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Trends in Multivitamin Use Among Women of Reproductive Age: United States, 2006–2016

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Abstract

Background: Women of reproductive age can consume 0.4 milligrams of folic acid daily to reduce the risk of a neural tube defect (NTD)-affected pregnancy. Multivitamins (MVs) are one source of folic acid.

Materials and Methods: Using HealthStyles survey data (n = 9268), we assessed change in prevalence of MV use during 2006–2016 among women by age (18–24, 25–34, and 35–44 years), race/ethnicity (non-Hispanic [NH] white, NH black, Hispanic), and pregnancy status (trying to get pregnant, not pregnant nor trying to get pregnant, and pregnant) using log-binomial regression.

Results: Daily MV consumption decreased overall from 32.7% to 23.6% during 2006–2016 for women aged 18–44 years (p for trend <0.001). Age-specific decreases were seen in women aged 25–34 years (2006: 34.1%; 2016: 23.7%; $p < 0.001$) and 35–44 years (2006: 37.3%; 2016: 27.1%; $p < 0.001$). Decreases in daily MV intake were found among NH whites (2006: 35.4%; 2016: 24.9%; $p < 0.001$) and Hispanics (2006: 30.6%; 2016: 22.1%; $p < 0.001$), but remained unchanged among NH blacks (2006: 23.7%; 2016: 21.8%; $p = 0.87$). Daily MV intake remained unchanged for women trying to get pregnant (2006: 40.2%; 2012: 38.3%; $p = 0.19$), decreased for women not pregnant nor trying to get pregnant (2006: 31.3%; 2012: 21.3%; $p < 0.001$), and fluctuated for pregnant women (2006: 53.8%; 2012: 71.0%; $p = 0.21$). Prevalence of no MV consumption increased significantly across all age and race/ethnicity groups.

Conclusions: Overall MV intake decreased for the past decade and varied by age, race/ethnicity, and pregnancy status. Innovative messaging and targeted interventions for increasing folic acid intake are needed to reduce NTDs.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the U.S. Centers for Disease Control and Prevention.

Author Disclosure Statement

No competing financial interests exist.

Keywords

multivitamin; trend; folic acid; neural tube defects

Introduction

Neural tube defects (NTDs) are serious birth defects of the brain and spine and are among the most common major congenital anomalies in the United States.[1] The two most common types of NTDs, spina bifida and anencephaly, occur due to the failure of the neural tube to close properly very early in pregnancy.[2] These types of NTDs can lead to serious disabilities or death. The average annual prevalence of spina bifida and anencephaly combined in the United States was 6.5 per 10,000 live births for the period 2009–2011.[3] Infants with spina bifida face lifelong complex health needs and associated morbidities.[4,5] Not only do these conditions have a significant impact on the affected family and on the healthcare system, but they also result in significant economic costs. In 2016, the mean direct lifetime cost per infant with spina bifida in the United States was estimated to be $791,900.[6]

Folic acid has been shown to prevent NTDs, if taken periconceptionally (before and during early pregnancy).[7–11] In 1998, the U.S. government mandated fortification of enriched cereal grain products to increase folic acid intake at the population level. This intervention was especially important because almost half of the pregnancies in the United States are unplanned, and women might not be consuming sufficient amounts of folic acid during the periconceptional period.[12] Since the mandate was implemented, folic acid food fortification has greatly contributed to a decrease in NTD prevalence in the United States[3]; however, racial/ethnic disparities persist. In particular, Hispanic women continue to have a higher prevalence of babies born with NTDs than non-Hispanic (NH) women, and consume lower folic acid than NH white women.[3,13–15]

In 1996, the U.S. Preventive Services Task Force (USPSTF) recommended that all women planning a pregnancy or capable of pregnancy take a daily supplement containing 0.4–0.8 mg folic acid.[11] This recommendation was given a grade of A, indicating with high certainty that folic acid supplementation is an effective means of preventing NTDs. The USPSTF recommendation was renewed in both 2009 and early 2017 with a grade of A.[16–18] This recommendation affirms the importance of folic acid supplementation as an option for the prevention of folic acid-sensitive NTDs. Women can consume folic acid by eating fortified foods, foods rich in dietary folate, or by taking a folic acid supplement, such as a multivitamin (MV).

