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## Bridging the gap between evidence-based practice and probiotic utilization among US adults: Results from a national survey

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### ABSTRACT

**Objectives:** Recently published guidelines recommend probiotics for only a few indications. However, probiotics are widely utilized by consumers due to accessibility, perceived safety, and belief that they promote gut health. The objective of this survey study was to examine probiotic use, evaluate public knowledge regarding the risks and benefits of probiotics, and identify variables that predict the use of probiotics among US adults.

**Materials and Methods:** The survey was conducted among a random sample of 1000 adults living in the US, from January 28 through February 13, 2019. Analysis was conducted with Chi-square tests and Pearson correlation with 95% confidence intervals and a significance level of 5% for all tests. Multivariate logistic regression was used to identify associations between survey respondents' characteristics and use of probiotics.

**Results:** Thirty-one percent of respondents stated they currently take or have taken probiotics daily, while 29% are considering future use. Sixty-four percent of daily probiotic users were taking probiotics without a medical provider's recommendation. Six percent sought counseling from a pharmacist for over-the-counter products, including probiotics. A multivariate logistic regression showed that women, whites, 4-year college graduates, and younger respondents were more likely to report probiotic use. An additional logistic regression showed a significant conditional relationship between chronic illness, education, and white race ( $P < 0.05$ ).

**Conclusion:** Guideline-recommended indications for probiotic use are limited. This study showed some respondents may be using probiotics unnecessarily. Pharmacists can educate the public about probiotic benefits and prevent unnecessary use of these products.

**Keywords:** Probiotics, Gastrointestinal, Survey, National, Over-the-counter

### INTRODUCTION

Probiotics are live microorganisms that have health benefits to the host if consumed in adequate quantities.<sup>[1]</sup> Probiotics either occur naturally in fermented foods, added to food products, or sold as dietary supplements. The most commonly used genera of microorganisms in probiotic-containing products include *Lactobacillus*, *Bifidobacterium*, *Saccharomyces*, *Streptococcus*, *Enterococcus*, *Escherichia*, and *Bacillus*.<sup>[2,3]</sup> Probiotic supplement manufacturers do not have to demonstrate efficacy and safety, because dietary supplements do not require Food and Drug

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Administration approval before marketing.<sup>[3,4]</sup> The dose and purity of the probiotic supplement may vary between brands. For this reason, not all foods and supplements labeled as “probiotics” are proven to have any health benefit to the consumer due to the lack of regulatory oversight.

The mechanism by which probiotics exert health benefits to the host differs among the various strains, species, and genera of microorganisms. Mechanisms of action may include inhibition of growth of pathogenic microorganisms in the gastrointestinal (GI) tract, production of bioactive metabolites such as short-chain fatty acids, reduction of luminal pH in the colon, vitamin synthesis, strengthening the gut barrier, bile salt metabolism, enzymatic activity, and toxin neutralization.<sup>[5,6]</sup> Probiotics have been studied for different indications including obesity, irritable bowel syndrome (IBS), and antibiotic-associated diarrhea.<sup>[2,7,8]</sup> Research on probiotics has provided frequently conflicting results making it difficult for patients and clinicians to make evidence-based decisions about probiotic use in treating and preventing GI conditions.

Trends in consumer purchasing behavior show that probiotics are among the most widely used supplements. According to data from the Centers for Disease Control and Prevention, as of 2012, the use of pre- and pro-biotics quadrupled since 2007 reaching 3.9 million Americans making it the third most popular non-vitamin and non-mineral dietary supplement.<sup>[9]</sup> Prebiotics are non-digestible food ingredients that stimulate the growth of beneficial bacteria in the gut, and will not be included in this study.<sup>[10]</sup> Despite its growing utilization by the public, guidelines published by the American Gastroenterological Association (AGA) recommend probiotics in only three circumstances: (1) Prevention of *Clostridium difficile* infection for adults and children on antibiotic therapy, (2) improvement of symptoms in patients with pouchitis, and (3) prevention of necrotizing enterocolitis in preterm infants <37 weeks gestational age.<sup>[11]</sup> The objective of this study was to examine probiotic use, evaluate population knowledge regarding the risks and benefits of probiotics, examine whether pharmacist recommendations are sought before using probiotics, and to identify variables that predict the use of probiotics among US adults.

## MATERIALS AND METHODS

### Survey design

Survey development involved collaborative efforts between investigators in Fairleigh Dickinson university, school of pharmacy, and the survey research unit in the office of Fairleigh Dickinson’s public mind poll. Survey question wording and revision, clarification, and inclusiveness of answer choices was done iteratively based on investigator

feedback. The final survey was composed of demographics, questions on probiotic use, and utilization of pharmacist services. While many of the questions had primarily binary responses (Yes/No), respondents were given the opportunity to refuse to answer the question, or state that they did not know the answer, with these statements recorded as valid responses when volunteered. Participation in this survey study was voluntary. Results were deidentified and reported in aggregate to study authors.

### Sampling

The survey was conducted by landline and cellular telephone among a US national sample (including Hawaii and Alaska) of 1000 adults, reached through random digit dial techniques by professional live callers. About 70% of the sample was reached on cell phones, and the remainder on landline phones. Surveys averaged 10.4 min. Screening questions were used at the start of the survey to ensure that all respondents were at least 18 years of age. Rake weighting techniques were then used to match demographic characteristics of the sample to known population characteristics based on 2019 Claritas data on age, race/ethnicity, and sex.

### Data collection

The survey was conducted from January 28 to February 13, 2019. Interviews were conducted using live interviewers aided by computer-assisted telephone interviewing (CATI) software, which ensured all questions were asked correctly and all logic and skip patterns were implemented properly. Respondents’ answers to questions determined which questions were asked, as reflected in the base column in [Table 1]. The CATI system allowed for a maximum of six attempts to be made on each number. To maximize response rates, numbers were called at various times of the day and days in the week and respondents could request a callback at a more convenient time and date as needed. These appointments were called at the appointed time or rescheduled if the respondent was not available at the initially requested time. Interviews were conducted by professionally trained interviewers at an outside Market Research and Analysis Company (Reconnaissance Market Research, ReconMR, 135 S. Guadalupe Street, San Marcos, TX). This study was reviewed by the Institutional Review Board at Fairleigh Dickinson university and was determined to be exempt from human subject review.

