Article

The Effectiveness of a Mixed-mode Survey on Domestic Violence in Curaçao: Response and Data Quality

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Abstract

To collect reliable statistical data on domestic violence in Curaçao, we conducted a large-scale quantitative study ($n = 816$). To meet with the special needs of the population and topic, we designed a tailored mixed-mode survey to assess the prevalence of domestic violence in Curaçao and its health consequences. Great care was taken to reduce selective nonresponse and stimulate open and honest responses. We describe how we implemented and tailored a mixed-mode survey and report on its consequences for response and data quality.

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Introduction

Much of what is known about domestic violence, its prevalence, and risk
factors stems from research carried out in Western countries, in particular
the United States (Barnish 2004). Although there have been some efforts
to identify domestic violence prevalence rates in the Caribbean (World
Health Organization [WHO] 2002, 2006), reliable statistical data on domes-
tic violence in this region are largely unavailable. The Inter-American Com-
mission of Women (Chin et al. 2001) pointed out the urgent need for
systematic collection of quantitative data on the incidence of violence in the
Caribbean. This call for reliable data was put on the agenda of several non-
governmental organizations such as the U.N. Office on Drugs and Crime in
2007 and the Global Movement for Children in 2009 (van Wijk 2012). In
response to this call, a large-scale survey was conducted to estimate preva-
lence rates and provide figures on risk factors and consequences of domes-
tic violence against men *and* women in Curaçao. When designing this
survey, we had to meet several challenges; the two major ones were the sen-
sitive nature of the questions and the illiteracy rate in Curaçao.

Tourangeau and Yan (2007) point out that when respondents are con-
fronted with sensitive questions, they want to avoid embarrassment or possi-
ble repercussions from disclosing sensitive information, so they lie. Asking
men and women in Curaçao about domestic violence is highly sensitive, as
it concerns behavior that is socially frowned on, may be illegal, and concerns
areas of privacy (Coutts and Jann 2011). When answered affirmatively, ques-
tions about possible experiences of domestic violence may be embarrassing,
delve into deeply personal experiences, and threaten the respondent's self-
image. In addition, questions about being a perpetrator of domestic abuse are
concerned with deviance and domination; when answered affirmatively, they
may involve fear of social exclusion and punishment, thereby posing external
threats to the respondent (Lee 1993; Schaeffer 1999; Tourangeau and Yan
2007). Furthermore, living in a small island community like Curaçao may
heighten the sense of shame (MacNeil 2004).

For large-scale quantitative studies into sensitive phenomena, self-
administered questionnaires are the preferred data collection mode because,
compared to interview surveys, self-administered surveys produce less

underreporting of sensitive behavior (De Leeuw 1992, 2008; Richman et al. 1999; Tourangeau and Yan 2007). These findings hold for a variety of sensitive topics, including abuse, violations, and mental and physical health (Lessler and O'Reilly 1997; Link and Mokdad 2005; Moum 1998; Tourangeau and Smith 1996; Tourangeau and Yan 2007). Therefore, to estimate prevalence rates for domestic violence by and against men and women, the use of self-administered questionnaires is preferable to other methods.

However, the Caribbean has a less-developed "reading culture" than Western countries, exemplified by higher illiteracy and semi-literacy rates. Illiteracy rates are around 1% in Western countries and range from around 4% in the Bahamas and the Netherlands Antilles, including Curaçao, to around 39% in Haiti in the Caribbean (Colin 2010). This complicates the use of self-administered procedures, and interviewer assistance is often needed. We therefore designed a mixed-mode survey in which the same structured questionnaire was presented either as self-administered paper form or as interviewer-administered face-to-face interview, depending on the needs of the respondent. Although quantitative mixed-mode surveys[1] offer many advantages (Blyth 2008), there is concern over potential mode effects, as the same questions may produce different answers when administered through different modes (Dillman and Christian 2005). Most research into mode effects has been conducted in the United States and Europe (De Leeuw 2005); in this study, we investigate mode effects in a mixed-mode survey in the Caribbean.