Most MVs contain 0.4 mg of folic acid.[19] As such, MV intake can be an appropriate proxy for assessing adequate folic acid intake that meets the USPSTF recommendation. Studies have shown that the prevalence of MV and individual supplement intake in women of reproductive age (18–44 years) to be low and decreasing over time.[20–22] During the years 2006– 2007, about 40% of U.S. women of reproductive age indicated past-year daily consumption of a supplement containing folic acid.[20,21] However, National Health and Nutrition Examination Survey (NHANES) data from a 2016 study have shown that among women of child-bearing age (20–44 years) in the United States, the use of a folic

acid supplement, taken as an individual supplement or through a MV, decreased from 40% in 2005–2006 to 34% in 2011–2012.[22] Pregnancies among young women (18–24 years) comprise over a quarter of annual births, yet this group has the lowest reported daily MV use.[20,23]

There is a paucity of stratified data on temporal trends in supplement and MV use, especially regarding trends in specific subgroups of women. Identifying the characteristics of women who do not consume MVs, in particular daily MVs, is crucial for any future efforts aimed at increasing the proportion of women consuming MVs daily. Daily MV consumption optimizes prevention of folic acid-sensitive NTDs. This study compares MV consumption trends in subgroups of women in the United States using data from an annual survey with nationally representative samples.

Methods

Study sample

Data in this cross-sectional study were taken from the 2006–2016 annual waves of the Porter Novelli Styles surveys. Porter Novelli, a public relations firm, changed the methodology of their consumer surveys in 2011. The 2006–2010 data for this study were taken from the HealthStyles survey, an annual postal mail survey conducted by Synovate, Inc. The 2011–2016 data for this study were taken from the SummerStyles survey. Starting in 2011, the Styles surveys were conducted through KnowledgePanel, an online panel. Both sets of survey respondents were randomly recruited from a nationally representative panel of noninstitutionalized adults aged ≥18 years. Data from each year were weighted using several demographic factors to match the U.S. Current Population Survey proportions. Response rates for these surveys ranged between 65% and 80%.

Measures

Each year, the MV use question has been asked using the same language on the Styles surveys, prompting the respondent to answer with the number of times per week he or she takes a MV. We coded the MV use responses into the following categories: none, 1–3 times per week, 4–6 times per week, and ≥7 times per week.

Respondents reported demographic information, including race, ethnicity, age, and pregnancy status (for female respondents), as well as other health information. The HealthStyles/SummerStyles surveys did not assess pregnancy status during the 2013–2015 waves. Pregnancy status was assessed during the 2016 wave, but the answer options precluded us from being able to separate women who were pregnant and women who were trying to get pregnant. Therefore, we only utilized pregnancy status data from the 2006–2012 waves of data. Respondents were asked to report their pregnancy plans for the next 12 months. We coded pregnancy status as either trying to get pregnant, neither pregnant nor trying to get pregnant, or pregnant. Race and ethnicity were assessed through separate questions. We categorized the list of responses as NH white, NH black, Hispanic ethnicity, or other race/ethnicities. The age of survey respondents was categorized into 18–24, 25–34, and 35–44 years.

Statistical analyses

We calculated the demographic variables for women of reproductive age (18–44 years) using data from the 2006–2016 HealthStyles/SummerStyles. We calculated the unweighted number of respondents and weighted percentages by year, age group, race/ethnicity, pregnancy status, and MV use. Owing to the small sample size of the other race/ethnicities category, we excluded this group from the analyses.

We calculated the prevalence of MV use by year for MV consumption categories, age group, and race/ethnicity. We estimated prevalences using a log-binomial model with the weights accounted for in the model. Within the model, we treated time as a continuous variable and estimated the trend over time for the consumption categories, age groups, and race/ethnicities. Parameter estimates from the models can be found in the supplementary material (Supplementary Tables 1 and 2; Supplementary Data available online at www.libertpub.com/jwh). In addition, we used a prevalence ratio (PR) to estimate the change in prevalence between the years 2006 and 2016 by exponentiating the parameter estimate.

