Received: 25 August 2023 | Revised: 5 February 2024 | Accepted: 28 February 2024

DOI: 10.1111/obr.13741

REVIEW

OBESITY Reviews WILEY

Prevalence of obesity in religious clergy in the United States: A systematic review and meta-analysis

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Funding information
This research was funded by a grant from the Rural Church Area of The Duke Endowment (ORC-2241-SP).

Summary

Objective: This systematic review aims to summarize the current body of evidence concerning the prevalence of obesity among clergy (i.e., the officially designated leaders of a religious group) in the United States.

Method: From November 2022 to February 2023, five databases, one data repository, and gray matter were searched for articles and data sources. The search was restricted to articles published or raw data collected from 2001 to 2021. Study quality was assessed with a template, and heterogeneity was assessed using the I^2 statistic. The protocol for this review was registered with PROSPERO (CRD42022376592).

Results: Forty-seven studies of clergy obesity involving 35,064 individuals were eligible. The pooled prevalence estimate of obesity across studies was 34.8% (95% confidence interval [CI]: 32.5–37.2). Obesity prevalence was found to be increasing over time and to vary considerably between clergy from different religious traditions. Compared to national estimates, from 2005 onwards, obesity prevalence was higher than in the US adult population.

KEYWORDS
clergy, obesity, occupations, prevalence, United States

1 | INTRODUCTION

The prevalence of obesity is known to vary between occupational and professional groups. Workers in certain professions are differentially exposed to chronic risk factors for obesity, including chronic workplace stress, sedentary working environments, and shift work.[1-3] It is commonplace for researchers to assert that, as an occupational group, clergy are disproportionately affected by obesity.[4-8] Following the generally accepted definition, we define clergy as the official leaders of a religious group, whether or not they are ordained. We use the term to describe leaders in Christian and other faith traditions.[9] Many studies reporting obesity prevalence in clergy populations are small, confined to a single religious group, and focused on a single geographic region. While a recent article has reported obesity rates in a representative sample of clergy across the United States,[10] to date, no studies have developed a pooled prevalence estimate to leverage all available data on clergy in the US. Developing pooled estimates for clergy could aid the planning of therapeutic and preventative measures and identify the particular groups of clergy who would benefit most from these measures.

In this study, we conducted a systematic review and meta-analysis to estimate a pooled prevalence estimate for obesity in clergy in the United States. Using meta-regression, we also sought to determine whether clergy obesity prevalence shows evidence of a

time trend and whether prevalence varies among different religious traditions. We also compared predicted clergy obesity prevalence to national estimates of obesity prevalence among US adults. We aimed to fill existing gaps in the literature by assessing the evidence that supports the frequent claim that clergy have elevated obesity prevalence.[4,6,11,12] To our knowledge, this is the first systematic review of obesity prevalence in clergy populations.

2 | METHODS

We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines for preparing this review.[13] The review protocol was registered with Prospero, CRD42022376592.[14]

2.1 | Search strategy

For selection, two authors (DE and AH) evaluated the suitability of each article, report, or dataset separately. Any discrepancy between the two authors was resolved by a third author (BO). Two authors extracted data from articles and reports (AH and BO). No discrepancies were reported. Gray literature search was conducted by one author (AH), who also determined the suitability of the studies. Data extraction was performed by two authors (DE and AH). No discrepancies emerged during extraction.

For all included articles and reports, two authors (AH and BO) identified the underlying data used to calculate obesity prevalence. When articles used the same underlying data, we excluded articles for which we had a copy of the underlying data (i.e., from the Association of Religion Data Archives [ARDA]) or, when data were not available, used the most recent article reporting obesity prevalence.

2.2 | Inclusion and exclusion criteria

To be included, the participants in the study had to be clergy. We used studies that included clergy serving religious congregations and clergy serving in other ministerial contexts, such as denominational leadership or chaplaincy. As this study was designed to assess obesity prevalence, not to consider the effectiveness of an intervention, we did not include experimental studies with a control group. Experimental studies of clergy may have specific health-related inclusion criteria, which could bias the reported prevalence of obesity. Our outcome of interest was obesity prevalence, and studies had to report the prevalence of obesity, or datasets needed to include variables for obesity status, body mass index (BMI), or height and weight. Obesity was defined as individuals with a BMI of 30 kg/m^2 or more.[15] Because factors influencing obesity vary considerably across countries, we restricted our analysis to studies conducted in the United States. Finally, we included studies employing both cross-sectional and longitudinal designs.

2.3 | Assessment of study quality

We assessed study quality with a modified AXIS tool for cross-sectional studies.[16] We included eight questions to assess the quality of the studies. Two authors (AH and BO) independently evaluated each study and rated them based on the modified AXIS tool. High-quality studies had to satisfy all eight criteria. Studies were categorized as low quality if they failed to meet criterion three: *Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?* All other studies were placed in the medium category. In the protocol, we specified that discrepancies were to be resolved through a discussion among all co-authors, during which we should reach a consensus on whether the study was of high, medium, or low quality. However, the authors did not disagree with their qualitative assessments of the identified studies. The assessments are included in the supplemental materials.

