



**Ethiopia (2006): Malaria TRaC Study
Evaluating Ownership and Use of Insecticide
Treated Nets among Pregnant Women and
Children Under Five in SNNPR
First Round**

The P S I D a s h b o a r d

**Addis Ababa, Ethiopia
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of Insecticide Treated Nets among Pregnant Women and Children
Under Five in SNNPR**

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Summary

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Background & Research Objectives

In July 2006, PSI/Ethiopia conducted a baseline household survey among mothers of children 0-4 years in the Southern Nations, Nationalities and Peoples Region (SNNPR) of Ethiopia, designed to investigate practices related to malaria prevention using insecticide treated mosquito nets (ITNs). The 2006 survey will be followed-up with annual surveys to enable an ongoing method of monitoring and evaluating PSI/Ethiopia's programmatic activities in these areas. This report presents identified behavioral determinants of use and related behaviors for preventing malaria. It establishes a baseline for trends of indicators relating to the PSI/Ethiopia's logical framework and serves as a tool for performance review. The findings in this report are intended to provide guidance for future activities.

Description of Intervention

The goal of the PSI/Ethiopia program is to reduce mortality and morbidity due to malaria among children under five years old by improving the availability and use of long lasting insecticide treated mosquito nets (ITNs). PSI launched its first ITN in SNNPR in 2004, and has since distributed over 989,053 ITNs, the majority of which are long lasting ITNs, across several regions of Ethiopia. Some of these products are socially marketed through private sector outlets at subsidized prices in urban and peri-urban areas, and others distributed for free in rural areas by partner NGOs, among carefully targeted beneficiaries .

Methodology

A cross-sectional survey was conducted in June and July 2006 among mothers with children 0-4 years in the SNNPR region of Ethiopia. A multi-stage stratified sampling was used in the survey, with a total of 804 eligible women recruited in rural and urban areas. PSI/Ethiopia used the methodology of project TRaC, which is designed to provide actionable evidence for decision making as well as helping to measure the impact of project interventions and activities. These TRaC surveys act as a tool to inform programming by routinely collecting data from cross-sections of populations at risk for adverse health outcomes. TRaC surveys are conducted at least once a year, but can be implemented more frequently based on programmatic needs. PSI/Ethiopia is conducting a follow up TRaC survey in the final quarter of 2007.

TRaC surveys are unique for two reasons: 1) they are heavily rooted in the PERForM behavior change framework, which is at the core of most of PSI's social marketing interventions; and 2) they are designed with the end use of research findings in mind. Towards that end, they build upon the 'backwards research process' whereby decision makers first conceive of and verbalize the possible decisions that will be based on research findings. These discussions lead to an exhaustive list of indicators or areas of enquiry that are then included in the survey. TRaC surveys also include psychographic scales to capture the multidimensional and complex concepts that form 'bubbles' constructs in the PSI Behavior Change Framework, such as social norms, intentions, social support, and individuals' self-efficacy to adopt a particular behavior.

Apart from measuring the key indicators mentioned above, TRaC surveys also use segmentation analysis to divide the project's target at-risk population. This exercise determines significant differences between 'behavers' and 'non-behavers' (e.g., consistent ITN users vs. inconsistent users). Interventions aimed at addressing those differences will have a greater likelihood of changing risk behavior. Furthermore, survey analysis monitors the reach of PSI activities among target populations. TRaC Analysis also evaluates the relationship between changes in populations' opportunity, ability, and motivation (OAM) to adopt behavior change as well as actual changes in behavior with exposure PSI activities.

TRaC surveys aim to answer three fundamental questions related to segmentation, monitoring and evaluation of populations:

- *Segmentation.* By each risk/behavior combination, which OAM constructs and population characteristics are significantly correlated with the behavior in question?

- *Monitoring.* By each risk/behavior combination, what are the levels and trends in logical framework indicators of interest over time? Likewise, what trends are evident in other key behavior, risk, OAM constructs, and exposure to PSI activities?
- *Evaluation.* By each risk/behavior combination, is exposure to PSI activities leading to changes in OAM, risk, and behavior?

Because this is a baseline survey, there are no Evaluation tables published in this report.

Evaluation surveys measure exposure to PSI activities, which have not yet been implemented, and the first evaluation table will be published in the report following a follow up TRaC survey being carried out in the third quarter of 2007. The methodology is outlined in more detail in Appendix 3.

Main Findings

Use of mosquito nets in SNNPR has increased significantly since the 2005 Ethiopian Demographic and Health Survey, which reported that only 8.2% of households in SNNPR had any kind of mosquito net. However, despite that around 40% of the interviewed households had at least one ITN and 14% had two ITNs, the current coverage still falls significantly short of the Government of Ethiopia target of 100% of households in malarial areas to have two ITNs.

Nearly 10% of urban households had purchased a PSI /Ethiopia *SafeNite* branded ITN, and approximately 50% of all the nets in households found in this survey were provided by PSI in rural and urban areas. Around 44% of people in urban areas who had obtained a net had purchased an ITN supplied by PSI/Ethiopia.