In the presentation of results, we show the ratios of prevalence of use in 2016 versus 2006. A significant decrease corresponds to a ratio <1 and a $p < 0.05$, and a significant increase corresponds to a ratio >1 and a $p < 0.05$. We generated all estimated prevalences, PRs, and associated 95% confidence intervals (CIs) using data weighted to provide estimates for the U.S. population of females of reproductive age, and we conducted a chi-square test for trend to assess statistical significance. We used SPSS (Version 23) to conduct all analyses.[24]

Results

For the 11 years of data, 9268 adult women between 18 and 44 years completed a survey wherein MV use was ascertained. There was <1% missing data across study variables, namely pregnancy status and MV use. After applying weights, women who completed the survey were most frequently in the 35–44 years age group (37.1%) and NH white (61.8%; Table 1). Pregnancy status was assessed from 2006 to 2012, and 84.5% of respondents were not pregnant nor trying to get pregnant. Within the 2006–2012 waves of HealthStyles/SummerStyles data, the overall prevalence of pregnancy was 5.6% for the respondent sample, which is similar to national estimates for this period of time.[23]

In this nationally representative sample of U.S. women of reproductive age, those reporting daily MV use significantly decreased from 32.7% in 2006 to 23.6% in 2016 (PR, 0.70; 95% CI, 0.63–0.77; Tables 1 and 2), whereas those reporting no MV use increased significantly from 44.3% in 2006 to 60.1% in 2016 (PR, 1.35; 95% CI, 1.27–1.44). Respondents reporting MV use within the other consumption levels also experienced significant decreases during the years 2006–2016 (10.9% in 2006 to 8.8% in 2016 for 1–3 times per week; PR, 0.78; 95% CI, 0.64–0.95; 12.1% to 7.5% for 4–6 times per week; PR, 0.73; 95% CI, 0.60–0.88). The majority of those who consumed MVs reported daily consumption (MV use prevalence 2006–2016: 60.0% ≥7 times per week; 21.5% 4–6 times per week; 18.5% 1–3 times per week).

The trends in MV use differed by age group. Within the MV consumption category of ≥7 times, women aged 25–44 years had significant decreases, namely, from 34.1% in 2006 to 23.7% in 2016 in women aged 25–34 years (PR, 0.67; 95% CI, 0.58–0.79), and from 37.3% in 2006 to 27.1% in 2016 in women aged 35–44 years (PR, 0.64; 95% CI, 0.55–0.74; Fig. 1). Women aged 18–24 years experienced a nonsignificant decrease from 25.4% in 2006 to 18.6% in 2016 (PR, 0.85; 95% CI, 0.67–1.06). The prevalence of no MV use increased significantly when stratified by age group. In women aged 18–24 years, the prevalence of no MV use increased from 54.2% in 2006 to 68.1% in 2016 (PR, 1.17; 95% CI, 1.06–1.27). In women aged 25–34 years, the prevalence of no MV use increased from 40.0% in 2006 to 61.4% in 2016 (PR, 1.54; 95% CI, 1.39–1.69). In women aged 35–44 years, the prevalence of no MV use increased from 40.1% in 2006 to 52.9% in 2016 (PR, 1.38; 95% CI, 1.23–1.52). In the MV consumption groups of 1–3 times per week and 4–6 times per week, only women aged 25–34 years had significant decreasing trends (1–3 times per week: PR, 0.52; 95% CI, 0.37–0.73; 4–6 times per week: PR, 0.67; 95% CI, 0.49–0.92).

The trends in MV use also differed by race/ethnicity (Fig. 2). In the ≥7 times per week MV consumption category, NH whites and Hispanics significantly decreased, from 35.4% in 2006 to 24.9% in 2016 in NH whites (PR, 0.71; 95% CI, 0.67–0.76) and from 30.6% in 2006 to 22.1% in 2016 in Hispanics (PR, 0.66; 95% CI, 0.55–0.79). NH blacks experienced a nonsignificant decrease from 23.8% in 2006 to 21.8% in 2016 (PR, 0.98; 95% CI, 0.81–1.18). The prevalence of no MV use significantly increased for the racial/ethnic groups included in the analyses. In NH whites, the prevalence of no MV use increased from 44.1% in 2006 to 57.9% in 2016 (PR, 1.50; 95% CI, 1.42–1.60). In NH blacks, the prevalence of no MV use increased from 52.6% in 2006 to 71.3% in 2016 (PR, 1.18; 95% CI, 1.04–1.32). In Hispanics, the prevalence of no MV use increased from 40.3% in 2006 to 59.3% in 2016 (PR, 1.30; 95% CI, 1.15–1.45). In the 1–3 times per week and 4–6 times per week MV consumption categories, NH whites experienced significant decreases in both categories (1–3 times per week: PR, 0.62; 95% CI, 0.50–0.78; 4–6 times per week: PR, 0.79; 95% CI, 0.66–0.95). NH blacks also experienced a significant decrease in the 4–6 times per week MV consumption category (PR, 0.56; 95% CI, 0.37–0.85).

