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Phone Surveys and Sensitive Behaviour Reporting: Evidence from a Methods Experiment in India



Sujatha Srinivasan, Geetanjali GK, and Anup Roy

LEAD at Krea University (formerly IFMR LEAD)

Chennai, Tamil Nadu

PHONE SURVEYS AND SENSITIVE BEHAVIOUR REPORTING: EVIDENCE FROM A METHODS EXPERIMENT IN INDIA

Sujatha Srinivasan,

Senior Research Fellow,

LEAD at Krea University, Chennai, India

sujatha.srinivasan@ifmr.ac.in

Geetanjali GK,

Research Associate

LEAD at Krea University, Chennai, India

Anup Roy

Chief Operating Officer

LEAD at Krea University, Chennai, India

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1. Introduction

1.1. Background

Phone surveys have been a popular mode of survey research in developed countries for many decades. Within these country contexts, the standalone benefits of phone surveys as well their relative merits and demerits over other modes of data collection such as online, mail, and in-person interviewing in terms of the response rate, reporting on sensitive questions, and measurement errors and biases is well-documented (Dillman, 2014); (Lavrakas, 2008); (Aquilino, 1992); (Beck, Yan, and Wang, 2009) (Bracken et al., 2009) (Chang and Krosnick, 2009) (Couper, 2011) (Fricker et al., 2005) (Greenfield et al., 2000) (Herzog and Rodgers, 1988) (Holbrook et al., 2003) (Peterson et al., 2003) (Rogers, 1976). In contrast, low- and middle-income countries with comparatively lower phone coverage have continued to rely on in-person surveys as the predominant mode of data collection.

This survey paradigm has been shifting in recent years in India, with phone surveys emerging as a promising mode of primary data collection owing to overall improvements in the country's telecommunications infrastructure and phone coverage. This shift has also been propelled by other factors, including time- and resource-intensiveness of in-person surveys, which undermine their utility within large-scale national surveys, and a dynamic policy environment in a high-growth economy, which creates a strong demand for survey data to inform policymaking in a timely and reliable manner. Even as phone and electronic modes of data collection have gained increasing importance within the national survey system, actionable research around the use and efficacy of phone surveys or methods to improve the same is still emerging in the Indian context. The current literature includes one study which finds comparable response rates between phone and in-person surveys for examining non-sensitive issues (Thulasigam and Cheriya, 2008). Our study aims to contribute to efforts in this direction.

We examine the efficacy of phone surveys (indirect or unseen presence of the interviewer) relative to in-person surveys (physical presence of the interviewer) in sensitive behaviour reporting within the Indian context. Survey literature suggests that self-reports are prone to under-reporting of socially undesirable behaviours or sensitive behaviours (Gnambs and Kaspar, 2015). We will examine this phenomenon further in the context of our study. Our choice of sensitive behaviour is menstrual hygiene. Menstrual hygiene management (MHM) is an important dimension of the global development framework to eliminate gender inequities in sanitation and hygiene.¹ According to the 2011 Census of India, approximately 54.5 per cent of the female population who are in the reproductive age group of 15-49 years have a need for safe menstrual hygiene practices. However, only 58 per cent of women aged 15-24 years use a hygienic method of menstrual protection (National Family Health Survey [NFHS]-4). Further, MHM literature in India suggests that knowledge and practices around menstrual hygiene are unsatisfactory and restrictions are imposed on women and adolescent girls during menstruation (Kansal, 2016) (Paria et al., 2014) (Jogdand and Yerpude, 2011) (Mohite and Mohite, 2016),² underscoring the need for evidence-based MHM policies and practices in India.

From a survey methodology standpoint, existing evidence in India is largely from cross-sectional studies which measure menstrual hygiene behaviours through structured or semi-structured in-person interviews. Phone surveys have not been used to measure menstrual hygiene behaviours till date and therefore, they present a novel opportunity for data collection around this sensitive behaviour.

1.2. Study Objectives and Hypotheses

With this background, the broad objective of our study is to advance knowledge around diversified data collection approaches in the Indian context. The specific study objectives and corresponding hypotheses are:

¹ Goal 6.2 of the Sustainable Development Goals (SDG) specifically advocates for "access to adequate and equitable sanitation and hygiene for all, paying special attention to the needs of women and girls and those in vulnerable situations".

² The common restrictions on adolescent girls at the time of menstruation include attending school, and participating in religious ceremonies, household work, or even sports (Jogdand and Yerpude, 2011), but awareness levels, practices, and social norms vary depending on the local contexts.

- 1) To examine the utility and effectiveness of phone surveys in collecting data on *sensitive behaviours*, relative to in-person surveys—we hypothesise that phone surveys (unseen or indirect presence of the interviewer) may have different impacts in terms of reducing biases and reporting around sensitive behaviours vis-à-vis in-person surveys wherein interviewers are physically present during data collection; and
- 2) To understand cost variations in phone surveys, relative to in-person surveys—our hypothesis is that phone surveys may lead to reduced cost and time efficiencies relative to in-person surveys.

