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Posttraumatic Growth in Parents Following Preterm Birth: A Systematic Review of Related Factors

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This systematic review synthesizes quantitative evidence on factors associated with posttraumatic growth (PTG) in parents following preterm birth. Systematic searches of MEDLINE, Web of Science, PsycINFO, CINAHL, and ProQuest Dissertations & Theses identified peer-reviewed and grey literature published up to August 2025. Studies were included if they involved parents of preterm infants, administered a validated PTG measure at any time after birth, and examined factors related to PTG. Thirteen studies (N = 2,568 parents) met inclusion criteria, with study quality rated as good (n = 2) or fair (n = 11). Across studies, 38 factors were examined. PTG was positively associated with social support, longer neonatal admission, parental well-being, lower gestational age, posttraumatic stress symptoms, resilience, adaptive coping strategies, and deliberate rumination, although some associations were inconsistent or examined in only one study. Overall, findings suggest a complex interplay of demographic, psychological, social, and event-related factors influencing PTG in this population, but methodological heterogeneity limits comparability and the strength of conclusions. Future research should prioritize consistent assessment of key factors and employ longitudinal and intervention designs to inform the development of integrated models of care that address both psychological distress and PTG in parents of preterm infants.

Keywords: Neonatal Intensive Care Unit (NICU), parents, posttraumatic growth, preterm birth, psychological adaptation, traumatic stress

Preterm birth, defined as live birth before 37 weeks' gestation, affects approximately 13.4 million infants annually and is the leading cause of death in children under five (Ohuma et al., 2023; World Health Organization, 2023). Survival rates vary markedly by region, with less than

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10% of extremely preterm infants (<28 weeks) surviving in low-income countries, compared to over 90% in high-income settings (Perin et al., 2021). Advances in neonatal care have now enabled survival from 22 weeks' gestation (Malloy & Wang, 2022; Smith et al., 2023), but families often face prolonged hospitalization in the Neonatal Intensive Care Unit (NICU) and long-term developmental or health challenges (Nelson et al., 2020).

Parents of preterm infants are at increased risk of psychological difficulties, including depression, anxiety, and posttraumatic stress symptoms (PTSS), compared with the general perinatal population (Laccetta et al., 2023; Legge et al., 2023; Pace et al., 2016). NICU admission exposes parents to separation from their baby, medical uncertainty, and distressing interventions; disrupting parent-infant bonding and assumed expectations of early parenthood (Baía et al., 2016; Obeidat et al., 2009). Although parental distress may initially represent an acute, adaptive response to trauma, many parents continue to experience psychological difficulties beyond NICU admission (Galea et al., 2021).

Crucially, psychological distress is not solely determined by infants' medical acuity but also by parents' subjective experience of the event (Colville & Pierce, 2012), highlighting the importance of accessible psychological support during NICU admission. However, available evidence suggests that access to this provision is inconsistent. A UK audit found that over 30% of units did not offer access to a psychologist or counselor, with only 15% using screening tools to identify parents' psychological distress (Thomson et al., 2022). A survey from NICUs across Australia and New Zealand reported that only 43% of units used screening tools, and just 9% provided staff-led mental health support programs (Harrison Ginsberg et al., 2023). Globally, comparable data is not yet available, but existing findings indicate substantial gaps in support.

Alongside distress, some parents also report posttraumatic growth (PTG), a process of positive psychological change arising from the struggle with adversity (Tedeschi & Calhoun, 1995). PTG does not diminish the traumatic impact of events but, instead, offers a framework for meaning-making and adaptation. PTG and PTSS can co-occur, highlighting the importance of assessing both outcomes to inform tailored psychological support (Liu et al., 2017).

The functional-descriptive model (Tedeschi & Calhoun, 2004) conceptualizes PTG as transformational change in cognitions, emotions, and behaviors beyond pre-trauma functioning, differentiating it from related concepts such as resilience and recovery. While PTG has been reported across diverse cultural and demographic contexts, it is not experienced by all individuals, and research suggests meaningful cultural variation in its experience and expression (Exenberger et al., 2019; Kashyap & Hussain, 2018). The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) is the most widely used tool for measuring PTG, assessing growth on five domains: relating to others, new possibilities, personal strength, spiritual change, and appreciation of life. The PTGI has been validated across diverse populations, including parents of NICU-hospitalized newborns (Bayrami et al., 2023).

Parents of preterm infants report higher levels of PTG than those of term-born infants (Noy et al., 2015; Taubman-Ben-Ari et al., 2014). A systematic review by Brandão and colleagues (2020) examined PTG after childbirth and found a consistent association between prematurity and PTG but did not identify related factors. More recently, O'Toole et al. (2022) reviewed factors

associated with PTG in parents following their child's admission to intensive care. However, by combining findings across heterogeneous groups, including term-born infants with complex medical needs and children up to 16 years old, this review was unable to capture the unique experience of preterm parents. Emerging studies focus directly on this group (Wu et al., 2024; Xingyanan et al., 2025), highlighting the need for an updated synthesis.

This systematic review aims to synthesize and critically evaluate quantitative evidence on factors associated with PTG in parents following preterm birth, specifically examining:

- Demographic factors: family background, parents' personal characteristics (e.g., parental age, education level)
- Psychological factors: how parents think, feel, and cope with their experiences (e.g., depression, resilience)
- Social factors: including relationships and support systems (e.g., partner support, access to community resources)
- Event characteristics: occurring during and after preterm birth that may influence parental adjustment (e.g., NICU duration, medical interventions)

To reflect diverse family structures, gender-neutral terminology is used throughout: "birthing parent" refers to anyone who has given birth, while "non-birthing parent" describes partners. Exceptions are made in tables where study characteristics are reported verbatim.

Methods

This systematic review was conducted and reported according to guidelines published on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Page et al., 2021). The protocol was published via PROSPERO (ID: CRD42024519511).

Search Strategy and Study Selection Criteria

A systematic search of articles published before August 2025 was conducted across five databases: MEDLINE, Web of Science, PsycINFO, CINAHL, and ProQuest Dissertations & Theses. The search terms were limited to variations of two keywords ("posttraumatic growth" and "preterm birth") to ensure that all relevant papers were identified. Supplementary Data 1 outlines the final search terms.

Articles were included if they met the following criteria: (a) observational quantitative studies in which (b) participants were parents who had experienced preterm birth; (c) participants completed a psychometrically validated measure of posttraumatic growth at any time after birth; and (d) factors related to PTG in preterm parents were examined. Research on parents' posttraumatic growth following NICU admission was excluded unless data were reported separately for preterm births. Similarly, research on parents' posttraumatic growth following the death of a preterm baby was excluded unless data were reported separately for non-bereaved parents. Gray literature was included if it was empirical. Studies published in non-English