We also examined trends by pregnancy status. Between the years 2006 and 2012, MV consumption of ≥7 times per week decreased slightly but nonsignificantly for women trying to get pregnant (40.2% in 2006; 38.3% in 2012; $p = 0.19$), decreased significantly for women not pregnant nor trying to get pregnant (31.3% in 2006; 21.3% in 2012; $p < 0.001$), and increased nonsignificantly (53.8% in 2006; 71.0% in 2012; $p = 0.21$; range, 36.1%–78.6%) for pregnant women. Similarly, a significant increase in no MV use was seen in women not pregnant nor trying to get pregnant (45.5% in 2006; 57.3% in 2012; $p < 0.001$). No other significant trends emerged among pregnancy status groups.

Discussion

Overall, daily MV use decreased between 2006 and 2016 among women of reproductive age. Among most subgroups of women, when examining by age groups and race/ethnicity, the prevalence of daily MV consumption decreased between 2006 and 2016. In all age groups and race/ethnicities, the prevalence of no MV consumption increased. Findings from

this analysis are similar to those of recent studies examining dietary supplement use,[22,25] and add specific temporal trend information on MV consumption behaviors in various age and racial/ethnic groups. In a U.S. study examining dietary supplement use trends from 1999 to 2012 using NHANES data, the past 30-day prevalence of MV/multimineral use (defined as a supplement containing ≥10 vitamins/minerals) decreased from 37% to 31% in adults >20 years (PR, 0.85; $p < 0.001$).[22]

Differences among age and racial/ethnic groups of women emerged when examining trends in the MV consumption category of ≥7 times per week. When examining MV consumption by age group, there are clear decreases in daily MV use. No significant decrease in trend was witnessed in young women (18–24 years) for daily MV use; however, this may be due to this age group's overall low consistent use of MV. In all of the study waves, no more than 30% of women aged 18–24 years were in the MV consumption category of ≥7 times per week. Since the older women in the study sample displayed significant decreases in daily MV consumption but not the young women, this difference may reflect a cohort effect or generational differences in reasons for consuming dietary supplements.[26]

Significant decreases in daily MV use were witnessed in all race/ethnicities, except for NH blacks. Although NH blacks experienced a small nonsignificant decrease in daily MV consumption, continued suboptimal rates of folic acid use among this population and other subgroups underscore the need for focused attention. Our findings are also consistent with other studies showing higher MV consumption among NH whites than NH blacks and Hispanics.[22,27] Given the historically low levels of MV or supplement consumption in NH blacks, there may be potential for further reductions in NTD rates.[27] The reasons for why young women and NH blacks did not reduce daily MV consumption are unclear, but these unique trends reaffirm the need for formative research and tailored messaging for different population subgroups.

The prevalence of no MV use increased significantly for all age groups. No MV use increased in women aged 18–24 years, yet pregnancies within this age group comprise over a quarter of annual births.[23] Therefore, it is of critical importance that this age group be made aware of the benefit of consuming MVs to reduce the risk of NTDs. Our study also showed that the prevalence of no MV use increased significantly for all racial/ethnic groups. In particular, in this study, Hispanics experienced both a significant increase in no MV consumption and a significant decrease in daily MV consumption from 2006 to 2016. This is especially concerning given that, in the United States, Hispanics are more likely to have a baby born with an NTD and have the lowest blood folate levels, a key biomarker of NTD risk.[3,28]

It has been suggested[22] that the trend of decreasing MV use (or inversely increasing no MV use) may reflect the increased scrutiny of MVs and mineral supplements that has occurred over the past decade.[29–37] Expert bodies, including the USPSTF, released statements and recommendations concluding an insufficient body of evidence to support the use of MVs and mineral supplements to prevent chronic disease, cardiovascular disease, and cancer.[31–33] This overall skeptical perception of the benefits of MV consumption by the healthcare community received national media attention and could have affected the

public's behavior.[34–37] It is crucial for future efforts to better understand this trend in MV consumption and how to target messaging toward women who do not currently consume MVs.