2. Approach and Methods

2.1. Study Context

The study was undertaken in partnership with the Tamil Nadu Corporation for Development of Women (TNCDW), a Government of Tamil Nadu undertaking, among women’s Self-Help Group (SHG) members supported by TNCDW. TNCDW carries out menstrual hygiene awareness programmes among its members and also supports women’s SHG-based collective enterprises focused on menstrual hygiene management. We conducted the study in Madurai district as NFHS-4 suggests that only 57.62 per cent of the women aged 15-24 years in the district used a hygienic method of menstrual protection as compared to a corresponding figure of 91 per cent in Tamil Nadu as a whole. Also, Madurai district, which has 18,643 SHGs, accounts for almost 3.50 per cent of the total SHG coverage in Tamil Nadu (TNCDW, 2012). The study gathered data from women in the reproductive age group of 20-49 years as women in the younger cohort of 15-19 years were typically not members of SHGs.

2.2. Study Design

The study followed a longitudinal design, with repeated follow-up of the sampled women across two time periods over a six-month duration. The study design helped examine patterns of sensitive behaviour reporting and whether the reporting was consistent over time.

2.3. Village and Respondent Selection

Based on recommendations from TNCDW, two blocks—Vadipatti and T. Kallupatti—were selected within Madurai district based on good coverage and the activity of SHGs. On the basis of administrative data shared by TNCDW, 11 villages were randomly selected within these two blocks using village-level stratification taking into account the number of women in the age group of 20-49 years and the number of SHG members in each of these villages. The selected members were stratified by education level and economic status indicated in the TNCDW administrative data, and were then randomly assigned to one of the two survey modes—in-person and phone surveys. The survey mode was switched across respondents in the second round to help examine whether reporting was consistent over time. Table 1 provides details of the distribution of the sample SHG member households across both rounds.

Table 1: Sample Distribution across Two Survey Rounds

Block	Village	Survey Round 1		Survey Round 2	
		<i>In-person</i>	<i>Phone</i>	<i>In-person</i>	<i>Phone</i>
Vadipatti	C. Pudur	23	26	26	23
	Kutladampatti	27	31	31	27
	Poochampatti	22	23	23	22
T. Kallupatti	S. Paraipatty	58	63	63	58
	S. Keelapatty	43	31	31	43
	S. Mellapatty	19	26	26	19
	Santhaiyur	33	39	39	33
	Puliampatty	46	36	36	46
	Ravuththanpatty	41	33	33	41
	Koovalapuram	37	45	45	37
	Lakshmipuram	40	43	43	40

Total	11 villages	389	396	396	389
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Source: LEAD at Krea University-NDIC Study.

2.4. Procedures

2.4.1. Survey Instrument

A common structured survey instrument of approximately 30 minutes' duration was administered to SHG households assigned to the two survey modes—in-person and phone surveys. The survey instrument combined a household roster with four components: 1) A general module on individual-level socio-economic and demographic variables (age, education, occupation, and health history); 2) A priming module aimed at building rapport with the respondents to minimise any social desirability bias in subsequent reporting on sensitive behaviours—this module gathers information on respondent involvement in SHG activities and household decisions; 3) The main menstrual hygiene module focused on knowledge, attitudes and practices around this sensitive behaviour; and 4) A household-level module with variables on asset ownership, income, and access to water and sanitation. This module also included questions/observations on survey settings to record aspects of privacy/presence of others during the interview. The questionnaire was translated into the local language Tamil for administration to the respondent.

2.4.2. Surveyor Recruitment

Considering the sensitivity of the topic, we ensured strict data quality measures across all survey stages, viz., surveyor selection, training, and data collection. We recruited an all-women survey team given that it would be difficult and uncomfortable for male interviewers to elicit responses on gender-based sensitive behaviours pertaining to menstrual hygiene. The selection criteria for female surveyors included - attainment of a college degree (under-graduate/post-graduate), minimum one year of experience in data collection, and the ability to speak Tamil. In order to minimise surveyor errors across data collection rounds, we sought to recruit the same surveyors for both rounds. However, only three out of six surveyors from the first round were available for data collection during the second round. We, therefore, recruited two new surveyors having comparable qualifications with the others in the second round.

2.4.3. Training

Prior to the data collection, rigorous training was imparted to the surveyors for a period of seven days, including classroom and field pilot training across both the survey modes, which ensured that the surveyors were comfortable administering each survey module across the different survey modes, and were trained to elicit true responses by handling the topic with sensitivity. The surveyors were trained first on administering the paper questionnaire and were given a detailed explanation of each question and its intent. Tablet training was imparted to ensure that the surveyors were able to navigate through the questionnaire on the tablet and were able to save and send the completed forms.

A detailed training manual was created for reference of the field staff and surveyors. The field and phone pilot helped identify some of the challenges that would arise during data collection, common misinterpretation of some of the questions by the surveyors and respondents, ways to reach out to the respondent (especially in a phone survey), and delivery of consent. Feedback sessions post the pilot helped improve the overall surveyor performance. The same training process was followed for both rounds of data collection. Details of the training are provided in Table 2.