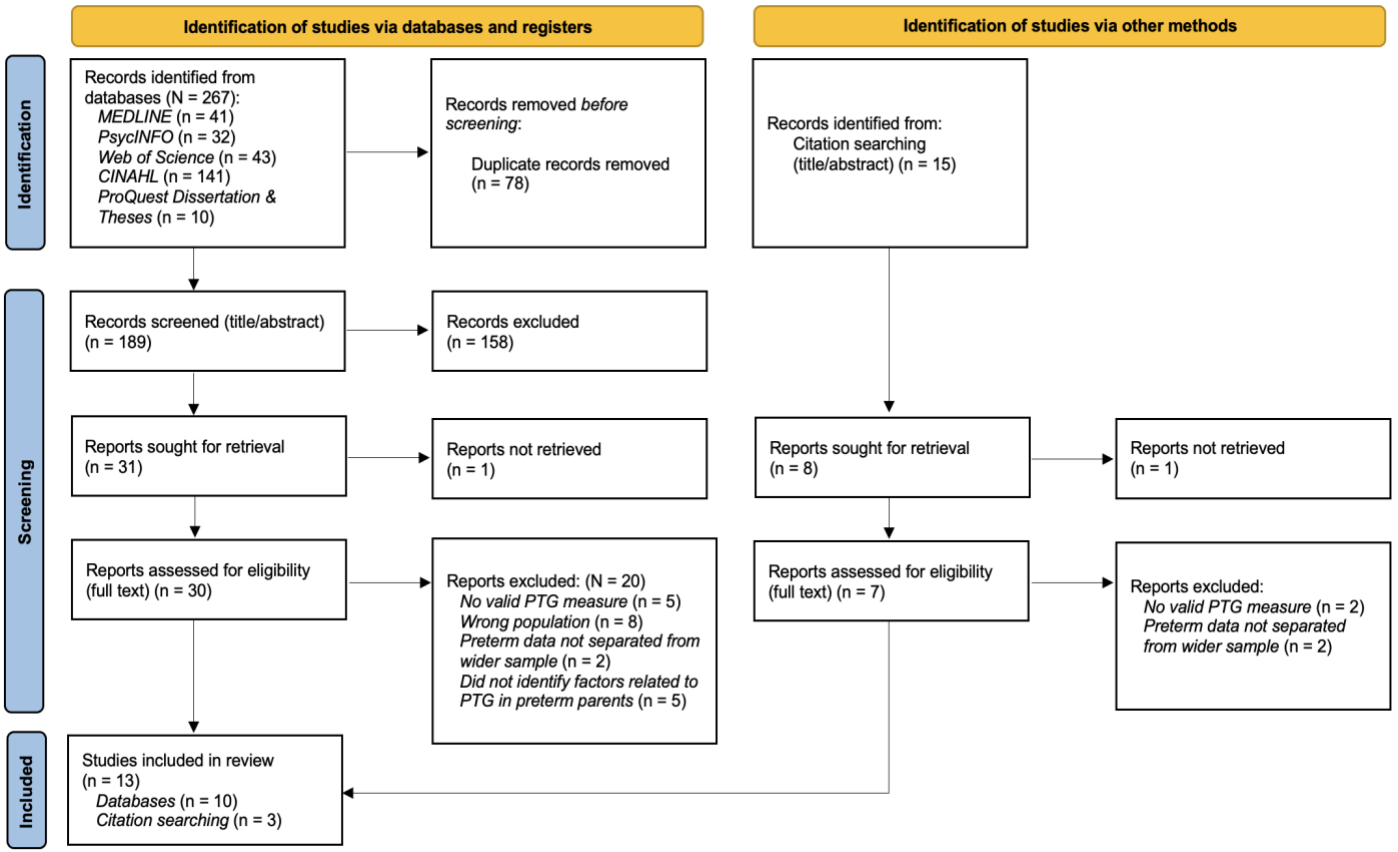
languages were translated into English. Reference lists of eligible research studies and any relevant published reviews were screened for relevant papers.

Search Results

A PRISMA flow diagram depicting stages of the screening and selection process is presented in Figure 1. The search strategy yielded 267 papers for screening, and 189 remained after duplicate removal. Thirty-one papers were identified as potentially eligible following title and abstract screening. The full text could not be retrieved for one article, leaving 30 articles for full-text review. One Korean-language article was professionally translated. Twenty papers were excluded following full-text review: five used no valid PTG measure, eight focused on non-preterm populations, two did not separate preterm data, and five did not examine factors related to PTG. Ten papers were identified as eligible for inclusion from database searching. A further three papers were identified following backward and forward citation chaining. One citation (Pang, 2021, unpublished thesis) was identified but excluded because no abstract or full text was available. In total, 13 studies were included.

Figure 1

PRISMA 2020 Flow Diagram



Data Extraction

Results were tabulated to capture key data extracted from the included studies. The following information was extracted for each study: author; year and country of origin; study aim/objective; study design; data collection method and dates; sample and clinical inclusion/exclusion criteria; demographic information; PTG measure employed and timing; and other variables examined in preterm parents (see Table 1). Key findings were also extracted, including PTG levels (means and standard deviations) and correlation or regression statistics for related factors (see Table 2). For PTGI data, item means were calculated (i.e., total score divided by the number of administered items) to compare PTG levels across studies.

Quality Assessment

Given the observational, quantitative nature of the included studies, the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies, developed by the National Heart, Lung, and Blood Institute (NHLBI; accessed January 2025), was used to assess study quality and risk of bias (Table 3). The tool comprises 14 questions for which the rater assigns "yes," "no," "cannot determine," "not applicable," or "not reported." The tool was used to assign an overall rating of "poor," "fair," or "good" to each study.

Interrater Reliability

A second rater was involved during screening, data extraction, and quality appraisal, screening 25% of papers at each stage. Interrater agreement for titles and abstracts was 93% ($k = 0.76$), and for the full-text review, it was 100% ($k = 1.00$). Interrater agreement for data extraction was 100% ($k = 1.00$), and for quality appraisal was 97% ($k = 0.93$). All disagreements between raters were discussed, leading to consensus.

Table 1

Methodological Characteristics of Included Studies

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Brelsford et al. (2020) *USA*	To explore associations between parents' posttraumatic growth, distress, and aspects of their religiousness and spirituality post-NICU discharge	Cross-sectional	Convenience sampling from NICU Questionnaire survey sent via post; 48% returned	N = 25 parents 12 fathers, 13 mothers Age: *M* = 30.36; *SD* = 4.10 Inclusion: babies born 25–35 weeks and admitted to NICU within 48 hours Exclusion: Infants born with congenital syndromes, severe or life-threatening illnesses or significant deformational abnormalities	Ethnicity: 88% White Marital status: 96% married Education: Not stated Employment: Not stated Income/SES: Not stated Spirituality/Religion: 40% Protestant or Catholic; 20% no religious affiliation; 20% agnostic or atheist, 20% 'other' 60% Religious (slightly-very), 80% Spiritual Birth order: Not stated	PTGI (Tedeschi and Calhoun, 1996); 21 items, 6-point scale 0–5 Completed 6 weeks after discharge from NICU	Demographic factors None reported Psychological factors Depression, Anxiety and Stress *(Depression, Anxiety and Stress Scale; DASS-21)* Religious coping *(Brief Religious Coping Scale; RCOPE)* Sanctification (*Theistic, Manifestation of God Scale; Non-theistic, Sacred Qualities Scale)* Social factors Spiritual disclosure *(Spiritual Disclosure Scale; SDS*) Event characteristics None reported

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Galpin (2013) *UK*	To report the existence of posttraumatic stress (PTSS) and PTG in parents of premature babies hospitalized on a neonatal unit, and to test the PTG model by examining the relationships between rumination type (intrusive and deliberate) and PTSS, PTG and social support	Cross-sectional	Convenience sampling from NICU (4 units) Questionnaire-based study recruited in two phases; 19% response rate (first phase); 32% response rate (second phase) over 10.5 months	N = 83 parents (30 mother-father pairs + 23 additional unpaired mothers) Age: paired data (mothers' range 20–40 years, median = 31; fathers range 20–45 years, median = 31), unpaired (mothers' range 21–49 years, median = 31.5) Inclusion: Infants of gestational age between 29–36 weeks with birth weight greater than 1500g Exclusion: Mothers with ongoing physical health problems because of the birth	Ethnicity: Majority White British (93% paired, 87% unpaired mothers) Marital status: Majority married or with partner (100% paired, 91% unpaired mothers) Education: Majority paired parents left education after 18 (60% mothers, 43% fathers); unpaired mothers 32% at 16, 23% at 18, 41% after 18 Employment: Not stated Spirituality/Religion: Not stated Income/SES: Not stated Birth order: Majority first baby (80% fathers, 73% paired mothers, 56.5% unpaired mothers)	PTGI (Tedeschi and Calhoun, 1996); 21 items, 6-point scale 0–5 Completed 4–8 weeks after discharge from NICU	Demographic factors Parental age Marital status Education Ethnicity Mental health diagnoses Psychological factors Posttraumatic stress symptoms *(PTSS; Impact of Event Scale-Revised, IES-R)* Deliberate and intrusive rumination *(Event-Related Rumination Inventory, ERRI)* Depression *(Centre for Epidemiologic Studies Depression Scale, CES-D)* Social factors Social support *(Crisis Support Scale, CSS)* Event characteristics Gestational age Birth weight Length of stay (NICU) Infant health status Multiple birth Birth order

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Jarašiūnaitė-Fedosejeva et al. (2024) *Lithuania*	To explore the moderating effect of proneness to guilt and shame on the relationship between birth-related posttraumatic stress and posttraumatic growth in women with preterm births	Cross-sectional	Convenience sampling from online communities for parents of preterm infants, and outpatient neonatal unit and obstetric settings Web-based survey January–August 2021	N = 79 mothers Age *M* = 31.42; *SD* = 5.22 Inclusion: 36 weeks or less gestational age (*M* = 31.44, *SD* = 3.98) Exclusion: None stated 74.7% of women indicated having healthy babies, 19% prematurity related illnesses or health problems	Ethnicity: Not stated, 'Lithuanian women' Marital status: 95% married or living with partner Education: 70.9% attended higher education Employment: Not stated Income/SES: Not stated Spirituality/Religion: Not stated Birth order: Previous childbirths varied from 1 to 7 (median 2, mode 1)	PTGI (Tedeschi and Calhoun, 1996); 21 items, 6-point scale 0–5; translated into Lithuanian Completed at least 2 months, and no longer than 14 months, after birth (*M* = 5.95, *SD* = 3.82) PTGI (Tedeschi and Calhoun, 1996); 21 items, 6-point scale 0–5; translated into Lithuanian Completed at least 2 months, and no longer than 14 months, after birth (*M* = 5.95, *SD* = 3.82)	Demographic factors None reported Psychological factors Birth-related posttraumatic stress (PTSS; City Birth Trauma Scale; City BiTS) Guilt and shame proneness (Guilt and Shame Proneness Scale; GASP) Social factors None reported Event characteristics Gestational age Infant health status