In urban areas, segmentation analysis indicates that in order to convert non-users of ITNs to become users of ITNs, the project should focus on increasing consumer awareness about the attributes of ITNs, influence social norms around the use of ITNs, increase knowledge about ITNs and promote improved self efficacy around the use of ITNs. In rural areas, the focus should be around product attributes and self efficacy.

Some of the factors that do not appear to influence use of ITNs include knowledge of malaria, an understanding of the severity of the disease, perceptions of personal susceptibility to malaria, ITN brand appeal, educational status or literacy levels. In urban areas it was found that higher levels of social capital and social support may even reduce people's ability and motivation to use ITNs.

Monitoring Table – Levels of ITN Use and related determinants among mothers in urban and rural areas in the SNNPR region.

Risk Group: Children under five and pregnant women

Behavior: Use of ITNs

Indicators	Urban SNNPR N=403	Rural SNNPR N=401	Total N=804
Behavior / Use			
§Percent of households with at least one mosquito net.	37.2	41.5	39.4
§Percent of households with at least two mosquito nets	9.9 ^a	18.0 ^b	13.9
§Percent of households with at least one ITN.	36.4	41.1	39.0
- Percent of households with <i>SafeNite</i> nets	9.4 ^a	2.1 ^b	5.8
- Percent of households with <i>WobaGasha</i> nets	2.1 ^a	7.1 ^b	4.6
- Percent of households with a public sector nets	10.1 ^a	10.1 ^a	10.1
§Percent of households in which an under five slept under a net the night before the survey. (n=800)	30.9	36.1	33.5
- Percent of households in which one member slept under a <i>SafeNite</i> net	7.9 ^a	2.1 ^b	5.0
- Percent of households in which one member slept under a <i>WobaGasha</i> net	1.6 ^a	6.7 ^b	4.1
- Percent of households in which one member slept under a public sector net	9.3 ^a	9.5 ^a	9.4
§Percent of pregnant women who slept under a net the night before the survey (n=85)	29.7	27.1	28.2
§Percent of children under five who slept under a net the night before the survey (n=1307)	25.6	29.7	27.8
-Household is very likely to have a mosquito net in the next 6 months	78.7	76.4	77.5
-Intends to use ITNs in the next 6 months	78.9	76.9	77.9
Opportunity			
Availability	1.98	1.54	1.76
Product attributes	3.98	3.77	3.88
Brand appeal			
- <i>SafeNite</i>	3.80	3.56	3.68
- <i>WobaGasha</i>	3.47	3.35	3.41
Social norms	2.63	2.73	2.68
Ability			
-Knowledge of malaria transmission, risk groups, (0-13)	7.72	7.17	7.45
-Knowledge of bed nets (0-3)	0.91	1.19	1.05
Self-efficacy	3.92	3.41	3.67
Social support	1.96	2.07	2.01
Motivation			
Attitude	4.73	4.51	4.62
Threat			
-Susceptibility	3.43	3.66	3.54
-Severity	4.89	4.78	4.84
Response Efficacy	4.67	4.44	4.56
Perceived Control	3.11	3.04	3.08
Social Capital	3.82	4.13	3.97
Exposure			
-Intensity (number of messages heard about malaria)			
-Zero	24.6	39.6	32.1
-1-2	21.3	20.1	20.7
-3-5	32.0	15.7	23.9
-6+	22.1	24.6	23.3
-Intensity (number of messages heard about bed nets)			
-Zero	64.0	82.3	73.2
-One	14.1	8.5	11.3
-Two	8.2	2.7	5.5
-3+	13.6	6.5	10.1

§ ITN Log-Frame Indicators

-Scale means range from (1=strongly disagree – 5=strongly agree); Knowledge index ranges are shown in parenthesis

- Superscripts that have different letters across rows are significant at p<.05

The following table presents more specific information with respect to malaria messages and bed net messages:

