# What is the association between stopping cigarette smoking and life satisfaction or wellbeing? And specifically what can we expect if someone who is currently smoking manages to stop?

People who stop smoking can expect both immediate and long-lasting improvements in their mental wellbeing and overall life satisfaction.

## Abstract

Stopping cigarette smoking is linked with measurable improvements in mental wellbeing. Several studies report that, compared with continued smoking, abstinence is associated with lower depression scores (standardized mean differences of about –0.25 to –0.30) and reduced anxiety (standardized mean differences of approximately –0.28 to –0.37) observed as early as 6 weeks, with benefits persisting for 12 months or longer. Odds ratios for reduced mood disorders (0.24–0.34) and mean improvements on tools such as the SF-36 and Q-LES-Q-SF further support these findings.

Key observations include:

1. Mental Health: Across diverse study designs, quitting is associated with early and sustained improvements in depression and anxiety, as measured by various validated instruments.
2. Quality of Life: Smoking cessation is linked to gains in psychological and social quality of life (with standardized improvements up to 0.40), while enhancements in physical health domains may require several years to resemble those of never-smokers.

This evidence suggests that a smoker who stops can expect an improvement in mental wellbeing and life satisfaction soon after cessation, with many benefits enduring over time.

## Paper search

Using your research question "What is the association between stopping cigarette smoking and life satisfaction or wellbeing? And specifically what can we expect if someone who is currently smoking manages to stop?", we searched across over 126 million academic papers from the Semantic Scholar corpus. We retrieved the 500 papers most relevant to the query.

## Screening

We screened in papers that met these criteria:

- **Adult Population**: Were all study participants 18 years or older?
- **Smoking Status**: Did the study include participants who were regular cigarette smokers ( 1 cigarette/day) prior to cessation?
- **Complete Cessation**: Did the study examine complete cigarette smoking cessation (not just reduction or switching to alternatives)?
- **Outcome Measures**: Did the study use validated scales or instruments to measure life satisfaction, quality of life, or wellbeing?
- **Study Design**: Was the study design either a longitudinal study, cohort study, randomized controlled trial, or systematic review?
- **Follow-up Duration**: Did the study include a follow-up period of at least 3 months?

- **Psychological Measures**: Did the study include psychological or quality of life measures beyond just physical health outcomes?
- **General Population**: Was the study conducted in a general population rather than focusing exclusively on specific medical conditions or unique populations (e.g., only pregnant women, only psychiatric patients)?

We considered all screening questions together and made a holistic judgement about whether to screen in each paper.

## Data extraction

We asked a large language model to extract each data column below from each paper. We gave the model the extraction instructions shown below for each column.

- **Study Design**:

  Identify the specific type of study design used. Look in the methods section for details. Possible designs include:

- Longitudinal observational study
- Systematic review/meta-analysis
- Prospective cohort study
- Cross-sectional study

If multiple design elements are present, list all. If unclear, note "design not clearly specified". Prioritize the primary design type used for data collection and analysis.

- **Participant Characteristics**:

  Extract the following details about participants:

- Total sample size
- Age range or mean age
- Gender distribution (% male/female)
- Smoking status at baseline (current smokers, recent quitters, etc.)
- Any specific population characteristics (e.g., general population, clinical population)

If information is incomplete, note "partial information available". Use exact numbers or percentages when possible. If ranges are provided, include both minimum and maximum values.

- **Smoking Cessation Intervention**:

  Describe the smoking cessation approach:

- Type of intervention (behavioral, pharmacological, combined)
- Specific methods used (e.g., counseling, nicotine replacement, bupropion)
- Duration of intervention
- Frequency of support or treatment

If multiple interventions were used, list all. If no specific intervention was described (e.g., in observational studies), note "no specific intervention described".

- **Life Satisfaction and Wellbeing Outcomes**:

Extract all measures related to life satisfaction or wellbeing:

- Specific instruments used (e.g., SF-36, quality of life questionnaires)
- Specific domains measured (mental health, physical health, emotional functioning)
- Timing of outcome measurements
- Key numerical results (means, standard deviations, effect sizes)

Prioritize outcomes directly measuring life satisfaction, quality of life, or psychological wellbeing. Include both statistical significance and effect size if reported.

- **Key Findings on Smoking Cessation**:

  Summarize the primary findings related to smoking cessation and wellbeing:

- Changes in mental health measures
- Comparative results between smokers and non-smokers/quitters
- Statistical significance of findings
- Any notable effect sizes or confidence intervals

Focus on results directly addressing the association between stopping smoking and life satisfaction or well-being. Extract the most important quantitative findings.