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Lee & Kang (2020) *Korea*	To explore the impact of resilience and social support on the PTG of mothers whose premature infants have been hospitalized in the NICU	Cross-sectional	Convenience sampling from online communities and self-help group forums for parents of preterm infants Web-based survey January 2019	N = 105 mothers Age at birth *M* = 31.41±3.63 years 19% 'advanced maternal age' (≥35) Inclusion: Hospitalized for more than 7 days and now discharged; corrected age 18 months or less Exclusion: Readmission to NICU; serious chromosomal abnormalities or genetic disorders NICU stay: *M* = 58.0 ± 53.4 days Birth weight (g): *M* = 1577.5 ± 666.0; range: 520–3500 (g)	Ethnicity: Not stated Marital status: 99% married, 1% unmarried Education: 8.6% high school, 78.1% university, 13.3% graduate school Employment: 44.8% unemployed, 55.2% employed Income/SES: 1.9% low income, 21.9% lower-middle, 41.9% middle, 22.9% upper-middle, 11.4% high income Spirituality/Religion: 45.7% religious, 20% Protestant, 17.1% Catholic, 7.6% Buddhist, 1% other Birth order: 76.2% firstborn, 23.8% later born	PTGI, Korean version (Song et al., 2009) 16 items on 4 dimensions, 6-point scale 0–5 Completed within 18 months corrected age	Demographic factors Age at birth Employment status Psychological factors Resilience *(Korean version: Connor-Davidson Resilience Scale; CD-RISC)* Social factors Social support *(Multi-dimensional Scale of Perceived Social Support Scale; MSPSS)* Event characteristics Birth weight Length of stay (NICU) Birth order

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Newton-Bennett (2022) *Australia*	To investigate wellbeing and posttraumatic growth in birthing parents of children aged 0–9 years, and identify risk and protective factors associated with outcomes	Cross-sectional	Convenience sampling via parent and neonatal support organizations Web-based survey, respondents residing in Australia (36.6%), Canada (6.7%), Ireland (9.0%), New Zealand (26.8%), UK (6.2%) or USA (14.7%) Data collected over 7 weeks in 2022	N = 866 birthing parents (99.4% female gender), stratified by child age groups (35.6% infancy/toddlerhood 0–2, 29.9% early childhood 3–5, 34.5% middle childhood 6–9). Current age: *M* = 36.0 ± *SD* = 5.59 Inclusion: <37 weeks gestational age (M = 30.15, *SD* = 3.60) Exclusion: None stated	Ethnicity: 91% did not identify with minority ethnic group Marital status: 91% married or de facto relationship Education: 90% high educational attainment Employment: Not stated Income/SES: 89% high household socioeconomic status Spirituality/Religion: Not stated Birth order: Not stated	PTGI (Tedeschi and Calhoun, 1996); 21 items, 6-point scale 0–5 Completed 0–9 years after birth	Demographic factors Parental age Parental ethnicity Psychological factors Psychological wellbeing *(Psychological Wellbeing Scale; PWBS)* Social factors None reported Event characteristics NICU length of stay (>50 days) Infant health status: Neonatal risk Number of therapies in NICU

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Okay & Güler (2021) *Turkey*	To examine the depression, stress, and PTG experienced by parents after preterm birth from the perspective of relationship dynamics	Cross-sectional	Online questionnaire survey March 2019–February 2020, before COVID-19 pandemic	N = 209 parents 50 fathers, 159 mothers Age *M* = 31.01 ± 5.35 years Inclusion: Baby born at or before 32 weeks, singleton baby, less than 12 months old Exclusion: Congenital abnormalities	Ethnicity: Not stated Marital status: Not stated Education: Not stated Employment: 57.9% employed, 42.1% not employed Income/SES: 10% described income level as inadequate, 45.5% as partially adequate and 44.5% as adequate Spirituality/Religion: Not stated Birth order: Not stated	PTGI adapted into Turkish (Duru, 2006), 21 items on 5 dimensions, 6-point scale 0–5 Completed within the first year after birth	Demographic factors None reported Psychological factors Relationship satisfaction *(Relationship Assessment Scale; RAS)* Emotional dependency *(Emotional Dependency Scale)* Depression, Anxiety and Stress *(Depression, Anxiety and Stress Scale; DASS)* Social factors None reported Event characteristics None reported

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Porat-Zyman et al. (2018) *Israel*	To investigate the long-term impact of premature birth on personal growth (PG) in mothers, and the mediating role of maternal mental health (MH) over 4 years postpartum.	Prospective longitudinal *Part of the MOST (Mothers of Singletons and Twins) project*	Deliberate sampling; over-representation of mothers of preterm babies and twins; from hospital setting Self-report questionnaires administered over 4 intervals: (1) 1 month, (2) 1 year, (3) 2 years, and (4) 4 years post-partum 2001–2012 Phase 4: 40.1% response rate	N = 222 mothers (preterm group, whole sample 561) Age *M* = 30.90 ± 4.58 years Inclusion: None stated Exclusion: None stated 78% of preterm group born between 24–35 weeks (*M* = 31.37, *SD* 2.47)	Ethnicity: Israeli Marital status: 100% married Education: 65.8% had an academic education *(whole sample, not given separately for preterm group, no sig. differences)* Employment: Not stated Income/SES: 61.8% average economic status *(whole sample, not given separately for preterm group, no sig. differences)* Spirituality/Religion: Not stated Birth order: 62.7% first time mothers	PTGI adapted to parenthood and translated into Hebrew (Taubman-Ben-Ari et al, 2010), 2 items referring to spiritual change omitted, 19 items on 4 dimensions; 6-point scale 0–5 Completed once at the last timepoint, 4 years after birth (*n* = 77)	Demographic factors None reported Psychological factors Mental health; initial and change *(Mental Health Inventory; MHI)* Social factors None reported Event characteristics None reported

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Rozen et al. (2017) *Israel*	To expand existing knowledge regarding the way in which the relationships between the objective severity of premature childbirth, the subjective perception of stress in such circumstances, and several Psychological and Social resources contribute to the mother's personal growth	Prospective longitudinal *Part of the MOST (Mothers of Singletons and Twins) project*	Convenience sampling from NICU (Sheba Hospital) Self-report questionnaires administered at two intervals: (1) 1 month after birth while infant in NICU and (2) 2 months after reaching corrected birth age January 2013–April 2015	N = 94 mothers, stratified by infant risk: 42 (44.7%) low/no risk, 52 (55.3%) moderate-high risk Age *M* = 32.54 ± 3.85 years Inclusion: Born before 35 weeks and birth weight lower than 1750g Exclusion: Infants' medical status critical or at serious risk of life	Ethnicity: 92.6% born in Israel Marital status: 93.1% married or in stable relationship Education: 81.9% post-secondary or academic education Employment: Not stated Income/SES: 52.1% average, 38.3% above average Spirituality/Religion: Not stated Birth order: 55.3% first child, 40.4% already had one or two children, 4.3% >2 older children	PTGI adapted for mothers following childbirth, Hebrew (Taubman-Ben-Ari, 2011), 21 items on 5 dimensions, 6-point scale 0–5 Completed 2 months after newborn reached corrected birth age (*n* = 87)	Demographic factors Level of education Economic status Parental age Psychological factors Stress *(Perceived Stress Scale; PSS)* Self-esteem *(Rosenberg Self-Esteem Scale; RSES)* Attachment style *(Experiences in Close Relationships Scale)* Social factors Maternal (grandmother's) emotional support *(Support Functions Scale; SFS)* Event characteristics Infant health status: objective severity (medically defined risk level)