Messages about Malaria (n=548)	Urban SNNPR N=403	Rural SNNPR N=401	Total N=804
Malaria is transmitted only through the bite of a mosquito	80.0	82.4	81.2
Malarial mosquitoes bite mainly at night	71.8	75.0	73.4
Using mosquito nets is the best way to protect our family from malaria	55.4	49.6	52.9
Nets protect against malaria causing mosquito by serving as a shield and by repelling or killing due to the insecticide	33.8	38.0	36.1
Pregnant women are at high risk from malaria	40.3	45.1	42.5
Children are at high risk of malaria	36.7	41.4	38.6
Those who eat well and those who don't are equally infected by malaria	17.0	20.9	18.8
Nets can be hung over a bed or a mattress on the floor	24.9	29.5	27.0
If child has symptoms of malaria take to nearest health facility within 24 hours	38.4	37.7	38.1
Early treatment and finishing the course of medication is important for effective treatment of malaria	30.8	33.6	32.1
Nets have to be properly hung and tucked for effective prevention	25.9	27.0	26.5
Preventing malaria with nets is cheaper than paying for treatment	28.9	34.4	31.4
<i>Where did you hear or see these messages? (n=548)</i>			
Radio	66.2	31.1	50.5
Television	29.2	0.8	16.6
Billboard	12.8	3.7	8.7
Point of purchase	11.1	9.8	10.6
Counseling card / community worker	57.4	81.6	68.2
Branded vehicle	7.9	1.2	4.5
<i>Messages heard or seen about bed nets</i>			
SafeNite PermaNet is the malaria shield for my family and me	82.1	73.2	79.1
The insecticide gives long lasting protection up to four years	50.3	50.7	50.7
SafeNite PermaNet kills and repels mosquitoes	43.4	38.0	41.8
SafeNite PermaNet costs 40 Birr	21.4	22.5	21.9
SafeNite PermaNet is conveniently pre-treated and ready to hang	28.3	28.2	28.4
-Ever seen PSI's ITN counseling cards %	24.3	21.6	23.0
-Counseling card acceptability (n=184 - among those who have seen the cards)			
I liked the counseling cards.	4.92	4.87	4.90
The counseling cards were too simplistic.	4.87	4.78	4.83
The messages were appropriate for me	4.81	4.80	4.81
I understood what message the counseling cards were trying to convey.	4.81	4.75	4.78
-Ever heard of malaria	91.8	77.4	84.6
-Ever heard of mosquito nets	86.1	69.9	78.0
-Ever heard of ITNs	70.7	60.7	65.7
-Heard or seen any messages about Malaria	75.7	60.7	68.2
-Seen or heard any advertisements about bed nets	36.0	17.7	26.7
Brand ads recalled (n=215 among those who have seen net ads)			
-SafeNite	69.0	63.4	67.4
-PermaNet	38.6	49.3	42.3
-WobaGasha	46.9	36.6	43.3
-Selam Enkilf	25.5	7.0	19.5
-Wobalba	11.7	4.2	9.3
-Child in the household has had a fever in the last 2 weeks	50.4	53.7	52.0

Monitoring Analysis

Levels of ITN use and related determinants among mothers in urban and rural areas in the SNNPR Region.

Behavior / Use

Use of mosquito nets has increased significantly since the 2005 Ethiopian Demographic and Health Survey, which reported that only 8.2% of households in SNNPR had any kind of mosquito net. However, the current coverage still falls significantly short of the Government of Ethiopia target of 100% of households in malarial areas to have two ITNs.

- Around 40% of the interviewed households have at least one mosquito net. Almost the same percentage of households have at least one ITN, which means that practically all mosquito nets are insecticide treated.
- Urban ITN coverage is slightly lower than rural coverage.
- Only 14% of households currently have two ITNs.
- Around 30% of both pregnant women and children under 5 slept under a net the night before the survey.
- The households' intention to have and use a mosquito net in the next 6 months is much higher: just over 75% in both urban and rural SNNPR.

Use of project ITNs

PSI/Ethiopia has supplied both *SafeNite* and *WobaGasha* ITNs in SNNPR, with *SafeNite* sold in retail outlets in urban areas for around 40 Birr (approximately \$4.40), and *WobaGasha* given for free in rural areas affected by emergencies by NGO partners. Nearly 10% of urban households had purchased a *SafeNite* ITN. Approximately 50% of all the nets in households found in this survey were provided by PSI in both rural and urban areas, and around 44% of people in urban areas who had obtained a net had purchased an ITN supplied by PSI/Ethiopia.

Opportunity

The availability of mosquito nets is very low in both urban and rural SNNPR (lower in rural SNNPR). The respondents rate the product attributes and the brand appeal of *SafeNite* and *WobaGasha* as above average. Appreciation is slightly higher in urban SNNPR compared to rural SNNPR and also *SafeNite*'s rates are slightly higher than those of *WobaGasha*.

Ability

The respondents in both urban and rural SNNPR do not have much knowledge about bed nets, but there is reasonable knowledge about malaria transmission and risk groups among the respondents in both urban and rural SNNPR. Self-efficacy of the respondents is relatively high in both areas. Social support related to bed net use from friends, neighbors and family on the other hand is low in both urban and rural SNNPR.

Motivation

The motivation of the respondents in both urban and rural SNNPR to change their behavior is high. Especially their attitude towards bed nets is very positive as they consider bed nets very effective (response efficacy) against malaria. The scores for susceptibility, measuring the risk of their own children, and the respondents' perceived control of the threat of malaria are somewhat lower.

Exposure

Exposure to malaria messages is relatively high. Around 75% (urban SNNPR) and 60% (rural SNNPR) of the respondents have heard messages about malaria. However, the exposure of the respondents to bed net messages is very low. Around 65% (urban SNNPR) to more than 80% (rural SNNPR) of the respondents have never heard a message about bed nets.