Although the trends in no and daily MV consumption are clear, the trends remained statistically stable within the lower MV consumption categories (1–3 times per week and 4–6 times per week) across most age and racial/ethnic groups. Each year, these two consumption categories comprise ~15%–25% of the respondents. Because these survey respondents are already engaging in the behavior of consuming MVs, understanding the additional support and encouragement they need may help increase the percentage of women consuming an MV daily. Nondaily consumers may require a different set of motivators for targeted messaging to provide support to transition them into higher levels of MV consumption.

Trends by pregnancy status reveal the potential for increases in MV consumption. Although it is reassuring that the trends in the groups of women who were pregnant and trying to get pregnant were not decreasing significantly, our findings revealed relatively low prevalence of daily MV consumption among these groups. We would hope for these two groups of women to have high MV consumption levels to reflect optimal preconception and prenatal care and nutrition.

Daily MV consumption was also low in women who were not pregnant nor trying to get pregnant. This group of women also experienced significant increases in no MV use. With half of the pregnancies within the United States being unplanned,[12] women who are not pregnant nor trying to get pregnant should be consistently consuming MVs to ensure an adequate intake of folic acid. There could be several factors that influence MV consumption in these populations. Medical provider knowledge of folic acid and NTDs, patient adherence to medical advice, or awareness of folic acid may all play a role in determining one's likelihood of consuming folic acid before or during pregnancy.[38–41] Further understanding and addressing the needs of these groups with targeted and relevant messages is of crucial importance when trying to prevent folic acid-sensitive NTDs.

This study has several important strengths. It was conducted using data from an annual nationally representative survey. This allowed us to assess and evaluate the trends in MV consumption using a consistent data source for a 11-year period. Furthermore, the way in which MV consumption was obtained allowed us to assess not only if survey respondents used MVs but also the frequency with which they were consumed. Recall bias was also limited since the question asked respondents to report use in the past week.

This study has several limitations. First, due to the lower response rates when compared with other nationally representative surveys, such as NHANES, there is a possibility of nonresponse bias. Second, potential survey participants were chosen based on having a mailing address or a landline, and participants had to be English literate to complete the survey. This sampling strategy could potentially lead to selection bias and inaccurate MV consumption estimates, especially in non-English literate participants. Third, data collection methods changed during the years of data that we examined; however, similar studies have

analyzed Styles data pre- and post-methodology change and have found consistent estimates for other health outcomes.[42,43] Fourth, all data were self-reported, which could potentially lead to social desirability bias. Fifth, because pregnancy status was only adequately assessed from 2006 to 2012, we were unable to separate out pregnant women from the analysis after 2012.

In separate analyses (data not shown), MV consumption levels among all women and among nonpregnant women from 2006 to 2012 were comparable, indicating that the 2006–2016 estimates reported in this article were not significantly affected by pregnancy status. Per physician guidelines, pregnant women would likely be prescribed a prenatal MV, which could have overestimated our consumption rates if all pregnant women had adhered to their daily intake regimen.[44] Furthermore, due to our exclusion of the *other* race/ethnicities group, we are unable to assess MV consumption trends within this subgroup. Finally, the survey did not define an MV and, in particular, whether it contained folic acid. There is a chance that we have overestimated the percentage of women taking folic acid, if the MV did not contain folic acid. There is also a chance that we have underestimated the percentage of women taking folic acid if folic acid-only supplements were consumed, since women might not report consuming them as an MV.

Supplementation is an effective way to achieve the recommended daily intake of folic acid for the prevention of folic acid-sensitive NTDs. This might be particularly true for women who do not consume fortified products, such as enriched cereal grain products and ready-to-eat breakfast cereals. The findings from this study demonstrating decreased daily MV intake can serve as a catalyst for increased efforts to develop folic acid messages. Such messages could help promote public awareness of the role of folic acid supplements in reducing the risk of NTDs.