### Data analysis

Analysis was conducted with Chi-square tests and Pearson correlation with 95% confidence intervals (CIs) and a significance level of 5% for all tests. Multivariate logistic regression analysis was used to identify associations between

**Table 1:** Survey responses on probiotic utility.

	Base	Yes (%)	No (%)	Don't know (%)	Refused (%)
Probiotic use					
1. Are you now, or have you ever taken probiotics, either in food or pill form, on a daily basis?	1000	310 (31)	658 (66)	30 (3)	2 (0.2)
2. Would you consider taking probiotics on a daily basis?	690	203 (29)	417 (60)	68 (10)	2 (0.3)
3. Did a doctor recommend that you personally take probiotics on a daily basis?	310	110 (35)	198 (64)	1 (0.3)	1 (0.3)
4. To the best of your knowledge, does daily probiotic use only enhance health, OR can probiotics also HURT someone's overall health?	1000	Yes, enhances health: 412 (41)	No, hurts health: 249 (25)	331 (33)	9 (1)

survey respondents' characteristics and taking probiotics. Analyses were conducted using IBM SPSS Statistics (version 25), IBM corporation and Stata 16 (Statacorp, 2020). Multivariate logistic regression was used to isolate the contributions of various demographic factors in predicting probiotic use (coded as a dichotomous variable, with 0 for non-reported use and 1 for reported use of probiotics). Predictors in the model included standard demographic controls: Sex, education level, age, race/ethnicity (coded as a dummy variable: 1 for white non-Hispanic respondents, 0 otherwise), whether the respondent reported a chronic health condition, and whether the respondent reported speaking with a pharmacist recently.

## RESULTS

In the weighted sample, 51% of respondents were female, 38% were between the ages of 35–59, and 57% of respondents self-identified as non-Hispanic white [Table 2]. Approximately one-third (31%) of survey respondents stated that they currently take or have taken probiotics daily. An additional 29% of respondents said that they would consider future probiotics use [Table 1]. Probiotic formulations selected among survey respondents who either took probiotics in the past, were taking them currently, or considered taking them in the future, included pill (36%), yogurt (43%), or other food or drink (18%) [Figure 1]. Most probiotic users (64%) were using daily probiotics without seeking a medical provider's recommendation [Table 1]. Good intestinal health (55%), counteracting the negative effects of antibiotics (11%), and weight loss/management (12%) were the most common reasons why respondents took probiotics [Figure 1]. Only 26% of respondents taking probiotics now or in the past reported having a chronic illness [Table 3]. Study respondents were also asked whether they believed daily probiotic use only enhanced health or could also hurt health. The majority (41%) stated that probiotics only enhanced health, while 25% said that they can also hurt health [Table 1]. When the respondents were asked whether they spoke with a pharmacist when visiting a pharmacy, 28% said always, 27% said sometimes, 29% said rarely, and 15% answered

**Table 2:** Weighted sample characteristics\*.

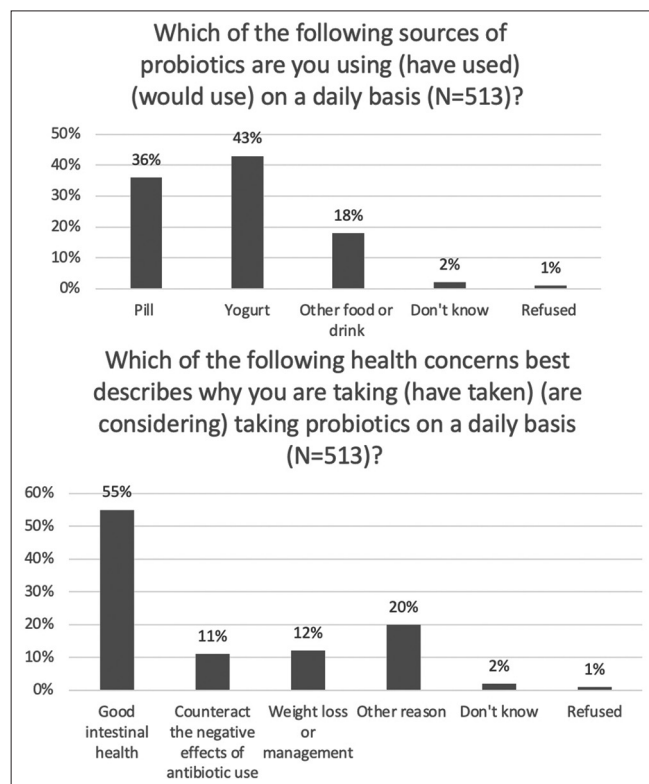
Characteristics	n=1000 (%)
Sex	
Male	487 (48.7)
Female	513 (51.3)
Age	
18–34	277 (27.7)
35–59	378 (37.8)
60+	277 (27.7)
Refused	69 (6.9)
Race	
White	569 (56.9)
Black	105 (10.5)
Hispanic	184 (18.4)
Other	141 (14.1)
Chronic illness	
Yes	235 (23.5)
No	742 (74.2)

\*Samples may not add up to 1000 because respondents could refuse a question. Percentages may not add up to 100% because of rounding

never. Only 6% sought pharmacists' counseling for over-the-counter therapies, including probiotics [Table 1 (suppl)]. There was a weak positive correlation between probiotic use, female sex, age, chronic illness, and white race ( $P < 0.05$ ) [Table 2 (suppl)]. The full survey questions and answers are shown in [Table 1] in the supplemental material. Predicted probabilities based on the results showed that, controlling for other factors, women were 18% points more likely to report using probiotics than men, and older respondents were less likely to report probiotic use than younger respondents, with the likelihood decreasing by approximately 2.2% points for every 10-year increase in age. White respondents were also about 8 points more likely to report probiotic use than non-white respondents, and individuals with a 4-year college degree were about 6 points more likely to do so than those who did not complete a degree. Further logistical regression analysis was conducted to explore the interaction between race/ethnicity, education level, and having a chronic illness [Table 4]. This analysis included an interaction effect between

**Table 3:** Results from probiotic use question (Are you now or have you ever taken probiotics, either in food or pill form on a daily basis?).