Table 2: Details of the Training Process

Training Day	Training Session
Day 1	Introducing the project; Training on the paper questionnaire
Day 2	Tablet training

Training Day	Training Session
Day 3	Field Pilot—In-person
Day 4	Field Pilot—In-person
Day 5	Phone survey training
Day 6	Phone pilot
Day 7	Feedback session on phone and in-person surveys

Source: LEAD at Krea University -NDIC Study.

2.4.4. Survey Implementation

We encountered some mode-specific challenges with respect to respondent identification and survey implementation, as outlined below:

In-person Surveys: The data collection process involved first approaching the village head and SHG heads in every village, which helped in identifying the SHGs, followed by efforts to locate the respondents based on their SHG membership. This process helped save time, as one member identified the other members in the list without the need for adopting a door-to-door approach. This process also instilled a sense of confidence amongst respondents about the survey as the respondent women were approached through their SHG heads and other members of the SHG. The privacy setting of the respondent in the in-person survey mode was recorded by the surveyors based on their observations.

Phone Surveys: In the case of telephone surveys, given the time and budget constraints, random digit dialing (RDD) was not possible, and the collaboration with TNWDC helped as the administrative data on SHG members that was shared had the telephone numbers of the respondents. In cases where the phone numbers included in the administrative data were erroneous, a second visit to the village helped obtain correct phone numbers for the respondents. We also validated the phone numbers from the respondents during the first survey round to ensure that they were easier to contact in the follow-up survey. Respondent impersonation could be a risk in phone and online surveys. Within our study context, we were able to verify that the selected SHG member was being interviewed via phone for gathering data on the member's age and date of birth, which could be compared to related administrative data. The privacy setting of the respondent in the phone survey was recorded based on a survey question that asked whether the respondent was alone or in the presence of others during the interview.

Further, most respondents were occupied in MGNREGA work or other factory work during the day which made it difficult to conduct the surveys in the daytime. The surveyors, therefore, worked on a shift basis to ensure that the respondents could be reached at a convenient time, which was mostly in the afternoon or evening.

Research Associates (RAs) and field supervisors accompanied the surveyors to ensure that the latter were asking the questions as outlined in the instrument and were following the survey protocol. For the phone surveys, a call centre set-up was instituted, which was monitored by the field manager and RA, with relevant protocols in place. The calls were made in the presence of the field manager and RA. This helped in monitoring the administration of phone surveys, clarifying any doubts with the instrument, and finding solutions for challenges that might arise.

The accompaniment of RAs and field supervisors with the surveyors during both modes of data collection also helped ensure that the questionnaire was administered in an unbiased and sensitive manner. This helped identify errors and provide timely feedback on the survey. An operational tracker was maintained to monitor the status of the survey of all the listed households, number of attempts made to reach out to a household, number of eligible women in the household, and the performance of surveyors. The same procedure was followed for phone interviews wherein calls were monitored and instant feedback was provided. Before submission, forms were scrutinised by field executives and the RAs along with the surveyors so as to provide individual feedback and correct errors. High-frequency checks were performed on the submitted surveys to examine data inconsistencies, refusal rates, and item non-response/do not know cases, among other things.

2.4.5. Measures

Our primary measures corresponding to objective 1 relate to *unit response rates* across survey modes, calculated as the number of completed surveys divided by the total sample of eligible surveys in each mode; and *item non-response on sensitive items* across survey modes, calculated as the mean value of respondents in each mode who participated in the survey but refused to respond to sensitive survey questions. Our secondary measure for objective 1 relates to *response quality across survey modes*, which is measured by the percentage of respondents who reported the practice of unimproved menstrual hygiene behaviours in each survey mode. We assume that those who reported unimproved menstrual hygiene behaviours answered the questions truthfully. To examine objective 2, we compared *unit costs for survey implementation* across survey modes.

2.4.6. Ethics

Ethical practices were followed at all stages to ensure the protection of the rights and welfare of all the participants in this research. Prior to data collection, the study was granted ethics approval by the Human Subjects Committee of the Institute for Financial Management and Research (Approval # IRB00007107; FWA00014616; IORG0005894). The field staff signed Data Handling and Protection contracts prior to data collection or handling of the personal identifiers. Personal identifiers that were stored electronically were removed and saved as separate files which were accessible only to the research team. LEAD at Krea University has controls in place to ensure that primary data is kept confidential, and stored in non-networked computers and in securely locked offices. The study subjects were informed about the risks and benefits of participation and informed consent was sought prior to surveying. Ethical considerations in good interview practices were applied such as building of trust and rapport that might make it difficult for the participants to refuse or to withdraw from the survey.