2.4 | Meta-analysis

We used a χ^2 test to assess whether observed differences between studies were compatible with sampling error alone. A p-value less than 0.05 indicated a high likelihood of heterogeneity between estimates. The relative degree of inconsistency between the studies was evaluated using the I^2 statistic and defined according to Higgins and Chandler.[17] We used a binomial-normal (or exact likelihood) specification of a random-effects model to estimate the pooled prevalence and 95% confidence intervals (CI) for obesity prevalence. Models were estimated with a generalized linear mixed model using a maximum likelihood estimator.[18] All analyses were conducted using the *metafor*[19] package in R.[20]

We conducted a meta-regression analysis to examine the possible effects of year and religious tradition on obesity prevalence. Religious tradition was coded using the popular *reltrad* taxonomy, with two modifications.[21] One challenge with US data on clergy is that many studies are conducted using samples of United Methodist Church clergy – 16 studies marked for inclusion were restricted to this denomination. While generally classified as Mainline Protestants, we created a separate category for this group to see if they were masking trends present among other Mainline Protestant traditions. Another challenge came from the fact that there were two studies of Seventh-Day Adventist clergy. As a group, Adventists are an outlier in their favorable health profiles; Adventism encourages members to care for their physical bodies and promotes vegetarianism.[22] While generally classified as Conservative Protestants, we added a separate indicator for this group. Due to the small numbers of non-Christian religious groups represented in the United States, they were collapsed into a single *other religion* category. This process is also followed by the *reltrad* taxonomy (this includes Jewish rabbis, Muslim imams, Buddhist monks, Hindu priests, etc.).

To test for time trends in obesity prevalence, we estimated a meta-regression model with the logit-transformed prevalence

estimate as the outcome variable and year as a predictor. Year was a continuous variable, with zero assigned to 2001, the year of the first study in our analysis. We then estimated predicted obesity prevalence rates for each year represented in our data (2001–2021).

We added indicators for religious tradition and study quality to test for differences between the religious traditions. Conservative Protestants were the reference category for religious tradition, and "medium" was the reference category for quality. Each denominational group was extracted from the larger dataset using available indicators and entered into the meta-analysis as a unique entry. National studies where the underlying data were unavailable to calculate obesity rates by religious tradition were excluded from this analysis.[6,23,24]

2.5 | Comparison with National Estimates

To compare clergy obesity prevalence to national prevalence rates, we used data from the Centers for Disease Control National Health and Nutrition Examination Survey (NHANES) from 1999 to 2020 (pre-pandemic). Data from NHANES is collected every two years. However, because the pandemic interrupted data collection, the last wave of representative data covers the period from 2017 to 2020 (pre-pandemic). Because most clergy surveys rely on self-reports of height and weight to derive obesity prevalence and BMI is systematically lower in samples using self-reported height and weight (NHANES also includes measured height and weight),[25] we used the self-reported data from NHANES for comparative purposes. We dropped all participants under 20, over 80, and people not in the labor force in the past week. While clergy differ from the United States population on key characteristics – clergy are older and more likely to identify as men[9] – we lacked sufficient nationally representative data over time from all clergy to establish benchmarks to adjust the national sample. In our analyses, because our clergy obesity prevalence estimates are derived from linear regression models, we also applied a regression model to the NHANES data. We did this using a logistic regression model with an indicator for whether a respondent was classified with obesity as the outcome and the continuous value of the year of the NHANES survey as the key predictor. The regression was run with the survey weights included in the model. The estimated coefficients from the model were used to plot a smoothed estimate of obesity prevalence nationally to compare against the estimates from the meta-regression model.

3 | RESULTS

3.1 | Search results

The search of electronic databases was conducted on November 30th, 2022, and found 1,868 unique citations. Of these studies, 24 were flagged for further screening. Of these, 12 were excluded (four because obesity was not reported, four because they were from

