Consequences of a match made in hell: the harm caused by menthol smoking to the African American population over 1980–2018

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ABSTRACT

Background  For many years, national surveys have shown a consistently disproportionately high prevalence of menthol smokers among African Americans compared with the general population. However, to our knowledge, no prior study has quantified the harm that menthol smoking has caused on that population. In this work, we estimate the public health harm that menthol cigarettes have caused to the African American community over the last four decades.

Methods  Using National Health Interview Survey data, we employed a well-established simulation model to reproduce the observed smoking trajectory over 1980–2018 in the African American population. Then, we repeat the experiment, removing the effects of menthol on the smoking initiation and cessation rates over that period, obtaining a new hypothetical smoking trajectory. Finally, we compared both scenarios to calculate the public health harm attributable to menthol cigarettes over 1980–2018.

Results  Our results show that menthol cigarettes were responsible for 1.5 million new smokers, 157,000 smoking-related premature deaths and 1.5 million life-years lost among African Americans over 1980–2018. While African Americans constitute 12% of the total US population, these figures represent, respectively, a staggering 15%, 41% and 50% of the total menthol-related harm.

Discussion  Our results show that menthol cigarettes disproportionally harmed African Americans significantly over the last 38 years and are responsible for exacerbating health disparities among that population. Removing menthol cigarettes from the market would benefit the overall US population but, particularly, the African American community.

BACKGROUND

For over 60 years, tobacco companies have targeted menthol cigarettes to the African American community through aggressive marketing and promotion. It is well known that a disproportionately high number of African Americans smoke menthol cigarettes. According to the 2018 National Survey on Drug Use and Health, 83% of African American smokers used menthol versus 39% of those in the general population. This is not a recent phenomenon. In 1980, for example, menthol prevalence among African American smokers was 66% vs 33% among the general population, according to the National Health Interview Survey (NHIS).

Several articles have addressed the prospective harm to the black community that could be avoided if menthol cigarettes were banned from the market; and while other studies have addressed the historical causes that have made menthol the preferred choice of cigarette products among African Americans, to our knowledge, no prior study has quantified the health harm that menthol smoking has already inflicted on that population.

Following a recent study that calculated the health damage caused by menthol smoking on the entire US population over 1980–2018, the current work estimates the share of such harm borne by the African American community, and its disproportion compared with the total menthol toll in the USA. Our results may be helpful to the Food and Drug Administration as they continue evaluating the benefit of a menthol ban.
The simulated smoking prevalence for African Americans closely captures the NHIS reported smoking prevalence over 1980–2018 with $\text{pseudo-R}^2=0.95$ ($\text{pseudo-R}^2=1-\frac{|\text{Errors Sum of Squares}|}{\text{Total Sum of Squares}}$) (see online supplemental figure A1 and A2). Table 1 shows the harm attributable to menthol cigarettes for the general population (from Le-Mendez’s work), the African American population and the hypothetical low-menthol African American population. A complete sensitivity analysis on the values in Table 1 is presented in online supplemental table A4.

The values in the first three columns of the table are self-explanatory; the numbers within parentheses show the percentages that those values represent, relative to those for the general population. The last column shows the average proportion (over 1980–2018) of the corresponding population referred to on each row, relative to the entire US population. For example, the table shows that, among African Americans, menthol was responsible for 1.5 million extra smokers, 157 000 smoking-related premature deaths and 1.5 million excess life-years lost during 1980–2018, representing 15%, 41% and 50% of the total menthol toll, respectively. However, during the same period, African Americans constituted only around 12% of the overall US population.

The last row of the table shows a hypothetical African American population that exhibits the same menthol smoking-related parameters as the general population. We simulated this scenario by setting the values of menthol-affected parameters for the African American population to those of the general population. In this hypothetical group, the estimated menthol smoking excess initiation, premature deaths and life-years lost would have represented 13%, 16% and 21% of the overall menthol harm, respectively; much more in agreement with the proportional (relative to the entire US) size of this population (12%). It is worth noting, though, that the menthol death toll in the low-menthol population is still above its proportional share. This is due to the mortality rates among African American smokers, which are higher than in the general population.

### RESULTS

The switching rates between menthol and non-menthol smokers were calculated as in the 2011 menthol report (2.29% switching to menthol and 1.08% to non-menthol cigarettes). An extensive sensitivity analysis (see online supplemental table A4) showed that these parameters exert little influence on the results. The ratio of yields from experimenter to smoker and menthol mortality multiplier for the African American population remains as in the Le-Mendez work, following their same arguments.