2.5. Analysis Strategy

The primary objective of the study is to compare sensitive behaviour reporting across phone and in-person survey modes. Data from the two modes from each round was merged into one cross-section dataset. Individual characteristics were categorised as follows: age was coded as 20-29 years, 30-39 years, and 40-49 years; education was coded into 'no education', '1-8 years' and 'more than 8 years'; and marital status was categorised into 'married', 'separated', 'widowed', and 'never married'. Respondent gender was coded into a dichotomous variable 0 as male and 1 as female. Descriptive statistical analysis was performed to determine the sample characteristics and to examine response rates across the two modes of survey. For each round, independent t tests were carried out between in-person and phone data to corroborate results on the relationship between the survey mode and sensitive behaviour reporting. Binomial proportion tests were also performed on key variables to examine differences in reporting of sensitive behaviour across survey modes. McNemar's tests and paired tests were used to examine response agreement over time and across modes for the same subject. Data analysis was performed on Stata 15.

3. Results

3.1. Sample Description

From the identified sample of 785 member households, in the first round, the survey could be completed in 481 households, covering 501 individuals. In the second round, from a sample of 777 households (603 households were followed from the first round), surveys were completed in 482 households covering 520 individuals.

Table 3 provides an overview of the key characteristics of our completed survey sample. The data suggests that randomisation ensured even distribution of member households according to key socio-economic and demographic variables (for example, age, education, and occupation) that are likely to influence their behaviours and practices on menstrual hygiene. As noted earlier, our target sample were women in the reproductive age group of 20-49 years. The mean age was comparable across the survey modes and across the two survey rounds, with a majority of the respondents falling in the age group of 30-39 years. The household heads were predominantly male across both the survey arms. Mean education was also comparable across both the survey modes, with a majority of respondents having received 1-8 years or more of education. A majority of the respondents across the survey arms were

occupied in agricultural and non-agricultural labour activities. At least 10 per cent of the respondents in each arm reported visiting a doctor for suspected urinary tract infections (UTI) in the first survey round, and 7 per cent of the respondents in the second round but a smaller proportion reported being diagnosed with UTI. At least half of the respondents in each arm reported mobile phone ownership.

Table 2: Description of the Sample

	Round 1		Round 2	
	In-person Survey	Phone Survey	In-person Survey	Phone Survey
	N (%)	N (%)	N (%)	N (%)
# households	239 (49.48%)	242 (50.52%)	251 (52.07%)	231 (47.93%)
# individuals	250 (49.9%)	251 (50.1%)	272 (52.31%)	248 (47.69%)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Age				
20-29 years	52 (20.8%)	50 (19.92%)	65 (24.1%)	55 (22.6%)
30-39 years	104 (41.6%)	111 (44.22%)	98 (36.3%)	100 (41.1%)
40 - 49 years	94 (37.6%)	90 (35.86%)	107 (39.6%)	88 (36.2%)
Gender of HH Head				
Male	223 (89.2%)	218 (86.8%)	314 (91.5%)	264 (88.6%)
Female	27 (10.8%)	33 (13.15%)	29 (8.45%)	34 (11.4%)
Education				
No education	42 (16.8%)	44 (17.53%)	43 (15.9%)	38 (15.6%)
1-8 Years	118 (47.2%)	128 (51%)	134 (49.6%)	102 (41.9%)
> 8 years	90 (36%)	79 (31.47%)	93 (34.4%)	103 (42.4%)
Marital Status				
Married	226 (90.4%)	226 (90.04%)	237(87.8%)	216(88.9%)
Separated	3 (1.2%)	5 (1.99%)	5 (1.8%)	2 (0.8%)
Widowed	12 (4.08%)	14 (5.58%)	17 (6.3%)	18 (7.4%)
Never married	9 (3.6%)	6 (2.39%)	11 (4.07%)	7 (2.88%)
Occupation				
Does not work	2 (0.8%)	1 (0.40%)		
Agriculture	14 (5.60%)	10 (3.98%)	47 (17.4%)	39 (16.05%)
Animal husbandry	7 (2.80%)	4 (1.59%)	6 (2.2%)	5 (2.06%)
Government job	2 (0.80%)	4 (1.59%)	8 (2.9%)	6 (2.5%)
Agricultural labour	42 (16.80%)	60 (23.90%)	59 (21.8%)	72 (29.6%)
Non-agricultural labour	84 (33.60%)	70 (27.89%)	17 (6.3%)	6 (2.5%)
Independent/skilled work	9 (3.60%)	4 (1.59%)	12 (4.4%)	14 (5.8%)
Own shop/business	3 (1.20%)	4 (1.59%)	4 (1.5%)	6 (2.5%)
Salaried job	27 (10.80%)	36 (14.34%)	16 (5.9)	23 (9.5%)
Household work	57 (22.80%)	57 (22.71%)	98 (36.3%)	69 (28.4%)
Student	2 (0.80%)		3 (1.1%)	2 (0.8%)
Health History				
Consulted doctor for UTI	27 (10.80%)	29 (11.55%)	19 (7.04%)	17 (7.00%)
Diagnosed with UTI	11 (4.04%)	10 (3.98%)	9 (3.3%)	12 (4.9%)

Source: LEAD at Krea University-NDIC Study.

3.1. Sensitive Behaviour Reporting across Survey Modes

3.1.1. Unit Response Rates

We examined whether the response rates were equivalent for the two survey modes in both rounds. Table 4 indicates our results from this assessment.