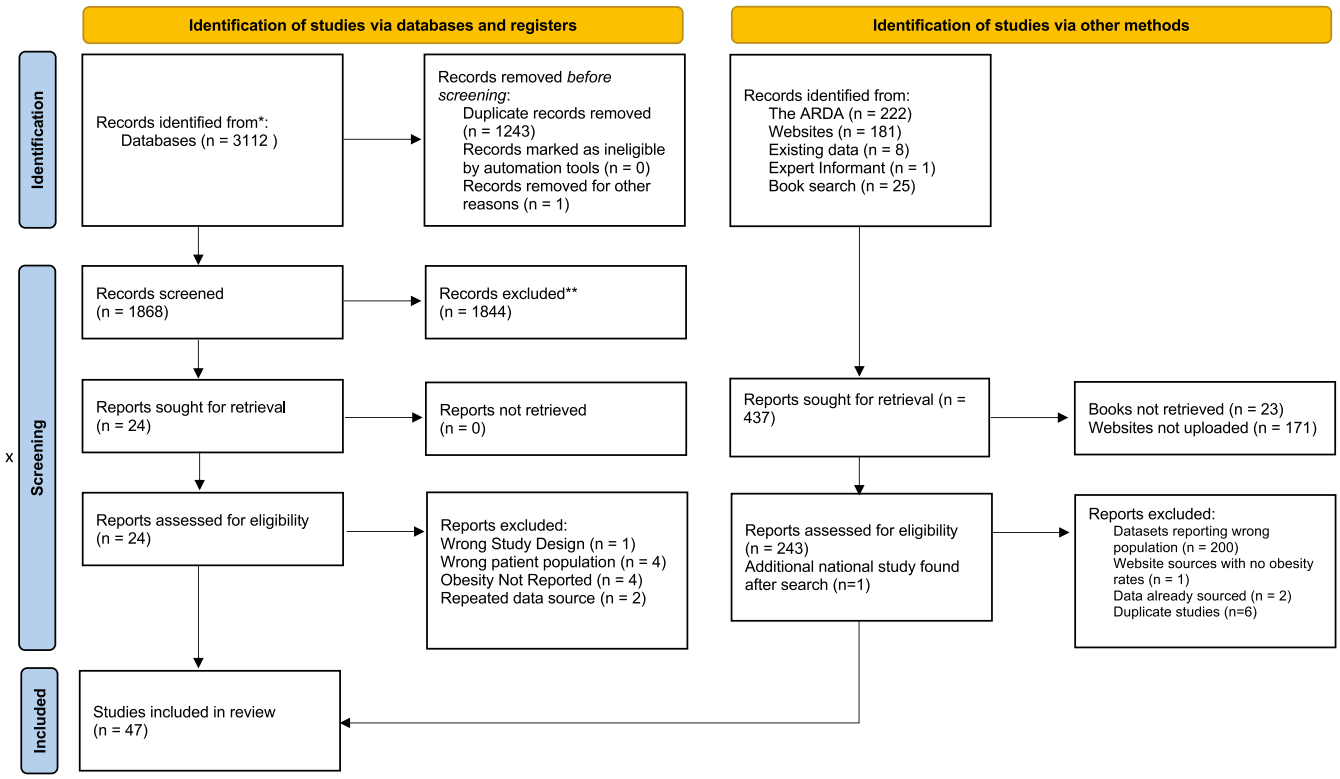

FIGURE 1 PRIMSA flow diagram for study selection.

TABLE 1 Characteristics of studies of obesity prevalence in clergy in the United States included in the meta-analysis (n = 47).

Study ID	N	Region	Year	Denom.	Relig. Trad.	Obesity (%)	Quality
Halaas[62]	1,460	Natl.	2001	ELCA	MP	34.0	Medium
Price[59]	687	Natl.	2001	Episcopal	MP	23.3	Medium
Carroll[31]	883	Natl.	2001	Multi	Multi	28.9	High
USCLS 1a[49]	89	Natl.	2001	Adventist	CP	14.6	Medium
USCLS 1b[41]	410	Natl.	2001	Lutheran	MP	30.1	Medium
USCLS 1c[48]	168	Natl.	2001	PC (U.S.A.)	MP	24.8	Medium
USCLS 1d[45]	107	Natl.	2001	Nazarene	CP	35.8	Medium
USCLS 1e[47]	530	Natl.	2001	PC (U.S.A.)	MP	27.2	Medium
USCLS 1f[42]	124	Natl.	2001	SBC	CP	27.7	Medium
USCLS 1g[50]	224	Natl.	2001	UCC	MP	28.9	Medium
USCLS 1h[51]	175	Natl.	2001	UMC	MP	40.8	Medium
Baruth[26]	40	SC	2007	AME	BP	60.0	Low
CHI a[4]	1726	NC	2008	UMC	MP	39.7	Medium
Marcum[52]	725	Natl.	2008	PC (U.S.A.)	MP	26.3	Medium
USCLS 2a[36]	22	Natl.	2008	Adventist	CP	21.1	Medium
USCLS 2b[32]	84	Natl.	2008	Ch. of God (TN)	CP	47.1	Medium
USCLS 2c[34]	361	Natl.	2008	ELCA	MP	28.8	Medium
USCLS 2d[33]	34	Natl.	2008	Nazarene	CP	53.1	Medium
USCLS 2e[43]	490	Natl.	2008	PC (U.S.A.)	MP	31.1	Medium
USCLS 2f[35]	692	Natl.	2008	Multi	Multi	33.1	Medium
USCLS 2g[69]	321	Natl.	2008	Multi	Multi	35.4	Medium
USCL 2h[37]	138	Natl.	2008	UCC	MP	37.5	Medium
USCLS 2i[38]	134	Natl.	2008	UMC	MP	44.9	Medium
Rossetti[54]	2,482	Natl.	2009	Catholic	RC	29.7	Medium
CHI b[63]	1749	NC	2010	UMC	MP	40.3	Medium
Manister[5]	430	Natl.	2011	LCMS	CP	36.7	Medium
USCLS 2j[44]	752	Natl.	2011	PC (U.S.A.)	MP	20.4	Medium
USCLS 2k[40]	201	Natl.	2011	PC (U.S.A.)	MP	21.1	Medium
USCLS 2l[39]	110	Natl.	2011	SBC	CP	39.6	Medium
CHIc[64]	1777	NC	2012	UMC	MP	38.1	Medium
Gwin[23]	141	OK	2012	Multi	Multi	34.3	Low
Wespath a[56]	1,480	Natl.	2012	UMC	MP	41.0	Medium
Lindholm[7]	150	KS	2013	UMC	MP	40.4	Medium
Webb a[6]	844	Natl.	2013	Multi	Multi	40.7	Low
Wespath b[61]	1,602	Natl.	2013	UMC	MP	40.0	Medium
CHI d[65]	1723	NC	2014	UMC	MP	40.0	Medium
Wespath c[57]	1,501	Natl.	2015	UMC	MP	42.0	Medium
CHI e[66]	1746	NC	2016	UMC	MP	41.1	Medium
Wespath d[58]	1,360	Natl.	2017	UMC	MP	43.1	Medium
Webb b[24]	221	Natl.	2018	Multi	Multi	52.0	Low
CHI f[67]	1,454	NC	2019	UMC	MP	40.7	Medium
NSRL[9]	1,600	Natl.	2019	Multi	Multi	37.6	High
Wespath e[55]	1,240	Natl.	2019	UMC	MP	44.0	Medium
Gray Matter[70]	560	TX	2020	Baptist GC	CP	46.0	Low
Mook[27]	301	Natl.	2020	Wesleyan	CP	43.3	Low

