
Recent masturbation	25.9	25.0	1.05	0.69–1.59	0.83	–	–	–
Mental health								
Major depressive episode	4.8	10.2	0.45	0.22–0.91	0.027	0.45	0.22–0.74	0.031
Post-traumatic stress disorder	13.6	25.6	0.46	0.29–0.74	0.001	0.43	0.27–0.70	0.001
Alcohol abuse	84.4	68.8	2.45	1.58–3.82	<0.001	2.06	1.30–3.26	<0.001
Alcohol dependency	34.6	30.2	1.22	0.83–1.80	0.32	–	–	–

OR odds ratio, aOR adjusted odds ratio

^a Adjusted analyses are only presented for odds ratios that were significant at *p* < 0.05

^b Results are derived from a logistic regression controlling for the effects of length of interview. Odds ratios express the likelihood of a reported behavior among those interviewed by males, in comparison to those interviewed by females

Table 2 Significant effects of interviewer gender on severity, floor and ceiling effects for select items among military personnel stationed along border crossing zones in the Dominican Republic (2008–2009), *n* = 474

	Count distributions			Floor effects ^b			Ceiling effects ^c		
	Beta ^a	95% CI	<i>p</i> value	aOR ^d	95% CI	<i>p</i> value	aOR ^d	95% CI	<i>p</i> value
Sexual behavior									
MDE symptoms	–0.47	–0.82 to –0.11	0.01	1.58	1.08–2.32	0.018	–	–	–
PTSD symptoms	–0.90	–1.26 to –0.55	<0.001	2.41	1.63–3.56	<0.001	0.088	0.01–0.73	0.024
Alcohol abuse/dep symptoms	0.25	0.001 to 0.50	0.049	0.49	0.31–0.77	0.002	–	–	–
Condom use during oral sex	0.34	0.12 to 0.56	0.002	0.29	0.15–0.54	<0.001	–	–	–

OR odds ratio, aOR adjusted odds ratio

^a Results are derived from a linear regression controlling for the effects of length of interview. The beta weight expresses the effect for those interviewed by males

^b Floor effects refer to the minimum value provided in the scale

^c Ceiling effects refer to the maximum value provided in the scale

^d Results are derived from a logistic regression controlling for the effects of length of interview. Odds ratios express the likelihood of a reported behavior among those interviewed by males, in comparison to those interviewed by females

1.01–3.1, *p* = 0.046) (Table 1), and were less likely to report oral sex (aOR = 0.38, 95% CI 0.25–0.57, *p* < 0.001) and vaginal sex (aOR = 0.27, 95% CI 0.15–0.47, *p* < 0.001). Respondents interviewed by males reported more frequent use of condoms during oral sex (beta = 0.34, *z* = 3.1, *p* = 0.002) (Table 2).

Mental health

Respondents interviewed by males were 0.45 times less likely to report symptoms of a probable MDE (95% CI

0.22–0.74, *p* = 0.031) (Table 1). Respondents interviewed by males reported less symptoms of depression and were more likely to report null symptoms (Table 2). Probable PTSD was 0.43 times less likely among respondents with male interviewers in comparison to those with female interviewers (95% CI 0.27–0.70, *p* = 0.001). Respondents reported less symptoms of probable PTSD to male interviewers and were more likely to report null symptoms to a male interviewer. Probable alcohol abuse was 2.1 times more likely among respondents interviewed by males compared to those interviewed by females (95% CI

1.3–3.3, $p = 0.002$). Respondents reported more symptoms of alcohol abuse to male interviewers and were more likely to report null symptoms to female interviewers (Table 2).

Discussion

Interviewer gender effects varied across sexual behavior and mental health domains. Interviewer gender impacted the estimated prevalence of select behaviors and mental health, and results suggest gender-specific censoring by domain. Combined with evidence of interviewer gender effects on symptom counts (Table 2), we stipulate that male interviewers may be eliciting more valid responses for alcohol abuse, and that female interviewers are eliciting more valid responses for depression. Males elicited more frequent use of condoms during oral sex. While these discrepancies may be corrected for in the analytic stage with statistical adjustments, further research is required to validate the direction of the adjustment.

Our finding that male military personnel were more likely to report depression and more symptoms of depression to female interviewers is in line with findings from a household survey in the United States where male and female respondents reported a greater number of symptoms of depression when interviewed by female interviewers (Pollner 1998). Further, our finding that respondents were more likely to report alcohol abuse and more symptoms of alcohol abuse to male interviewers corresponds with findings from a health survey of Swiss residents where higher rates of alcohol consumption were found among respondents interviewed by male interviewers in comparison to those interviewed by females (Heeb and Gmel 2001). To the best of our knowledge, our findings of interviewer gender effects on sexual behavior reporting and PTSD in a population of male military personnel are a unique contribution to the literature.

Further, we found that males spent a larger amount of time interviewing other males in comparison to female interviewers. This may be due to the potential for embarrassment in having men asking other men about their sexual behavior and mental health; however, further research is needed to understand why this difference exists.

Respondent–interviewer “gender-pairing” strategies may reduce the effect of interviewer gender bias for a single domain or item, but in a multi-domain assessment this would not necessarily be a feasible technique. Similarly efficient modes of data collection which can be implemented for large-scale assessments in military personnel in developing countries, such as Audio Computer Assisted Self Interviews (ACASI) (Ghanem et al. 2005) should be further evaluated.

This study has several limitations. First, while interview subjects were assigned to the next available interviewer, we

found that length of interview varied by interviewer gender. This could potentially introduce a bias into a randomization process. Second, we only recorded interviewer gender as a demographic attribute of the interviewer. Additional interviewer effects (such as age, role, and education of the interviewer) may have also held an impact, although the data collection team was relatively homogenous in these demographics as data collectors were officers. Finally, the results of this study can only be generalized to male Dominican military personnel stationed at border crossing zones on the Haitian border.

To our knowledge, this is the first study to report interviewer gender effects for sexual risk behavior and mental health among male military personnel. When interviewed by males, male military personnel were less likely to report oral and vaginal sex, depression and PTSD, but were more likely to report sexual coercion and alcohol abuse. Future research should aim to test whether military personnel censor specific information by interviewer gender, and whether alternative modes of data collection are feasible and superior.

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Conflict of interest All authors declare that they have no competing interests.

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