Gender	Yes (310)	No (658)	Don't Know (30)	Refused (2)	Total (n=1000)
Male	113 (33%)	361 (55%)	11 (37%)	2 (100%)	487 (49%)
Female	197 (64%)	297 (45%)	19 (63%)	0 (0%)	513 (51%)
Total	310 (100%)	658 (100%)	30 (100%)	2 (100%)	1000 (100%)
Race	Yes (310)	No (658)	Don't know (30)	Refused (2)	Total (n=1000)
White	195 (63%)	359 (55%)	16 (53%)	0 (0%)	570 (57%)
Non-white	115 (37%)	299 (45%)	14 (47%)	2 (100%)	430 (43%)
Total	310 (100%)	658 (100%)	30 (100%)	2 (100%)	1000 (100%)
Age	Yes (287)	No (616)	Don't know (26)	Refused (0)	Total (n=929)
18-34	83 (29%)	185 (30%)	8 (30%)	---	276 (30%)
35-59	124 (43%)	244 (40%)	9 (35%)	---	377 (40%)
60+	80 (28%)	187 (30%)	9 (35%)	---	276 (30%)
Total	287 (100%)	616 (100%)	26 (100%)	---	929 (100%)
Have chronic illness	Yes (301)	No (649)	Don't know (26)	Refused (0)	Total (n=976)
Yes	79 (26%)	146 (29%)	9 (35%)	---	234 (24%)
No	222 (74%)	503 (71%)	17 (65%)	---	742 (76%)
Total	301 (100%)	649 (100%)	26 (100%)	---	976 (100%)
Have health insurance	Yes (247)	No (537)	Don't Know (19)	Refused (0)	Total (n=803)
Yes	247 (100%)	535 (100%)	19 (100%)	---	801 (100%)
No	0	2	0	---	2
Total	247 (100%)	535 (100%)	19 (100%)	---	803 (100%)
Been to pharmacy in the last few months	Yes (309)	No (657)	Don't Know (31)	Refused (0)	Total (n=997)
Yes	247 (80%)	470 (71%)	20 (65%)	---	737 (74%)
No	62 (20%)	187 (29%)	11 (35%)	---	260 (26%)
Total	309 (100%)	657 (100%)	31 (100%)	---	997 (100%)

**Figure 1:** Survey responses on probiotic utility.

these three variables (as well as all necessary lower order interactions). The results of this analysis show a significant conditional relationship between chronic illness, education, and white race/ethnicity ( $z = 1.96$  on the three-way interaction,  $P < 0.05$ ). The largest effects of chronic illness were among more educated non-white respondents. In this group, individuals with a chronic illness were 11% points more likely to report probiotic use than individuals without a chronic illness. This effect did not increase reported probiotic use among more educated white respondents.

## DISCUSSION

This study found that sex, age, race, and education level were significantly associated with probiotics use. The association between female sex and probiotic use may be explained by increased prevalence of GI disorders, such as IBS and inflammatory bowel disease, in females.<sup>[12]</sup> In one study, as many as, 24.3% of females diagnosed with IBS currently use or have used probiotics to manage their symptoms.<sup>[13]</sup> In addition, the previous studies showed that in general, women are more likely to use alternative medicines than men, consistent with our findings.<sup>[14,15]</sup> In our study, there was a significant decrease in probiotic use with each decade of life. This could be due to marketing targeted to a younger demographic, less knowledge or familiarity with benefits of

**Table 4:** Logistic regression for reported use of probiotics.

Predictors	N = 867, Pseudo R2 = .04			N = 867, Pseudo R2 = .05		
	Coef	Std Error	Z	Coef	Std Error	Z
Sex	0.863	0.153	5.63	0.857	0.154	5.57
Chronic Illness	0.110	0.172	0.64	-2.249	1.384	-1.62
Education	0.156	0.068	2.29	0.116	0.170	0.68
Pharmacist	0.303	0.197	1.54	0.290	0.198	1.47
Age	-0.010	0.004	-2.35	-0.010	0.004	-2.23
White	0.421	0.186	2.26	0.381	0.696	0.55
<i>Interaction Effects</i>						
White x Education				0.023	0.194	0.12
White x Chronic				2.604	1.502	1.73
Chronic x Education				0.695	0.361	1.92
White x Chronic x Education*				-0.778	0.397	-1.96
Constant	-2.654	0.408	-6.51	-2.549	0.661	-3.86

\*Significant data reported in the results section

probiotics in older respondents, or lower acceptance/higher level of mistrust toward probiotics. One study found that older patients were significantly less likely to have heard the word “probiotics” than younger patients.<sup>[16]</sup> Correlation of white race and 4-year college degree education level to probiotic use may be explained by this population having higher median disposable income.<sup>[17]</sup> There was a weak correlation between probiotic use and having a chronic illness. Survey respondents were not asked which chronic illness, they were diagnosed with limiting the interpretation of this correlation. Respondents with chronic illnesses may be looking for alternative medicines to alleviate their symptoms.<sup>[13]</sup> Interaction effects from the logistic regression analyses show the absence of effects in certain respondents, especially in those self-identifying as white and highly educated. While useful, these effects do not answer the question of why suffering from chronic illness does not have a main effect on increasing the likelihood of probiotic use. These interaction effects support a social capital explanation in which certain demographic groups may be more aware of the potential efficacy of probiotics than others. More educated people and whites may be more likely to take probiotics regardless of chronic conditions while others become more informed of the benefits when they have a chronic illness. As such, we did not observe an interaction of indicators of higher social capital with chronic illness, indicating that chronic illness did not make them more likely to take probiotics than they already were. This led to conducting an additional logistical regression to test for interaction effects between race, education, and chronic illness. We found a significant conditional relationship between chronic illness, education, and race in the additional regressions. Among white respondents with the lower levels of education, chronic illness increased the likelihood of reported use of probiotics. The interaction between chronic illness and probiotic use was greatest in more educated, non-white respondents. In general,

we observed that chronic illness makes individuals more likely to use probiotics, but only among those not otherwise using them, since majority of patients reported using probiotics for preventive purposes and not for chronic illness. In general, chronic illness makes people who were less likely to take probiotics about as likely as educated white people who do not have chronic illness. This indicates that chronic illness has only a contingent effect on the reported use of probiotics, rather than increasing the likelihood across the board. Our results are similar to some previously reported surveys. A study conducted by Chin-Lee and colleagues (2014) reported similar rates of probiotics use in the US (29.9%); however, they did not find a statistically significant relationship between use of probiotics and other variables such as age, sex, ethnicity, education, or income level.<sup>[18]</sup> This could be because their sample size was 162 compared to this study which had 1000 survey respondents. Our study demonstrated lower prevalence of probiotics use when compared to a survey study conducted by Draper *et al.*, which showed that 55% of respondents used probiotics in the 3 months before completing the survey.<sup>[19]</sup> In a survey conducted in 2013 by the International Food Information Council Foundation, the top three reasons associated with probiotic use by Americans were maintenance of digestive system health, maintenance of immune system health, and help with weight management which is similar to our findings (International Food Information Council Foundation 2013).<sup>[20]</sup> In recently released AGA guidelines, probiotics use is recommended for only three GI conditions: Prevention of *C. difficile* infection for adults and children on antibiotic therapy, improvement of symptoms in patients with pouchitis, and prevention of necrotizing enterocolitis in pre-term infants <37 weeks gestational age. The recommendations are conditional with differing quality of evidence for each of the three indications. For each of the three conditions, specific