Method

Sample Selection

Curaçao is an island in the Dutch Caribbean with 140,000 inhabitants, who have descended from African, Dutch, Jewish, Arabic, and recent Spanish Caribbean ancestors. The population for this study was defined as adult (18 years and older) inhabitants of Curaçao. Institutionalized people (e.g., those in prison or mental hospitals) were excluded, and language was an explicit inclusion criterion. Papiamentu and Dutch are spoken in 91% of the households in Curaçao (Boer 2004), and only people with an adequate command of Papiamentu or Dutch could participate in the study.

When sensitive topics are studied, methodological problems with self-report measures, such as underreporting and low response rates, are amplified (Jehn and Jonsen 2010). Based on a thorough knowledge of the dynamics in Curaçao, we tailored the research design to reduce refusals and

invited open and honest responses. We used a ''waiting area intercept'' approach. In this method, respondents are approached by an interviewer and invited to participate, instead of being approached at their home based on a register sample (Diamond 1994). Reaching people at home for scientific research is unusual in Curaçao. Finding an interviewer at the doorstep or receiving a letter inviting one to complete a questionnaire is not common and may cause distrust or misinterpretation. This could lead to more refusals and affect data quality negatively. Further, domestic violence is linked to one's household, and asking about this in the household setting could lead to unwanted reactions. For instance, other household members could act as ''gatekeepers'' and deny access to the house. Also the presence of others, which is almost unavoidable in open family compounds or in small dwellings, threatens the privacy of respondents and may lead to underreporting. Finally, it could be very painful and intrusive to talk about violence where it occurred and with the chance that the perpetrator is present, causing unnecessary stress to respondents, which is against research ethics.

Four major public waiting rooms on Curaçao served as waiting-area-intercept locations: (1) the governmental registry office, (2) the biggest local health insurance company, (3) a governmental food handling permit distribution unit, and (4) a medical facility. These four locations are regularly visited by people from all social strata, and waiting times are at least an hour, which is ample time to complete the questionnaire. All persons entering the waiting rooms were approached by a trained interviewer with a request to participate in a local survey of the Medical and Public Health service. The only selection criterion was that respondents spoke Dutch or Papiamento.

Questionnaire

A standardized questionnaire was developed based on the literature and similar questionnaires about domestic violence and health (Bos and Van Zanden 2004; GGD Amsterdam 2008; Goderie and Ter Woerds 2005; Lünneman and Bruinsma 2005; Straus et al. 1996; Van Dijk et al. 1997). It contained questions about the following topics: (1) demographics, (2) health status, (3) psychological distress, (4) loneliness, (5) specific experiences with domestic violence as a victim in youth and adulthood, (6) inflicting domestic violence as an adult perpetrator, and (7) emotions experienced while undergoing or committing domestic violence.

Experiences with domestic violence were subdivided into domains of psychological (with subcategories of humiliation, restricting contact, and restricting freedom), physical (subcategories of light and severe threats), and sexual violence (threats and assaults). An example of a question in the subcategory of severe physical violence is "Have you been slapped or kicked (in childhood/as adult)?" If a person replied yes to at least one of the questions in a subcategory, that person was regarded as a victim.

Adult perpetrators were asked seven questions about inflicting domestic violence (making psychologically hurting remarks, humiliating someone, uttering threats of physical violence, hitting or kicking, inflicting any other physical violence, engaging in unwanted sexual touching, and threatening sexual assault). For example, one of the questions was "Have you ever, as an adult, slapped or kicked a partner, friend, or family member."

A closed-question format was used in which respondents could answer by choosing one or more prespecified response categories. For a full description of the questionnaire used, see van Wijk (2012:123–32).

Based on Dillman's (2007:232–40) unified-mode construction, two equivalent versions of the questionnaire were developed: one for paper self-administration and one for face-to-face interviews. The same questions and question wordings were used in both versions; the questionnaires were available in both Papiamentu and Dutch.

