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Authors

Bamishigbin, Olajide N
Dunkel Schetter, Chris
Stanton, Annette L

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Review article

The antecedents and consequences of adolescent fatherhood: A systematic review

Olajide N. Bamishigbin Jr.^{a,*}, Chris Dunkel Schetter^b, Annette L. Stanton^b^a California State University, Los Angeles, United States^b University of California, Los Angeles, United States

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ABSTRACT

Rationale: Although several systematic reviews have addressed the antecedents and consequences of adolescent motherhood, none have examined adolescent fatherhood.

Objectives: The aims of this systematic review were to identify evidence-based factors that increase the probability of adolescent fatherhood and to identify outcomes that differ between adolescent fathers compared to two other groups, namely adult fathers and non-father age peers. The current study used a theoretical framework, Parke's systems view, to guide the review.

Method: The search strategy included a bibliographic search of PubMed and PsycINFO. To be included, publications had to be (a) peer-reviewed, (b) quantitative studies, (c) published in English, and (d) compare adolescent fathers (< 20 years) to adult fathers (> 19 years) or to non-father peers (13- to 19-years old).

Results: A total of 2869 unique published sources were screened and 39 met these inclusion criteria. More than half of the articles focused on antecedents ($k = 24$), with the most consistent evidence showing that adolescent fathers come from disadvantaged backgrounds characterized by single-parent households and low parental socioeconomic status. There is also evidence that adolescent fathers were disproportionately Black or Latino (vs. White), had lower academic competence, engaged in more delinquent behavior (e.g., vandalism), and had peers who engaged in more anti-social behaviors. Articles on the outcomes of adolescent fatherhood ($k = 23$) yielded consistent evidence that their offspring are at greater risk of being preterm or low birthweight and psychological disorders as compared to the offspring of adult fathers.

Conclusions: Much of the literature was published prior to the year 2000, and methodological weaknesses are noted. Nonetheless, this review has implications for beginning to establish an evidence-based understanding of adolescent fathers. Future rigorous and theory-driven research can provide an even clearer picture and a basis for intervention.

1. Introduction

Considerable research is available on the antecedents and consequences of adolescent motherhood. Specifically, several research reviews have been published on risk factors for adolescent pregnancy (Blinn-Pike et al., 2002; Rigsby et al., 1998), consequences of adolescent pregnancy (Imamura et al., 2007; Scholl et al., 1994), and programs to prevent adolescent pregnancy (Bennett and Assefi, 2005; DiCenso et al., 2002; Robin et al., 2004). However, each of these is exclusively focused on females or mothers. Notably, there are no systematic reviews on adolescent fathers (< 20 years), as they are understudied in comparison to adolescent mothers. This systematic review is dedicated to examining the antecedents and consequences of becoming a father in adolescence.

One reason adolescent fathers may be understudied is because adolescent mothers are less likely to put fathers' information on the birth certificate (Landry and Forrester, 1995). Another reason could be because they are less likely to affirm paternity than older fathers (Paschal, 2013). Finally, due to cultural norms dictating that, since mothers give birth and are primary caretakers, fathers are unimportant in their children's development and do not need to be studied (Phares, 1992). Despite these concerns, the National Survey of Family Growth, a nationally representative study of men aged 15 to 44-years old, estimated that, between 2006 and 2010, there were nearly 11 million adolescent fathers in the U.S. (Martinez et al., 2012). Accordingly, this group merits further investigation.

The present work is guided by Parke's (1996) systems view on determinants of paternal involvement. Parke theorizes that there are

* Corresponding author. 3350 Sawtelle Blvd, Apt 105, Los Angeles, CA, 90066, United States.

E-mail address: obamish@calstatela.edu (O.N. Bamishigbin).

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individual influences, familial influences, extra-familial influences, and cultural influences, all related to a father's involvement with the family. Individual influences refer to a father's attitudes about fatherhood and timing of entry into the parental role. Familial influences include the father-child relationship and the mother-child relationship. Extra-familial influences refer to the father's relationship with his relatives, neighbors, friends, or co-workers. Finally, cultural influences involve childhood cultures of boys and girls, attitudes concerning parental gender roles, and ethnicity-related family values and beliefs. Parke's systems view was chosen to guide the current paper because it focuses specifically on the experiences of fathers and differentiates between individual and external influences.

