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**NCD MOBILE PHONE SURVEY IN THE
PHILIPPINES**

by

Agnes B. Segarra and Juliette Lee

For additional information, please contact:

Author's name
Designation

Juliette Lee
Technical Officer
Centers for Disease Control, Atlanta, Georgia.

Author's name
Designation
Affiliation
Address
Tel. no.
E-mail

Agnes B. Segarra, MD, PHSAE
Medical Officer V
Epidemiology Bureau, Department of Health
Rm 208, 2/F Bldg. 19, San Lazaro Compound, Rizal Ave., Manila
651-7800 loc. 2928, 743-6076 (telefax)
absegarra1726@gmail.com

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ABSTRACT:

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The goal of the Philippines Mobile Phone Survey was to provide nationally representative estimates of indicators that can provide information on NCDs to help make programmatic recommendations to improve and enhance NCD prevention and response in the Philippines. The NCD Mobile Phone Survey included 18 core questions on the following topics: Demographics, Tobacco Use, Alcohol Use, Diet (Fruit, Vegetable and Salt Consumption), Diabetes and Hypertension.

Full scale data collection commenced on July 27, 2018. Data collection was deployed in a 3-phase approach; each took approximately a month. A total of 3,679 individuals completed or partially completed the survey using either short message service (SMS) or mobile web through the three major mobile network operators in the middle of August 10, 2018. The survey employed a two-phase sampling strategy. In the first stage, mobile phone numbers were generated via random digit dialing (RDD), using mobile phone prefixes for the major Mobile Network Operators. In the second phase respondents were stratified into age and sex strata. Completed interviews were defined as answering all survey questions, partial interviews were defined as answering at least one NCD question.

To achieve the 3,679 interviews, 977,957 possible mobile phone numbers were dialed. Due to the nature of the RDD sampling, it was expected that many of these mobile phone numbers were invalid or unregistered reflecting an overall response rate of 3.9%, with an interview rate of 97.1%. Majority (56.8%) of the sample were female and two-fifths (43.4%) reported that they were 18-29 years old (43.4%). To account for sample imbalances, the data was adjusted to the 2018 population census totals.

Findings from the survey help provide a national baseline on selected NCD risk factors for Filipinos. Results will help inform the Department of Health as they advance the efforts to improve and enhance NCD prevention and response strategies and draw the Philippines closer to achieving the Sustainable Development Goal of reducing premature mortality from NCDs by one third

I. Introduction:

NCDs are the leading cause of death worldwide. According to the World Health Organization country profiles in 2014, NCDs contribute to 34% of all deaths in the Philippines [1]. Efficient monitoring and surveillance are cornerstones to track the progress of NCD burden, related risk factors, and policy interventions. The systematic monitoring of risk factors to generate accurate and timely data is essential for Philippines' ability to prioritize crucial resources and make sound policy decisions to address the growing NCD burden. With increasing access and use of mobile phones globally, opportunities exist to explore the feasibility of using mobile phone technology as an interim method to collect data and supplement household surveys.

In the survey, 3,679 individuals subscribed to the Globe, Smart, and Sun mobile phone networks participated in the survey using short message service (SMS) and mobile web modes.

The survey was the culmination of significant work by the Department of Health, including but not limited to telecommunications approval from the Philippines National Telecommunications Commission, agreements with mobile network aggregators, data hosting, and management at

the Philippines Knowledge Management and Information Technology Service at the Department of Health. The Department of Health led questionnaire development, sampling, the mass media campaign, and data collection. Technical assistance was provided by the US Centers for Disease Control and Prevention, RTI International, and InSTEDD. Bloomberg Philanthropies Data for Health Initiative provided financial support through the CDC Foundation.