Data Collection

According to the literature, when surveying sensitive topics, the data collection should be as private as possible and a self-administered questionnaire is optimal. However, due to the relative high percentage of semi-illiterates in Curaçao, we opted for a mixed-mode self-administered and face-to-face survey approach, so that each respondent could choose the mode that the respondent felt most comfortable.

The fieldwork took place during 2 months in 2009 in four public waiting rooms. Four experienced interviewers were specially trained by researchers of the Public Health Research and Policy Unit. This training went beyond basic interview training and included extra modules on how to interview on sensitive topics, how to approach respondents in waiting areas, and how to offer a choice between questionnaire and interview.

All persons entering the waiting areas were approached with a request to participate in a local survey of the Medical and Public Health service. All participants were then offered the choice to fill in the questionnaire themselves or have the interviewer read out the questions and record the

responses. Respondents were taken aside to a quiet corner, so that they could not be overheard by others present. After completing the question-naire, the respondents received a small gift.

Analysis

As the main dependent variables of interest were dichotomous (e.g., one was either victim of a certain form of abuse or not) and the predictors were a mixture of continuous and discrete variables, we used logistic regression to analyze the data. Respondents were offered a choice and due to self-selection (e.g., more elderly and less-educated people pre-ferred the interview mode), the sample composition in the two modes may differ. To control for this, sequential logistic regression was used in which the demographic variables age, gender, and education were considered as covariates (Pearl 2009) and were entered in the first block. The major independent variable of interest, the mode of data col-lection, was entered in the second block (Tabachnick and Fiddell 2013:439, 442). In the third block, interactions of demographic vari-ables with mode were added. Interpretations are based on the results from block 2 and block 3.

Results

Response Rate

We achieved an overall response rate of 91% and collected 816 completed questionnaires, of which 76% were the result of self-administered question-naires and 24% the result of face-to-face interviews (for details, see van Wijk 2012:135).

Respondents from different demographic segments have different mode preferences. A direct logistic regression analysis was performed on mode choice as outcome and three demographic predictors: age, gender, and edu-cation. A test of the full model against the null model was statistically sig-nificant, $\chi^2(3) = 61.41$, $p < .001$. Gender was not significant ($p = .37$), but both education and age were significant ($B_{\text{education}} = -.49$, $p < .001$, $B_{\text{age}} = 0.01$, $p < .05$). Education has a stronger effect on respondents' mode choice than age (see also Figure 1).

To control for differences in demographic variables, these are considered as covariates in all subsequent analyses.
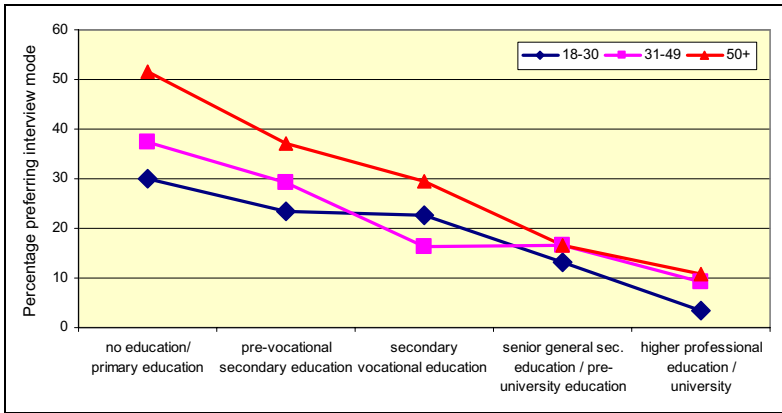
Figure 1. Percentage preferring interview mode by age and educational level.

Mode Effects in Prevalence of Domestic Violence as Victim

We did not find any statistically significant mode effects for experiences with violence as an *adult* victim (α =.05; results not shown). We did find some effects for experience with violence as a *child* (see Table 1).