- The respondents that have heard messages about malaria have mainly heard messages related to mosquito bites (more than 75% in both urban and rural SNNPR). Furthermore, 35-40% of respondents have heard about the high risk of malaria for both children and pregnant women.
- The respondents that have heard messages about bed nets have mainly heard messages about *SafeNite* being a malarial shield (around 80%). Less than half have heard of the long lasting effects of insecticide and the fact that *SafeNite* kills and repels mosquitoes.
- Between 20-25% of the respondents reported having seen the PSI-produced ITN counseling cards. The women that have seen the counseling cards appreciated these cards.
- 65% of the respondents in urban SNNPR and 85% of the respondents in rural SNNPR have never seen or heard an advertisement about bed nets and 30% in urban SNNPR and 40% in rural SNNPR have never heard of ITNs at all. At the same time in just over 50% of the interviewed households a child has had a fever the last two weeks.

Segmentation Table – Determinants of ITN use in urban and rural areas of SNNPR.

Risk Group: Children under five and pregnant women

Behavior: Use of ITNs

Indicator	SNNPR Urban				SNNPR Rural			
	Users N=120 (30%)	Non - Users N=281 (70%)	OR	Sig.	Users N=146 (37%)	Non - Users N=252 (63%)	OR	Sig.
Opportunity								
Availability				ns				ns
Product attributes	4.35	3.82	2.21	***	4.10	3.59	1.81	**
Brand appeal -SafeNite -WobaGasha				ns ns				ns ns
Social norms	3.42	2.30	1.84	***				ns
Ability								
-Knowledge of malaria transmission, risk groups, (0-13)				ns				ns
-Knowledge of bed nets (0-3)	1.22	.791	1.71	**				ns
Self-efficacy	4.18	3.81	1.98	***	4.02	3.08	2.27	**
Social support	1.63	2.09	0.762	**				ns
Motivation								
Attitude				ns	4.61	4.46	1.92	*
Threat -Severity -Susceptibility				ns ns				ns ns
Response Efficacy				ns				ns
Perceived Control				ns				ns
Social Capital	3.55	3.97	0.768	*				ns
Population Characteristics								
Age (mean)				ns	28.6	30.4	.96	*
Higher socio-economic status (%)	68.8	55.7	2.03	*				ns
Marital status				ns				ns
Educational Level				ns				ns
Literate				ns				ns
Ethnic Group				ns				ns
	<i>Adjusted R-square: 0.487; Goodness of fit Chi square: 0.218; Chi square test is 168.77, df 7 p<.001</i>				<i>Adjusted R-square: 0.467; Goodness of fit Chi square: .0.15; Chi square test is 166.19, df 4 p<.001</i>			

-Scale means range from (1=strongly disagree – 5=strongly agree); Knowledge index ranges are shown in parenthesis

Note: Determinants are adjusted for other significant independent variables,

*= $p<.05$, **= $p<.001$, ***= $p<.000$, ns=not significant

Users refer to those who reported at least one child under five slept under an ITN the night before the survey.

Segmentation Analysis

1) Determinants of ITN use in urban and rural areas in the SNNPR Region

In households with children under five and pregnant women in urban areas in SNNPR, analysis was conducted to compare households where families report that they use ITNs (users) with households where they do not sleep under ITNs (non-users). The analysis shows that there are significant differences between the two behavioral determinants, including important differences with respect to knowledge of bed nets and social norms. Definitions of behavioral determinants are found in Appendix 2.

Knowledge of bed nets:

- Although both users and non-users have very little knowledge of bed nets (including what they are, and when and how to use them), there are still significant differences between the two categories. The knowledge of non-users is significantly lower (0.791, extremely low) than the knowledge of users (1.22).

Social norms:

- An important significant difference between users and non-users is the fact that users perceive that their social environment to be more or less supportive of the purchase and use of ITNs (3.42) compared to non-users who don't perceive such support at all (2.30).

Product attributes:

- Although both users and non-users appreciate the product attributes, there are still significant differences between the two categories with users appreciating the product attributes more.

Self-efficacy:

- Although both users and non-users feel they have sufficient self-efficacy, there are still significant differences between the two categories with users having more self efficacy.

Socio-economic status:

- Significantly more respondents with a higher socio-economic status are users (68.8%) than non-users (55.7%).

There is also a significant correlation shown between social capital and social support and use of ITNs, but paradoxically this correlation is negative, meaning those that perceive stronger social support and capital in their neighborhoods are less likely to use ITNs. This result may be

explained by the fact that these people perceive that their will be more support for them should their children get sick, and therefore are less likely to undertake personal actions – such as buying an ITN. These results will be monitored carefully in future surveys.

Another important consideration is of those factors that do not appear to influence ITN use. In urban areas, these include product availability, brand appeal, knowledge about malaria, attitudes to ITN use, perceptions of severity and susceptibility, educational status and literacy.

Segmentation Analysis

2) Determinants of ITN use in rural areas in the SNNPR Region

In households with children under five and pregnant women in rural areas in SNNPR, analysis was conducted to compare households where children under five or pregnant women use ITNs (users) with households where they do not sleep under ITNs (non-users). The analysis shows that there are significant differences between the two behavioral determinants, including important differences with respect to self-efficacy and product attributes.

Self-efficacy:

- An significant difference between users and non-users is the fact that users perceive that they personally are able to purchase and/or use ITNs (4.02) while non-users rate their ability as being average (3.08).