TABLE 1 (Continued)

Study ID	N	Region	Year	Denom.	Relig. Trad.	Obesity (%)	Quality
CHI g[68]	1,469	NC	2021	UMC	MP	43.7	Medium
Wespath f[56]	1,107	Natl.	2021	UMC	MP	47.0	Medium

Acronyms and abbreviations used: Natl. = National, SC=South Carolina, NC=North Carolina, KS=Kansas, OK=Oklahoma, TX = Texas, ELCA = Evangelical Lutheran Church in America, Multi = Multidenominational, Ch. of God (TN) = Church of God, Tennessee, PC (U.S.A.) = Presbyterian Church in the USA, UCC=United Church of Christ, UMC=United Methodist Church, SBC=Southern Baptist Church, Baptist GC=Baptist General Conference, MP = Mainline Protestant, CP=Conservative Protestant, BP=Black Protestant, RC = Roman Catholic.

the wrong population, two because they used data from another study where obesity was already included in the analysis, and one because it did not report an obesity prevalence, and one duplicate record). We extracted data from 12 articles.[4,5,7,11,12,23,24,26–30] In Figure 1, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart is shown.

3.2 | The Association of Religion Data Archive Search (ARDA)

The search was conducted on December 2nd, 2022, and found 222 unique datasets for further screening. Of these, 22 were of clergy populations with sufficient data to calculate BMI.[31-52] We calculated the obesity rates among the respondents included in each dataset identified, using survey weights where indicated.

3.3 | Gray matter search

A search of Amazon.com books was conducted on February 10th, 2023, and the first 25 titles were examined. Of these, two were identified for further screening. One was excluded because it reported data from the Duke Clergy Health Initiative Longitudinal Study, which was already captured in the meta-analysis;[53] the other was retained.[54] Had more than one title been eligible for inclusion, we would have reviewed more than the first 25 books. A search of major denominational websites was conducted on February 10th, 2023, and 181 websites were identified. Of these, eight were uploaded for further screening, all of which were deemed eligible for data extraction.[55–62] Because of the small number of studies from the Roman Catholic Church, we contacted a key informant to inquire about additional datasets, who recommended one study, which was excluded because it was already found by our search. The Duke Clergy Health Initiative also provided data from their seven-wave panel survey of United Methodist clergy conducted from 2008 to 2021. The 2008 Duke Clergy Health study had already been separately captured in the database search, but data from the six subsequent waves were retained for analysis.[63–68] Finally, we added a recent dataset from a large national study of clergy, which at the time of the search was not publicly available but to which we were granted access by the principal investigator.[9] From underlying data, obesity prevalence was calculated.

After screening and removal, a total of 53 records were included in this analysis. Of these 53 records, we identified six that were reporting data from the same underlying dataset already captured by our review.[11,12,28–30,47] Obesity prevalence from 47 sources were used for the meta-analyses.[4–7,9,23,24,26,27,31–45,47–52,54–59,61–70]

3.4 | Studies included

Table 1 shows the characteristics of the 47 studies included in this review, which represented a total of 35,624 individual clergy members. Only two studies were designated as high quality: these were the only nationally representative probabilistic samples of U.S. clergy.[9,31] Six were deemed low quality: these were small studies using convenience samples.[6,23,24,26,27,70] Most studies were national in scope.[5,6,9,24,27,31–45,47–52,54–59,61,62,69] As this table demonstrates, the majority of studies only included Mainline Protestants (n = 27),[4,7,34,37,38,40,41,43,44,47,48,50–52,55–59,61–63,65–68] 10 were studies of Conservative Protestants,[5,27,32,33,36,39,42,45,49,70] and only one study focused solely on Black Protestants[26] and one on Roman Catholics,[54] although these groups were also captured in the seven multidenominational studies.[6,9,23,24,31,35,69] In Figure 2, we present the results of the pooled meta-analysis. The estimated prevalence of clergy obesity was 34.8% (95% CI: 32.5–37.2). There was a high level of heterogeneity, with an I^2 of 91.5% (95% CI: 89.8–92.9). In terms of the individual studies, a study of Seventh-Day Adventist clergy reported the lowest obesity prevalence (14.6%, 95% CI: 8.0–23.7, n = 89)[36] and a study of African Methodist Episcopal clergy, the highest (60.0%, 95% CI: 43.3–75.1, n = 40).[26]

3.5 | Time trend

From Figure 2, which is ordered by year of data collection from oldest to most recent, there appears to be a positive relationship between obesity prevalence and time. These studies span a significant time period, during which US obesity rates were rising.[71] In Figure 3, we plot the predicted obesity prevalence estimated from the logistic meta-regression model with year added as an independent variable. From this model, obesity prevalence among clergy in 2001 was estimated at 28.9% (95% CI:26.1–31.9) and increased to 46.8% (95% CI:42.5–51.1) in 2021.

