Dear Dr. Wittman:

Thank you for submitting your manuscript to Diabetes Care. The editors have decided that your manuscript is not acceptable for publication in its present form. However, we would be willing to consider a version that has been substantially revised if you feel you can adequately address all the comments from the editors and/or reviewers. Please note that we make no commitment to publishing your revised manuscript given the important points that have been raised.

If you choose to submit a revised version of your manuscript, please provide a point-by-point response to the reviewers’ comments, with each comment verbatim in bold or italics followed by your response. If you have made substantive changes to your manuscript, in addition to highlighting them in track changes in the resubmitted version of the paper, please also provide in your response to the reviewers a detailed description of these changes and indicate where they appear in the manuscript. If you have inserted key sentences, paragraphs, or sections in response to the comments, please be clear about their location in your response. Further, if you have made any deletions, please also indicate the location of these changes.

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Thank you once again for submitting your work to Diabetes Care. We look forward to receiving your revised manuscript.

Yours sincerely,

Steven E. Kahn, M.B., Ch.B.

Editor-in-Chief, Diabetes Care

Professor of Medicine

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Revisions that do not meet guidelines, or have not submitted all forms, will not be processed.

FORMATTING COMMENTS:

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Abstracts are limited to 250 words. You currently have 251.

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EDITOR COMMENTS:

REVIEWER COMMENTS:

Reviewer: 1

Comments to the Author

Thank you for the opportunity to review this manuscript. I think this paper is addressing the persistent issues in diabetes care (i.e., lack of receipt in guideline recommended preventive care) using MEPS data. Methods are appropriate and manuscript is overall well written. Here are my comments for authors’ consideration.

Major

1. Abstract: provide sample size of this study.

Added (*n* = 25,616).

2. I was wondering whether data on urine albumin testing is available in MEPS.

Data on urine albumin testing do not appear to be available in MEPS.

3. Page 5: “To our knowledge, the proportion and trend of receipt of preventive services addressed in the Medical Expenditure Panel Survey (MEPS) has not been reported.” It would be nice to state the relative strengths of MEPS data compared to other national data sources (eg, NHANES and BRFSS).

Added brief statement on the advantages of working with data from MEPS “Analysis of MEPS data provides advantages, as MEPS is available yearly, unlike NHANES. BRFSS is administered at the state level and the diabetes module is not available in every state in every year”

4. Page 5: The authors mentioned “examining any effects of the COVID-19 pandemic….”, but the study period is up to 2020 (only beginning of the pandemic). Studying the effects of pandemic is a primary objective in this study? I found this sentence is confusing.

We clarified that the inclusion of data from 2020 was to show how the onset of the pandemic impacted the reported receipt of preventive services, as opposed to impacts over the duration of the pandemic.

5. Page 6: MEPS data collection was not interrupted (or modified) after the start of pandemic in 2020?

Data collection was moved from in-person interviews to phone surveys, although the DCS remained a paper-and-pencil survey that was mailed to respondents. Added a sentence in the methods to clarify this.

6. Methods: I think the study population is individuals with diagnosed diabetes, but it is not super clear by the way it was written in the methods. For example, average annual number of 32,170 individual respondents are those with diabetes?

We clarified that data were drawn from respondents to the DCS sub-survey and provided numbers appropriate for that survey. “In this analysis, we used data from the full-year consolidated MEPS files for adults with diabetes that responded to the DCS survey (*n* = 25,616). Response rates for the DCS survey ranged from 92.4% in 2008 to 57.1% in 2020”

6. Page 8: Results: What is the sample size for this study?

Added, see above.