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Taubman-Ben-Ari et al. (2010) *Israel*	To examine factors that might contribute to a mother's personal growth after the birth of preterm twins	Prospective longitudinal	Convenience sampling from maternity ward (Sheba Hospital) Self-report questionnaires administered at two intervals; (1) 3 weeks postpartum, (2) 1 year postpartum	N = 64 mothers in preterm group (whole sample 211) Age *M* = 30.31 ± 4.20 years Inclusion: Birth of preterm twins Exclusion: None reported	Ethnicity: Not stated Marital status: 100% married or cohabiting with male partner Education: 1/5 high school education, 1/10 post high school education, 2/3 postsecondary degrees *(whole sample, not given separately for preterm group, no sig. differences)* Employment: Most had full time jobs, detailed statistics not reported *(whole sample, not given separately for preterm group)* Income/SES: Most average economic status, detailed statistics not reported *(whole sample, not given separately for preterm group)* Spirituality/Religion: Not stated Birth order: 65% first-time mothers	PTGI, Hebrew (Tedeschi and Calhoun, 1996); 21 items, 6-point scale 0–5 Completed one year after birth (T2)	Demographic factors None reported Psychological factors None reported Social factors Marital adaptation *(Evaluating and Nurturing Relationship Issues Communication and Happiness Scale; ENRICH)* Maternal (grandmother's) support *(Support Functions Scale; SFS)* Event characteristics None reported *Other measures administered but analysis did not isolate these factors in just preterm parents*

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Vidaković & Ombla (2020) *Croatia*	To determine the level of stress, anxiety, depression, life satisfaction and PTG in mothers of premature children, and to determine their relations with measures of social support from family and friends	Cross-sectional	Convenience sampling from online communities and self-help group forums for parents of preterm infants Web-based survey	N = 164 mothers Age *M* = 30.00 ± 5.54 years (range 20–49) Inclusion: Only one child who was born preterm Exclusion: Not stated Gestational age: 40% late preterm (34–36), 31% moderate preterm (30–33), 24% very preterm (26–29), 5% extreme preterm (before 26) NICU Length of stay mean = 44 days, SD = 47.92, range 0–325	Ethnicity: Not stated Marital status: 76% married, 18% cohabiting, 3% single, 2% in a relationship, 1% divorced Education: 58% higher qualifications, 41% high school, 1% primary qualifications Employment: Not stated Income/SES: 69% average income, 27% above average, 4% below average Spirituality/Religion: Not stated Birth order: Not stated	PTGI adapted into Croatian (Malada, 2018); 21 items on 5 dimensions, 5-point scale 1–5 Completed any time after birth: average age of prematurely born child was 3 years (*SD* = 3.29, range 0.08–18 years)	Demographic factors None reported Psychological factors Satisfaction with life *(Satisfaction with Life Scale)* Social factors Social support *(Social Support Scale)* Event characteristics Gestational age NICU Length of stay *Also administered a measure of Depression, Anxiety and Stress (Depression, Anxiety and Stress Scale; DASS), but did not observe relationship with PTG*

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Wang et al. (2023) *China*	To investigate the levels and factors influencing posttraumatic growth among parents of premature infants in NICU	Cross-sectional	Convenience sampling from NICU Questionnaire survey conducted as part of NICU discharge process; 98.64% participation rate February–September 2022	N = 217 parents (111 fathers, 106 mothers) 93.5% aged 20–39 Inclusion: Gestational age <37 weeks, diagnosis of three or more hospital diseases Exclusion: Premature infants with congenital malformations or genetic disorders Gestational age: 30% <32 weeks NICU length of stay: 40.1% <20 days, 32.7% 20–39, 18% 40–59, 9.2% 60+ days	Ethnicity: Not stated Marital status: 95.4% married, 4.6% unmarried Education: 0.9% primary school and below, 24.9% junior school, 34.1% senior school, 40.1% bachelor's degree and above Employment: 81.1% employed, 10.1% resigned, 8.8% unemployed Income/SES: 5.5% low, 26.3% low average, 42.9% average, 25.3% high Spirituality/Religion: Not stated Birth order: 47.9% only child, 52.1% more than one child	PTGI Simplified Chinese Version (Wang et al., 2011); 20 items on 5 dimensions, 6-point scale 0–5 Completed on discharge from NICU	Demographic factors Parental age Marital status Education Psychological factors Rumination *(Chinese Event-Related Rumination Inventory; C-ERRI)* Social factors Social support *(Perceived Social Support Scale; PSSS)* Family resilience *(Family Resilience Assessment Scale; FRAS)* Event characteristics None reported

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Wu et al. (2024) *China*	To investigate the current state of PTG, psychological resilience, social support and coping styles among parents of very low birth weight infants (VLBW) and to explore the interrelationships between these factors	Cross-sectional	Convenience sampling from NICU (9 hospitals) Self-report questionnaires, encouraged to complete when visiting NICU, distributed via QR code January–December 2022	N = 344 parents (207 fathers, 137 mothers) Age *M* = 32.79 ± 4.26 years Inclusion: Parents of VLBW infants (<1500g, <37 weeks' gestation) admitted to NICU after birth; newborn hospitalized for 4–6 weeks Exclusion: Discontinuation of treatment or hospital transfer due to disease progression Gestational age: *M* = 30.33 ± 1.86 weeks	Ethnicity: Not stated Marital status: Not stated Education: 31.10% high school or below, 61.34% bachelor or associate, 7.56% master's degree or above Employment: 53.49% employed, 39.24% freelance work, 7.27% unemployed Income/SES: 20.93% low, 36.92% average, 42.15% high Spirituality/Religion: 12.21% have religious belief, 87.79% do not Birth order: 53.49% first child, 46.51% second child and above	PTGI Simplified Chinese Version (Wang et al., 2011); 20 items on 5 dimensions, 6-point scale 0–5 Completed during NICU admission	Demographic factors None reported Psychological factors Resilience *(Connor-Davidson Resilience Scale; CD-RISC)* Coping style *(Simplified Coping Style Questionnaire; SCSQ)* Social factors Social support *(Perceived Social Support Scale; PSSS)* Event characteristics None reported

Author(s)/ Year/Country	Aim/Objective	Study Design	Data Collection	Sample/Clinical Criteria	Demographic Information	PTG Measure/ When	Other related variables *(measures)*
Xingyanan et al. (2025) *China*	To explore the levels and influencing factors of PTG among parents of preterm infants in the NICU	Cross-sectional	Convenience sampling from NICU Self-report questionnaires May–August 2022	N = 160 parents (100 fathers, 60 mothers) Age *M* = 34.68 ± 5.79 years Inclusion: Gestational age greater than 28 weeks and less than 37 weeks; live birth premature infant admitted to NICU for treatment Exclusion: Parents who gave up treatment for the premature infants; infant death Gestational age: 14.37% 28/29 weeks, 35.00% 30/31 weeks, 26.25% 32/33 weeks, 18.13% 34/35 weeks, 6.25% 36/37 weeks	Ethnicity: Not stated Marital status: Not stated Education: 8.75% primary school, 21.88% junior high school, 26.87% secondary school, 36.25% undergraduate, 6.25% graduate or above Employment: Not stated Income/SES: 20.63% low, 29.37% low average, 20.63% average, 22.50% high average, 6.87% high Spirituality/Religion: 7.50% have religious belief, 92.50% do not Birth order: 42.50% one child, 33.13% second child, 24.37% third+	PTGI Chinese Version (Wang et al., 2011); 20 items on 5 dimensions, 6-point scale 0–5 Completed during hospital admission	Demographic factors Parental role/sex Parental age Education level Significant disease history Monthly household income Psychological factors *C*oping style *(Ways of Coping Questionnaire; WCQ)* Social factors Social support *(Social Support Scale; SSS)* Event characteristics Gestational age Infant health status: Apgar score (5 minutes) Multiple pregnancy

Findings

Thirteen studies published between 2010 and 2025 were included, with nine published in the last five years. This research involved N = 2,632 parents across nine countries: Israel (*n* = 3), China (*n* = 3), the USA, the UK, Lithuania, Korea, Australia, Turkey, and Croatia (*n* = 1 each). One study reported international data from Canada, Ireland, and New Zealand (Newton-Bennett, 2022). Three studies from China collected data during overlapping periods but from different hospitals (Wang et al., 2023; Wu et al., 2024; Xingyanan et al., 2025), and two Israeli studies were part of the same research program but used different cohorts (Porat-Zyman et al., 2018; Rozen et al., 2017), ensuring discrete samples. Data from Taubman-Ben-Ari and colleagues (2010) may overlap with Porat-Zyman and colleagues (2018), so the overall sample is conservatively estimated at N = 2,568.

Birthing parents were over-represented (n = 2,098) compared to non-birthing parents (n = 470). Seven studies included only birthing parents (Jarašiūnaitė-Fedosejeva et al., 2024; Lee & Kang, 2020; Newton-Bennett, 2022; Porat-Zyman et al., 2018; Rozen et al., 2017; Taubman-Ben-Ari et al., 2010; Vidaković & Ombla, 2020). Six included both parents, with one analyzing separately (Galpin, 2013). As shown in Table 1, participants were typically in their early thirties (mean of means = 31.9 years, range 30–36). Marital status was consistently high, with most being married or partnered. Education levels were also high, with most parents reporting post-secondary qualifications. Ten studies reported income data, with most participants of average-to-high socioeconomic status. Ethnicity was less frequently reported, but when available, participants tended to reflect the majority group. Religious affiliation and employment status were inconsistently reported. Nine studies indicated that many participants were first-time parents. Overall, the studies sampled predominantly middle-class, well-educated, partnered parents, although there are notable gaps in demographic reporting.