When we inspect the direct mode effects in block 2, we find no direct mode effects for psychological violence or physical violence experienced as a child. For sexual assault as a child, we find a significant mode effect (p = .037). This indicates a *direct* mode effect after correcting for differences in demographics; respondents reported having experienced more sexual assaults (e.g., rape) as a child in the self-administered mode.

When we inspect the results from block 3, where interactions are added, we find some significant interactions. For humiliation, we find an interaction of mode with age: Persons older than 30 report more humiliation in childhood in the self-administered questionnaire, while younger persons report more humiliation face-to-face. For childhood experiences of physical violence, we find an interaction with education: More highly educated persons report more extreme physical violence in the self-administered questionnaire, while both modes produce the same results for less-educated persons. For sexual assault, we find an interaction with gender: Women report more sexual assaults as children in the self-administered mode than in face-to-face.

No statistically significant direct mode effects or interactions with mode were detected (α =.05; results not shown) regarding victimization in

Table 1. Victimization as a Child, Psychological, Physical, and Sexual: Results of Sequential Logistic Regression Analysis.

Indicators of Domestic Violence Experienced in Childhood	Block	B (SE), p; Sex	B (SE), p; Age	B (SE), p; Education	B (SE), p; Mode	B (SE), p; Sex × Mode	B (SE), p; Age × Mode	B (SE), p; Education × Mode
Psychological violence (n = 789)								
Humiliate (Humiliating and/or hurting remarks)	1	.06 (.21), p = .78	−.02 (.01), **p = .005**	−.09 (.08), p = .30	n/a	n/a	n/a	n/a
	2	.05 (.21), p = .80	−.02 (.01), **p = .005**	−.09 (.09), p = .29	−.05 (.25), p = .86	n/a	n/a	n/a
	3	.94 (.67), p = .16	.04 (.02), p = .12	.14 (.31), p = .66	3.3 (1.4), **p = .016**	−.71 (.51), p = .17	−.04 (.02), **p = .014**	−.21 (.27), p = .43
Physical violence (n = 741)								
Severe physical violence (hit with objects and/or cut and/or burn)	1	.04 (.20), p = .85	−.03 (.01), **p < .001**	.13 (.08), p = .10	n/a	n/a	n/a	n/a
	2	.03 (.20), p = .87	−.03 (.01), **p < .001**	.11 (.08), p = .18	−.28 (.26), p = .27	n/a	n/a	n/a
	3	.55 (.66), p = .40	−.02 (.02), p = .35	1.53 (.40), **p < .001**	3.73 (1.51), **p = .014**	−.44 (.52), p = .40	−.01 (.02), p = .60	−1.29 (.37), **p < .001**
Sexual violence (n = 742)								
Sexual assault	1	1.77 (.54), **p = .001**	−.04 (.01), **p = .002**	−.03 (.15), p = .82	n/a	n/a	n/a	n/a
	2	1.77 (.54), **p = .001**	−.04 (.01), **p = .004**	−.11 (.15), p = .48	−1.30 (.62), **.037**	n/a	n/a	n/a
	3	5.94 (1.9), **p = .002**	.01 (.06), p = .83	−.28 (.69), p = .68	5.78 (3.52), p = .10	−3.50 (1.45), **p = .016**	−.05 (.06), p = .40	.16 (.64), p = .81

Note: Test results: parameter estimates (B) with their accompanying standard error in parentheses, p value based on the appropriate Wald test. Statistically significant results ($\alpha = .05$) in boldface. n/a indicates empty cell resulting from sequential blocks in logistic regression analysis.

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childhood for the more severe psychological violence indicators (restrict contact and restrict freedom), for indicators of lesser physical violence (threats and pushing), and for indicators of lighter forms of sexual violence such as threats.

Mode Effects in Prevalence of Domestic Violence as Perpetrator

Seven questions on inflicting domestic violence were asked. No statistically significant mode effects were found for the question on humiliating others and the question about sexual touching ($\alpha = .05$; results not shown). For the remaining five questions, the results of the logistic regression analyses are reported in Table 2.