probiotic strain or combination of strains is recommended based on extensive review and grading of available evidence.<sup>[11]</sup> Moreover, in contrast to the previous 2018 American College of Gastroenterology (ACG) recommendations, which suggested use of probiotics to improve global symptoms of bloating and flatulence in patients with IBS, a recent 2020 ACG update on the management of IBS does not support use of probiotics (conditional recommendation and very low quality of evidence).<sup>[21,22]</sup> While there is an abundance of clinical studies and reports on using probiotics for various GI diseases (technical review identified close to 9000), their quality and generalizability were poor in many cases, leading to these limited recommendations.<sup>[23]</sup> It is also important to mention that general GI health is not one of the recommended uses; however, majority of respondents in our study utilized probiotics for this non-clinical indication. Respondents reported using a variety of probiotics formulations: Pill (36%), yogurt (43%), or other food/drink (18%). This was an interesting finding since most fermented yogurts contain live probiotic cultures but not at a sufficient level of colony-forming units of bacteria and yeast to be considered a “probiotic,” where there is an implication that the product can alter a disease course. Some yogurts are fortified with adequate cultures to be classified as probiotics, and their benefits have been studied in clinical trials in humans.<sup>[24-27]</sup> There is ongoing controversy surrounding probiotic-fortified foods making unsubstantiated claims regarding efficacy.<sup>[28,29]</sup> While the cost of probiotic-fortified yogurt appears to be lower than the tablet or capsule, when taking dosing regimen into consideration, cost per day is similar and may even be higher with yogurt.<sup>[30]</sup> Among all respondents, 25% indicated that probiotics can hurt their health, with 33% unsure. Lack of concern for safety is one of the reasons probiotics gained such prominence in consumers’ self-prescribed wellness regimens. Due to lack of regulatory status as drugs, probiotic safety has not been studied systematically. One major report prepared by the US agency for health-care research and quality in 2011 identified 11,977 publications and further examined 622 studies that reported any adverse effects tracking. This large-scale evidence-based analysis reported no relative risk increase in the overall incidence of adverse events due to short-term probiotic use (RR 1.00; 95% CI: 0.93, 1.07,  $P = 0.999$ ). Probiotics also did not increase the risk of GI infections or other adverse reactions, including serious reactions (RR 1.06; 95% CI: 0.97, 1.16;  $P = 0.201$ ). However, the authors caution that despite abundance of studies on probiotic efficacy, systematic evaluation and reporting of safety and adverse events are subpar to make definitive conclusions on probiotic safety in all patient populations.<sup>[31]</sup> Therefore, while majority of available evidence suggests that probiotics are safe, in certain patient populations, such as immunocompromised patients or critically ill patients, risks of bacterial or fungal bloodstream infection or GI ischemia

need to be considered.<sup>[32]</sup> Our study also found very low utilization of pharmacists for over the counter (OTC) product counseling. A survey conducted by the national council on patient information and education and pfizer showed that 38% of patients were unsure how to select the correct OTC products, with 56% turning to primary care or other providers, as well as pharmacists, for advice on OTC product selection.<sup>[33]</sup> Our results show that pharmacists may represent a small proportion of health-care providers giving this advice, despite their knowledge, accessibility, and proximity to products and consumers making OTC or probiotic selection. Underutilization of pharmacists for this task represents an important opportunity for building trusting pharmacist-patient relationships and avoiding unnecessary costs to an individual.

There were several limitations to this study. The survey relied on respondents’ self-report, which makes the questions vulnerable to variable interpretation by the survey respondents. Like all surveys, there is the possibility of nonresponse bias. Our sample, while representative of all the dimensions we set out to measure, may differ from the general population. All respondents who said that they did/do take probiotics daily also reported having health insurance [Table 3]. In 2020, 28 million (8.6%) of Americans did not have health insurance; therefore, these results may not be generalizable.<sup>[34]</sup> In addition, there were 100 respondents who selected “other reasons” to the question about the reason for probiotic use and there was no follow-up question to elaborate on this response. Their reason for use is unknown and could not be analyzed. The survey also did not ask respondents about the type of chronic illness, they had which is a limitation. In addition, it is unknown whether respondents who answered “yes” to consuming yogurt bought regular yogurt or probiotic-fortified yogurt. Furthermore, this survey was conducted in 2019 and respondent behavior may have changed since then. The results of this study do not reflect potential changes in consumer behavior that were brought on by the coronavirus disease 2019 pandemic.

## CONCLUSION

Probiotics are marketed as beneficial for gut health; however, evidence-based indications for their use are limited. This study shows that some US adults are using probiotics for reasons where their benefit is unconfirmed. Pharmacists can play an important role in educating patients about probiotic benefits and curtail potentially unnecessary use of these products.

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## Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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None.

## Conflicts of interest

There are no conflicts of interest.

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SUPPLEMENTARY TABLES

Table 1 [suppl]: Survey questions.