All studies measured PTG using versions of the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). Nine used the original PTGI-21, with six translating the measure into the appropriate language for their participants (e.g., Lithuanian, Turkish, Croatian, and Hebrew). All studies utilized a Likert-type scale ranging from 0 (no growth) to 5 (greatest growth). One study (Porat-Zyman et al., 2018) omitted two items referring to spiritual change due to insignificant growth on this dimension found in previous studies (Sawyer & Ayers, 2009; Taubman-Ben-Ari et al., 2011). The remaining studies employed alternative versions of the PTGI. Three studies from China used the 20-item C-PTGI, culturally adapted to collectivist values (Wang et al., 2011). One study from Korea used the 16-item K-PTGI, consolidating five domains into four (Lee & Kang, 2020; Song et al., 2009). Item means were compared across studies to account for varied scale length, with ≥3.0 indicating moderate-to-high PTG (Jansen et al., 2011).

Ten studies were cross-sectional and three longitudinal, with PTG assessed from NICU admission to 18 years post-birth. In total, 38 individual factors (Supplementary Data 2) were examined using 26 distinct self-report scales (Supplementary Data 3). Analyses included correlations (*r*), regressions (β), and group comparisons (Table 2).

Table 2

Key Findings of Factors Related to PTG

			Other variables related to PTG		
Study	**Levels of PTG *M* ± SD**	**Demographic factors**	**Psychological factors**	**Social factors**	**Event characteristics**
Brelsford et al. (2020) *USA*	PTGI Total: 52.16 ± 27.37 Item mean[1]: 2.48 ± 1.30 Range: 6–93 *PTGI subscales not reported*	None reported	Positive religious coping positively correlated ($r = .41$, $p < .05$)* Sanctification of parent-child relationship positively correlated ($r = .52$, $p < .05$ – theistic; $r = .73$, $p < .001$ - non-theistic)***; predicted higher PTG, after controlling for stress and parental role/sex ($\beta = .84$, $p < .001$)*** Stress positively correlated with PTG ($r = .46$, $p < .05$)* *Depression[2], anxiety[2], and negative religious coping[2]*	Spiritual disclosure positively correlated ($r = .43$, $p < .05$)	None reported

		Other variables related to PTG			
Study	**Levels of PTG *M* ± SD**	**Demographic factors**	**Psychological factors**	**Social factors**	**Event characteristics**
Galpin (2013) *UK*	PTGI Total[1]: 46.80 ± 23.49 Item mean[1]: 2.23 ± 1.12 Range: 0–93 Five factor structure: [1] Relating to others: 2.52 ± 1.21 New possibilities: 1.67 ± 1.30 Appreciation of life: 2.99 ± 1.45 Personal strength: 2.49 ± 1.36 Spiritual change: 0.93 ± 1.46 Mothers: 51.51± 23.23 Fathers: 42.10 ± 23.75 ($p < .05$)*	**Mothers:** Parental age negatively correlated with PTG ($r = -.52$, $p < .01$)** *Marital status[2], education[2], ethnicity[2], mental health diagnosis[2]* **Fathers:** *Age[2], marital status[2], education[2], ethnicity[2], mental health diagnosis[2]*	**Combined:** Positively correlated: PTSS ($r = .38$, $p < .01$)** Deliberate rumination ($r = .61$, $p < .01$); and predicted PTG ($\beta = .58$, $p = .000$)*** Intrusive rumination ($r = .44$, $p < .01$)** **Mothers:** Positively correlated: PTSS ($r = .38$, $p < .01$)** Deliberate rumination ($r = .60$, $p < .01$)** Intrusive rumination ($r = .43$, $p < .01$)** Depression ($r = .30$, $p < .05$)* **Fathers:** Positively correlated: Deliberate rumination ($r = .52$, $p < .01$)** Intrusive rumination ($r = .40$, $p < .05$)* Depression ($r = .40$, $p < .05$)* *Fathers' PTSS [2]*	*Social support[2]*	**Mothers:** *Gestational age[2], birth weight[2], NICU length of stay[2], infant health status[2], multiple birth[2], birth order[2]* Appreciation of life subscale correlated with: Birth weight ($r = -.27$, $p < .05$)* NICU length of stay ($r = .32$, $p < .05$) **Fathers:** *Gestational age[2], birth weight[2], NICU length of stay[2], infant health status[2], multiple birth[2], birth order[2]*

		Other variables related to PTG			
Study	**Levels of PTG *M* ± SD**	**Demographic factors**	**Psychological factors**	**Social factors**	**Event characteristics**
Jarašiūnaitė-Fedosejeva et al. (2024) *Lithuania*	PTGI Total: 48.62 ± 25.15 Item mean[1]: 2.32 ± 1.20 Range: 0–99 *PTGI subscales not reported*	None reported	Birth-related PTSS positively correlated (r = .32, p < .05)*; and predicted PTG (β = .30, p = .01)** Shame-related negative self-evaluation positively correlated (r = .27, p < .05)*; moderates the relationship between PTSS and PTG, decreasing PTG (p = .02)*; only significant for very preterm group (<32 weeks, N = 35; p < .05)* *Shame-related withdrawal* [2] *Proneness to guilt (negative behavior evaluation and repair action tendencies)* [2]	None reported	Gestational age negatively correlated (r = -.32, p < .01)**; lower gestational age predicts higher PTG (β = .31, p < .01)** *Infant health status*[2] *- after controlling for PTSS and gestational age*
Lee & Kang (2020) *Korea*	K-PTGI Total: 57.38 ± 13.30 Item mean[1]: 3.59 ± 0.83 Range: 17–80 *K-PTGI subscales not reported*	Age at birth (≥35) predicted higher PTG (β = .17, p < .05)* Current employment (on leave vs unemployment) predicted higher PTG (β = .17, p < .05)*	Resilience positively correlated (r = .63, p < .001)***; increased resilience predicted higher PTG (β = .54, p < .001)***	Social support positively correlated (r = .45, p < .001)***	*Birth weight*[2]*, NICU length of stay*[2]*, birth order*[2]

		Other variables related to PTG			
Study	**Levels of PTG *M* ± SD**	**Demographic factors**	**Psychological factors**	**Social factors**	**Event characteristics**
Newton-Bennett (2022) *Australia*	PTGI Total: 47.05 ± 22.63 Item mean[1]: 2.20 ± 1.10 Five factor structure: [1] Relating to others: 2.21 ± 1.25 New possibilities: 1.77 ± 1.34 Appreciation of life: 2.90 ± 1.36 Personal strength: 2.98 ± 1.26 Spiritual change: 1.03 ± 1.45	Lower parental age at assessment predicted higher PTG (β = -.15, p < .001)*** Ethnic minority status predicted lower PTG (β = -.08, p < .05)*	Psychological wellbeing positively correlated with PTG (r = .18, p < .001)***	None reported	NICU length of stay: >50 days predicted higher PTG (β = .13, p < .01)** Infant health status: greater therapies in NICU predicted higher PTG (β = .11, p < .01)**; higher neonatal risk predicted higher PTG (β = .16, p < .001)***
Okay & Güler (2021) *Turkey*	PTGI Total[1]: 57.56 ± 20.12 Item mean[1]: 2.74 ± 0.96 *PTGI subscales not reported* Mothers: 61.24 ± 19.20 Fathers: 53.88 ± 21.03 (p < .05)*	None reported	Relationship satisfaction positively correlated (r = .20, p < .01); and predicted higher PTG (β = .44, p < .05) Emotional dependency positively correlated (r = .29, p < .01); and predicted higher PTG (β = .39, p < .001) Depression negatively correlated (r = -.17, p < .05); and negatively predicted PTG (β = -.84, p < .001); fully mediated relationship satisfaction → PTG; partially mediated emotional dependency → PTG Anxiety negatively predicted PTG (β = -1.27, p < .001); fully mediated relationship satisfaction → PTG; *did not mediate emotional dependency → PTG Stress*[2]	None reported	None reported