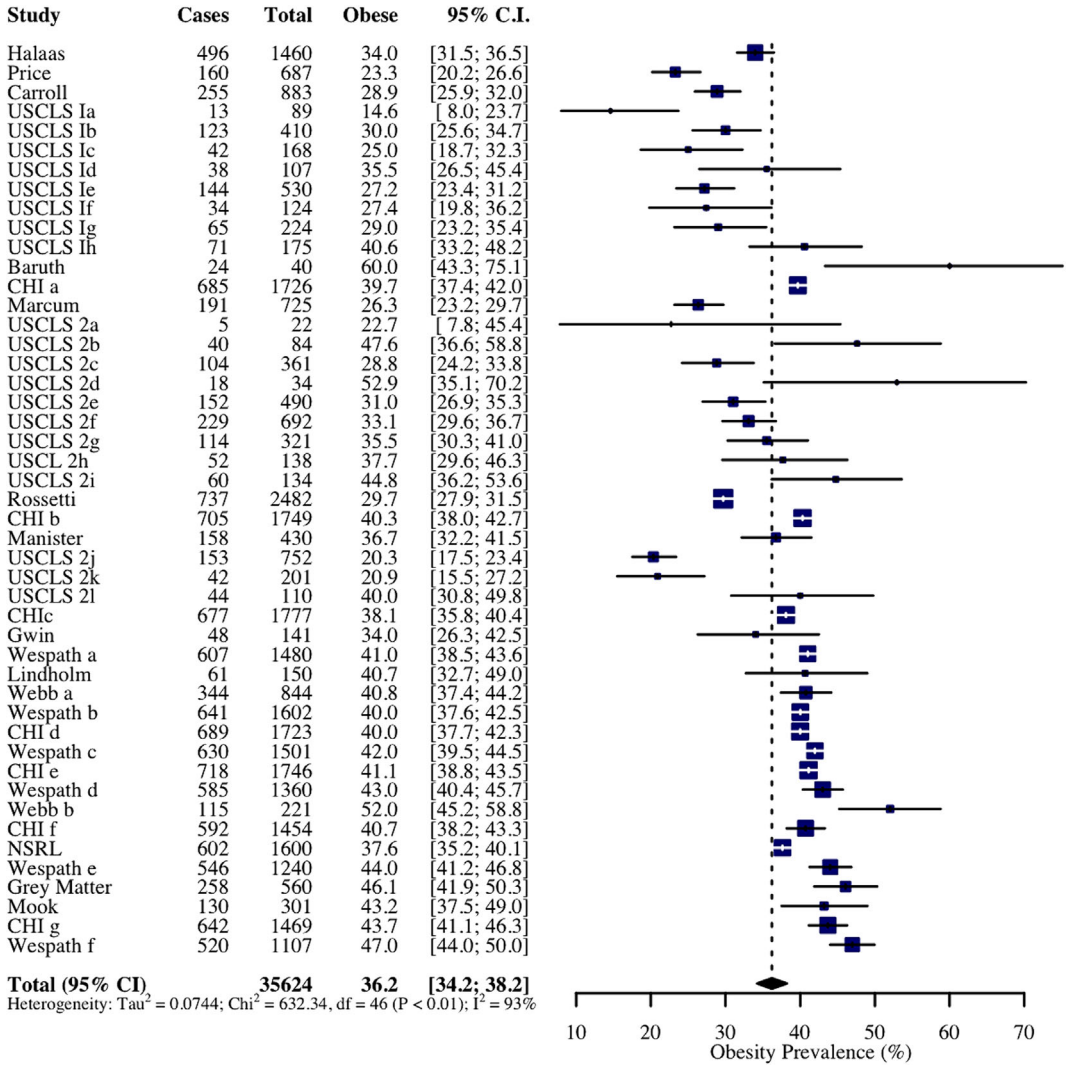

FIGURE 2 Meta-analysis of all studies (n = 47) of clergy obesity prevalence, ordered from oldest at the top to most recent at the bottom.

3.6 | Variation by religious tradition

In Figure 4, we plot the predicted obesity prevalence for each religious tradition with the 95% CIs for the adjusted model (the year was fixed at 2022 and the study quality at medium). As this figure shows, non-Christian groups had the lowest obesity prevalence (12.2%, 95% CI:6.2–22.7), followed by Seventh-Day Adventists (20.1%, 95% CI:12.3–30.9), Mainline Protestants (33.3%, 95% CI:29.2–37.6), Roman Catholics (34.2%, 95% CI:29.4–39.2), Conservative Protestants (41.2%, 95% CI:36.5–46.0), United Methodists (43.9%, 95% CI:41.2–46.5), and Black Protestants (55.3%, 95% CI:46.4–63.9). With Conservative Protestants as the reference category, their obesity rates were significantly different from all groups ($p \le 0.05$), except for United Methodist clergy ($p = 0.18$). When Mainline Protestants were set as the reference category in the regression model, they were significantly different from all groups ($p \le 0.05$), except for Roman Catholics ($p = 0.47$). Higher-quality studies tended to predict lower obesity prevalence, although the effect was small (logistic regression coefficient of $-0.054, p = 0.10$); low and medium-quality studies did not differ significantly ($p = 0.48$).