Conclusion

Daily MV intake has decreased for the past 11 years among women of reproductive age in the United States. Although fortification has improved folic acid intake, dietary restrictions and differences in food preferences might lead to some women not regularly consuming fortified products. As such, folic acid supplementation remains an important intervention strategy for the prevention of folic acid-sensitive NTDs. Developing engaging messages that reach the unique needs of different subgroups of women of reproductive age and disseminating these messages through appropriate outlets can potentially help increase folic acid supplement use, contributing further to the prevention of folic acid-sensitive NTDs.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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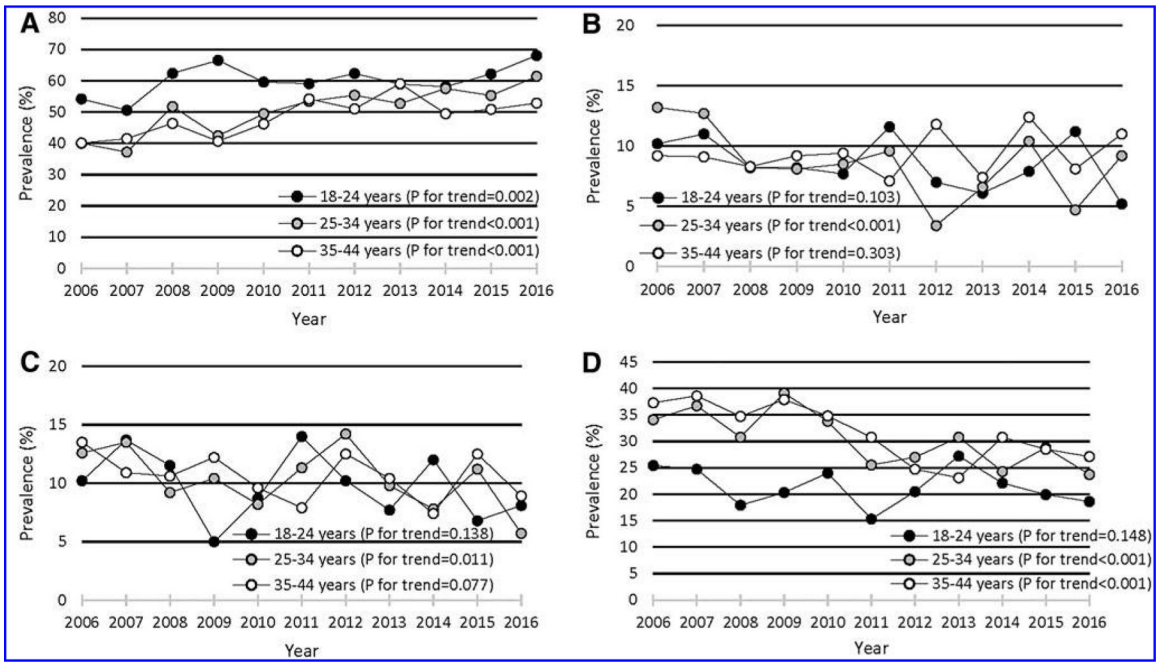

FIG. 1.

Trends in MV use by age among U.S. women of reproductive age: 2006–2016 HealthStyles/SummerStyles. **(A)** No MV use. **(B)** 1–3 MVs consumed/week. **(C)** 4–6 MVs consumed/week. **(D)** ≥7 MVs consumed/week. Data are weighted to be nationally representative. MV, multivitamin.