		Other variables related to PTG			
Study	**Levels of PTG *M* ± SD**	**Demographic factors**	**Psychological factors**	**Social factors**	**Event characteristics**
Porat-Zyman et al. (2018) *Israel*	PTGI Total[1]: 66.69 ± 11.21 Item mean: 3.51 ± 0.59 *PTGI subscales not reported*	None reported	Increase in mental health over time predicts higher PTG (β = .33, p < .01)** 4 years post; and partially mediates the relationship: preterm birth → PTG (*ind* = .10, p < .01)** *Initial mental health after birth*[2]	None reported	None reported
Rozen et al. (2017) *Israel*	PTGI Total[1]: 63.44 ± 24.11 Item mean[1]: 3.20 ± 1.15 Five factor structure: Relating to others (RTO): 2.99 ± 0.95 New possibilities (NP): 2.83 ± 1.11 Appreciation of life (AOL): 3.46 ± 1.29 Personal strength (PS): 3.50 ± 1.13 Spiritual change (SC): 1.99 ± 1.76	Lower education level predicts higher PTG on *personal strength* (β = -.24, p < .05)* and *spirituality* (β = -.28, p < .01)** dimensions Lower economic status predicts higher PTG on *relating to others* dimension (β = -.26, p < .05)* *Parental age*[2]	Moderate stress predicted higher PTG on *new possibilities* (β = -.26, p < .05)*,* *personal strength (β = -.21, p < .05)*, *relating to others* (β = -.26, p < .01)** dimensions Attachment style: attachment anxiety negatively correlated with *personal strength* (r = -.22, p < .05)* and *spirituality* (r = -.23, p < .05)* PTG dimensions *Self-esteem*[2]	Maternal (grandmother's) emotional support positively correlated with all five dimensions (r = .32, p < .01)** RTO; (r = .27, p < .05)* NP; (r = .25, p < .01)** AOL; (r = .44, p < .01)** PS; (r = .23, p < .01)** SC), moderated by infant health status; only in low-risk babies on three dimensions (β = -.32, p < .05)* PS; (β = -.39, p < .05)* NP; (β = -.33, p < .05)* RTz	Infant health status: predicted higher PTG on *spirituality* (β = .26, p < .05)*

		Other variables related to PTG			
Study	**Levels of PTG *M* ± SD**	**Demographic factors**	**Psychological factors**	**Social factors**	**Event characteristics**
Taubman-Ben-Ari et al. (2010) *Israel*	PTGI Total[1]: 68.67 ± 14.91 Item mean: 3.27 ± 0.71 *PTGI subscales not reported*	None reported	None reported	Marital adaptation immediately after birth associated with higher PTG 1 year later (r = .30, p < .05)* *Maternal (grandmother's) emotional support[2]*	None reported
Vidaković & Ombla (2020) *Croatia*	PTGI Total: 68.74 ± 29.65 Item mean[1]: 3.27 ± 1.41 Range: 0–105 *PTGI subscales not reported*	None reported	Life satisfaction positively correlated (r = .23, p < .01)**	Social support: Instrumental family support positively correlated (r = .21, p < .01); and predicts PTG (β = -.35, p < .01) Emotional friend support positively correlated (r = .20, p < .01) Self-esteem friend support positively correlated (r = .20, p < .01) Informational friend support positively correlated (r = .20, p < .01)** Instrumental friend support positively correlated (r = .18, p < .05)* *Emotional family support[2], self-esteem family support[2], informational family support[2]*	Gestational age negatively correlated with PTG (r = -.18, p < .05)* NICU length of stay positively correlated with PTG (r = .21, p < .01)**

		Other variables related to PTG			
Study	**Levels of PTG *M* ± SD**	**Demographic factors**	**Psychological factors**	**Social factors**	**Event characteristics**
Wang et al. (2023) *China*	C-PTGI Total: 61.89 ± 17.89 Item mean: 3.09 ± 0.89 Range: 12–100 Five factor structure: Relating to others: 2.96 ± 1.04 New possibilities: 3.22 ± 0.95 Appreciation of life: 3.25 ± 1.01 Personal strength: 3.41 ± 0.99 Spiritual change: 2.58 ± 1.14	Parental age: predicted PTG (β = -.14, p < .01)**; PTG levels higher in parents aged 20–39 years, compared to <20 and >40 (p < .001)* Marital status: married status positively predicted PTG *(β = -.11, p < .05)*;* married parents reported significantly higher PTG compared to unmarried parents (p < .001)** Education: predicted PTG *(β = .14, p < .05)*,* more educated parents reported significantly higher PTG (p < .001)**	Rumination positively correlated (r = .43, p < .01)**; and deliberate rumination predicts PTG (β = .42, p < .001)***	Social support positively correlated (r = .42, p < .01)**; and family support positively predicts PTG (β = .17, p < .01)** Family resilience positively correlated (r = .44, p < .01)**; and positively predicts PTG (β = .26, p < .001)***	None reported

		Other variables related to PTG			
Study	**Levels of PTG *M* ± SD**	**Demographic factors**	**Psychological factors**	**Social factors**	**Event characteristics**
Wu et al. (2024) *China*	C-PTGI Total: 47.91 ± 12.75 Item mean: 2.40 ± 0.64 Five factor structure: Relating to others: 2.32 ± 0.76 New possibilities: 2.27 ± 0.75 Appreciation of life: 2.56 ± 0.71 Personal strength: 2.44 ± 0.75 Spiritual change: 2.31 ± 0.79 Mothers: 47.80 ± 13.09 Fathers: 47.98 ± 12.55 (p = .90)	None reported	Resilience positively correlated (r = .89, p < .01)**; and predicts PTG (β = .98, p < .001)*** Coping style: Positive coping positively correlated (r = .51, p < .01)**; and predicts PTG (β = .08, p < .05)* Negative coping negatively correlated with PTG (r = -.11, p < .01)**	Social support positively correlated with PTG (r = .51, p < .01)**; does not directly impact PTG (β = .01, p = .84); but can influence PTG through positive coping style (mediator; β = .02, p < .05)*	None reported
Xingyanan et al. (2025) *China*	C-PTGI Total: 66.41 ± 10.37 Item mean: 3.28 ± 0.51 Five factor structure: Relating to others: 3.00 ± 1.02 New possibilities: 2.90 ± 0.79 Appreciation of life: 3.47 ± 0.62 Personal strength: 3.36 ± 0.91 Spiritual change: 3.55 ± 0.77 Mothers: 62.60 ± 10.58 Fathers: 68.70 ± 9.58 (p < .01)**	*Parental role/sex[2], age[2], education level[2], significant disease history[2], monthly household income[2]*	Coping style positively predicts PTG (β = .37, p < .001)*** Positive coping positively correlated with PTG (r = .66, p < .01)** Negative coping negatively correlated with PTG (r = -.79, p < .01)**	Social support positively predicts PTG (β = .23, p < .001)*** Objective support positively correlated with PTG (r = .68, p < .01)** Subjective support positively correlated with PTG (r = .78, p < .01)** Support utilization positively correlated with PTG (r = .72, p < .01)**	Gestational age: predicts PTG (β = .28, p < .001)***; parents reported higher PTG with increased gestational age (p < .01)* Infant health status: Apgar score predicts PTG (β = .14, p < .05)*; parents reported higher PTG with increased Apgar score (p < .01)** *Multiple pregnancy[2]*

Note. * p < .05, ** p < .01, *** p < .001. Abbreviations: PTG = posttraumatic growth; PTGI = Posttraumatic Growth Inventory; NICU = neonatal intensive care unit.
[1] Calculated for the purpose of this review. [2] Indicates that no significant relationship was reported between this variable and PT

Methodological Quality

Two studies were rated "Good" (Newton-Bennett, 2022; Rozen et al., 2017), and the remainder "Fair" (Appendix A). All studies clearly described their aims and used established, psychometrically validated PTG instruments commonly employed in PTG research. However, this strength was offset by several methodological limitations. Six studies lacked sample-size justification and eight reported low or indeterminate response rates. One study used a repeated-measures design. Only three studies measured PTG at least two years post-birth (Newton-Bennett, 2022; Porat-Zyman et al., 2018; Vidaković & Ombla, 2020), the timeframe considered sufficient for PTG to fully emerge (Helgeson et al., 2006).

Levels of PTG

Item means ranged from 2.20 to 3.59, indicating small (n = 6*) to* moderate (n = 7) PTG. No study reported an item mean below 2.00, suggesting all samples demonstrated at least some PTG. Seven studies, conducted in China, Croatia, Israel, and Korea, reported means above 3.00 (Lee & Kang, 2020; Porat-Zyman et al., 2018; Rozen et al., 2017; Taubman-Ben-Ari et al., 2010; Vidaković & Ombla, 2020; Wang et al., 2023; Xingyanan et al., 2025). Six studies from the USA, UK, Lithuania, Australia, Turkey, and China reported means below 3.00 (Brelsford et al., 2020; Galpin, 2013; Jarašiūnaitė-Fedosejeva et al., 2024; Newton-Bennett, 2022; Okay & Güler, 2021; Wu et al., 2024). Four studies compared PTG levels in birthing and non-birthing parents: two reported higher PTG in birthing parents (Galpin, 2013; Okay & Güler, 2021), one in non-birthing parents (Xingyanan et al., 2025), and one reported no difference (Wu et al., 2024).