3.7 | Comparison to the US population

In Figure 5, we overlay the prevalence of obesity among the US working adult population aged 20–80 derived from NHANES (n = 32,043), with the predicted prevalence of obesity over time derived from this meta-analysis. NHANES data are presented as both point estimates from each wave of the survey and as regression-smoothed estimates of obesity prevalence. Comparing modeled estimates, in 2000, clergy obesity prevalence was similar to national prevalence (28.9% [95% CI: 26.1–31.9] in clergy vs. 26.9% [95% CI: 25.3–28.6] nationally). However, as of the 2005–2006 wave of NHANES, clergy obesity prevalence has been consistently higher than the US population. Comparing predicted estimates for the year 2021, the predicted

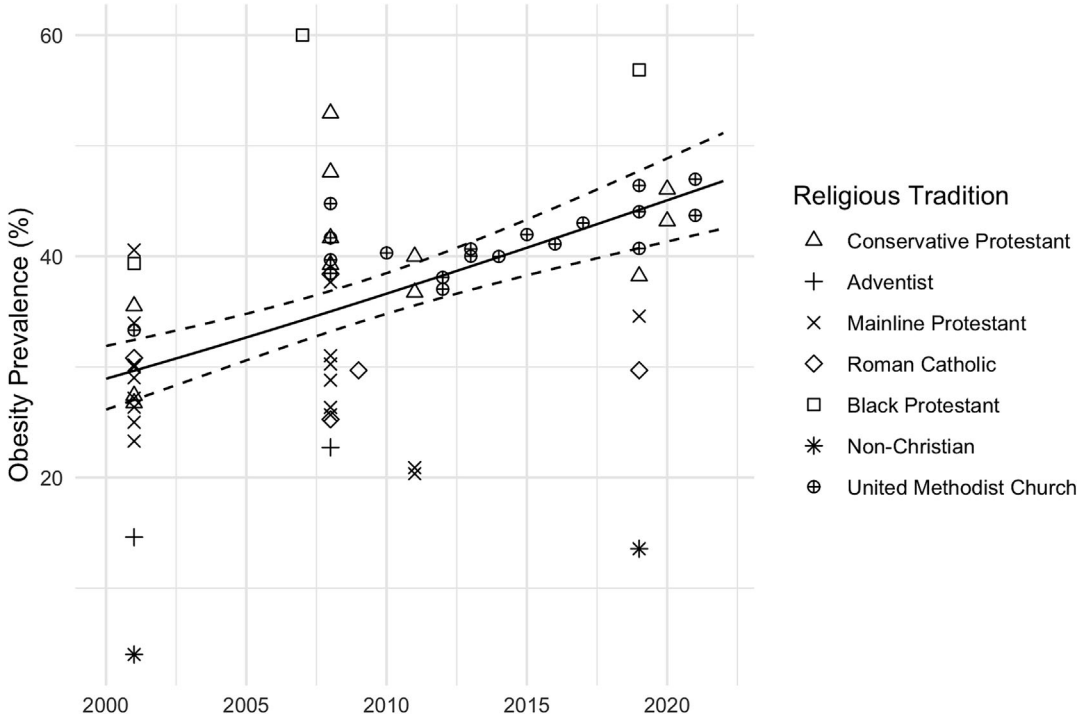

FIGURE 3 Predicted prevalence of obesity over time in clergy with 95% confidence intervals estimated from a meta-regression model. Raw prevalence from individual studies is plotted as points.

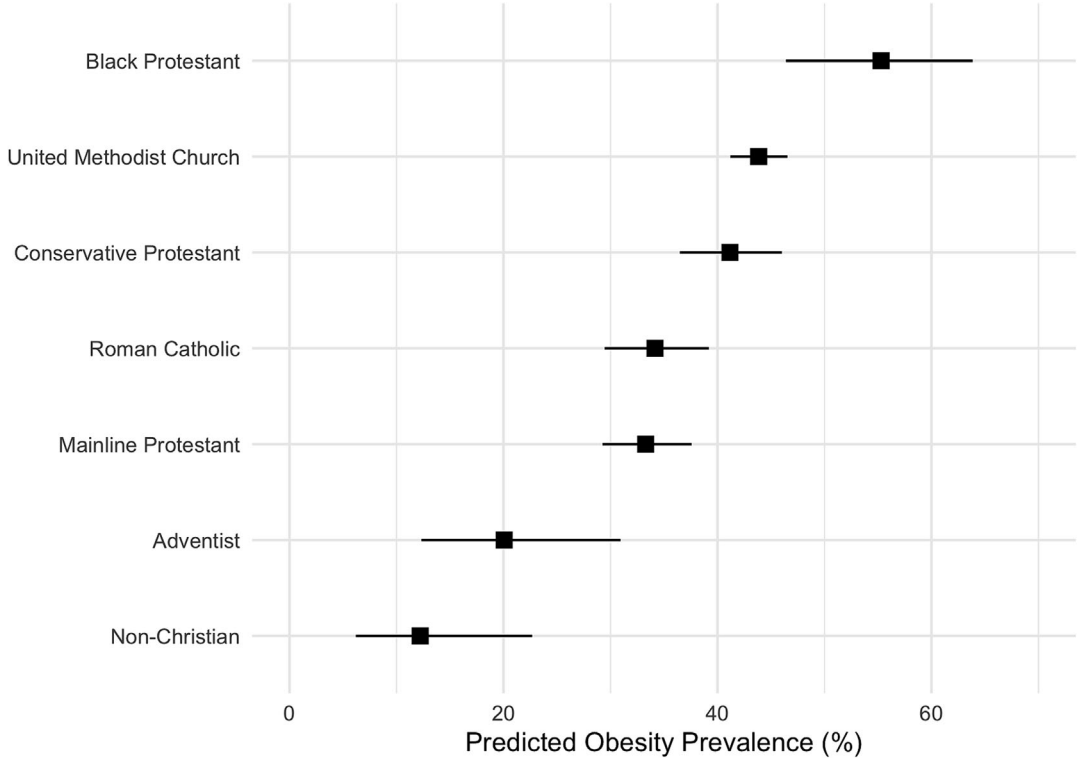

FIGURE 4 Predicted prevalence of obesity in clergy by religious tradition and 95% confidence intervals derived from a meta-regression model. The reference year is set at 2022 and quality at medium.