Product attributes:

- Although both users and non-users appreciate the product attributes, there are still significant differences between the two categories with obviously users (4.10) appreciating the product attributes more than non-users (3.59).

Attitude:

- Although both users and non-users have a positive attitude towards ITNs, there are still significant differences between the two categories with users having a more positive attitude.

Similar to urban areas, the factors that do not appear to influence ITN use include product availability, brand appeal, knowledge about malaria, attitudes to ITN use, perceptions of severity and susceptibility, educational status and literacy. Additional factors include social support, social capital and socio-economic status.

Concentration Index

The Concentration Index is a standard measure of equity. PSI uses it to examine socio-economic inequities in the practice of behaviors. The index ranges from -1.0 to +1.0, with zero being absolute equity. Negative values represent behaviors that are practiced at higher rates among those with higher socio-economic status. Positive values represent those practiced at higher rates among those with lower socio-economic status.

	Ownership of ITNs	Pregnant Women Slept under ITN	Children Under Five Slept under ITN
Concentration index	-0.02	0.01	0.02

Overall ownership and use of ITNs in SNNPR appears to be reasonably equitable, meaning that the concentration index is close to zero for ownership and use by specific vulnerable groups including pregnant women and children under five. In fact, use of ITNs by these vulnerable groups is higher among lower socio-economic groups since the concentration index is a positive number.

Programmatic Recommendations

This survey represents the first detailed analysis of behavioral determinants for use of ITNs in Ethiopia, and is the first of a series of similar surveys that will track changes in these determinants over time. The recommendations that follow will therefore also be adapted over time to respond to changes in our knowledge base.

In urban areas, segmentation analysis indicates that in order to convert non-users of ITNs to become users of ITNs, the project should focus on increasing consumer awareness about the attributes of ITNs, influence social norms around the use of ITNs, increase knowledge about ITNs and promote improved self efficacy around the use of ITNs. In rural areas, the focus should be more around product attributes and self efficacy only.

The knowledge increase should be realized by means of both A&P (advertising and promotion) and IEC (information, education and communication) programs. Specific messages should at least include ITNs as a method to prevent malaria, the way bed nets and insecticide work, and make a clear distinction between ITNs and other nets.

While (perceived) availability does not appear to be a determinant of ITN use, actual availability of ITNs is a necessary pre-condition to ensuring use. Currently, the availability in SNNPR is very low. Therefore, programs and activities should still focus on increasing the availability of ITNs in order to increase net ownership and net use. Additionally, PSI Ethiopia has to ensure that advertising and promotion efforts not only enhance actual availability but also perceived availability by informing consumers where and how they can obtain the product.

Population Characteristics

Population Characteristics	Urban SNNPR N=403	Rural SNNPR N=402	Total N=805
Age	%	%	%
15-19	3.7	1.5	2.6
20-24	18.4	17.2	17.8
25-29	28.3	28.6	28.4
30-34	22.6	26.1	24.3
35-39	16.4	19.4	17.9
40-44	5.2	3.7	4.5
45 +	5.5	3.5	4.5
Religion			
Christian Orthodox	36.7	17.4	27.1
Christian Protestant	49.6	63.9	56.7
Christian Catholic	0.2	1.2	0.7
Muslim	13.4	16.9	15.1
Other	0.0	0.5	0.2
Ethnicity			
Oromo	4.7	2.7	3.7
Amhara	16.6	1.2	8.9
Gurage	11.7	11.7	11.7
Sidama	8.4	17.7	13.0
Gedeo	2.5	9.5	6.0
Hadiya	12.7	5.0	8.9
Kembata	14.1	0.0	7.1
Other	29.3	52.2	40.7
Education Level			
No education	29.0	71.1	50.0
Grade 1 – 8	46.7	26.9	36.8
Grade 9 – 12	21.1	2.0	11.6
Above high school	3.2	0.0	1.6
Literate (Can read whole sentences)	51.6	10.7	31.2
Marital Status			
Married	89.8	98.0	93.9
SES Quintiles			
Very low	17.4	41.5	29.4
Low	19.6	29.4	24.5
Medium	40.2	28.9	34.6
High	6.2	0.2	3.2
Very High	16.6	0.0	8.3
Economic control : Who decides how money earned is spent (n=301, who earns money)			
-Respondent	30.8	14.9	22.9
-Husband/partner	5.0	22.4	13.7
-Respondent & husband / partner	64.2	59.7	62.0
-Mother in law	0.0	1.5	0.7
-Respondent and someone else	0.0	1.5	0.7

The following observations are made from analyzing the population characteristics table above:

- The majority of both urban and rural SNNPR is Christian Protestant (around 50% and 65% respectively) followed by Christian Orthodox (urban: 50%, rural: 65%) and Muslim (both urban and rural around 15%).