This report is structured as follows:

- Goals (Section 2)
- Design and Implementation (Section 3)
- Results (Section 4)
- Conclusions (Section 5)

2. Goals

The goal of the Philippines Mobile Phone Survey was to provide nationally representative estimates of indicators that can provide information on NCDs to help make programmatic recommendations to improve and enhance NCD prevention and response in Philippines. The results may be used to supplement results of key behavior risk factors assessed in the WHO Stepwise survey or other national surveillance systems.

The NCD Mobile Phone Survey included 18 core questions on the following topics:

- Demographics
- Tobacco Use
- Alcohol Use
- Diet (Fruit, Vegetable, and Salt Consumption)
- Diabetes
- Hypertension

3. Design and Implementation

3.1 Design

The design parameters used for the NCD Mobile Phone Survey are shown below in Table 1.

Table 1. Mobile Phone Survey Design

Component	Design
Mode	SMS and mobile web
Mode Strategy	The primary mode of contact was SMS with mobile web as the fallback. The “fallback” mode initiated if the respondent did not complete the survey in the primary mode.
Sample	A two-phase sample of mobile phone numbers generated via random digit dialing (RDD), using the mobile phone prefixes for Globe, Smart, and Sun stratified by age and sex in the second phase.
Number of Interviews	3,679 interviews, allocated proportionally across strata to the general population distribution.
Strata	6 strata, created by crossing sex (male, female) with age (18-29, 30-44, 45+)
Questionnaire	The NCD Mobile Phone Survey questionnaire, which included

	20 questions in 2 languages: Filipino and English.
Contact times	All 7 days of the week, between 8am and 8pm each day
Contact attempts	<ul style="list-style-type: none"> • Contact #1: SMS • Contact #2: SMS, 50 hours after Contact #1 • Contact #3: Mobile Web, 50 hours after Contact #2 • Contact #4: Mobile Web, 50 hours after Contact #3
Cost to Respondents	None. Incoming SMS messages are free. The channels were configured to not invoice any data charges to respondents.
Incentives	Every person who completed the survey were sent 50 Pesos load.
Tool and Hosting	Surveda, with data hosted at the Philippines Department of Health

3.2 Implementation

The Philippines NCD Mobile Phone Survey implementation process consisted of five stages: Engagement, Planning and Pre-Test, Full-scale Data Collection, Data Management and Analysis, and Data Release and Use.

Full-scale data collection commenced on June 25th. Data collection deployed in a 3-phase approach, each took approximately a month. A total of 3,679 individuals completed or partially completed (defined as answering at least one NCD behavior or risk factor question) the survey through the three major mobile network operators by the middle of August 10th.

4. Results

This section presents the following results:

- Demographics and Response Rates (section 4.1)
- Tobacco Use (section 4.2)
- Alcohol Use (section 4.3)
- Diet (section 4.4)
- Diabetes (section 4.5)
- Hypertension (section 4.6)

4.1 Demographics and Response Rates

The Philippines Mobile Phone Survey included 3,679 interviews across 6 age by sex groups. Table 2 shows the Mobile Phone Demographic distribution compared to the UN population national statistics for sex and age.

Table 2. Mobile Phone Survey Demographics

	Mobile Phone Sample	National
Sex	3,679	63,197,960
Male	43.2%	49.9%
Female	56.8%	50.1%
Age		
18-29	43.4%	34.9%
30-44	35.8%	31.6%
45+	20.7%	33.6%

By the end of data collection, all the strata were achieved, except for 45+ males and females. To achieve the 3,679 interviews, we sent invitations to 977,957 mobile phone numbers. Due to

the nature of the RDD (random digit dialing) sampling, it was expected that many of these mobile phone numbers were invalid or unregistered. Out of these, 11,208 provided some sort of response but only 7,555 consented and provided the age and sex information necessary to be eligible to participate: 4,322 females and 3,233 males. Of these, 1,463 were ineligible due to age, and 2,303 respondents of eligible age were rejected due to stratum sample size being full. The result was 3,789 eligible respondents, of which 3,679 provided interviews (completed or partial) with known gender. Completed interviews were defined as answering all survey questions. Partial interviews were defined as answering at least one NCD question and not finishing the survey. The interview rate was 97.1% and the overall response rate was 3.9%, which is described in detail below.