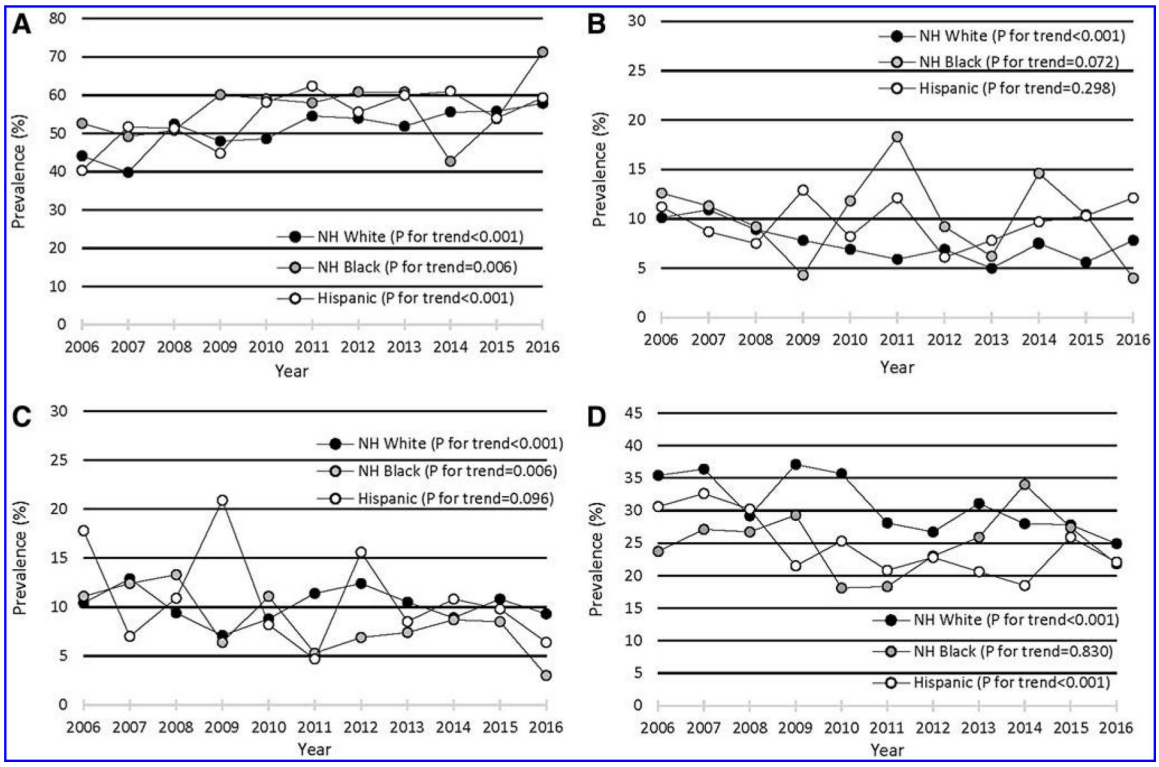

FIG. 2.

Trends in MV use by race/ethnicity among U.S. women of reproductive age: 2006–2016 HealthStyles/SummerStyles. **(A)** No MV use. **(B)** 1–3 MVs consumed/week. **(C)** 4–6 MVs consumed/week. **(D)** ≥7 MVs consumed/week. Data are weighted to be nationally representative. MV, multivitamin; NH, non-Hispanic.

TABLE 1.

RESPONDENT DEMOGRAPHICS AMONG U.S. WOMEN OF REPRODUCTIVE AGE: 2006–2016 HEALTHSTYLES/SUMMERSTYLES SURVEYS

	2006		2007		2008		2009		2010		2011	
Characteristic	**Unweighted No.**	**Weighted%**	**Unweighted No.**	**Weighted%**	**Unweighted No.**	**Weighted%**	**Unweighted No.**	**Weighted%**	**Unweighted No.**	**Weighted%**	**Unweighted No.**	**Weighted%**
Overall	1303		995		1053		841		672		805	
Age (years)												
18–24	119	29.8%	69	28.2%	55	24.0%	47	27.6%	33	26.6%	144	25.8%
25–34	417	34.3%	324	34.3%	345	36.2%	257	35.1%	231	35.9%	242	36.9%
35–44	767	35.9%	602	37.5%	653	39.8%	537	37.3%	408	37.5%	419	37.3%
Race/ethnicity												
NH white	795	62.0%	609	63.2%	589	56.9%	506	65.9%	420	66.1%	554	62.2%
NH black	181	12.9%	166	14.9%	184	16.9%	137	15.3%	82	13.3%	98	14.3%
Hispanic	239	17.2%	147	14.7%	187	18.8%	127	13.1%	104	15.8%	93	15.6%
Other	88	7.9%	73	7.2%	93	7.4%	71	5.7%	66	4.8%	60	7.9%
Pregnancy status[a]												
Trying to get pregnant	120	11.7%	66	9.9%	91	12.5%	57	11.1%	38	9.7%	29	4.4%
Not pregnant nor trying to get pregnant	1139	83.1%	901	85.5%	933	82.4%	763	84.3%	626	88.5%	709	85.5%
Pregnant	44	5.2%	28	4.6%	29	5.1%	21	4.6%	8	1.8%	62	10.1%
MV use												
None	554	44.3%	421	42.6%	542	51.4%	370	48.4%	332	50.8%	447	55.2%
1–3 times/ week	136	10.9%	100	10.8%	85	8.1%	73	8.5%	64	8.6%	59	9.3%
4–6 times/ week	158	12.1%	109	12.6%	92	10.2%	99	9.6%	61	8.9%	81	10.7%
≥7 times/ week	438	32.7%	340	34.0%	323	30.3%	299	33.5%	215	31.7%	215	24.8%
Overall	662		766		780		820		571		9268	
Age (years)												
18–24	177	26.1%	144	26.3%	129	26.5%	142	26.1%	116	25.5%	1175	26.7%