In the first round, of the 785 member households assigned for the survey, 181 households were found to be ineligible for various reasons, including migration, death, being outside the target age range

of 20-49 years, and wrong address/phone number. Of the 604 eligible member households, 115 households could not be contacted (64 households in the eligible in-person sample were unavailable to take the survey even after a mean of three in-person contact attempts while 51 of the 301 households eligible for phone surveys were unavailable to take the survey despite a mean of 6.6 telephone attempts). The overall response rate was 79.6 per cent, conditional on the eligible households. The response rate did not differ significantly across the two survey modes ($p=0.925$). Non-response was mainly due to the eligible respondents being unavailable at home or not picking up the phone at the time of the survey despite multiple contact attempts. The refusal rate was 3.2 per cent (8 households) in the phone surveys, with these respondents expressing unwillingness to discuss sensitive issues. There were no refusals in the in-person mode, suggesting a significant difference in refusal rates across the two survey modes ($p=0.005$).

Table 3: Response Rates by the Survey Mode

	Survey Mode (Round 1)		Survey Mode (Round 2)	
	In-person Survey	Phone Survey	In-person Survey	Phone Survey
Assigned households	389	396	393	384
Eligible households	303	301	330	328
Reasons for ineligibility				
<i>Migration</i>	32	4	26	2
<i>Death</i>	1	1	0	0
<i>Out of the target age range of 20-49 years</i>	52	54	37	18
<i>Wrong address/phone number</i>	0	28	0	22
Number of 'no contacts'				
<i>No women at home during survey</i>	64	-	79	-
<i>Not picking up the phone/unavailable during the survey</i>	-	51	-	43
<i>Call barred (phone not recharged/call not going through)</i>	-	-	-	54
Number of refusals	0	8	0	14
Number of contact attempts	543	1500	346	767
Mean contact attempts (SD)	1.2 (0.4)	3.09	1.1 (0.3)	2.0 (1.3)
Number of completed interviews	239	242	251	231
Number of respondents	250	251	272	248
Mean survey duration (in minutes) (SD)	11.2 (4.4)	10.7 (3.3)	10.7 (2.1)	11.5 (3.5)
Response rate (# completed interviews/# eligible households)%	78.9%	80.4%	76%	70%
Response rate (# completed interviews/# contact attempts)%	44%	16.1%	72.5%	42.7%
Refusal rate (# refusals/# contacted households) %	0	3.2%	0	6.1%
Non-contact rate (# of no contacts/# eligible households)%	21.1%	16.9%	23.9%	29.57%

Source: LEAD at Krea University-NDIC Study.

A total of 777 member households were assigned for the second survey round. These included all eligible households from the first round with the exception of instances of death and the out of target age group. From this sample, 119 households were found to be ineligible for the same reasons as in the first survey round. Of the 658 eligible member households, 176 households could not be contacted (79 households in the eligible in-person sample were unavailable to take the survey even after a mean of three in-person contact attempts). Of the 328 households eligible for phone surveys, 43 were unavailable to take the survey despite a mean of 2.01 telephone attempts, while 54 households from the phone sample could not be contacted for reasons including mobile not recharged or call not going through). The overall response rate was 73.3 per cent, conditional on eligible households. The response rate did

not differ significantly across the two survey modes ($p=0.249$). At 6.1 per cent (14 households), the refusal rate in phone surveys was higher in this round, with the primary reason being respondent unwillingness to repeat the survey for a second time. There were no refusals in the in-person survey mode, suggesting a significant difference in the refusal rate across the survey modes ($p=0.001$).

The survey length was uniform across the two modes. Correspondingly, the mean survey completion time was comparable across the in-person and phone survey modes in both rounds, at approximately 10-11 minutes per survey. The mean of contact attempts made to respondents of the completed surveys was the highest among the phone sample (3.098 attempts in the first survey round and 2.007 in the second round). A majority of the in-person surveys could be completed within the first attempt to contact the respondent. Phone surveys required multiple contact attempts for various reasons, including the phone being switched off, the number being in an out of coverage area, no incoming facility on the number, and the phone ringing but no answer.

3.1.2. Item Non-response

Chi-squared and independent t tests were run on the sample to test for independence between the survey mode and reporting on sensitive questions. We particularly examined item non-response (measured based on the respondents' refusal to answer a particular question) across the two groups. The sensitive behaviour module had questions on the age of menarche, method of menstrual hygiene protection used and reasons for the same, cleaning and re-use practices in the case of use of cloth as protection, disposal practices around the method of protection, preferences in protection methods and reasons for the same, impact of the menstrual cycle on daily life, and financial empowerment for menstrual hygiene purchases.

Table 5 shows our results from this assessment. In general, the item non-response was minimal in the first round—among the entire sample ($N=501$), there were only 19 refusals to respond across the 11 sensitive survey questions. Fisher's exact tests indicated that there were no statistically significant differences in item non-responses across the two survey modes on 7 out of the 11 sensitive questions. On 4 sensitive questions, the differences across modes were significant ($p<0.05$). These were questions in which at least three participants had refused to respond in the self-administration mode. Independent t-tests on the first round sample showed that there were no statistically significant differences in item non-responses across the two survey modes in 10 out of 11 sensitive questions. On one question which examined the impact of the menstrual cycle on daily life and activities, the differences were significant ($p<0.10$).