7. Page 12-13: “Other studies on trends in preventive care using different data sources report some conflicting findings. A study using NHANES data from 2005 to 2018 found increases in the proportion of adults with diabetes who reported: having a primary care doctor, receiving an annual check-up with a physician, having had at least two A1C tests in a year, having their cholesterol levels tested, and having an annual foot exam by a doctor” This sentence is misleading (i.e., increased in all these components) and needs to be changed. In this study, proportion of receiving ADA recommended care meeting all five criteria in the past year (having a primary doctor for diabetes and one or more visits for this doctor, HbA1c testing, an eye examination, a foot examination, and cholesterol testing) increased from 25% to 34%. However. when looking at the individual component, only A1C testing was increased (Please see the Supplemental Figure 2 in the paper). I suggest to revise the sentence to accurately reflect the prior study.   
Added text to this sentence to clarify that it was receipt of all 5 practices, and not necessarily any individual practice:  
 “A study using NHANES data from 2005 to 2018 found increases in the proportion of adults with diabetes who reported receiving all of the following: having a primary care doctor, receiving an annual check-up with a physician, having had at least two A1C tests in a year, having their cholesterol levels tested, and having an annual foot exam by a doctor (12). Although, when evaluated individually, only A1C testing increased, which is similar to our findings”   
 Related to this, what is the trends of receipt of all of six preventive services in your study?   
We added a few sentences to the results to describe the trend and proportion of adults receiving all six services; the trend was flat over 2008 to 2019:  
“The percentage of adults that reported receiving all six preventive services in 2008 was 7.1% (4.5%, 9.6%). This percentage increased to 10.8% (7.4%, 14.1%) in 2019, but was lower in 2020 (7.9% [5.3%, 10.5%]).”

8. “Another study that reported on data from NHANES, NHIS, and BRFSS found that foot exams, influenza vaccinations, and A1C testing increased from 1999 to 2016, although dilated eye exams stayed roughly constant (10).” In this study, what is the frequency of A1C testing? >=1 per year or >=2 per year like your study? I think this distinction is important and may contribute to the discrepancies between the studies in A1C testing trends.   
In this study they used “biannual A1C” testing, or >= 2 tests a year, similar to ours. This has been clarified in the discussion.  
“Another study that reported on data from NHANES, NHIS, and BRFSS found that foot exams, influenza vaccinations, and 2 or more A1C tests in a year increased…”

9. If sample size allows, characterize people who did not receive any preventive services.   
Due to the unreliability of estimates in some sub-populations in some years, we do not characterize this any further. A sentence has been changed in the methods to clarify this.  
“We also created binary variables classifying adults with diabetes who received none of the recommended preventive care services or all of the recommended services, although these results are presented only for the overall population due the unreliability of estimates of some sub-populations in some years (17)”

Minor

1. page 4 article highlights: Last bullet point is not supported by the data.   
We respectfully disagree; the data provided highlight subgroups that report receiving less preventive services and could therefore be targeted to improve preventive care. Adults in the youngest age group reported lower rates of receipt of eye exams, foot exams, cholesterol testing, and A1C testing. Adults with less than a high school education were less likely to visit the dentist. Reported foot examination rates have been decreasing since 2011. Adults age 45-64 years had a decreasing trend in receipt of cholesterol testing since 2016, as did males and adults with less than a high school education.

2. Page 7. First sentence: provide an appropriate reference.   
Unclear which sentence needs a reference. The first sentence of page 7 on our manuscript is for the results: “All values pertaining to individual preventive practices presented here, as well as those that are not described, can be found in Supplemental Table 1.”

3. Page 7: “We reported the estimated proportions for 2020 in Table 1 and as points in Figure 1 and Figure 2, but 2020 was excluded from trend analysis because of the decreased medical care utilization associated with the COVID-19 pandemic.”. I think it would be better to describe the analytic methods without mentioning the result figures.

Changed as suggested

4. Page 8: Adults with Medicaid had an AAPC of -2.3% (-3.6%, (-1.0%). Remove “(“ before -1.0%.

Changed as suggested

5. In figure 1, change from percentage to % in Y axis. It is too crowded. Also, I would remove circle marker in the figure legend. Line seems better.

Changed the Y axis label, but we feel the circle in the legend marker is important and does not unduly clutter the legend.

6. Figure 1 and 2 should be mentioned in the results text.

Added

“We reported the estimated proportions for 2020 in Table 1 and as points in [Figure 1](#fig-exams) and [Figure 2](#fig-tests).”

Reviewer: 2

Comments to the Author

This study reported trends in receipt of six American Diabetes Association recommended preventive care services during 2008 – 2020 using MEPS data and joinpoint analysis. The analysis is straightforward. Clarify of the manuscript could be improved, and some critical references are missing. Specific comments are provided below.

1. Under Abstract, under Results, line 4, “Trend analysis at the subgroup level was heterogeneous: influenza vaccination, A1C testing, and dental visits tended to improve while, among the uninsured, foot exams, cholesterol testing, and dental visits tended to decline.” – It seems contradicting here for dental care. Need to define the group in the first sentence: overall group?  
This section has been rewritten slightly to make this clearer:

“Trend analysis of subgroups was heterogeneous: influenza vaccination and A1C testing had improvements among several subgroups, while among the uninsured, foot exams, cholesterol testing, and dental visits tended to decline.”