Characteristic	2006		2007		2008		2009		2010		2011	
	Unweighted No.	Weighted%	Unweighted No.	Weighted%	Unweighted No.	Weighted%	Unweighted No.	Weighted%	Unweighted No.	Weighted%	Unweighted No.	Weighted%
25–34	229	36.7%	254	37.8%	253	37.4%	306	38.0%	248	38.4%	3106	36.2%
35–44	256	37.2%	368	35.9%	398	36.1%	372	35.9%	207	36.1%	4987	37.1%
Race/ethnicity												
NH white	444	57.9%	535	66.0%	529	61.0%	553	60.1%	388	59.1%	5922	61.8%
NH black	65	10.7%	76	8.5%	77	10.2%	87	10.9%	61	12.2%	1214	13.1%
Hispanic	107	22.7%	95	15.6%	117	19.4%	123	18.1%	80	17.1%	1419	17.0%
Other	46	8.7%	60	9.9%	57	9.4%	57	10.9%	42	11.6%	713	8.1%
Pregnancy status[a]												
Trying to get pregnant	27	3.7%	—	—	—	—	—	—	—	—	428	10.0%
Not pregnant nor trying to get pregnant	588	88.8%	—	—	—	—	—	—	—	—	5659	84.4%
Pregnant	43	7.5%	—	—	—	—	—	—	—	—	235	5.6%
MV use												
None	340	55.6%	412	56.7%	413	54.6%	441	55.5%	331	60.1%	4603	51.5%
1–3 times/ week	59	7.6%	64	6.8%	76	10.5%	64	7.6%	48	8.8%	828	9.0%
4–6 times/ week	77	12.5%	78	9.4%	67	8.8%	88	10.6%	49	7.5%	959	10.4%
≥7 times/ week	184	24.3%	204	27.1%	218	26.1%	220	26.3%	141	23.6%	2797	29.1%

Values in columns may not sum to the overall value in that year due to missing data.

[a]Pregnancy status was not assessed in the 2013–2016 waves of HealthStyles/SummerStyles. MV, multivitamin; NH, non-Hispanic.

TABLE 2.

TRENDS IN WEEKLY MULTIVITAMIN USE AMONG U.S. WOMEN OF REPRODUCTIVE AGE: 2016 VERSUS 2006 HEALTHSTYLES/SUMMERSTYLES

	No MV use	1–3 MVs consumed/week	4–6 MVs consumed/week	≥7 MVs consumed/week
	PR (95% CI)	PR (95% CI)	PR (95% CI)	PR (95% CI)
Age (years)				
18–24	1.17 (1.06–1.27)	0.73 (0.49–1.07)[a]	0.76 (0.53–1.09)[a]	0.85 (0.67–1.06)[a]
25–34	1.54 (1.39–1.69)	0.52 (0.37–0.73)	0.67 (0.49–0.92)	0.67 (0.58–0.79)
35–44	1.38 (1.23–1.52)	1.18 (0.86–1.62)[a]	0.76 (0.56–1.03)[a]	0.64 (0.55–0.74)
Race/ethnicity				
NH white	1.50 (1.42–1.60)	0.62 (0.50–0.78)	0.79 (0.66–0.95)	0.71 (0.67–0.76)
NH black	1.18 (1.04–1.32)	0.69 (0.46–1.03)[a]	0.56 (0.37–0.85)	0.98 (0.81–1.18)[a]
Hispanic	1.30 (1.15–1.45)	1.22 (0.84–1.79)[a]	0.74 (0.53–1.06)[a]	0.66 (0.55–0.79)
Overall	1.35 (1.27–1.44)	0.78 (0.64–0.95)	0.73 (0.60–0.88)	0.70 (0.63–0.77)

[a]Not significant at $p < 0.05$.

CI, confidence interval; MV, multivitamin; NH, non-Hispanic; PR, prevalence ratio.