# Results

## Characteristics of Included Studies

| Study | Study Design | Population Size | Follow-up Duration | Quality of Life Measurement Tool | Full text retrieved |
|---|---|---|---|---|---|
| Taylor et al., 2021 | Systematic review/meta-analysis | >169,500 | 6 weeks to years | Various (no mention found) | No |
| Taylor et al., 2014 | Systematic review/meta-analysis; Longitudinal observational | 26 studies | 7 weeks–9 years | Various (no mention found) | Yes |
| Shields et al., 2013 | Longitudinal observational | 7,484 | 16 years | No mention found | No |
| Guitérrez-Bedmar et al., 2009 | Prospective cohort | 5,234 | 4 years | Short Form-36 Health Survey (SF-36) | Yes |
| Hays et al., 2012 | Randomized Controlled Trial (longitudinal) | 2,052 | 52 weeks | Smoking Cessation Quality of Life questionnaire | No |

| Study | Study Design | Population Size | Follow-up Duration | Quality of Life Measurement Tool | Full text retrieved |
|---|---|---|---|---|---|
| Sarna et al., 2008 | Prospective cohort with cross-sectional | 158,736 | 4, 8 years | SF-36 version 1 | Yes |
| Hahad et al., 2022 | Prospective cohort | 15,010 | 5 years | Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder-2 (GAD-2) | No |
| Nagawa et al., 2024 | Prospective cohort (secondary analysis) | 986 | 6 months | Patient Health Questionnaire-8 (PHQ-8), Generalized Anxiety Disorder-7 (GAD-7) | No |
| Tomioka et al., 2014 | Prospective cohort | 277 | 12 weeks | St. George's Respiratory Questionnaire (SGRQ) | Yes |
| Taylor et al., "Change in Mental Health" | Systematic review/meta-analysis | 26 studies | 7 weeks–9 years | Various (no mention found) | No |
| Jain, 2014 | Systematic review/meta-analysis | 26 studies | 7 weeks–9 years | Various (no mention found) | No |
| Lappan et al., 2018 | Longitudinal observational | 2,939–4,230 | 4 years | Satisfaction with Life Scale | Yes |
| Moayeri et al., 2021 | Longitudinal observational | 1,858 | 13 years | SF-36 | No |
| Tillmann and Silcock, 1997 | Cross-sectional | 3,000 | N/A | SF-36, EuroQol | No |
| Bloom et al., 2017 | Randomized Controlled Trial (longitudinal) | 61 | 12 months | Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form (Q-LES-Q-SF) | Yes |
| Donald et al., 2013 | Cross-sectional | 34,653 | N/A | No mention found | No |
| Sales et al., 2009 | Prospective cohort | 60 | 12 months | SF-36 | No |

| Study | Study Design | Population Size | Follow-up Duration | Quality of Life Measurement Tool | Full text retrieved |
|---|---|---|---|---|---|
| Taylor et al., 2015 | Prospective cohort (secondary analysis of RCTs) | 937 | 12 months | SF-36 emotional well-being | Yes |
| Shahab et al., 2013 | Prospective cohort | 3,645 | 12 months | EuroQol-5 Dimension (EQ-5D) | Yes |
| Chen et al., 2015 | Prospective cohort | 3,514 | 12 months | EQ-5D-3L | Yes |
| Despoina et al., "Smoking Cessation Process" | Longitudinal observational | 97 | 12 months | EQ-5D, EQ-Visual Analogue Scale (EQ-VAS) | Yes |
| Crabb et al., 2025 | Systematic review/meta-analysis | 62 studies (36,150) | 6 weeks–4 years | Various (no mention found) | No |
| Song et al., 2018 | Longitudinal observational (secondary analysis of RCT) | 1,407 | 12 months | EQ-5D | Yes |
| Rodríguez-Cano et al., 2016 | Prospective cohort | 242 | 12 months | Beck Depression Inventory-II (BDI-II) | Yes |
| Majeed et al., 2024 | Longitudinal observational | 5,669 | 12 months | Perceived Quality of Life (no mention found) | No |

Study design:

- Systematic reviews/meta-analyses:5 studies
- Randomized Controlled Trials (RCTs, longitudinal):2 studies
- Prospective cohort studies (including secondary analyses):10 studies
- Longitudinal observational studies (including secondary analyses):7 studies
- Cross-sectional studies:3 studies
  (Some studies are counted in more than one category if multiple designs were listed.)