Table 4: Item Non-response on Sensitive Questions by Survey Mode

Item	Survey Mode (Round 1)			Survey Mode (Round 2)		
	<i>In-person Survey</i> N=250 (%)	<i>Phone Survey</i> N=251(%)	<i>p-value</i>	<i>In-person Survey</i> N= 272(%)	<i>Phone Survey</i> N= 248(%)	<i>p-value</i>
Protection method used	0	1 (0.4%)	0.3188	0	4 (1.3%)	0.031**
Re-use of cloth	0	0	0	0	0	0
Method of cleaning cloth	1 (0.4%)	0	0.3168	0	0	0
Reasons for using specific method	0	0	0	0	4 (1.3%)	0.031**
Disposal method	0	1 (0.4%)	0.3188	0	7 (2.3%)	0.004***
Preference to change	0	1 (0.4%)	0.3188	4 (1.2%)	10 (3.4%)	0.059*
Reasons for change preference	0	0	0	0	0	0
Impact on daily life	9 (3.6%)	3 (1.2%)	0.0787*	4 (1.2%)	28 (9.4%)	0.000***
Have to ask money for menstrual hygiene product purchase	0	1 (0.4%)	0.3188	1 (0.3%)	9 (3.0%)	0.005***
Have been refused money for purchase of menstrual hygiene product	0	1 (0.4%)	0.3188	1 (0.3%)	11 (3.7%)	0.002***
Age at menarche	0	1 (0.4%)	0.3188	1 (0.3%)	5 (1.7%)	0.069*

Source: LEAD@Krea-NDIC Study.

Note: * $p<0.10$, ** $p<0.05$, *** $p<0.01$

However, item non-response had considerably increased in the second survey round, with 89 refusals to respond across the 11 sensitive survey questions, 79 of which were observed in just the phone sample. Correspondingly, differences in item non-response were statistically significant across the two survey modes in the second round in at least out of the 11 sensitive survey questions. This result suggests *respondent burden*, a factor that is believed to influence survey data quality by increasing unit and item non-response and panel attrition (Martin et al., 2001) (Fricker et al., 2012)

Using paired analysis, we examined these results further by comparing whether reporting was consistent over time and across survey modes among respondents who participated in both survey rounds. As noted earlier, among respondents who participated in both survey rounds, the survey mode was switched between the two survey rounds to better understand response patterns. Table 6 shows our results from this paired assessment. This indicates that the incidence of item non-response was particularly higher among respondents who originally participated in an in-person survey but had a follow-up phone survey in the second round. Interestingly, the results do not indicate the reverse to be true—reporting, and item non-response, in particular, was consistent over time among respondents who participated in a phone survey in the first round but had a follow-up in-person survey in the second round. Survey literature suggests that respondents in a phone survey may be prone to *satisficing* as people usually are multi-tasking while speaking on the phone (Vincente et al., 2009; Lavrakas et al., 2007). Our study results appear consistent with this literature, in that phone surveys, particularly as a follow-up to a survey that a respondent has already participated in, could increase the risk of satisficing and present measurement challenges.

Table 5: Reporting Consistency over Time and across Survey Modes

Item	In-person Survey N = 167(%)	Phone Survey N= 167 (%)	p-value	Phone Survey N = 190(%)	In-person Survey N=190 (%)	p-value
Protection method used	0	3 (1.5%)	0.083*	1 (0.4%)	0	0.318
Re-use of cloth	0	0	0	0	0	0
Method of cleaning cloth	1 (0.45%)	0	0.3	0	0	0
Reasons for using specific method	0	3 (1.5%)	0.083*	0	0	0
Disposal method	0	6 (2.9%)	0.014***	1 (0.4%)	0	0.318
Preference to change	0	9 (4.4%)	0.002***	1 (0.4%)	2 (0.8%)	0.564
Reasons for change preference	0	0	0	0	0	0
Impact on daily life	6 (2.69%)	23 (11.1%)	0.001***	2 (0.8%)	2 (0.8%)	0.564
Have to ask money for menstrual hygiene product purchase	0	8 (3.9%)	0.004***	1 (0.4%)	1 (0.4%)	1.000
Have been refused money for purchase of menstrual hygiene product	0	9 (4.4%)	0.0025***	1 (0.4%)	1 (0.4%)	1.000
Age at menarche	0	4 (1.9%)	0.045**	1 (0.4%)	0	0.318

Source: LEAD Krea University-NDIC Study.

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.1.3. Response Quality

We also examined variations in reporting across survey modes and over time on select sensitive questions that could elicit socially desirable reporting—whether the respondent used an improved menstrual hygiene method, whether the menstrual product was disposed in a sanitary manner, whether any restrictions were imposed by the family during the menstrual cycle, and whether the respondent could make independent financial decisions around menstrual hygiene purchases without having to consult other family members. Missing values were omitted from these analyses.