Here, Parke's (1996) view is extended by exploring how antecedents such as individual, familial, extra-familial, and cultural influences predict entry into adolescent fatherhood, and by examining how entry into adolescent fatherhood predicts consequences related to the father, the child, and the child's mother. Although Parke's systems view does include cultural influences, which has ethnicity-related family values, this review will explore race/ethnicity as a separate antecedent of adolescent fatherhood. Although it precedes adolescent fatherhood, race/ethnicity does not appropriately fit into any of these categories because it is a social construct strongly associated with material and psychosocial resources. Accordingly, when exploring race/ethnicity as an antecedent to adolescent fatherhood, considerations on the structures that determine the allocation of economic and psychosocial resources by race/ethnicity should be included.

Fig. 1 displays the hypothesized conceptual psychosocial life course model, which considers the life course of men from adolescence to adulthood. In the model, race/ethnicity, individual, familial, extra-familial, and cultural influences predict early entry into fatherhood, and early entry into fatherhood predicts consequences for the father himself and the father's subsequent family. It is important to note that the model shows a direct association between antecedents and consequences. For example, childhood SES is associated with SES in adulthood, and this pattern may be true regardless of entry into adolescent fatherhood. In the interest of focusing on research in which temporal precedence may be inferred, studies for which temporal precedence cannot be inferred are not included (tables available from

authors; Bamishigbin, 2017). An exception to this rule is that cross-sectional studies are included when they involve factors that clearly precede adolescent fatherhood (e.g., parental education) or clearly occur after fatherhood (e.g., parental satisfaction).

2. Method

2.1. Search strategy

The search strategy involved a search of PubMed using a combination of the following National Library of Medicine's indexed search terms, known as Medical Subject Headings (MeSH) descriptors, and other key phrases. In several searches, an asterisk that locates several related terms (e.g., father* also searches for fathers, fatherhood) was used. The six PubMed searches used a combination of the MeSH terms for "father*" and "adolescen*," a combination of the MeSH terms for "pregnancy in adolescence" and the word (fathers), "adolescent fathers" in quotations (which searches only for studies with the exact phrase), a combination of the phrases (adolescent fathers) and (outcomes), a combination of the MeSH term for "paternal ages" and the word (outcomes), and a combination of the phrase (teenage pregnancy) and (fathers). PsycINFO was searched using the Psychological Index Terms (APA Subject Heading System), which are similar in function to MeSH terms. The six PsycINFO searches used "adolescent father," "adolescent pregnancy" in combination with the term "fathers," a combination of the phrases (teenage pregnancy) and (fathers), the phrase (teenage fathers), (adolescent fathers) in combination with the word (fathers), a combination of the phrases (adolescent fathers) and (consequences), and a combination of (adolescent pregnancy) and (fathers). Searches were conducted from June through August of 2016.

2.2. Inclusion criteria

The studies included in the review met these a priori criteria: (a) quantitative, (b) published in English or translated into English, (c) published in a peer-reviewed journal, (d) used the definition of an adolescent father as < 20 years old, (e) had a sample of at least 30 adolescent fathers, (f) included significance testing comparing