2. On page 5, line 3, “Diabetes is also costly: total direct and indirect costs are estimated at $327 billion”, need to provide year for the cost estimation.   
This has been clarified.

“Diabetes is also costly: total direct and indirect costs in 2017 were estimated at $327 billion”

3. On page 5, second paragraph, line 1: “Access to preventive services is important to minimize diabetes-related complications and reduce rates of hospitalization.” Need references, and a short description of the association between receiving the preventive services and the reduction of diabetes-related complications and reduce rates of hospitalization will be informative.   
A citation has been added:

9. Gregg EW, Li Y, Wang J, Rios Burrows N, Ali MK, Rolka D, et al. Changes in Diabetes-Related Complications in the United States, 19902010. New England Journal of Medicine [Internet]. 2014 Apr 17;370(16):1514–23. Available from: <http://dx.doi.org/10.1056/NEJMoa1310799>

4. On page 5, second paragraph, line 5, “To our knowledge, the proportion and trend of receipt of preventive services addressed in the Medical Expenditure Panel Survey (MEPS) has not been reported”: Why was using MEPS data to measure the trend important? what are the advantages of MEPS over BRFSS and NHANES for this study?   
Text has been added in the introduction to address this:

" Analysis of MEPS data provides advantages, as MEPS is available yearly, unlike NHANES. BRFSS is administered at the state level and the diabetes module is not available in every state in every year.”

Next sentence, “We reported the proportion of and trends in the receipt of six preventive care services recommended by the American Diabetes Association (ADA)” needs reference.   
Added:  
15. American Diabetes Association. Standards of medical care in diabetes—2011. Diabetes Care. 2011;34(Supplement\_1):S11–61.

5. On page 5-6, under “Data source”, needs references describing MEPS data for the first a few sentences. In the same section, “We chose the years 2008 to 2020 due to method changes in MEPS starting in 2008, and the consistency of questions related to preventive care during that time period.”: What were the changes? need a reference here. Also need a reference for DCS.   
Clarified that the changes were the change in questions on the survey and that this period of time allowed us to evaluate response that were generated from the same question

“We chose the years 2008 to 2020 due to consistency of questions related to preventive care during that time period starting in 2008.”

Last sentence under “Data Source”: the response rate for 2020 was very low. The authors may want to exclude the data in 2020, since we know the health care access was interrupted by the pandemic.

We clarified that the inclusion of data from 2020 was to show how the onset of the pandemic impacted the reported receipt of preventive services, as opposed to impacts over the duration of the pandemic. We added the following text in the introduction:

“These data are valuable for identifying groups that may be under-utilizing health care services, examining any effects the start of the COVID-19 pandemic may have had on receipt of these services, and providing benchmarks for future studies.”  
And in the methods:  
“However, we presented the estimated proportions for 2020 in the results to show how the onset of the pandemic affected the reported receipt of preventive services.”  
  
6. Under “Outcome Measures”, the last sentence: “although these results are presented only for the overall population due to small sample sizes in many of the examined subgroups.” : not clear what the authors mean here. The sample size for this binary variable should be the same as the measurement for the 6 preventive services individually. Why there is small sample size issue only for this variable?

The number who report having none of these services is small (<0.5% in some cases), leading to unreliable estimates in some years for some sub-populations as laid out in the NCHS data presentation standards for proportions document. This has been clarified in the methods and we cite this document.

“We also created binary variables classifying adults with diabetes who received none of the recommended preventive care services or all of the recommended services, although these results are presented only for the overall population due the unreliability of estimates of some sub-populations in some years (17).”  
17. Parker J, Talih M, Malec DJ, Beresovsky V, Carroll MD, Gonzalez JF, et al. National center for health statistics data presentation standards for proportions. 2017;

7. Under “Analysis”, the authors said, “accounted for complex survey design”. Needs to specify whether the weights are for the DCS survey or the whole MEPS weights. They are different, and here, the DCS survey should be used. Please see <https://meps.ahrq.gov/survey_comp/standard_errors.jsp>

“These situations include analyses based solely on data from MEPS event files, which only contain sample persons that received a particular type of care, and analyses of data from MEPS supplements (e.g., the diabetes supplement data in PUF HC-070), which require the use of special analytic weights that exclude the sample persons who were not included in the supplement.”  
Clarified that we used DCS survey weights:  
“Our analysis accounts for the complex survey design used, including clustering and stratification, through use of the DCS survey weights (18).”