Tables 7 and 8 show our results from this assessment. The results were mixed on this front. In the first survey round, a binomial proportion test conducted between the in-person and phone samples found statistically significant differences across the survey modes on three (out of the five) survey questions with the risk of social desirability bias in reporting. These questions related to disposal practices of menstrual protection ($p < 0.01$), financial dependence among women on household heads

for menstrual hygiene product purchases ($p < 0.10$), and household refusal of purchase of menstrual hygiene products ($p < 0.05$). On financial decisions around the purchase of menstrual hygiene products, results from a binomial proportion test between the in-person and phone survey groups suggest that fewer phone respondents reported having to consult someone else in their household for the purchase of menstrual hygiene products than in-person survey respondents. Similarly, fewer phone respondents reported being refused money for menstrual hygiene purchases in comparison to the in-person respondents.

An analysis of the second round sample indicated statistically significant differences in four out of the five sensitive questions. However, in contrast to results from the first survey round, in three out of the four sensitive questions which had statistically significant differences, fewer phone respondents reported socially desirable behaviours as compared to in-person respondents. These mixed results render it difficult to make meaningful inferences about the response quality by the survey mode within our study context.

Table 6: Response Quality by the Survey Mode

Item	Survey Mode (Round 1)			Survey Mode (Round 2)		
	<i>In-person Survey</i> N=250 (%)	<i>Phone Survey</i> N=251(%)	<i>p-value</i>	<i>In-person Survey</i> N= 272(%)	<i>Phone Survey</i> N= 248(%)	<i>p-value</i>
Use an improved method of menstrual protection	112 (44.8%)	129 (51.6%)	0.14	137(50.7%)	126 (51.9%)	0.80
Practise a safe and sanitary method of disposing menstrual product	200 (80%)	215 (86%)	0.01***	246 (91.1%)	207(85.2%)	0.04**
No restriction imposed by family during menstruation	146 (58.4%)	150 (59.8%)	0.71	121 (44.8%)	152 (62.6%)	0.00***
Don't have to ask anyone for money to purchase menstrual hygiene products	140 (56%)	160 (63.8%)	0.08*	222 (82.2%)	180 (74.1%)	0.02***
Even if I have to ask someone for money, I have not been refused money for purchase of menstrual hygiene products	232 (92.8%)	243 (96.8%)	0.04**	266 (98.5%)	225 (92.6%)	0.00***

Source: LEAD at Krea University-NDIC Study.

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

We also conducted McNemar's test to compare whether reporting on sensitive behaviours was consistent over time and across survey modes among respondents who answered these questions in both the survey rounds. The test results determined that in the case of two out of the five questions, there was a statistically significant difference in the proportion of respondents whose responses were not consistent over time. As noted earlier, the mixed result renders it difficult to make meaningful inferences about response quality over time and across survey modes within our study context.

Table 7: Response Consistency over Time and across Survey Modes

Item	McNemar p-value
Use an improved method of menstrual protection	0.24
Practise a safe and sanitary method of disposing menstrual hygiene product	0.08*
No restriction imposed by family during menstruation	0.34
Don't have to ask anyone for money to purchase menstrual hygiene products	0.00***
Even if I have to ask someone for money, have not been refused money for purchase of menstrual hygiene products	0.37

Source: LEAD at Krea University-NDIC Study.

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.2. Cost and Time across Survey Modes

In the first round, the cost per household survey was INR 793.56 for the in-person mode, and INR 516.79 for the phone mode, without including administrative overheads. Most of the cost difference was due to the fact that phone surveys were taking lesser number of days to complete (8 days for 242 phone surveys versus 12 days for 239 in-person surveys) despite phone surveys requiring a mean of 3.08 contact attempts (SD = 2.415) as compared to a mean of 1.17 contact attempts for in-person surveys (SD = 0.427).

The phone numbers of the respondents across both the survey modes were validated during the first survey round to ensure that the respondents were easier to contact in the follow-up survey. Nevertheless, out of the 328 households eligible for phone surveys in the follow-up phone survey round, 97 members (29.5 per cent) could not be contacted for various reasons. Of these 97 members, there were 54 instances where members were not contactable due to calls being barred, primarily for reasons of phone account not being recharged and call not going through. Consequently, in the second round, the phone survey mode took longer to complete (12 days) as compared to in-person surveys (10 days). Of the 12 phone survey days, 8 days were spent in reaching the call barred households, while the phone surveys among the households that could be contacted took merely four days to complete. Based on preliminary cost data available for the second round, this translates to a cost per household survey of INR 725.02 for an in-person survey and INR 799.19 for a phone survey. If the instances of calls barred were not considered, our cost and time data from both the rounds confirm phone surveys to be more cost-effective than in-person surveys.