Demographic Factors

Six studies examined demographic factors related to PTG.

Parental Age (n = 6)

Younger age was associated with higher PTG in three studies (Newton-Bennett, 2022; Wang et al., 2023; Galpin, 2013), while one found older age predictive (Lee & Kang, 2020). Wang and colleagues (2023) reported a non-linear relationship, finding higher PTG in those aged 20–39. Two studies found no relationship (Rozen et al., 2017; Xingyanan et al., 2025).

Education (n = 4)

Findings were inconsistent. Lower education was associated with higher PTG in one study (Rozen et al., 2017), higher education in another (Wang et al., 2023), while two reported no association (Xingyanan et al., 2025; Galpin, 2013).

Other Factors

Single studies found that lower SES (Rozen et al., 2017), being married (Wang et al., 2023), and current employment (Lee & Kang, 2020) were associated with greater PTG, whereas minority ethnic status was associated with lower PTG (Newton-Bennett, 2022). Pre-existing parents' medical and mental health diagnoses showed no significant relationship.

Psychological Factors

Twelve studies explored psychological factors related to PTG.

Well-being (n = 2)

Two studies found higher psychological well-being to be associated with greater PTG (Newton-Bennett, 2022; Porat-Zyman et al., 2018), with the latter reporting that immediate well-being after birth was unrelated to PTG, whereas improvements in well-being over time were positively associated.

PTSS (n = 2)

Two studies found positive associations, with PTSS predicting PTG (Galpin, 2013; Jarašiūnaitė-Fedosejeva et al., 2024). The latter reported that shame-related negative self-evaluation moderated this relationship, decreasing PTG in parents of very preterm infants (<32 weeks' gestation).

Depression (n = 3)

Results were mixed. One study found a positive association (Galpin, 2013), another a negative association (with depression mediating links between relationship satisfaction, emotional dependency, and PTG; Okay & Güler, 2021), and one reported no relationship (Brelsford et al., 2020).

Stress (n = 3)

Findings varied; stress correlated positively with PTG in one study (Brelsford et al., 2020), moderate stress predicted higher PTG in another (Rozen et al., 2017), while no relationship was found in a third (Okay & Güler, 2021).

Rumination (n = 2)

Two studies found both intrusive (automatic, repetitive, and often distressing thoughts about the traumatic event) and deliberate (purposeful reflection to make sense of the experience) rumination correlated with PTG, with deliberate rumination emerging as a significant predictor (Galpin, 2013; Wang et al., 2023).

Coping (n = 2)

Two studies reported positive coping associated with higher PTG, and negative coping with lower PTG (Wu et al., 2024; Xingyanan et al., 2025).

Resilience (n = 2)

Both studies examining resilience found positive associations, with resilience also predicting PTG (Lee & Kang, 2020; Wu et al., 2024).

Other Factors

Single studies linked higher PTG to anxious attachment (Rozen et al., 2017), positive religious coping and sanctification of the parent–child relationship (Brelsford et al., 2020), greater life satisfaction (Vidaković & Ombla, 2020), relationship satisfaction and emotional dependency (Okay & Güler, 2021), and lower anxiety or shame-related self-evaluation (Okay & Güler, 2021; Jarašiūnaitė-Fedosejeva et al., 2024). Guilt, negative religious coping, and self-esteem showed no significant association.

Social Factors

Six studies examined social factors related to PTG.

Social Support (n = 5)

All five studies consistently found greater perceived support related to higher PTG (Lee & Kang, 2020; Vidaković & Ombla, 2020; Wang et al., 2023; Wu et al., 2024; Xingyanan et al., 2025). Effects were stronger for perceived (subjective) rather than actual (objective) support. One study found that social support acted indirectly on PTG through adaptive coping (Wu et al., 2024).

Grandmother's Emotional Support (n = 2)

Subfactor or wider social support, with mixed findings. One study found grandmother's emotional support to be associated with PTG in parents of medically lower-risk infants (Rozen et al., 2017), while another reported no effect (Taubman-Ben-Ari et al., 2010).

Other Factors

Spiritual disclosure (Brelsford et al., 2020), marital adaptation (Taubman-Ben-Ari et al., 2010), and family resilience (Wang et al., 2023) were each linked to higher PTG.

Event Characteristics

Six studies assessed event characteristics related to PTG.

Gestational Age (n = 4)

Three studies found that lower gestational age was associated with greater PTG (Galpin, 2013; Jarašiūnaitė-Fedosejeva et al., 2024; Vidaković & Ombla, 2020), with the association observed only for birthing parents in one study (Galpin, 2013). One study reported the opposite association, with higher gestational age linked to greater PTG (Xingyanan et al., 2025).

Infant Health Status (n = 5)

Findings were inconsistent. Poorer infant health was linked to higher PTG in three studies (Galpin, 2013; Rozen et al., 2017; Newton-Bennett, 2022), better health linked to greater PTG in one (Xingyanan et al., 2025), and no reported relationship in another (Jarašiūnaitė-Fedosejeva et al., 2024).

NICU Length of Stay (n = 4)

Three studies found longer stays associated with higher PTG (Galpin, 2013; Newton-Bennett, 2022; Vidaković & Ombla, 2020), one found no relationship (Lee & Kang, 2020). In one study, the association was observed only for birthing parents (Galpin, 2013).

Other Factors

Higher birth weight predicted PTG in one study (Galpin, 2013). No significant relationships with PTG were reported for birth order (n = 2) or multiple pregnancy (n = 1).

Across 13 studies, parents reported low-to-moderate PTG after preterm birth. Psychological and social resources (e.g., social support, coping, resilience, rumination) were most frequently examined and consistently showed associations with PTG. Demographic and event-related variables were examined less often and showed more mixed results.

Discussion

Posttraumatic growth (PTG) refers to positive psychological change that can occur following adversity (Tedeschi & Calhoun, 1995). This review synthesized quantitative evidence on factors associated with PTG in parents following preterm birth. Thirteen studies from diverse geographic and cultural settings examined demographic, psychological, social, and event-related factors. Across the included studies, parents typically reported small to moderate levels of PTG, suggesting that growth-related meaning-making is a commonly described response following preterm birth. Thirty-eight unique factors were assessed, of which 14 were replicated across more than one study. Methodological quality varied across studies, with two studies rated good and the remainder fair. This review highlights emerging patterns and factors that may be associated with PTG following preterm birth.

PTG levels varied across countries but did not align clearly with regional groupings. For instance, high PTG was observed in China and Croatia, despite distinct cultural and healthcare

systems, whereas lower scores were reported in countries such as the UK, USA, and Australia. In line with critiques of binary cultural classifications (Krys et al., 2024), this review does not group countries but considers sociocultural factors that may shape PTG. Previous research proposes that PTG is shaped by cultural frameworks, which influence coping, social support, and interpretations of adversity (Taku et al., 2021; Wadji et al., 2023). Cultures emphasizing community-based coping may facilitate PTG through collective meaning-making (Wlodarczyk et al., 2016). Religious beliefs may also promote PTG by reframing trauma as an opportunity for spiritual growth (Eames & O'Connor, 2022). Beyond culture, systemic factors such as perinatal health inequalities, access to quality maternity and neonatal care, and integration of mental health support may further explain variations (Barros et al., 2012; Womersley et al., 2021). However, as cultural context was not directly measured in the included studies, these interpretations should be considered hypothesis-generating rather than evidence-based conclusions.

Demographic factors, especially age and education, showed inconsistent associations with PTG, highlighting gaps in evidence. In contrast, psychological factors showed stronger and more consistent relationships. Several identified factors align with Tedeschi and Calhoun's (2004) functional-descriptive model, including parental well-being, deliberate rumination, and coping. The relationship between well-being and PTG underscores the potential of psychological interventions. Coping strategies also emerged as related factors: positive coping (problem-solving, seeking support) was associated with PTG, while avoidance was negatively related. These findings are consistent with resilience theory, which emphasizes adaptive coping after adversity (Joseph & Linley, 2006).