8. Under “Analysis”, second paragraph, “We reported the estimated proportions for 2020 in Table 1 and as points in Figure 1 and Figure 2”: 2020 data was not meaningful in this case, unless the authors want to show the impact of pandemic on receiving the diabetes preventive care services. If yes, the authors may want to add it as on objective.  
Data from 2020 was not included in trend analysis and is provided to show change in reported receipt of preventive services at the start of the pandemic. See previous text in response to item 5 that has been added to clarify this and note it as an objective.

9. On page 8, under “Results”: “All values pertaining to individual preventive practices presented here, as well as those that are not described, can be found in Supplemental Table 1”: No mentioning of the main tables and figures in the text. Are all the results in Supplemental Table 1? Did not find it in the PDF.

Mention of the main figures and table have been added. Supplemental Table 1 is included in a separate document

10. On page 10, Under “Absence of Preventive Care Services”, “In 2019, this estimate was 6.1% (3.7%, 8.5%) and in 2020 it was 8.2% (4.5%, 11.9%).”: Why did not report the results for the trend analysis here as for the other services?

Clarified that the trend was not statistically significant.

11. On page 11, under “Discussion”, the first sentence: since the authors mentioned this mechanism, did the authors consider doing specific trend comparisons before and after 2010? If not, the authors may want to put this in the later part as explanation or implications of the findings.

We did not specifically evaluate differences before/after 2010. This sentence was included to highlight that we expected to find increasing trends around this time period but mostly did not find that.

In the same page, line 5, “Among subgroups, influenza vaccine uptake, A1C testing, and dental visits tended to improve.”: adding a word "all" or "most" might be more accurate.

Changed as suggested

In the same paragraph, “While the passing of the ACA led to an increase in the number of adults with diagnosed and undiagnosed diabetes who have health insurance, and an increase in their use of health care services”: the six preventive health care services are also health care services. Suggest adding the types of health care services studies in the literature to be more specific.

Sentence was altered to better reflect meaning.

In the same paragraph, “This percentage grew to 8.2% in 2020 during the onset of the COVID-19 pandemic.”: 2020 data is an outlier. Unless the authors want to show how pandemic interrupted receiving the preventive care services, the authors may not want to use this data point to show the trend.   
Clarified that this was part of the purpose for leaving this point in.

12. Second paragraph under “Discussion”: the authors cited findings from NHANES data for 2005–2018 as well as BRFSS for 2004–2014. It seems contradicting with the description in the “background”, “Other studies have reported on trends in receipt of some preventive services in the 2000s using data from various surveys, such as the Behavioral Risk Factor Surveillance System (BRFSS) and the National Health and Nutrition Examination Survey (NHANES).”

In the introduction we highlight that other studies have reported on trends over similar time periods for some practices, but our study looks at certain preventive services that are not covered in each case or in certain time periods. In the discussion we then compare our results to the results that are available from other studies.

In the same paragraph, “Future research may wish to examine those adults with diabetes who reported receiving none of the six preventive care services, and factors contributing to this lack of care.”: suggest adding literature on the risk of not receiving the six preventive care services at all: worse diabetes control, more complications? Both in the introduction and/or the discussion parts.  
We added text in the introduction briefly addressing the role of preventive services in reducing complications and identifying what some of those complications are.  
“Complications of diabetes include both microvascular complications (retinopathy, neuropathy, and diabetic nephropathy) and macrovascular complications (coronary artery disease, peripheral arterial disease, stroke) (7). Access to preventive services is important to minimize diabetes-related complications and reduce rates of hospitalization (8,9).”

13. On page 12, second paragraph, first sentence, “A1C testing and influenza vaccinations were the only two preventive services that showed increases either among the overall population or various subgroups”: seems inconsistent with the abstract. In the abstract, the authors also mentioned dental care was increasing. In the same paragraph, “These services can be administered at the point-of-care during regular physician visits, whereas a dilated eye exam or dental visit require separate appointments.”: seem contradicting with the abstract, where it said dental care increased overall and only decline in unsured.   
Dental care did not increase overall, but it did increase in some subgroups. The abstract has been changed to make this clearer.