Quality of life measurement tools:

- Short Form-36 Health Survey (SF-36, including version 1 and emotional well-being):6 studies

- EuroQol-5 Dimension (EQ-5D, including EQ-5D-3L and EQ-Visual Analogue Scale):4 studies (some studies used more than one EQ-5D variant)
- Patient Health Questionnaire-9 (PHQ-9):1 study
- Generalized Anxiety Disorder-2 (GAD-2):1 study
- Patient Health Questionnaire-8 (PHQ-8):1 study
- Generalized Anxiety Disorder-7 (GAD-7):1 study
- St. George's Respiratory Questionnaire (SGRQ):1 study
- Satisfaction with Life Scale:1 study
- EuroQol:1 study
- Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form (Q-LES-Q-SF):1 study
- Smoking Cessation Quality of Life questionnaire:1 study
- Beck Depression Inventory-II (BDI-II):1 study
- Perceived Quality of Life (no mention found):1 study
- Various (no mention found):5 studies
- No mention found:2 studies

Population size:

- Individual studies:60 to 158,736 participants
- Systematic reviews:up to 169,500 participants or 62 studies

Follow-up duration:

- Individual studies:12 weeks to 16 years
- Systematic reviews:6 weeks to 9 years

We did not find a specified follow-up duration for 2 cross-sectional studies.

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## Effects

### Mental Health Outcomes

| Study | Depression Measures | Anxiety Measures | Effect Direction | Time to Effect |
|---|---|---|---|---|
| Taylor et al., 2021 | Standardized mean difference (SMD) -0.30 (95% CI -0.39 to -0.21) | SMD -0.28 (95% CI -0.43 to -0.13) | Improvement | 6 weeks |
| Taylor et al., 2014 | SMD -0.25 (95% CI -0.37 to -0.12) | SMD -0.37 (95% CI -0.70 to -0.03) | Improvement | 7 weeks–9 years |
| Shields et al., 2013 | No mention found | No mention found | No mention found | 5–20 years |
| Guitérrez-Bedmar et al., 2009 | Improved role-emotional, mental health (SF-36) | No mention found | Improvement | 4 years |
| Hays et al., 2012 | Improved mental profile | Improved anxiety | Improvement | 12–52 weeks |

| Study | Depression Measures | Anxiety Measures | Effect Direction | Time to Effect |
|---|---|---|---|---|
| Sarna et al., 2008 | SF-36 Mental Component Score improved | No mention found | Small improvement | 8 years |
| Hahad et al., 2022 | PHQ-9: weak negative association | GAD-2: weak negative association | Weak improvement | 5 years |
| Nagawa et al., 2024 | PHQ-8: difference-in-improvement 2.43 (95% CI 1.50–3.36) | GAD-7: difference-in-improvement 3.04 (95% CI 2.16–3.93) | Improvement | 6 months |
| Tomioka et al., 2014 | No mention found | No mention found | No difference between quitters and smokers | 12 weeks |
| Taylor et al., "Change in Mental Health" | SMD -0.25 (95% CI -0.37 to -0.12) | SMD -0.37 (95% CI -0.70 to -0.03) | Improvement | 7 weeks–9 years |
| Jain, 2014 | SMD -0.25 (95% CI -0.37 to -0.12) | SMD -0.37 (95% CI -0.70 to -0.03) | Improvement | 7 weeks–9 years |
| Lappan et al., 2018 | Life satisfaction: -0.25 (smoking→lower life satisfaction) | No mention found | Smoking reduces life satisfaction | 4 years |
| Moayeri et al., 2021 | Not significant | Not significant | No effect | 13 years |
| Tillmann and Silcock, 1997 | No mention found | No mention found | Small improvement | 5 years |
| Bloom et al., 2017 | Q-LES-Q-SF: higher in abstainers | No mention found | Improvement | 3–12 months |
| Donald et al., 2013 | Adjusted odds ratio (AOR) 0.64 (95% CI 0.50–0.82) | No mention found | Fewer mood disorders | N/A |
| Sales et al., 2009 | SF-36: p=0.002 (mental health) | No mention found | Improvement | 12 months |
| Taylor et al., 2015 | Mean difference 4.5 (95% CI 0.6–8.5) | No mention found | Improvement | 12 months |
| Shahab et al., 2013 | Odds ratio (OR) 0.24–0.34 (depression) | No change | Improvement (depression only) | 12 months |
| Chen et al., 2015 | OR=0.61–0.65 (anxiety/depression) | OR=0.61–0.65 | Improvement | 6–12 months |