- The populations of urban and rural SNNPR are a true and even mix of a number of Ethnic groups (no Ethnic group accounts for more than 20% of the population).
- The education level of the population of urban SNNPR (around 24% has grade 9-12 or above high school) is higher than the education level of the population of rural SNNPR (with 71% having no education at all). Literacy is also higher in urban SNNPR (52%) compared to rural SNNPR (only 11%).
- The urban SNNPR population fits mainly into the medium Socio-Economic Quintile and the rural SNNPR population in the very low, low and medium SES Quintiles.
- In both urban and rural SNNPR the husband of the respondent plays an important role with the respondent in deciding how money is spent.

The following table presents information with respect to the media habits of the population.

Indicators	Urban SNNPR N=403	Rural SNNPR N=402	Total N=805
MEDIA HABITS	%	%	%
Frequency of listening to radio			
Never	30.0	62.9	46.4
Occasionally	41.7	25.9	33.8
Frequently	6.0	1.5	3.8
Most of the Time	8.9	3.5	6.2
All of the Time	13.4	6.2	9.8
Types of radio programs listened to (listeners only)			
News	91.5	89.3	90.4
Sports	36.5	18.8	27.7
Drama / soaps	60.6	34.9	47.8
Religious programs	42.2	47.0	44.6
Health programs	43.3	35.0	39.2
Commercials	31.6	18.8	25.2
Radio stations listened to (ALL)			
Radio Ethiopia	62.0	28.9	45.5
Radio Fana	13.2	3.2	8.2
Radio FM Addis 97	2.7	0.2	1.5
Debub FM	40.9	13.4	27.2
Sidama Radio	8.9	10.9	9.9
Wolaita Radio	7.9	8.0	7.9
Other	6.5	1.5	4.0
Time of day when respondents listen to the radio (listeners only)			
Early morning (before work/school)	39.0	54.3	46.6
Morning	46.8	41.6	44.2
Lunch time	47.5	37.6	42.6
Afternoon	24.5	17.4	21.0
Early evening	18.4	9.4	13.9
Evening	41.5	41.6	41.5
Night	50.0	44.3	47.2
Frequency of watching TV			
Never	62.5	98.5	80.5
Occasionally	21.6	1.2	11.4
Frequently	3.2	0.0	1.6
Most of the Time	6.5	0.2	3.4

Appendix 1: Population Characteristics**Ethiopia, 2006**

	All of the Time	6.2	0.0	3.1
Frequency of reading newspapers				
	Not at all	60.6	77.7	69.1
	Less than once a week	20.1	15.5	17.8
	At least once a week	18.2	6.8	12.5
	Almost every day	1.1	0.0	0.6

Background Situation PSI Ethiopia SMRS Study 2006:

The 2006 survey was PSI Ethiopia’s first tracking survey. The purpose of the 2006 PSI Ethiopia SMRS tracking survey was to provide evidence for social marketing decision-making for promoting ITN use. In the future, the tracking survey will collect cross sectional data at least once a year to guide and refine programmatic decisions. The 2006 SMRS Study has monitored ITN use in urban and rural areas of SNNPR with mothers of children age 4 years and under. The study specifically aimed to answer the following questions useful for designing interventions and monitoring progress:

- What are important determinants of intentions (and actual use, if already available) of mothers/caregivers to use Insecticide Treated Nets (ITNs) for children ages 0-4 years?
- Do determinants of use of ITNs differ between urban SNNPR and rural SNNPR?
- What are the baseline levels of mother/caregiver intention to use (and actual use if available) of Insecticide Treated Nets (ITNs) for children ages 0-4 years?
- At base line are there differences between urban SNNPR and rural areas in SNNPR on intention to use (or actual use) of ITNs and their opportunity, ability and motivation determinants?

Key concepts relevant for this study are monitoring and segmentation (the association between Opportunity, Ability and Motivation (OAM)). The monitoring tables were used to set baseline levels for indicators in logical frameworks, programmatic indicators, behavior, behavioral intentions, and determinants of behavioral intentions. Then, performance on these key indicators can be tracked over time. The results from the segmentation table were used to identify important determinants of intention to use or actual use of the four products. These findings are useful for designing PSI-Ethiopia’s intervention programs. In the following table some more information with respect to the study, its concepts and possible measure is presented.

Table appendix 2: Behavioral Determinants and Definitions.

<u>Concepts and Measures</u>	<u>Definitions</u>
Behaviors	Respondents’ reports of use of ITNs in the past year, with a special focus on PSI products.
Intentions	Respondents’ intentions to purchase and/or use ITNs in the next year (by brand).
Opportunity	Opportunity is a summary construct that refers to community and service factors that promote or inhibit recommended behaviors