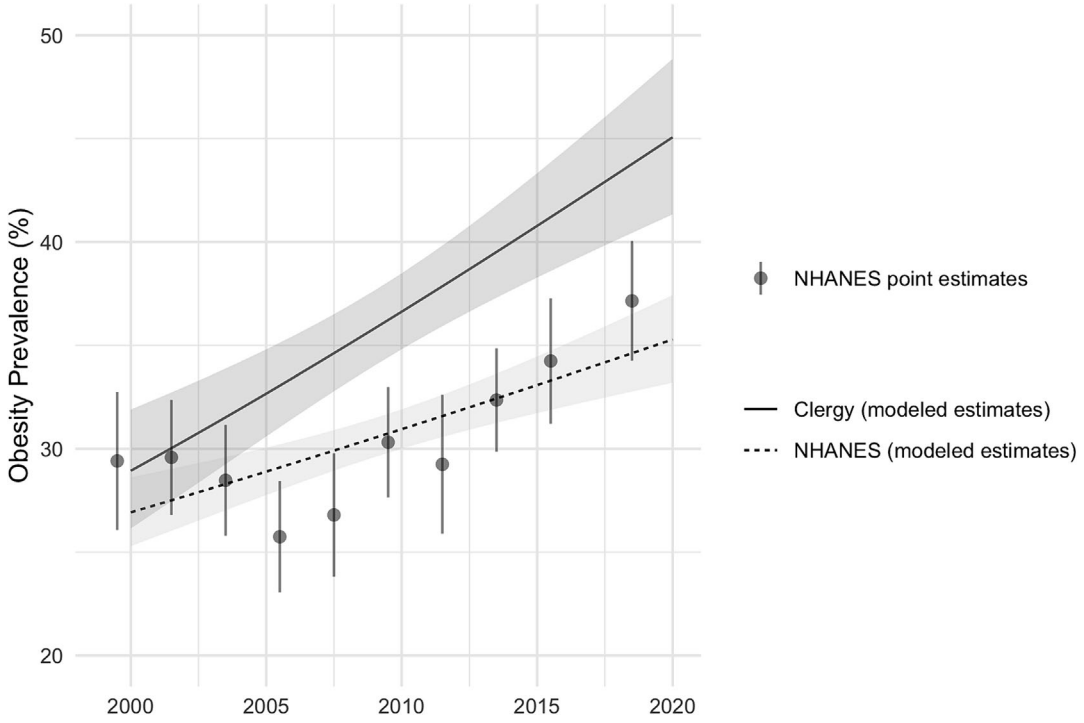

FIGURE 5 Predicted obesity prevalence from 2000 to 2020 with 95% confidence intervals modeled from meta-analysis estimates and the National Health and Nutrition Examination Study (NHANES).

obesity prevalence of clergy was 9.8 points (95% CI: 8.1–11.4) higher than the predicted obesity prevalence in the US population. To put it another way, over this time period, we found a 61% increase in the prevalence of obesity in the clergy, compared to a 37% increase among US adults.

4 | DISCUSSION

This systematic review and meta-analysis sought to evaluate if current evidence reflects that religious clergy as an occupational group have elevated obesity prevalence. The search yielded data from 47 studies containing 35,064 individuals. By using a meta-analysis, we found clergy obesity prevalence is highest among Black Protestant, United Methodist, and Conservative Protestant clergy and lowest among Roman Catholic, Mainline Protestant, and non-Christian clergy. This analysis also revealed that clergy obesity prevalence has risen faster than obesity prevalence among the general population. While there were no significant differences between clergy and the general population before 2005, by 2021, our analysis revealed a large, statistically significant difference between predicted clergy obesity prevalence (45.1%, [95% CI: 41.3–48.9]) and the predicted obesity prevalence of US adults who were in the labor force and aged 20–80 (35.3% [95% CI: 33.2–37.4]). This adds important context to a recent study that did not find a statistically significant difference between national obesity prevalence in clergy in 2019–20 and a matched population sample.[10] It is likely that this study lacked sufficient sample size to detect a significant difference.

In this research, we lacked sufficient data from national studies of clergy to adjust US population estimates to clergy benchmarks over the period covered by this review. Clergy differ from the US population in important ways, which should be considered in interpreting our findings. Using estimates from the 2019 to 2020 National Survey of Religious Leaders,[9] we know clergy are more likely to identify as men (69% of all clergy, compared to 54% of US adults in the NHANES sample in 2017–2020) and older than the US population (average age of 54 years compared to 43 years old in NHANES). In terms of the proportion of Black-identified respondents, clergy are higher (19% of clergy vs. 10% in NHANES). As a population, Black-identified Americans have a much higher obesity prevalence. If adjusted, the gap between clergy and national obesity prevalence may be smaller.[72] The age structure of clergy may also play a significant role in the observed gap. People in middle age tend to have the highest obesity rates.[71] This could mean that in a matched sample of US adults, the differences may be less pronounced. Finally, in terms of gender, the national obesity prevalence has tended to be higher in women than in men, which could mean that adjusting for these differences could make the gap larger. However, gender differences in obesity prevalence in the US are not large and were not significant in the 2017–2020 cycle of NHANES data.[73] In the Supplemental Materials, we compared the predicted prevalence of obesity in clergy to predictions from the NHANES data, adjusted to look similar to the 2019–2020 National Survey of Religious Leaders in terms of age, gender identity, and Black identity. Even with adjustment, clergy obesity prevalence remained higher, although the gap was smaller.