| Study | Depression Measures | Anxiety Measures | Effect Direction | Time to Effect |
|---|---|---|---|---|
| Despoina et al., "Smoking Cessation Process" | 78.9% moderate anxiety/depression at 1 month, improved by 3 months | As left | Improvement | 1–12 months |
| Crabb et al., 2025 | SMD -0.21 (95% CI -0.27 to -0.16) | SMD -0.22 (95% CI -0.33 to -0.12) | Improvement | 6 weeks–4 years |
| Song et al., 2018 | 30% vs 22% anxiety/depression (relapsers vs quitters) | As left | Relapse worsens | 12 months |
| Rodríguez-Cano et al., 2016 | BDI-II: abstainers improved, relapsers worsened | No mention found | Abstainers improved | 12 months |
| Majeed et al., 2024 | No mention found | No mention found | Better quality of life associated with higher abstinence | 12 months |

Depression Measures:

- Standardized mean difference (SMD) comparisons:5 studies
- Odds ratio (OR or AOR) comparisons:3 studies
- Mean difference (MD):1 study
- SF-36 mental health scale:3 studies
- Patient Health Questionnaire-9 (PHQ-9):1 study
- Patient Health Questionnaire-8 (PHQ-8):1 study
- Beck Depression Inventory-II (BDI-II):1 study
- Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form (Q-LES-Q-SF):1 study
- Life satisfaction measure:1 study
- Qualitative or narrative improvement (including % improved):3 studies
- Report of "not significant":1 study
- No mention found:3 studies

Anxiety Measures:

- SMD comparisons:5 studies
- OR comparisons:1 study
- Generalized Anxiety Disorder-7 (GAD-7):1 study
- Generalized Anxiety Disorder-2 (GAD-2):1 study
- Qualitative or narrative improvement (including % improved):3 studies
- Report of "no change":1 study
- Report of "not significant":1 study
- No mention found:11 studies

Effect Direction:

- Improvement:14 studies
- Small or weak improvement:3 studies
- No effect or no difference:2 studies
- Relapse worsens:1 study
- Smoking reduces life satisfaction:1 study
- Fewer mood disorders:1 study
- Abstainers improved (relapsers worsened):1 study
- Better quality of life associated with higher abstinence:1 study
- No mention found:1 study

Time to Effect:

- Follow-up durations of  12 months:12 studies
- Follow-up durations of  4 years:7 studies
- Ranges (e.g., 7 weeks–9 years, 6 weeks–4 years):4 studies
- No mention found:1 study

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**Quality of Life Changes**

| Study | Quality of Life Domain | Measurement Tool | Effect Size | Time Frame |
|---|---|---|---|---|
| Taylor et al., 2021 | Psychological quality of life, positive affect, social quality of life | No mention found | SMD 0.11–0.22 | 6 weeks |
| Taylor et al., 2014 | Psychological quality of life, positive affect | No mention found | 0.22–0.40 | 7 weeks–9 years |
| Shields et al., 2013 | Health-Related Quality of Life (HRQL) | No mention found | No mention found | 5–20 years |
| Guitérrez-Bedmar et al., 2009 | SF-36 domains | SF-36 | Significant improvement | 4 years |
| Hays et al., 2012 | Health transition, self-control, vitality | Smoking Cessation Quality of Life | Significant improvement | 12–52 weeks |
| Sarna et al., 2008 | SF-36 Physical Component Score, Mental Component Score | SF-36 version 1 | Small improvement (Mental Component Score) | 8 years |
| Hahad et al., 2022 | No mention found | No mention found | No mention found | 5 years |
| Nagawa et al., 2024 | No mention found | No mention found | No mention found | 6 months |