Posttraumatic stress symptoms (PTSS) were positively associated with PTG, consistent with other trauma contexts (Blix et al., 2013; Liu et al., 2017). This supports the idea that distress may activate cognitive processes such as rumination and meaning making (Tedeschi & Calhoun, 2004). However, PTSS in this context may stem from multiple sources, including childbirth, preterm delivery, and neonatal hospitalization, so it is challenging to isolate its specific role relevant to preterm birth. Associations with depression were mixed, echoing related reviews (Brandão et al., 2020; O'Toole et al., 2022). Findings on general stress were also inconsistent. These discrepancies suggest that while moderate distress may promote cognitive restructuring, severe distress may inhibit PTG, consistent with curvilinear models (Shakespeare-Finch & Lurie-Beck, 2014; Kleim & Ehlers, 2009).

Social factors were widely examined, with social support the most researched factor. Notably, parents' *perception* of support had a greater impact than its actual availability. By enabling parents to share and reconstruct narratives, social support helps them process emotional and cognitive challenges. The importance of social support in fostering PTG has been widely observed, especially in caregivers (Ning et al., 2023).

Event-related characteristics were also linked to PTG. Lower gestational age and longer hospitalization were positively associated with PTG. One possible explanation is that extended admissions allow stronger alliances with medical staff, fostering trust and support, as seen in pediatric intensive care (Yagiela et al., 2022). Some studies excluded extremely preterm infants (<28 weeks; Galpin, 2013), treating their parents as a distinct group. Research suggests parents of

higher birthweight infants may experience greater distress due to less support, whereas parents of lower birthweight infants may receive more acknowledgment of their challenges (Elklit et al., 2007).

Strengths and Limitations

This is the first systematic review to synthesize quantitative evidence on factors associated with PTG in parents following preterm birth. It included nine studies not covered by related reviews (Brandão et al., 2020; O'Toole et al., 2022). A key strength is the comprehensive search, which spanned multiple databases, included grey literature, and translated non-English articles to mitigate publication bias. While the findings are drawn from an international sample, the current evidence base does not include countries with the highest preterm birth rates (Southern Asia and Sub-Saharan Africa; World Health Organization, 2023), limiting generalizability. This is further compounded by the limited characteristics of the samples included in this review (predominantly married, well educated, ethnic majority, and of average to high socioeconomic status). Bereaved parents were not included in this review; although they may also experience posttraumatic growth, bereavement represents a qualitatively distinct experience requiring separate investigation.

Due to the heterogeneity of examined variables, a narrative synthesis was undertaken without a meta-analytic component, resulting in a primarily descriptive account of findings. The diversity of findings limits firm conclusions, as most factors were observed in only a few studies. Interpretation is further complicated by substantial heterogeneity in the timing of PTG assessment across studies, ranging from NICU admission to several years post-birth, which likely reflects different stages of the growth process and limits direct comparability of findings. Most studies were rated "fair," with concerns about bias. Small sample sizes may reduce statistical power, and low response rates raise the risk of non-response bias. Reliance on self-report may also introduce recall and social desirability biases.

Research and Clinical Implications

Future research should examine factors more consistently and replicate single-study findings, including in longitudinal designs. Representation of non-birthing parents should be improved. Cultural differences in parental roles and systemic health inequalities also warrant attention. Addressing these gaps would provide a more inclusive understanding of PTG and inform culturally sensitive interventions.

Clinically, interventions to promote PTG could be delivered antenatally, during neonatal admissions, or after discharge. Preliminary evidence suggests potential for mindfulness-based interventions (Ghaedi-Heidari et al., 2024), though future work should explore whether interventions can be tailored for diverse populations and embedded into current care pathways. Based on this review, clinicians should support coping, foster social connections, encourage deliberate rumination, and address distress. Event characteristics may help identify parents most in need of early support. These findings highlight the importance of care approaches that address parents' perceptions of safety, support, and control, which align closely with principles of

trauma-informed care. Policymakers should integrate PTG-supportive interventions into neonatal care, expand psychological provision, and address inequities in service access.

Conclusion

This systematic review synthesized quantitative evidence on factors associated with posttraumatic growth (PTG) in parents following preterm birth. Across 13 studies from nine countries, parents reported small-to-moderate PTG, indicating that many experience positive psychological change alongside significant distress. By focusing specifically on preterm birth and integrating demographic, psychological, social, and event-related correlates, this review extends previous work that combined heterogeneous pediatric populations or examined childbirth more broadly.

Psychological and social factors emerged as the most consistent correlates of PTG. Higher psychological well-being, resilience, deliberate rumination, and adaptive coping strategies were generally associated with greater growth, whereas avoidance-based coping and shame-related self-evaluation appeared to constrain it. Perceived social support, rather than objective support, showed a particularly robust relationship with PTG, reinforcing models that highlight the importance of cognitive processing and interpersonal contexts in transforming trauma into growth.

Associations with distress-related variables were more complex. Posttraumatic stress symptoms were positively related to PTG, while links with depression and general stress were mixed, consistent with the idea that moderate distress may facilitate meaning-making, whereas severe, persistent distress may inhibit growth. Event-related characteristics (e.g., lower gestational age, poorer infant health, longer NICU stays) were sometimes linked to higher PTG, possibly reflecting heightened opportunities for validation and reappraisal in the context of more evident adversity. Demographic factors were less frequently examined and yielded inconsistent findings, suggesting that their effects may be indirect or context dependent.

Methodological variability, reliance on self-report, and relatively homogeneous samples limit the strength and generalizability of conclusions. Future research should employ longitudinal designs, consistently assess core psychological, social, and event-related factors, and purposively include non-birthing parents and families from underrepresented cultural and socioeconomic contexts, particularly in regions with the highest preterm birth rates.

Clinically, the findings support integrating PTG-informed, trauma-aware care into neonatal and community services. Screening should encompass both distress and strengths, with interventions aimed at enhancing adaptive coping, fostering deliberate reflection, and strengthening social support. Event-related markers such as very early gestation or prolonged hospitalization may help identify parents needing early, proactive support. At a policy level, embedding psychological care within routine neonatal pathways and addressing inequities in access to perinatal mental health services are essential to ensure that all families have the opportunity not only to cope with preterm birth but also to experience growth.

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Appendix A

Quality Appraisal of Included Studies

Study	Q1 Research question	Q2 Study population	Q3 Ppt. rate	Q4 Recruitment	Q5 Sample justify	Q6 Exposure assessed	Q7 Sufficient timeframe	Q8 Levels of exposure	Q9 Exposure measures	Q10 Repeated assess.	Q11 Outcome measures	Q12 Blinding	Q13 Follow-up rate	Q14 Stats. Analyses	Rating
Brelsford et al. (2020)	Yes	Yes	No	Yes	No	No	No	No	Yes	NA	Yes	NA	NA	Yes	**Fair**
Galpin (2013)	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	NA	Yes	NA	NA	Yes	**Fair**
Jarašiūnaitė-Fedosejeva et al. (2024)	Yes	Yes	CD	Yes	Yes	No	No	Yes	Yes	NA	Yes	NA	NA	Yes	**Fair**
Lee & Kang (2020)	Yes	Yes	CD	Yes	Yes	No	No	No	No	NA	Yes	NA	NA	Yes	**Fair**
Newton-Bennett (2022)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	NA	Yes	NA	NA	Yes	**Good**
Okay & Güler (2021)	Yes	Yes	No	Yes	No	No	No	No	Yes	NA	Yes	NA	NA	Yes	**Fair**
Porat-Zyman et al. (2018)	Yes	Yes	CD	Yes	No	Yes	Yes	No	Yes	Yes	Yes	NA	No	Yes	**Fair**
Rozen et al. (2017)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	NA	Yes	Yes	**Good**
Taubman-Ben-Ari et al. (2010)	Yes	No	Yes	NR	No	Yes	No	No	No	No	Yes	NA	Yes	Yes	**Fair**

Study	Q1 Research question	Q2 Study population	Q3 Ppt. rate	Q4 Recruitment	Q5 Sample justify	Q6 Exposure assessed	Q7 Sufficient timeframe	Q8 Levels of exposure	Q9 Exposure measures	Q10 Repeated assess.	Q11 Outcome measures	Q12 Blinding	Q13 Follow-up rate	Q14 Stats. Analyses	Rating
Vidaković & Ombla (2020)	Yes	Yes	CD	Yes	No	No	Yes	No	Yes	NA	Yes	NA	NA	No	**Fair**
Wang et al. (2023)	Yes	Yes	Yes	Yes	No	No	No	No	Yes	NA	Yes	NA	NA	Yes	**Fair**
Wu et al. (2024)	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	NA	Yes	NA	NA	No	**Fair**
Xingyanan et al. (2025)	Yes	Yes	NR	Yes	Yes	No	No	No	Yes	NA	Yes	NA	NA	Yes	**Fair**