Demographic adjustments are also limited because obesity prevalence varies substantially by occupational group.[3] Of the occupational groups identified in the National Health Interview Study (NHIS) studied between 2004 and 2011, motor vehicle operators (39% with obesity); construction workers (39%); law enforcement workers (38%); and nursing, psychiatric, and home health aids (38%) had the highest obesity prevalence. The lowest obesity prevalence was found among health diagnosing and treating practitioners (15%), military employees (16%), and art and design workers (17%). Of the 361 non-Hispanic White individuals who were classified in the broad category of "religious workers" in the 2004–2011 waves of NHANES, the obesity prevalence was 30.7% for men and 22.1% for women, putting them nationally on the higher end of obesity prevalence among specific occupational groups.[3] Notably, these rates from the NHIS are lower than estimates derived from this meta-analysis. This likely stems from the fact that the religious worker classification includes a broader array of workers than just clergy, including religious education directors, religious musicians, and children and youth ministers, who are often not captured by clergy studies and who may be significantly younger than clergy populations. Additionally, as the current study found, there have been significant increases in the prevalence of obesity among clergy since 2011.

While these findings raise important questions for research on the factors that may lead to elevated obesity prevalence among clergy, the purpose of this review was to establish the obesity prevalence among clergy across religious traditions and over time. However, our review points to the importance of conducting research to understand why clergy obesity varies across traditions and why the prevalence of obesity has increased more rapidly in this group than in the population as a whole. The bulk of research on poor physical health among clergy has focused on the nature of clergy work and the psychological dispositions of clergy leaders that may lead to overwork and neglect of positive health behaviors. For example, researchers have pointed to things like role sanctification (the tendency to place sacred value in work, which may lead to the tendency to neglect one's health),[74] task fragmentation,[75] little predictability in work schedules, long hours of sedentary work, and frequently being around food as possible reasons for poor physical health among the clergy.[12]

The variation by religious tradition in obesity prevalence suggests the story is more complex. While it is true that there are commonalities in clergy work across religious traditions, the contexts in which clergy perform their work vary considerably. At the very least, the higher obesity prevalence among Black Protestant clergy may simply be a result of factors that create significant health disparities among Black people in America.[76] Other important social determinants of health that vary across religious traditions that are also worth considering are nativity,[77,78] rurality,[79] ageography,[72] differences in human resource policies (e.g., the United Methodist Church follows the unusual denominational system of annually assigning pastors to churches[80]), and religious differences (e.g., along with Seventh-Day Adventism, several major non-Christian religious traditions emphasize eating a vegetarian or vegan diet). In short, while the commonalities of clergy work should not be discounted,[4] untangling the web of complex factors that account for elevated obesity prevalence among clergy remains an important topic for research.

4.1 | Limitations

This study has a number of limitations. The predominance of studies of United Methodist clergy in this meta-analysis may present challenges for the interpretation of overall trends. United Methodist clergy appear to have a significantly elevated obesity prevalence. While the modeling approach we employed attempts to mitigate these effects, the large number of United Methodist clergy may still upwardly bias the pooled-prevalence estimates. Estimates of obesity prevalence in clergy are largely derived from self-reported data, which is known to understate the true prevalence.[25] The actual obesity prevalence in the clergy is likely higher than what our estimates suggest. Also, the definition of obesity used here is based on height and weight, not on body fatness. We do not know if clergy systematically misreport their height and weight in the same way as the population at large, which could influence how clergy compares to national estimates. We used a linear model to estimate the time trend, which may mask non-linearities in clergy obesity prevalence trends.

5 | CONCLUSIONS

In this meta-analysis, we found 47 separate studies that report the prevalence of obesity in different groups of clergy. Across studies and across time, the pooled obesity prevalence from 2001 to 2021 was 34.8% (95% CI: 32.5–37.2). The model demonstrated a significant, increasing trend in obesity prevalence in the clergy, going from 28.9% (95% CI:26.1–31.9) in 2001 to 46.8% (95% CI:42.5–51.1) in 2021. This represents a 60% increase over this 20-year period, compared to a 37% increase among the US adult population in the labor force over the same time interval. Clergy obesity prevalence has been higher than in US adults since 2005–2006, and the gap between clergy and the US population has been growing.

As with the broader US population, obesity rates among clergy are concerning, and reductions in obesity prevalence are likely to improve the overall well-being of clergy as an occupational group. Clergy are often part of denominations and other associational networks that may provide funding, promote communications pathways, and mutually reinforce weight loss and weight management interventions.

ACKNOWLEDGMENTS

None.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Eagle D, Holleman A, Olvera BB, Blackwood E. Prevalence of obesity in religious clergy in the United States: A systematic review and meta-analysis. *Obesity Reviews*. 2024;e13741. doi:10.1111/obr.13741