| Study | Quality of Life Domain | Measurement Tool | Effect Size | Time Frame |
|---|---|---|---|---|
| Tomioka et al., 2014 | SGRQ total, symptoms, activity, impact | SGRQ | Change in total -5.1±12.2 | 12 weeks |
| Taylor et al., "Change in Mental Health" | Psychological quality of life, positive affect | No mention found | 0.22–0.40 | 7 weeks–9 years |
| Jain, 2014 | Psychological quality of life, positive affect | No mention found | 0.22–0.40 | 7 weeks–9 years |
| Lappan et al., 2018 | Life satisfaction | Satisfaction with Life Scale | -0.25 (smoking→lower life satisfaction) | 4 years |
| Moayeri et al., 2021 | Physical health, general health | SF-36 | 0.22–0.65 | 13 years |
| Tillmann and Silcock, 1997 | SF-36, EuroQol | SF-36, EuroQol | Small improvement | 5 years |
| Bloom et al., 2017 | Total quality of life, physical health, well-being | Q-LES-Q-SF | p=0.02 (total), p=0.047 (well-being) | 3–12 months |
| Donald et al., 2013 | Physical, mental quality of life | No mention found | Beta=1.65 (physical), Beta=2.17 (mental) | N/A |
| Sales et al., 2009 | Role-emotional, general health, vitality, mental health | SF-36 | p=0.008–0.002 | 12 months |
| Taylor et al., 2015 | Mental health (emotional well-being) | SF-36 | Mean difference 4.5 (95% CI 0.6–8.5) | 12 months |
| Shahab et al., 2013 | EQ-5D | EQ-5D | 0.76–0.82 | 12 months |
| Chen et al., 2015 | EQ-5D-3L, EQ-VAS | EQ-5D-3L | OR=0.61–0.65 (anxiety/depression) | 6–12 months |
| Despoina et al., "Smoking Cessation Process" | EQ-5D, EQ-VAS | EQ-5D, EQ-VAS | VAS: 65.36→70.52 | 1–12 months |
| Crabb et al., 2025 | No mention found | No mention found | No mention found | 6 weeks–4 years |
| Song et al., 2018 | EQ-5D | EQ-5D | Change 0.0288 (quitters vs relapsers) | 12 months |
| Rodríguez-Cano et al., 2016 | No mention found | No mention found | No mention found | 12 months |

| Study | Quality of Life Domain | Measurement Tool | Effect Size | Time Frame |
|---|---|---|---|---|
| Majeed et al., 2024 | Perceived quality of life | No mention found | OR 1.95–3.33 | 12 months |

Quality of Life Domains:

- Psychological quality of life or mental health outcomes:8 studies
- Physical health, vitality, or activity domains:9 studies
- General or total quality of life (including EQ-5D, SF-36 total, life satisfaction, or perceived quality of life):12 studies
- Social quality of life:1 study
- Health-Related Quality of Life (HRQL) and life satisfaction:1 study each
- No mention found:4 studies

Measurement Tools:

- SF-36 (any version):6 studies
- EQ-5D (including EQ-5D-3L and EQ-VAS):5 studies
- SGRQ, Q-LES-Q-SF, Satisfaction with Life Scale, Smoking Cessation Quality of Life:1 study each
- No mention found:11 studies

Effect Size/Direction:

- Standardized mean difference, mean difference, beta coefficient, or change values:10 studies
- p-values reported:3 studies
- Odds ratios:2 studies
- "Significant improvement":2 studies
- "Small improvement":2 studies
- No mention found:5 studies

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## Thematic Analysis

### Temporal Patterns of Wellbeing

- Short-term improvements:Several studies reported that improvements in mental health and quality of life were observed as early as 6 weeks after stopping smoking and persisted for years.
- Long-term equivalence:Some studies (Shields et al., 2013; Sarna et al., 2008) reported that equivalence with never-smokers in health-related quality of life may take 5–20 years, especially for physical health domains.
- Consistency in mental health:Short-term improvements were more consistently reported in mental health and psychological wellbeing than in physical health.

### Sustainability of Benefits

- Persistence of benefits:Most studies reported that improvements in mental health and quality of life persisted at 12 months and beyond.

- Post-cessation changes:One study (Despoina et al., "Smoking Cessation Process") reported that perceived quality of life may decline slightly after the initial post-cessation period, but remained above baseline.
- Relapse effects:Relapse to smoking was associated with a deterioration in quality of life, particularly in anxiety and depression domains (Song et al., 2018; Rodríguez-Cano et al., 2016).

**Differential Effects by Population**

- Across populations:Reported benefits of stopping smoking on wellbeing were observed across general, clinical, and special populations (including women, older adults, and hospital patients).
- Psychiatric comorbidity:Systematic reviews (Taylor et al., 2014; Taylor et al., 2021) reported that effect sizes were similar in those with and without psychiatric disorders.
- Older/long-term smokers:Some studies (Moayeri et al., 2021; Sarna et al., 2008) reported that long-term or older smokers may experience less pronounced improvements, particularly in physical health domains.
- Socio-economic factors:One study (Tillmann and Silcock, 1997) reported that socio-economic factors may influence the magnitude of benefit.

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