3.3. Self-administration Mode of Data Collection

The study was designed to compare results across two survey modes—in-person and phone surveys. However, based on feedback from the NCAER-NDIC team that self-administered surveys can elicit more accurate reporting on sensitive behaviours relative to interviewer-administered surveys, we included self-administered surveys as an additional data collection mode on a small sub-sample in the first round of data collection. Surveyor training for this mode included sessions on assisting respondents with self-administrative surveys (using paper/tablets) and maintaining privacy of the respondents while entering the answers. Within 2-3 days of initiating data collection in the Vadipatti block, it was observed that most respondents, especially those in the older cohorts, faced difficulty in self-administering the survey due to low literacy and inability to self-administer the tablet survey, and required extensive surveyor assistance to complete the survey. As this mode was evolving as similar to an in-person survey, we abandoned data collection in this mode and re-assigned the respondents on this mode to in-person and phone survey modes instead.

Table 9 indicates the results corresponding to this survey mode. At 83.37 per cent, this mode recorded a higher response rate than in-person and phone survey modes. The total number of contact attempts was comparable to the in-person mode. However, the mean survey duration was at least 15 minutes longer in this mode as compared to the in-person and phone survey modes. Most respondents, in particular older cohorts, assigned to this survey mode found it difficult to administer the survey on their own and needed the assistance of surveyors. This undermined the purpose of including this survey mode in the study in terms of eliciting true responses. As this survey mode was proving to be similar to the in-person mode, it was therefore abandoned after 2-3 days of implementation.

Self-administered surveys were the most expensive as respondents in this mode not only took more time to complete the survey (M = 20.01, SD = 9.851 for self-administered surveys versus M = 11.23, SD = 4.364 for in-person surveys and M=10.70, SD= 3.325 for phone surveys) but also required considerable assistance from surveyors to complete the survey. The cost of a self-administered survey was INR 1,535.39 while the time taken for completing 52 self-administered surveys was four days.

Table 8: Response Estimates in Self-administered Survey Mode

Assigned households	79
Eligible households	62

Reasons for ineligibility	
	<i>Migration</i> 4
	<i>Death</i> 0
	<i>Out of target age range 20-49</i> 13
Number of 'no contacts'	
	<i>No women at home</i> 10
Number of refusals	0
Number of contact attempts	296
Mean contact attempts (SD)	1.17 (0.386)
Number of interviews	52
Number of respondents	56
Mean survey duration (in minutes) (SD)	20.014 (9.85)
Response rate (# completed interviews/# eligible households)%	83.9%
Response rate (# completed interviews/# contact attempts)%	79%
Refusal rate (# refusals/# contacted households) %	0%

Source: LEAD at Krea University-NDIC Study.

4. Challenges and Lessons

Following were the main learnings from this study:

- A key motivation for partnership with the TNCDW was that it enabled access to female respondents and to their phone numbers for the phone survey component of the study. Not having such a partnership would have meant conducting an elaborate listing exercise to select the study sample and undertaking random digit dialling approaches for the phone survey, both of which were not economically feasible in this study. Despite the evident benefits of the partnership, as the quality of administrative data was not satisfactory, there were challenges during survey implementation in accessing a few respondents (for reasons such as migration, incorrect phone numbers, and ineligible age profile, among others). These were resolved by over-sampling as well as through outreach efforts to the respondent through the district and block level SHG units.
- Other operational issues on the phone survey component involved the inability to access some respondents due to non-payment of bills, low coverage area, change of phone numbers and switched off phone. Again, we attempted to address this by over-sampling and multiple contact attempts to phone respondents.
- It was difficult to contact several respondents in the first attempt because most were MGNREGA workers/factory workers and their availability was limited to specific times of the day or during weekends only. This necessitated multiple contact attempts as well as surveyors working in shifts to complete surveys in all the three modes.
- There was an overall willingness among respondents to engage in the study. This was witnessed more strongly in the first survey round, which had high response rates and low item non-response rates. It is likely that knowledge of the TNCDW partnership encouraged respondents to engage actively in the study, including reporting on sensitive questions. However, it is important to note that respondents in both modes were informed of this partnership when their consent was sought to participate in the study. Therefore, response biases, if any, and their impact on reporting are likely to be comparable across both the survey modes.

5. Conclusions

Our study sought to examine sensitive behaviour reporting over two different modes of data collection. In particular, our aim was to understand the extent to which phone surveys can present an effective alternative to in-person surveys in gathering sensitive information. The results from the first round of data collection in this longitudinal study suggest that phone surveys are comparable to in-person in terms of sensitive behaviour reporting. The overall response rates were high across both modes and

over time (>70 per cent) and the item non-response rates were low, supporting the use of phone surveys for data collection on sensitive behaviours. We suspect that these positive results could stem, in part, from our survey implementation partnership with TNCDW, which may have improved respondent willingness to participate in the survey and answer sensitive questions to the extent possible across both modes and over time.

That said, higher refusal rates and higher instances of calls being barred in the phone survey mode underscore the measurement challenges that are specific to this survey mode. These challenges could potentially be addressed through over-sampling. Our results also suggest that the follow-up phone surveys could carry an increased risk of response burden and satisficing. Despite these challenges, our results also underscore that phone surveys ensure more value for money in terms of both the cost and time taken to complete the survey relative to in-person surveys.

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