“Trend analysis of subgroups was heterogeneous: influenza vaccination, A1C testing, and dental visits saw some improvement while, among the uninsured, foot exams, cholesterol testing, and dental visits tended to decline.”

14. On page 13, first paragraph, the second sentence to the last: despite the differences, what were the overarching/consistent conclusions from the studies?  
Text was added to highlight consistencies between the cited studies and our own.

“Although, when evaluated individually, only A1C testing increased, which is similar to our findings.”  
“Our finding that A1C testing tended to increase is consistent with what has been reported in other studies.”

15. On page 13, under “Limitation”, the last two sentence in the first paragraph, “in 2013, MEPS implemented efforts to improve collection of complete information by using field interviewers, with the goal of improving under reporting. This effort may have improved data quality after 2014 and could have impacted our trend analyses”: the authors mentioned a method change in 2008 thus they choose the study period starting in 2008. Was this 2013 change another method change? If yes, why not limiting the study period to start in 2014?   
We clarified that the changes in 2008 were related to the questions on the survey and consistency of those questions, while the changes in 2013 were methods based to improve under-reporting, while the questions remained largely the same.

The next paragraph, “There has been a steadily declining response rate for both MEPS and DCS from a peak during the studied time period from 59.3% and 92.4%, respectively in 2008 to 39.5% and 65.8%, respectively, in 2019 and 27.6% and 59.3%, respectively in 2020.”: don't understand what the authors mean here, and what the numbers represents.   
This sentence has been rewritten for clarity.

“Additionally, there has been a steadily declining response rate for both MEPS and DCS. During the studied time period both MEPS and DCS response rates peaked in 2008at 59.3% and 92.4%, respectively, fell to 39.5% and 65.8%, respectively, in 2019, and fell further to 27.6% and 57.1%, respectively, in 2020.”  
  
16. On page 14, the last sentence under “Discussion”: if jointpoint regression is not suited for survey analysis, why not use other methods? or at least test whether the results from other methods were consistent with the joinpoint regression, e.g., simple trend analysis comparing the overall trend from 2008 to 2019, or at several data points in the years which receiving services might be affected, e.g., 2010, when ACA was enacted.   
Joinpoint regression is suitable for the analysis of survey data, but it does come with trade-offs which may produce slight bias in the results. However, the results are generally reliable (see reference 33 below, which has been added to the Limitations section) and we do not feel additional analysis is warranted.   
33. Ingram DD, Malec DJ, Makuc DM, Kruszon-Moran D, Gindi RM, Albert M, et al.  
National Center for Health Statistics Guidelines for Analysis of Trends. National Center for  
Health Statistics. Vital Health Stat 2(179). 2018.

17. On page 18, under “Table 1”, under the column “APC (95% CI)”: please explain what the numbers mean in the footnote. What were the numbers in the rows when there were joinpoint detected? Did the APC compare one time period to another time period? If a joinpoint detected, why some of the 95% confidence intervals were covering zero? What are the differences of the APC and AAPC? Please explain how the APC and AAPCs were calculated in the footnote and in the methodology section.

Text has been added to the table and the methods to better explain the values and the discrepancy between Joinpoint years and APC intervals:   
“The Joinpoint software also provided estimates of the annual percent change (APC), or slope, for each trend segment and the average annual percent change (AAPC), or overall slope, for the entire trend. The test of significance for APC is an asymptotic t-test. Due to the omnibus nature of the permutation test used to identify Joinpoint years and the use of all the data in identifying those years, the permutation tests are more powerful. In some cases, Joinpoint years are identified but the corresponding intervals for the APC will overlap zero due to this power difference.”

18. On page 19, figure 1, title: did not mention the subgroups at all.

Changed as suggested: “Figure 1—Age-adjusted trends in proportions of U.S. adults with diabetes overall and by sub-group who reported receiving recommended medical examinations from 2008 to 2019. The dashed black line is the overall trend, while dots represent percentages for 2020. Data from 2020 were not included in the trend analysis.”

19. On page 21, figure 2, title: did not mention the subgroups at all.

Changed as suggested, as above.

20. On page 25: should it be Appendix Table 1? Same comment for this table as for Table 1 above.

The table on page 25 is Table 1.