<u>Concepts and Measures</u>	<u>Definitions</u>
Availability	An actual (objective) and perceived (subjective) construct. Perceived availability is assessed through the survey; actual availability will be assessed through the retail audit (a separate report).
Product Attributes	Specific features shown to influence purchasing and use behavior are assessed such as the color, texture, perceived quality, etc.
Product Appeal	Identification with image of brand and appeal of products overall.
Social Norms	The perceptions among respondents that their peers or salient referents support the purchase and use of products, creating an enabling environment for product purchase and use.
Ability	
	Ability refers to an individual's skill or proficiency at solving problems, given the setting and opportunity and motivation
Knowledge	Ability of respondents to correctly identify key facts about the public health problem (i.e., symptoms of malaria, causes, and transmission).
Self-Efficacy	Respondents' perceptions that they are able to purchase and/or use products, i.e., that they have the skills, knowledge, and confidence needed.
Perceived Control	Respondents' perceptions of control over their ability to purchase and/or use products.
Social Support	The assistance a person gives or receives regarding products use.
Willingness to Pay	The highest amount an individual is willing to pay for a product.
Motivation	
	Motivation describes how a person has or develops self-interest in changing his or her behavior, given the opportunity and ability
Attitude	Respondent's evaluation of a product as being good or bad.
Beliefs	A belief is a statement that can be verified as true or false. Often beliefs act as barriers to adopting a behavior.
Perceived Threat	The perceptions among respondents about their perceived risk of experiencing a serious threat that could be averted by consistent product usage.
Outcome Expectations / Response Efficacy	The perceptions that the recommended response, in this case obtaining the product and actual usage, effectively averts a serious threat from occurring.
Social Capital	A community level variable representing the participation, trust, and reciprocity community members have with each other.
Population Characteristics	
	Known demographics that relate to PSI product purchasing and use, such as age, marital status, socio-economic status, education, religion, ethnic group.

Methodology

Study design:

A multiple cross-sectional study design was used to identify determinants of behavioral intentions and establish a baseline for monitoring. A tracking survey in the future will be implemented at least once a year and may be implemented more frequently depending on programmatic needs. There were two survey modules – a population characteristics module and a module focusing on ITNs.

Sampling and Participants:

The target group was mothers with children 0-4 years. The research firm Development Studies Associates has developed a sampling scheme that was representative of mothers of children ages 0-4 years in accessible areas of rural and urban SNNPR. The following zones were defined as being the accessible areas of SNNPR: Dawro, GamoGofa, Welaita, Hadiya, Gurage, Selti, Alaba SW, KT, Sidama, and Gedeo. Several sample size calculations were conducted to determine the proper sample size. First, the following formula was used to determine the ideal total sample size for detecting change in proportion of users from time 1 to time 2. It was estimated that no more than 10% of the population currently uses ITNs (if that). A 15% increase in use of ITNs would mean that 25% of the targeted population might be expected to use ITNs at year 2. The conventional standards of alpha (significance level) = .05 and beta (power) = .80 were used in the formula to determine the ideal sample size. Finally, because a three-stage sampling frame was used (i.e., select zone, then woreda, then kebeles), a design effect of 3 was entered into the equation.

$$n = \frac{deff \times \left[Z_{1-\alpha} \sqrt{2P(1-P)} + Z_{1-\beta} \sqrt{P_1(1-P_1) + P_2(1-P_2)} \right]^2}{(P_2 - P_1)^2}$$

$P_1 = 10\%$, $P_2 - P_1 = 15\%$, $P_2 = 25\%$, $P = (20\% + 30\%)/2 = 17.5\%$, $Z_{1-\alpha} = 1.645$, $Z_{1-\beta} = 0.84$, $Deff = 3$ (Zone, Woreda, Kebele).

Assuming that at least 75% of the households are at risk for experiencing at least one of the negative health effects PSI products are trying to prevent, and then ideally a sample size of 2314 would be needed to detect changes in use of PSI products over time. Allowing for a 10% non-overlap rate between mothers of 0-4 year olds and mothers of 1-14 year olds, the recommended ideal sample size was about 2500. Based on the information with respect to 1) the ideal sample,

and 2) practical issues with respect to conducting the surveys the following decisions with respect to the sample sizes have been made:

- A sample size of equal distribution size in urban SNNPR and rural SNNPR in order to be able to make meaningful comparisons.
- A total sample size of 805 respondents: 403 in urban SNNPR and 402 in rural SNNPR.

A stratified cluster sampling strategy was used. The number of enumeration areas to be selected in urban and rural areas was determined by dividing the population sample size for Addis Ababa and accessible urban and rural areas of SNNPR by the number of households to be selected from each enumeration area. Enumeration areas were selected using a random method or systematic selection of enumeration areas with the probability of selection proportional to size (PPS).

Depending on the ages of the children in the household, up to five survey modules were completed.

Data Collection and Survey Instruments:

A standard population characteristics survey module was administered to all households. Before administering the survey, households were screened for the presence of children aged 4 and under. The subsequent four survey modules each assessed key OAM variables by product, as determined by PSI-Ethiopia. Interviewers were trained with a specific focus on scaled items. The questionnaire was pre-tested with a small group of respondents to check for understandability of questions as well as procedures for conducting interviews (e.g. how difficult or easy it is to ask specific questions about each net when a household owns more than one net). The scaled questionnaires in the tracking survey were also pilot tested in rural and urban SNNPR areas. Finally a reliability analysis was conducted on scaled items. The scaled items were revised based on the findings of the reliability analysis and findings from the pre-test. During data collection a quality control process was implemented to identify and correct problems (e.g. skip patterns not followed, missing data). Furthermore, Development Studies Associates has provided some additional specific advice on how to improve the survey before conducting the surveys in June 2006.