1. Are you now, or have you ever taken probiotics, either in food or pill form, on a daily basis?

	Gender		Age			Race1			Race2			Marital status			
	Male (A)	Female (B)	18-34 (C)	35-59 (D)	60+ (E)	White (F)	Non white (G)	White (H)	Black (I)	Hispanic (J)	Other (K)	Married (L)	Divorced (M)	Widow (N)	Never been married (O)
Base	1000	487	513	277	378	277	431	569	105	184*	141	486	123	75*	303
Yes	310	113	197	83	124	80	115	195	30	52	33	147	38	21	98
	31%	23%	38%A	30%	33%	29%	27%	34%K	28%	28%	23%	30%	31%	28%	32%
No	658	361	297	185	244	187	299	359	72	132	95	327	79	49	199
	66%	74%	58%	67%	65%	68%	70%	63%	68%	72%	68%	67%	64%	66%	66%
DK	30	11	19	8	9	9	14	16	3	0	11	13	6	5	6
	3%	2%	4%	3%	2%	3%	3%	3%	3%	0	8%HI	3%	5%	6%O	2%
Refused	2	2	0	0	0	0	2	0	0	0	2	0	0	0	0
	*	*	0	0	0	0	*	0	0	0	1%H	0	0	0	0
<<Sigma>>	1000	487	513	277	378	277	431	569	105	184	141	486	123	75	303
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M/N/O. \*Small base

1. Are you now, or have you ever taken probiotics, either in food or pill form, on a daily basis?

	Education			Employment			Chronic illness or disease			Health insurance			Been to pharmacy	
	Total	Some HS/High school/Some college (A)	Grad from 4 year/Grad school (B)	FT or PT (C)	Retired (D)	Working outside home (E)	Yes (F)	No (G)	No health ins. (H)	Self or spouse employer (I)	Direct from plan (J)	Public health ins. (K)	Yes (L)	No (M)
Base	1000	532	459	630	235	121*	235	742	2**	436	124*	240	738	260
Yes	310	152	155	203	69	33	79	222	0	146	36	65	247	62
	31%	29%	34%	32%	30%	27%	34%	30%	0	33%	29%	27%	33%	24%
No	658	361	292	415	155	83	146	503	2	284	88	163	470	187
	66%	68%	64%	66%	66%	68%	62%	68%	100%	65%	70%	68%	64%	72%
DK	30	18	12	12	10	5	9	17	0	7	1	11	20	11
	3%	3%	3%	2%	4%C	4%	4%	2%	0	2%	1%	5%I	3%	4%
Refused	2	0	1	1	0	0	0	0	0	0	0	0	2	0
	*	0	*	*	0	0	0	0	0	0	0	0	*	0
<<Sigma>>	1000	532	459	630	235	121	235	742	2	436	124	240	738	260
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M. \*Small base, \*\*Very small base (under 10) ineligible for sig testing

2. Would you consider taking probiotics on a daily basis?

	Total		Gender				Age			Race1			Race2			Marital status		
	Male	Female	18-34	35-59	60+	White	Non white	White	Black	Hisp	Other	Married	Divorced	Widow	Never been married			
																(A)	(B)	(C)
Base	374	316	193*	253	197	374	316	374	75*	132*	108*	340	85*	54*	205			
Yes	99	103	69	86	36	109	94	109	22	52	20	95	19	11	77			
	27%	33%	36%E	34%E	18%	29%	30%	29%K	29%	39%K	18%	28%	22%	20%	38%MIN			
No	234	184	116	137	135	225	192	225	44	73	75	212	55	34	111			
	62%	58%	60%	54%	69%D	60%	61%	60%	59%	55%	69%	62%	65%	64%	54%			
DK	39	29	8	30	26	40	28	40	9	8	12	32	11	9	16			
	10%	9%	4%	12%C	13%C	11%	9%	11%	12%	6%	11%	10%	13%	16%	8%			
Refused	2	0	0	0	0	0	2	0	0	0	2	0	0	0	0			
	1%	0	0	0	0	0	1%	0	0	0	2%H	0	0	0	0			
<<Sigma>>	374	316	193	253	197	374	316	374	75	132	108	340	85	54	205			
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M/N/O. \*Small base

2. Would you consider taking probiotics on a daily basis?

	Total		Education			Employment			Chronic illness or disease		Health insurance			Been to pharmacy														
	Male	Female	Some HS/ High school/ Some college	Grad from 4 year/Grad school	FT or PT	Retired	Working outside home	Yes	No	No health ins.	Self or spouse employer	Direct from plan	Public health ins.	Yes	No													
																(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
																(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
Base	380	305	305	428	165	88*	156	520	2**	290	88*	174	491	198														
Yes	121	82	82	142	36	24	46	155	0	95	26	43	144	58														
	32%	27%	27%	33%D	22%	28%	30%	30%	0	33%	30%	25%	29%	29%														
No	222	191	191	249	109	55	93	316	2	176	54	109	298	119														
	59%	63%	63%	58%	66%	62%	60%	61%	100%	61%	61%	63%	61%	60%														
DK	36	31	31	36	21	9	17	49	0	19	8	22	47	21														
	10%	10%	10%	8%	13%	10%	11%	9%	0	7%	9%	13%	10%	11%														
Refused	0	1	1	1	0	0	0	0	0	0	0	0	2	0														
	0	*	*	*	0	0	0	0	0	0	0	0	*	0														
<<Sigma>>	380	305	305	428	165	88	156	520	2	290	88	174	491	198														
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%														

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M. \*Small base, \*\*Very small base (under 10) ineligible for sig testing

3. Which of the following sources of probiotics are you using [have used] [would use] on a daily basis?

	Total	Gender		Age			Race1			Race2			Marital status			
		Male	Female	18-34	35-59	60+	White	Non white	White	Black	Hisp	Other	Married	Divorced	Widow	Never been married
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)
Base	513	213	300	153*	211	116	304	209*	304	52*	104*	53*	242	57*	32*	176*
Pill	185	75	110	45	77	53	119	66	119	23	23	20	93	27	16	46
	36%	35%	37%	30%	36%	46% <sup>C</sup>	39%	32%	39%	45% <sup>J</sup>	22%	38%	38% <sup>O</sup>	47% <sup>O</sup>	49% <sup>O</sup>	26%
Yogurt	222	89	133	62	100	44	121	101	121	23	58	20	104	22	10	84
	43%	42%	44%	41%	47%	38%	40%	48%	40%	44%	56%	38%	43%	38%	32%	48%
Other food or drink	91	42	49	43	29	15	56	36	56	5	23	7	36	7	4	44
	18%	20%	16%	28% <sup>DE</sup>	14%	13%	18%	17%	18%	10%	22%	13%	15%	13%	12%	25%
DK	11	6	5	2	3	4	7	4	7	1	0	4	5	2	1	2
	2%	3%	2%	1%	2%	3%	2%	2%	2%	1%	0	7%	2%	3%	4%	1%
Refused	4	1	3	0	2	1	2	2	2	0	0	2	3	0	1	0
	1%	*	1%	0	1%	1%	1%	1%	1%	0	0	4% <sup>H</sup>	1%	0	3% <sup>O</sup>	0
<<Sigma>>	513	213	300	153	211	116	304	209	304	52	104	53	242	57	32	176
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M/N/O. \*Small base