As in ref 10, we first used NHIS smoking prevalence data over 1980–2018 (when the NHIS survey was conducted) to calibrate the model. Then, we used the calibrated model to replicate African Americans’ smoking prevalence trajectory during 1980–2018. Finally, to quantify the harmful effect of menthol use on the African American population, we repeated the previous step to generate an alternative smoking trajectory for African Americans during the same period, eliminating the effect of menthol since 1980. We achieved this by adjusting the smoking initiation and cessation rates to eliminate the effect of menthol on those parameters (see the Appendices to the 2011 TPSAC Menthol Report and the Le-Mendez paper). Finally, we compared our results from both scenarios (with and without menthol cigarettes) to calculate the impact of menthol on smoking prevalence, life-years lost and smoking-related premature deaths. Additionally, we compared our results with those for the general population reported in Le-Mendez’s work and calculated the disproportionate harm inflicted on the African American population due to menthol.

### DISCUSSION

Since the 1960s, the tobacco industry has targeted the African American community for the consumption of menthol cigarettes through aggressive marketing, including intense advertising and price discounts. Simultaneously, the industry supported numerous African American organisations to gain the trust of the African American community. Seven publications describe the marketing efforts by the tobacco industry to establish a special connection between menthol cigarettes and the African American community. In a fascinating article entitled ‘The African Americanization of menthol cigarette use in the United States’, Gardner recounts the long history of, and explains the facts behind, the relationship between African Americans and menthol cigarettes, and how those products became an integral part of the African American culture. In essence, the identification of African American smokers with menthol has been purposely orchestrated by the tobacco industry following their goal of maximising their profits.

Unfortunately, this marketing strategy turned out to be a huge success for the tobacco industry, but deadly for the black community. Besides creating a brand with which African Americans could identify and call their own, the industry exposed this population to a substance that amplifies the damaging effects of cigarette smoking. Menthol intensifies this harm by increasing the chances that individuals transition from experimentation to regular smoking, and by increasing dependency, which leads to delayed cessation. These effects increase the number of smokers and the amount of time they remain smoking.

### Table 1 Excess smoking initiation, smoking-related deaths and life-years lost due to menthol cigarettes over 1980–2018 for the adult general, African American and hypothetical low-menthol African American population

<table>
<thead>
<tr>
<th></th>
<th>Cumulative excess smoking initiators (%)</th>
<th>Cumulative excess deaths (%)</th>
<th>Cumulative excess life-years lost (%)</th>
<th>Average percentage of population (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General population</td>
<td>10 137 808 (100)</td>
<td>377 528 (100)</td>
<td>2 951 533 (100)</td>
<td>100</td>
</tr>
<tr>
<td>African American population</td>
<td>1 508 913 (15)</td>
<td>156 471 (41)</td>
<td>1 476 198 (50)</td>
<td>12</td>
</tr>
<tr>
<td>Hypothetical low-menthol</td>
<td>1 286 848 (13)</td>
<td>61 132 (16)</td>
<td>606 840 (21)</td>
<td>12</td>
</tr>
<tr>
<td>African American population</td>
<td></td>
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The negative impact of menthol cigarettes on the public’s health is significant, as Le and Mendez described in ref 10. For African American smokers, though, the harm wrought by menthol smoking is much higher than that for the rest of the population. Despite having a similar overall smoking prevalence as the general population, it is well known that African Americans suffer, proportionally or disproportionately, more serious smoking-attributable health consequences. Main probable causes for this phenomenon are the high overall mortality rates due to economic and social conditions and the high prevalence of menthol among African American smokers, which causes them to be more addicted and quit less. In fact, our results show that menthol was responsible for 157 000 smoking-related deaths among African Americans during 1980–2018, over two and a half times their proportional share of menthol deaths compared with the general population. And, what is even more depressing, 30% of all the life-years lost to menthol smoking deaths from 1980–2018 occurred among African Americans. Additionally, our results (shown in online supplemental figure A1) also indicate that, without menthol, smoking prevalence among African Americans in 2018 would have been 8.3%, instead of the NHS reported 14.9% (a 44% reduction). We note that our results may be considered conservative, since we do not take into account the future harm that menthol smoking over 1980–2018 will cause to the African American population.

Considering that cigarette smoking is the number one cause of preventable deaths in the USA, menthol in cigarettes is an important factor in creating and exacerbating health disparities in this country. Removing menthol cigarettes from the market will save thousands of African American lives per year and help reduce health disparities at a time when inequalities among minority and socioeconomically disadvantaged groups are increasingly salient.

What this paper adds

- Menthol cigarettes have been disproportionately used among African Americans.
- Menthol cigarettes exacerbate health inequalities for the African American community.
- Removing menthol can have the double effects of saving lives and reducing inequalities.

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Contributors DM and TTTL conceptualised the project. TTTL calibrated the model and conducted all the analysis. DM supervised the work. Both authors contributed to the writing of the manuscript.

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