The final disposition codes for this sample are shown below

Table 3. Final disposition codes for all dialed mobile phone numbers

Disposition	Definition	N	Percent
1. Complete (I)	Answered all survey questions	2,886	0.30%
2. Partial (P)	Answered at least once NCD question but did not finish the survey	793	0.08%
3. Breakoff: Eligible (O)	Answered age and sex questions but did not answer any NCD questions	110	0.01%
4. Ineligible: Age	Under age 18	1,463	0.15%
5. Ineligible: Quotas	Answered age and sex questions but quotas were full	2,303	0.24%
6. Refused	Refused consent	542	0.06%
7. Breakoff: unknown eligibility	Answered some questions but stopped before age or sex	3,111	0.32%
8. No answer	No answer, possibly nonworking number	966,749	98.85%
<i>Total</i>		977,957	

In this project, the sampling design involved two Phases. Each phase had a response rate. The final response rate was the product of Phase I and Phase II response rates.

$$\text{Phase I Response Rate} = \frac{\text{Number MPNs screened}}{(\text{number MPNs dialed} * \text{Proportion MPNs with active subscribers})}$$

Or,

$$\text{Phase I Response Rate} = \frac{7,555}{(977,957 * 0.1925)} = 0.04013$$

Phase II Response Rate $RR6_s = \frac{IP_s}{IP_s + O_s}$, for stratum s.

$RR6_s$ was derived from the 2016 Standard Definitions of the [American Association for Public Opinion Research \(AAPOR\)](#). Phase II stratum-specific response rates (RR #6) are in Table 4:

Table 4. Phase II response rates for stratum s

Age	Males	Females
18-29	$RR6_1 = 0.98$	$RR6_2 = 0.9854722$
30-44	$RR6_3 = 0.9682779$	$RR6_4 = 0.9616477$
45+	$RR6_5 = 0.9618528$	$RR6_6 = 0.9534884$

The overall response rate is the product of Phase I and Phase II response rates, resulting in an overall response rate for the entire NCD Mobile Phone Survey in Philippines:

$$RR6_{overall} = \frac{IP_{overall}}{IP_{overall} + O_{overall}} * RR_{Phase I} = \frac{3,679}{3,679 + 110} * 0.04013 = 0.038965$$

4.2 Tobacco Use

Tobacco use is one of the most important risk factors for NCDs. Overall, 19.4% of Filipino adults (aged 18 years and older) used some form of tobacco (30.1% among men and 8.8% among women). Men reported higher rates of current tobacco smoking, 29.0%, of smoking tobacco use than women, 7.9%. Men also reported higher rates of daily tobacco smoking compared to women (18.7% vs. 4.3% respectively). Overall, 5.2% reported current smokeless tobacco use (8.1% among men and 2.3% among women); 2.4% reported daily smokeless tobacco use.

Table 5 shows key outcomes from the NCD Mobile Phone Survey on tobacco use.

Table 5. Tobacco Use Overall and by Sex

Tobacco Use	Overall	Males	Females
	% (95% CI)	% (95% CI)	% (95% CI)
Current tobacco smokers	18.4 (16.9 , 20.0)	29.0 (26.4 , 31.7)	7.9 (6.6 , 9.5)
Daily tobacco smokers	11.5 (10.2 , 12.9)	18.7 (16.4 , 21.3)	4.3 (3.3 , 5.4)
Smokeless Tobacco Users			
Current smokeless	5.2 (4.4 , 6.1)	8.1 (6.6 , 9.8)	2.3 (1.6 , 3.2)

tobacco users						
Daily smokeless tobacco users	2.4	(1.8 , 3.1)	3.5	(2.6 , 4.8)	1.2	(0.8 , 1.9)
<i>Tobacco Users (any use)</i>						
Current tobacco users	19.4	(17.9 , 21.0)	30.1	(27.4 , 32.8)	8.8	(7.4 , 10.4)