When we inspect the direct mode effects in block 2, we find direct mode effects for uttering remarks about hurting ($p = .047$) with more affirmative answers in the self-administered mode, for threats of physical violence ($p = .012$), and for threats of sexual assault ($p = .04$). Looking at block 3, we find some interesting interactions of mode with age, with more admittances of inflicting domestic violence in the self-administered form for those over 30, while younger respondents gave more affirmative answers face-to-face.

Discussion and Conclusion

A mixed-mode survey was successful in estimating prevalence rates on domestic violence in the Caribbean. When surveying sensitive topics such as domestic violence, self-administered questionnaires are preferable (e.g., Tourangeau and Yan 2007). As the high level of semi-illiteracy in the Caribbean discourages the use of self-administered questionnaires for the total population, respondents were offered a choice between a self-administered questionnaire and an interview with a specially trained interviewer. Self-selection in the preferred mode (e.g., the more illiterate respondents choosing the interview) is inherent in this type of tailored mixed-mode design. As illiteracy is highly correlated with education and age, and to a lesser degree with gender, we used these variables as covariates in our analysis to capture the selection effects between the modes (Pearl 2009) in our analysis of mode effects.

Our approach resulted in a high response rate and was successful in reaching those usually underrepresented in surveys. We found that different demographic segments have different preferences. In total, almost a quarter of the respondents chose a face-to-face interview, but among less-educated and elderly people, the interview option was chosen by over half of the respondents. In general, we found surprisingly *few* mode effects. Out of all

Table 2. Inflicting Domestic Violence as an Adult.

Type of Domestic Violence Inflicted as Adult (Assault)	Block	B (SE), p Sex	B (SE), p Age	B (SE), p Education	B (SE), p Mode	B (SE), p Sex × Mode	B (SE), p Age × Mode	B (SE), p Education × Mode
Psychological violence (N = 755)								
Hurting remarks	1	.17 (.17), p = .31	.02 (.01), p = .001	−.20 (.06), p = .001	n/a	n/a	n/a	n/a
	2	.18 (.17), p = .29	.02 (.01), p = .001	−.17 (.07), p = .009	.42 (.21), p = .047	n/a	n/a	n/a
	3	−.33 (.54), p = .54	−.04 (.02), p = .024	−.14 (.23), p = .53	−2.12 (1.09), p = .052	.42 (.43), p = .33	.05 (.02), p = .001	−.01 (.19), p = .95
Threats with violence (N = 751)								
Threatening with physical violence	1	.27 (.21), p = .21	−.003 (.01), p = .64	−.03 (.08), p = .72	n/a	n/a	n/a	n/a
	2	.29 (.22), p = .18	−.01 (.01), p = .48	.03 (.08), p = .76	.74 (.30), p = .012	n/a	n/a	n/a
	3	1.83 (.77), p = .017	−.06 (.02), p = .014	−.13 (.33), p = .69	.66 (1.63), p = .69	−1.34 (.65), p = .038	.04 (.02), p = .020	.16 (.29), p = .59
Inflicting physical violence (N = 752)								
Hitting or kicking	1	.12 (.22), p = .58	.03 (.01), p = .001	−.10 (.09), p = .27	n/a	n/a	n/a	n/a
	2	.13 (.22), p = .55	.03 (.01), p = .001	−.06 (.09), p = .50	.49 (.30), p = .10	n/a	n/a	n/a
	3	1.6 (.79), p = .048	−.04 (.03), p = .16	.04 (.33), p = .91	.70 (1.65), p = .67	−1.24 (.67), p = .06	.06 (.02), p = .02	−.07 (.28), p = .80

(continued)

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Table 2. (continued)