3. Which of the following sources of probiotics are you using [have used] [would use] on a daily basis?

Total	Education			Employment			Chronic illness or disease			Health insurance			Been to pharmacy	
	Some HS/High School/Some college	Grad from 4 year/Grad school		FT or PT	Retired	Working outside home	Yes	No	No health ins.	Self or spouse employer	Direct from plan	Public health ins.	Yes	No
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	
Base	273	236	344	105	57*	125*	378	0**	241	62*	108*	391	120*	
Pill	101	83	115	48	22	59	124	0	91	21	46	155	30	
Yogurt	37%	35%	33%	45% <sup>C</sup>	39%	47% <sup>G</sup>	33%	0	38%	34%	42%	40% <sup>M</sup>	25%	
	116	104	149	42	26	55	162	0	104	30	41	165	57	
	42%	44%	43%	40%	45%	44%	43%	0	43%	48%	38%	42%	48%	
Other food or drink	50	41	74	9	8	9	81	0	40	9	17	62	30	
	18%	17%	21% <sup>D</sup>	9%	14%	7%	22% <sup>F</sup>	0	17%	14%	16%	16%	25%	
DK	6	5	4	5	1	3	8	0	5	1	3	8	3	
	2%	2%	1%	5% <sup>C</sup>	2%	2%	2%	0	2%	2%	2%	2%	2%	
Refused	0	4	2	2	0	0	3	0	0	1	2	3	0	
	0	2%	1%	2%	0	0	1%	0	0	1%	2%	1%	0	
<<Sigma>>	273	236	344	105	57	125	378	0	241	62	108	391	120	
100%	100%	100%	100%	100%	100%	100%	100%	0	100%	100%	100%	100%	100%	

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M. \*Small base, \*\*Very small base (under 10) ineligible for sig testing

4. Did a doctor recommend that you personally take probiotics on a daily basis?

	Gender		Age			Race1			Race2			Marital status					
	Male		18-34		60+	White		Non white		White	Black	Hisp	Other	Married	Divorced	Widow	Never married
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)		
Base	113*	197	83*	124*	80	195	115*	195	30*	52*	33*	147	38*	21*	98*		
Yes	35	74	27	43	30	72	38	72	13	12	12	43	17	11	39		
	31%	38%	33%	34%	37%	37%	33%	37%	44%	23%	37%	29%	45%	50%L	39%		
No	77	121	56	81	49	121	77	121	17	40	21	103	21	11	59		
	68%	61%	67%	65%	61%	62%	67%	62%	56%	77%	63%	70%N	55%	50%	60%		
DK	1	1	0	1	1	1	0	1	0	0	0	1	0	0	1		
	1%	*	0	1%	1%	1%	0	1%	0	0	0	*	0	0	1%		
Refused	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0		
	0	*	0	0	1%	*	0	*	0	0	0	0	0	0	0		
<<Sigma>>	113	197	83	124	80	195	115	195	30	52	33	147	38	21	98		
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M/N/O. \*Small base

4. Did a doctor recommend that you personally take probiotics on a daily basis?

	Education			Employment			Chronic illness or disease		Health insurance			Been to pharmacy	
	Some HS/ High school/ Some college		Grad from 4 year/Grad school	Retired	Working outside home	Working home	Yes	No	Self or spouse employer	Direct from plan	Public health ins.	Yes	No
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
Base	152	155	203	69*	33*	79*	222	0**	146*	36*	65*	247	62*
Yes	54	56	64	36	9	39	68	0	54	9	25	98	12
	35%	36%	32%	53%CE	28%	49%G	31%	0	37%	25%	38%	40%M	19%
No	97	98	138	32	24	39	153	0	92	26	39	146	50
	64%	64%	68%D	46%	72%D	50%	69%F	0	63%	73%	60%	59%	81%L
DK	1	0	1	1	0	1	1	0	0	1	1	1	0
	1%	0	*	1%	0	1%	*	0	0	2%	1%	1%	0
Refused	0	0	0	1	0	1	0	0	0	0	1	1	0
	0	0	0	1%	0	1%	0	0	0	0	1%	*	0
<<Sigma>>	152	155	203	69	33	79	222	0	146	36	65	247	62
	100%	100%	100%	100%	100%	100%	100%	0	100%	100%	100%	100%	100%

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M. \*Small base, \*\*Very small base (under 10) ineligible for sig testing

5. Which of the following health concerns best describes why you are taking [have taken] [are considering] taking probiotics on a daily basis?

	Total		Gender		Age			Race1			Race2			Marital status			
	Male	Female	18-34	35-59	60+	White	Non white	White	Black	Hisp	Other	Married	Divorced	Widow	Never been married		
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)		
Base	513	213	300	153*	211	116	116	304	209*	304	52*	104*	53*	242	57*	32*	176*
Good intestinal health	282	97	185	90	113	61	174	108	108	174	29	56	23	135	31	16	97
Counteract the negative effects of antibiotic use	55%	46%	62%A	59%	53%	53%	57%	52%	52%	57%	55%	54%	44%	56%	55%	51%	55%
Weight loss or management	55	20	35	12	22	19	42	13	13	42	5	0	8	28	9	4	15
Other reason	11%	9%	12%	8%	10%	16%	14%G	6%	6%	14%J	9%	0	15%J	12%	15%	11%	8%
DK	59	28	32	21	26	9	23	37	37	23	6	25	6	30	10	2	17
Refused	12%	13%	11%	14%	12%	8%	7%	18%F	18%	7%	11%	24%H	11%	13%	18%	6%	10%
<<Sigma>>	100	57	44	24	48	20	56	44	44	56	12	23	10	41	7	7	45
	20%	27%B	15%	16%	23%	17%	18%	21%	21%	18%	23%	22%	19%	17%	12%	23%	25%
	10	6	4	2	1	7	8	2	2	8	1	0	1	5	0	3	2
	2%	3%	1%	2%	1%	6%D	3%	1%	1%	3%	2%	0	2%	2%	0	9%LMO	1%
	6	5	1	3	1	1	2	4	4	2	0	0	4	3	0	0	2
	1%	2%	*	2%	*	*	1%	2%	2%	1%	0	0	8%HJ	1%	0	0	1%
	513	213	300	153	211	116	304	209	209	304	52	104	53	242	57	32	176
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M/N/O. \*Small base

5. Which of the following health concerns best describes why you are taking [have taken] [are considering] taking probiotics on a daily basis?