4.3 Alcohol Use

Approximately one-third of adult Filipinos consumed alcohol in the past 30 days (36.3%), with males reporting current alcohol consumption more frequently than females (51.9% vs. 20.8% respectively). Among adult Filipinos who reported drinking in the past 30 days prior to the survey, 33.5% reported drinking six or more drinks in a single drinking occasion. Males had more than twice the rate of females of heavy drinking occasions.

Table 6 shows reported alcohol use overall and by sex from the NCD Mobile Phone Survey.

Table 6. Alcohol Use overall and by Sex

Alcohol Use	Overall	Males	Females
	% (95% CI)	% (95% CI)	% (95% CI)
Current alcohol users (past 30 days)	36.3 (34.4 , 38.3)	51.9 (48.9 , 54.9)	20.8 (18.7 , 23.1)
Heavy episodic drinkers (percentage of drinkers had 6+ drinks)	33.5 (31.6 , 35.4)	48.7 (45.7 , 51.7)	18.5 (16.4 , 20.7)

4.4 Diet

With regard to salt consumption, 61.9% of adult Filipinos always or often added salt in some form when cooking. Approximately one quarter, 27.0%, of adult Filipinos reported always or often eating processed foods high in salt. Two fifths, 40.2%, reported always or often adding salt or salty sauce to their food before or as they are eating.

For fruit and vegetable consumption, 91.6% of all adult Filipinos consumed less than five servings of fruit or vegetables per day with an average of 1.3 servings of vegetables and 1.2 servings of fruits per day. Less than 1% reported consuming no fruits or vegetables per day.

Table 7 presents salt, fruit, and vegetable consumption overall and by sex.

Table 7. Diet Overall and by Sex

Diet	Overall	Males	Females
	% (95% CI)	% (95% CI)	% (95% CI)
Salt Consumption			
Always or often add salt or salty sauce to food before eating or as they're eating	40.2 (38.1 , 42.4)	38.3 (35.3 , 41.4)	42.2 (39.2 , 45.2)

Always or often add salt or salty seasoning when cooking or preparing foods	61.9 (59.7 , 64.1)	60.9 (57.7 , 64.1)	62.9 (59.8 , 65.8)
Always or often eat processed foods high in salt	27.0 (25.1 , 29.0)	27.9 (25.1 , 30.9)	26.1 (23.6 , 28.8)
<i>Fruit Consumption</i>	Mean (95% CI)	Mean 95% CI	Mean 95% CI
Average number of days per week fruits are consumed	3.4 (3.3 , 3.5)	3.3 (3.2 , 3.4)	3.5 (3.4 , 3.6)
Average number of servings of fruit consumed per day	1.2 (1.2 , 1.3)	1.3 (1.2 , 1.3)	1.2 (1.2 , 1.3)
<i>Vegetable Consumption</i>	Mean (95% CI)	Mean 95% CI	Mean 95% CI
Average number of days per week vegetables are consumed	4.1 (4.1 , 4.2)	4.1 (3.9 , 4.2)	4.2 (4.1 , 4.3)
Average number of servings of vegetables consumed per day	1.3 (1.3 , 1.4)	1.4 (1.3 , 1.5)	1.3 (1.2 , 1.4)
<i>Fruit and Vegetable Consumption</i>	% (95% CI)	% (95% CI)	% (95% CI)
Consume less than five servings of fruits OR vegetables per day	91.6 (90.5 , 92.7)	90.1 (88.3 , 91.7)	93.1 (91.5 , 94.4)
Consume no fruits and vegetables per day	0.2 (0.1 , 0.4)	0.2 (0.1 , 0.5)	0.2 (0.1 , 0.6)

4.5 Raised Blood Glucose or Diabetes

Overall, 15.7% of adult Filipinos indicated they were ever told they had raised blood glucose or diabetes (17.9% among men and 13.6% among women). Of those, 46.1% reported that they were currently on medication for raised blood glucose or diabetes.