Type of Domestic Violence Inflicted as Adult (Assault)	Block	B (SE), p Sex	B (SE), p Age	B (SE), p Education	B (SE), p Mode	B (SE), p Sex × Mode	B (SE), p Age × Mode	B (SE), p Education × Mode
Other severe violence (N = 747)								
Other physical violence	1	.25 (.23), p = .29	.02 (.01), p = .06	−.08 (.09), p = .36	n/a	n/a	n/a	n/a
	2	.26 (.23), p = .27	.01 (.01), p = .08	−.04 (.09), p = .65	.53 (.32), p = .09	n/a	n/a	n/a
	3	1.55 (.81), p = .06	−.05 (.03), p = .09	−.14 (.35), p = .70	.09 (1.71), p = .10	−1.1 (.67), p = .10	**.05(.023), p = .025**	.10 (.31), p = .74
Threats of sexual assault (N = 747)								
Uttering threats of sexual assault	1	.30 (.44), p = .50	.004 (.01), p = .80	.11 (.18), p = .55	n/a	n/a	n/a	n/a
	2	.33 (.45), p = .46	.000 (.01), p = .98	.21 (.18), p = .23	**2.14 (1.04), p = .04**	n/a	n/a	n/a
	3	7.64 (38.71), p = .84	−.01 (.06), p = .83	−6.73 (21.25), p = .75	6.67 (80.34), p = .93	−7.21 (38.71), p = .85	.02 (.06), p = .79	6.91 (21.25), p = .74

Note: n/a indicates empty cell resulting from sequential blocks in logistic regression analysis. Perpetrating psychological, physical, or sexual violence. Results of sequential logistic regression analysis. Test results: parameter estimates (B) with their accompanying standard error in parenthesis, *p* value based on the appropriate Wald test. Statistical significant results ($\alpha < .05$) in bold.

statistical analyses performed, almost 90% did *not* show statistically significant mode effects at the 5% level. Most mode effects were in the expected direction, with more open reporting of severe forms of violence in the self-administered mode.

There were some interactions of age, gender, and education with mode; most interactions pointed to more openness in the chosen mode, but we did find an unexpected interaction of age and mode. As the interpretation of interaction effects in logit models is less straightforward than in linear models (Ai and Norton 2003), we examined and compared the domestic violence prevalence of age-, gender-, and education-defined subgroups within each mode, with great care to ensure a correct interpretation of the effect. Still, capitalization on chance may be the case, and more research and replication of these findings is needed.

The results of this study support the use of a tailored mixed-mode survey, but meeting respondent preferences may not always lead to the most valid results. Looking at the relationship between mode preference and educational level, meeting respondent preferences seems to be only beneficial, as highly educated groups tend to choose the self-administered mode and are also much more honest in this mode, while less-educated respondents, while less-educated respondents more often chose a face-to-face interview and gave more valid answers in the interview mode. However, the opposite is the case when the relationship between age and mode preference is examined. Although elderly people more often chose interviews, they tended to give somewhat less socially desirable answers in a self-administered questionnaire for a small number of topics. Young people, on the other hand, tend to choose the self-administration mode but report more undesirable behavior in an interview. An explanation for this could be that mode preferences are influenced by respondents' abilities. Perhaps elderly people chose an interview not because they feel more comfortable with a human interviewer but because they are unable to fill in a questionnaire by themselves. For instance, around 7% of the elderly (60 or older) in Curaçao are visually impaired. Further research into effects of survey mode on data quality in the Caribbean is necessary, and qualitative studies (e.g., Greene 2007) about *why* a certain mode is preferred could provide more insight into designing optimal mixed survey strategies.

Finally, it should be noted that we found few and small mode differences, which is a good news. But we took extreme care to design equivalent questionnaires in both modes and trained our interviewers very carefully. With a less strict tailored design or with questionnaires that are not completely equivalent, larger mode effects may occur and thus threaten data comparability.

Declaration of Conflicting Interests

Funding

Note

1. In survey research, mixed-mode survey refers to the use of more than one quantitative data collection method in a single study, while mixed-methods research refers to studies that combine qualitative and quantitative methods (Bergman 2008:138).

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