Data Analysis:

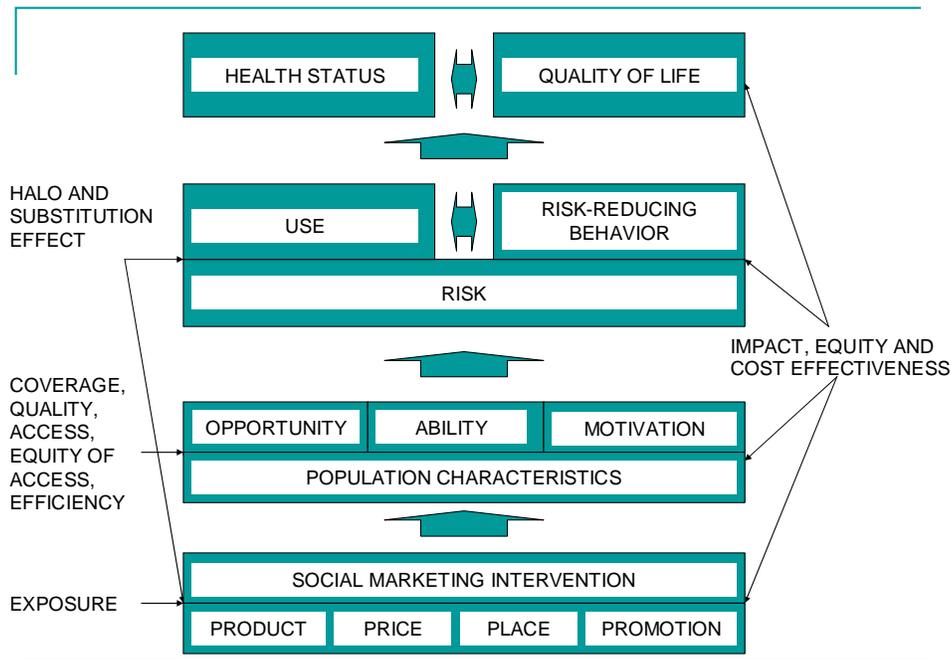
Data were managed and analyzed using SPSS. Three types of analyses were conducted to produce information relevant for designing/modifying, monitoring and evaluating the four product interventions. Prior to conducting these analyses, principal components analysis was used

to create a socio-economic status (SES) index using amenities and possession questions. Logistic regression analysis was used to identify significant determinants of intentions to use the four products. ANOVA was used to convert odds ratios from significant determinants into means. Means and percentages adjusted for significant population characteristics (from the segmentation analysis) were presented for data on behavior, behavioral intentions, OAM determinants of behavioral intentions and population characteristics.

Reliability Analysis

Behavior Change Determinants	Study Proper		Questions
	Cronbach's Alpha	# of Items	
OPPORTUNITY			
<i>Availability</i>	0.846	5	Q1119, Q1120, Q1121, Q1122, Q1123
<i>Product Attributes</i>	0.691	3	Q1129, Q1131, Q1132
<i>Brand Appeal SafeNite</i>	0.867	3	Q1202, Q1203, Q1204
<i>Brand Appeal WobaGasha</i>	0.837	3	Q1205, Q1206, Q1207
<i>Social Norms</i>	0.942	5	Q1137, Q1138, Q1139, Q1140, Q1141
ABILITY			
<i>Self efficacy</i>	0.850	3	Q1158, Q1159, Q1160
<i>Social support</i>	0.928	4	Q1170, Q1171, Q1172, Q1173
MOTIVATION			
<i>Attitudes</i>	0.819	5	Q1174, Q1175, Q1176, Q1178, Q1180
<i>Threat - susceptibility</i>	0.856	3	Q1181, Q1182, Q1183
<i>Threat - severity</i>	0.800	4	Q1185, Q1186, Q1187, Q1188
<i>Response efficacy</i>	0.811	4	Q1190, Q1192, Q1193, Q1194
<i>Perceived control</i>	0.824	4	Q1163, Q1164, Q1165, Q1166
<i>Social capital</i>	0.921	5	Q132, Q133, Q134, Q135, Q136

Performance Framework for Social Marketing



This study design is guided by PSI’s PERForM framework. PERForM describes the social marketing research process, identifies key concepts important for designing and evaluating social marketing interventions and mirrors the four levels and concepts in the logical framework.

The top level consists of the goal of social marketing for any health promotion intervention, namely improved health status and/or for interventions relating to coping with sickness or disability, quality of life.

The second level consists of the objectives of social marketing stated as product or service use on the left side and/or other risk-reducing behaviors that do not involve the use of a product or service on the right side. The adoption or maintenance of these behaviors in the presence of a given risk or need for health services is causally antecedent to improving or maintaining health and or quality of life.

The third level consists of the determinants of PSI Behavior Change framework summarized in terms of opportunity, ability and motivation that may differ by population characteristics such as age and sex. The fourth level consists of the characteristics of the social marketing intervention.