	Education			Employment			Chronic illness			Health insurance			Been to pharmacy	
	Total	Some HS/ High School/ Some college	Grad from 4 year/Grad school	FT or PT	Retired	Working outside home	Yes	No	No health ins.	Self or spouse employer	Direct from plan	Public health ins.	Yes	No
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	
Base	513	273	236	344	105	57*	125*	378	241	62*	108*	391	120*	
Good intestinal health	282	138	144	197	55	26	69	209	130	41	57	210	72	
55%	50%	61%	57%	53%	45%	55%	55%	55%	54%	66%	53%	54%	60%	
Counteract the negative effects of antibiotic use	55	29	25	31	14	10	13	41	28	7	12	49	5	
Weight loss or management	11%	11%	10%	9%	14%	17%	10%	11%	11%	11%	11%	13%	4%	
	59	40	18	38	6	15	17	42	35	4	17	45	15	
Other reason	12%	15%B	8%	11%	6%	26%	CD 14%	11%	14%	6%	15%	11%	12%	
	100	54	45	70	23	7	23	76	43	8	18	76	25	
20%	20%	19%	20%	22%	12%	18%	18%	20%	18%	13%	17%	19%	21%	
DK	10	9	1	3	6	0	4	5	4	1	3	8	2	
2%	3%	1%	1%	5% <sup>C</sup>	0	0	3%	1%	1%	2%	3%	2%	1%	
Refused	6	3	3	6	1	0	0	5	2	1	1	4	2	
1%	1%	1%	2%	1%	0	0	0	1%	1%	1%	1%	1%	1%	
<<Sigma>>	513	273	236	344	105	57	125	378	241	62	108	391	120	
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M. \*Small base, \*\*Very small base (under 10) ineligible for sig testing

6. To the best of your knowledge, does daily probiotic use only enhance health, OR can probiotics also HURT someone's overall health?

Total	Gender		Age			Race1			Race2			Marital status		
	Male	Female	18-34	35-59	60+	White	White non white	Black	Hisp	Other	Married	Divorced	Widow	Never been married
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(I)	(J)	(K)	(L)	(M)	(N)	(O)
1000	487	513	277	378	277	569	431	105	184*	141	486	123	75*	303
Enhances health	412	185	129	171	92	245	167	38	81	47	212	49	20	127
	41%	38%	47%E	45%E	33%	43%	39%	36%	44%	34%	44%N	40%	27%	42%N
Can hurt health	249	124	92	92	57	132	116	28	58	29	114	25	13	94
	25%	24%	33%E	24%	21%	23%	27%	27%	32%	21%	23%	20%	18%	31%N
DK	331	173	53	113	124	186	145	38	45	62	156	48	40	82
	33%	31%	19%	30%C	45%CD	33%	34%	36%	24%	44%HJ	32%	39%O	54%LMO	27%
Refused	9	6	2	1	3	6	3	1	0	2	4	2	1	1
	1%	1%	1%	*	1%	1%	1%	1%	0	1%	1%	1%	2%	*
<<Sigma>>	1000	487	277	378	277	569	431	105	184	141	486	123	75	303
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M/N/O. \*Small base

6. To the best of your knowledge, does daily probiotic use only enhance health, OR can probiotics also HURT someone's overall health?

Total	Education		Employment		Chronic illness or disease		Health insurance			Been to pharmacy			
	Some HS/High school/Some college	Grad from 4 year/Grad school	FT or PT	Retired	Working outside home	Yes	No	No health ins.	Self or spouse employer	Direct from plan	Public health ins.	Yes	No
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
1000	532	459	630	235	121*	235	742	2**	436	124*	240	738	260
Enhances health	214	194	280	72	54	97	309	1	193	61	78	308	103
	40%	42%	44%D	31%	45%D	41%	42%	71%	44%K	49%K	32%	42%	40%
Can hurt health	126	121	166	47	33	54	192	0	119	24	60	178	70
	24%	26%	26%	20%	27%	23%	26%	0	27%	19%	25%	24%	27%
DK	188	139	178	113	33	84	235	*	121	40	100	245	85
	35%	30%	28%	48%CE	27%	36%	32%	29%	28%	32%	42%I	33%	33%
Refused	3	5	6	2	1	1	6	0	4	1	1	6	2
	1%	1%	1%	1%	1%	*	1%	0	1%	1%	1%	1%	1%
<<Sigma>>	1000	532	630	235	121	235	742	2	436	124	240	738	260
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M. \*Small base, \*\*Very small base (under 10) ineligible for sig testing



7. When you visit a pharmacy, how often do you speak with or interact with the pharmacist on duty?

	Total	Gender			Age			Race1			Race2			Marital status			
		Male	Female		18-34	35-59	60+	White	Non white	White	Black	Hisp	Other	Married	Divorced	Widow	Never been married
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	
Base	1000	487	513	277	378	277	569	431	569	105	184*	141	486	123	75*	303	
Always	279	147	132	94	96	69	151	128	151	45	40	43	133	34	21	89	
	28%	30%	26%	34%E	25%	25%	27%	30%	27%	43%HJ	22%	30%	27%	28%	28%	29%	
Sometimes	268	111	157	57	112	81	151	117	151	27	56	34	134	28	24	80	
	27%	23%	31%A	21%	30%	29%C	27%	27%	27%	25%	31%	24%	28%	23%	32%	27%	
Rarely	286	139	147	67	115	82	187	99	187	15	49	36	146	37	22	76	
	29%	29%	29%	24%	30%	30%	33%G	23%	33%I	14%	26%	25%	30%	30%	29%	25%	
Never	155	86	69	57	50	40	76	79	76	15	40	24	66	22	9	56	
	15%	18%	13%	20%	13%	15%	13%	18%	13%	14%	21%	17%	14%	18%	11%	19%	
DK	10	3	7	1	5	4	4	6	4	3	0	3	6	2	0	2	
	1%	1%	1%	*	1%	1%	1%	1%	1%	3%	0	2%	1%	2%	0	1%	
Refused	3	1	2	0	0	1	1	2	1	0	0	2	2	0	0	0	
	*	*	0	0	*	*	*	*	*	0	0	1% <sup>H</sup>	*	0	0	0	
<<Sigma>>	1000	487	513	277	378	277	569	431	569	105	184	141	486	123	75	303	
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M/N/O. \*Small base