Table 8 shows the rates of self-reported raised blood sugar or diabetes.

Table 8. Raised Blood Glucose/Diabetes Overall and by Sex

	Overall	Males	Females
	% (95% CI)	% (95% CI)	% (95% CI)
Raised Blood Glucose/Diabetes Diagnosed by doctor or health care professional with raised blood glucose/diabetes	15.7 (14.1 , 17.5)	17.9 (15.4 , 20.7)	13.6 (11.5 , 15.9)
Currently taking medication for raised blood glucose/diabetes	46.1 (40.0 , 52.3)	47.5 (39.2 , 55.9)	44.3 (35.5 , 53.5)

4.6 Raised Blood Pressure or Hypertension

Approximately a third of adult Filipinos, 31.1%, ever reported that their raised blood pressure or hypertension was diagnosed by a doctor or health professional. Among those who reported they were diagnosed to have raised blood pressure or hypertension 51.6% were currently on medication for the said condition.

Table 9 shows the rates of self-reported raised blood pressure or hypertension.

Table 9. Raised Blood Pressure/Hypertension Overall and by Sex

	Overall		Males		Females	
Raised Blood Pressure/Hypertension	% (95% CI)		% (95% CI)		% (95% CI)	
Diagnosed by doctor or health care professional with raised blood pressure/hypertension	31.1	(29.1 ,33.2)	32.5	(29.5 ,35.6)	29.8	(26.9 ,32.8)
Currently taking medication for raised blood pressure/hypertension	51.6	(47.5 ,55.8)	49.7	(43.9 ,55.6)	53.7	(47.8 ,59.5)

5. Conclusions

NCDs and their associated risk factors have profound consequences on the individual and Filipinos society-at-large. The data presented in the Philippines NCD mobile survey provide a strong foundation for the development of prevention and response strategies in the Philippines. Some key outcomes included:

- Almost a fifth reported being current tobacco users, approximately one tenth, 11.5%, reported being daily tobacco users. Men were more likely to report current or daily tobacco smoking than women.
- Overall, 36.3% reported current alcohol consumption, of whom a third reported heavy episodic drinking (33.5%). Men were more likely to drink alcohol in the past 30 days as well as report being heavy episodic drinkers than women.
- A large percentage (91.6%) reported consuming less than five servings of fruits or vegetables per day.
- Almost two thirds, 61.9%, reported always or often adding a form of salt as they prepared a meal.
- Two fifths, 40.2%, reported always or often adding salt or salty sauces to food before or as they are eating it.
- Approximately one third, 31.3%, reported ever receiving a clinical diagnosis of raised blood glucose or diabetes. Half, 51.6%, of those who reported to have raised blood sugar or diabetes were currently taking medication for diabetes.
- Overall, 15.7% indicated ever being told that they have raised blood pressure or were hypertensive by a doctor or health professional. Two fifths of whom reported that they were taking medication for their raised blood pressure or hypertension.

Conclusions:

Findings from this survey help provide a national baseline on select NCD risk factors for Filipino adults aged 18 years and older. Results will inform the Department of Health in the Philippines as they advance efforts to improve and enhance NCD prevention and response strategies. The timely reporting of mobile phone survey results such as these will also facilitate cross-country comparisons.

Limitations:

The main limitation of any mobile phone survey includes the population's access to a mobile phone. Therefore, the population who do not have access to mobile phones was not represented in this survey. The results of the mobile phone survey were based on self-reports and may be influenced by recall or social desirability bias.

1. World Health Organization. Noncommunicable diseases country profiles 2014. Geneva: WHO; 2014