7. When you visit a pharmacy, how often do you speak with or interact with the pharmacist on duty?

	Total	Education			Employment			Chronic illness or disease			Health insurance			Been to pharmacy	
		Some HS/ High school/ Some college	Grad from 4 year/Grad school	FT or PT	Retired	Working outside home	Yes	No	No health ins.	Self or spouse employer	Direct from plan	Public health ins.	Yes	No	
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	
Base	1000	532	459	630	235	121*	235	742	2**	436	124*	240	738	260	
Always	279	162	115	174	63	38	63	211	0	112	41	62	204	75	
	28%	30%	25%	28%	27%	32%	27%	28%	0	26%	33%	26%	28%	29%	
Sometimes	268	142	125	162	68	36	69	195	0	119	29	81	222	45	
	27%	27%	27%	26%	29%	30%	30%	26%	0	27%	24%	34%	30%M	17%	
Rarely	286	130	153	182	67	34	75	205	1	138	31	71	229	57	
	29%	25%	33%A	29%	28%	28%	32%	28%	71%	32%	25%	30%	31%M	22%	
Never	155	88	64	104	35	12	26	122	*	65	22	22	77	78	
	15%	17%	14%	16%	15%	10%	11%	16%	29%	15%	18%K	9%	10%	30%L	
DK	10	9	1	8	2	1	2	8	0	2	1	2	5	5	
	1%	2%B	*	1%	1%	1%	1%	1%	0	*	1%	1%	1%	2%	
Refused	3	0	2	1	1	0	0	1	0	0	0	1	1	1	
	*	0	*	*	*	0	0	*	0	0	0	*	*	*	
<<Sigma>>	1000	532	459	630	235	121	235	742	2	436	124	240	738	260	
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M. \*Small base, \*\*Very small base (under 10) ineligible for sig testing

8. Why do you speak with the pharmacist on duty? Choose as many reasons as apply.

	Total	Gender		Age			Race1					Race2					Marital status	
		Male	Female	18-34	35-59	60+	White	Non White	White	Black	Hisp	Other	Married	Divorced	Widow	Never been married		
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)		
Base	587	277	310	165*	227	160	347	240	347	65*	99*	75*	299	67*	44*	173*		
Prescription drug counseling	379	190	189	99	150	110	222	157	222	41	72	44	204	41	26	107		
Over the counter drug counseling	65%	69%	61%	60%	66%	69%	64%	66%	64%	63%	72%	58%	68%	62%	58%	62%		
	60	27	33	12	21	22	38	22	38	4	8	10	28	7	5	20		
Medical device counseling	10%	10%	10%	7%	9%	13%	11%	9%	11%	7%	8%	13%	9%	11%	12%	11%		
	21	8	13	7	5	6	13	7	13	3	0	5	10	3	4	3		
Injectable drug counseling	4%	3%	4%	4%	2%	4%	4%	3%	4%	4%	0	6%	3%	5%	9%LO	2%		
	4	1	3	1	2	1	2	2	2	1	0	1	2	1	0	2		
Immunizations	1%	*	1%	1%	1%	1%	1%	1%	1%	2%	0	1%	1%	1%	0	1%		
	2	1	1	0	1	0	2	0	2	0	0	0	0	1	0	1		
Other	*	*	*	*	*	*	*	0	*	0	0	0	0	1%	0	1%		
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DK	205	81	124	78	87	29	109	96	109	23	38	35	102	23	8	70		
	35%	29%	40%A	47%E	39%E	18%	31%	40%	31%	36%	38%	47%H	34%N	35%N	18%	40%N		
Refused	36	23	13	9	10	12	20	16	20	5	5	6	17	4	5	9		
	6%	8%	4%	6%	4%	8%	6%	7%	6%	8%	5%	8%	6%	5%	11%	5%		
<<Sigma>>	706	331	375	206	276	180	405	301	405	78	122	101	363	80	47	212		
	120%	120%	121%	125%	122%	112%	117%	126%	117%	120%	123%	133%	121%	120%	108%	122%		

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M/N/O. \*Small base

8. Why do you speak with the pharmacist on duty? Choose as many reasons as apply.

	Total	Education			Employment			Chronic illness or disease			Health insurance			Been to pharmacy	
		Some HS/High school/Some college (A)	Grad from 4 year/Grad school (B)	FT or PT (C)	Retired (D)	Working outside home (E)	Yes (F)	No (G)	No health ins. (H)	Self or spouse employer (I)	Direct from plan (J)	Public health ins. (K)	Yes (L)	No (M)	
Base	587	289	293	388	127	64*	143	437	1**	287	71*	140	464	123*	
Prescription drug counseling	379	189	188	255	79	42	89	285	1	194	52	92	306	73	
Over the counter drug counseling	65%	25	35	66%	21	4	18	42	0	28	5	19	50	10	
Medical device counseling	10%	9%	12%	9%	17% <sup>C</sup>	7%	13%	10%	0	10%	7%	14%	11%	8%	
Injectable drug counseling	4%	2	4%	3%	4%	5%	4%	3%	0	3%	1%	6%	3%	4%	
Immunizations	2	2	2	2	1	1	1	4	0	0	1	2	4	0	
Other	1%	1%	1%	1%	1%	1%	1%	1%	0	0	2% <sup>I</sup>	2%	1%	0	
DK	205	96	107	156	27	19	47	157	0	106	25	34	159	46	
Refused	35%	33%	37%	40% <sup>D</sup>	21%	29%	33%	36%	0	37% <sup>K</sup>	36%	24%	34%	38%	
<<Sigma>>	706	344	358	478	145	75	167	530	1	348	88	169	563	144	
	120%	119%	122%	123%	114%	117%	117%	121%	100%	121%	125%	120%	121%	117%	

Proportions/Mean: Columns Tested (5% risk level) - A/B - C/D/E - F/G - H/I/J/K - L/M. \*Small base, \*\*Very small base (under 10) ineligible for sig testing

**Table 2 [suppl]:** Correlation between probiotic use and patient variables.

<b>Probiotic Use</b>	<b>Education</b>	<b>Female</b>	<b>Chronic Illness</b>	<b>Health Insurance</b>	<b>Age</b>	<b>White</b>
Pearson Correlation	0.019	0.155	0.13	0.024	0.188	0.202
Sig (2-Tailed)	0.542	0.000	0.000	0.441	0.000	0.000
N	992	1000	1000	1000	931	1000