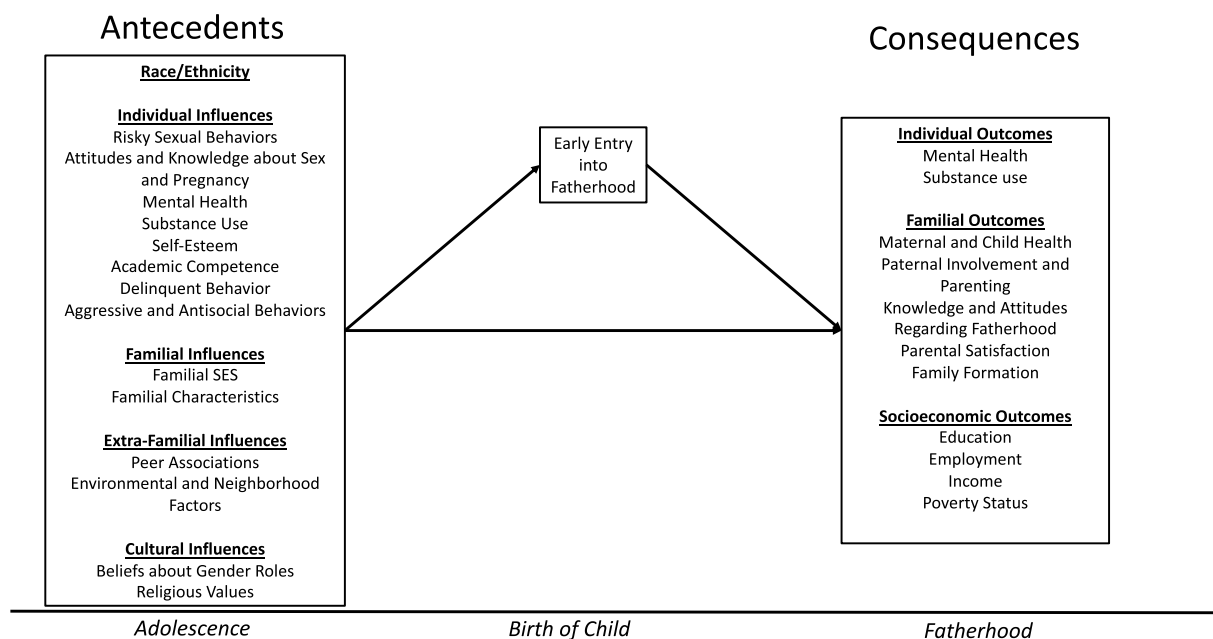


Fig. 1. Conceptual Model of the Antecedents and Consequences of Adolescent Fatherhood. This figure depicts a hypothesized conceptual model of potential antecedents and consequences of adolescent fatherhood. The antecedent factors (e.g., race/ethnicity, individual influences) may be associated with increased risk of adolescent fatherhood and adolescent fatherhood may be associated with certain individual, familial, and socioeconomic outcomes.

adolescent fathers to one of the following groups: adult fathers (> 19-years old), age peers (13- to 19-years old) who are not fathers, or a group comprised of men who may or may not have had children as adults, hereby referred to as ‘adult men.’

Only published peer-reviewed studies were reviewed in an effort to assess high quality studies and the authors acknowledge the risk for publication bias. The comparison groups were either non-father age peers or adult fathers. The comparison to non-father age peers allows the researchers to examine differences between adolescent fathers and their peers who did not have children. The comparison to adult fathers allows the researchers to examine differences between adolescent fathers and fathers who had children at more normative ages. Studies of expectant fathers were excluded because not all pregnancies are carried to term. This study only assessed quantitative studies to examine statistically significant ($p < .05$) differences between adolescent fathers and their comparison group. A minimum of 30 adolescent fathers was an inclusion criterion for this study because the ability to draw meaningful comparisons between groups is greatly diminished with samples less than 30 (Belle and Millard, 2002).

2.3. Screening process

Fig. 2 displays the flowchart of the screening process, which was conducted following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher et al., 2009) guidelines. The PRISMA checklist is provided in online Supplementary Table S1. In

total, 4358 sources (PubMed: 2724 sources and PsycINFO: 1279 sources) were located. After removing duplicate studies, books, and book chapters, 2869 unique sources remained. Two independent reviewers (trained research assistants) then screened titles and abstracts for relevance. If studies were not related to fathers, parenting, pregnancy, or parental age, they were eliminated. Reviewers had 86% agreement. Discrepancies were resolved by a third independent reviewer (first author). After title and abstract screening, two independent reviewers (trained research assistants) conducted a full-text review with an interrater agreement of 92%. Discrepancies were resolved through discussion.

Studies were classified into one of two non-mutually exclusive categories, either antecedents or consequences of adolescent fatherhood. A study was identified as concerning antecedents if it prospectively measured factors prior to entry into adolescent fatherhood or retrospectively measured factors that preceded (or could theoretically precede) entry into fatherhood. Example antecedents are parental education, sexual behaviors assessed in adolescence, or adolescent sexual behaviors measured retrospectively. Studies were categorized as consequences if they compared adolescent fathers to non-adolescent fathers in the period after the birth of the child. Example consequences are paternal involvement, income, or educational attainment assessed after the birth of the child. As stated before, this paper focused mostly on prospective, longitudinal studies. Cross-sectional findings are only included in this paper if they contain factors that precede adolescent fatherhood (e.g., parental education) or factors that could occur only

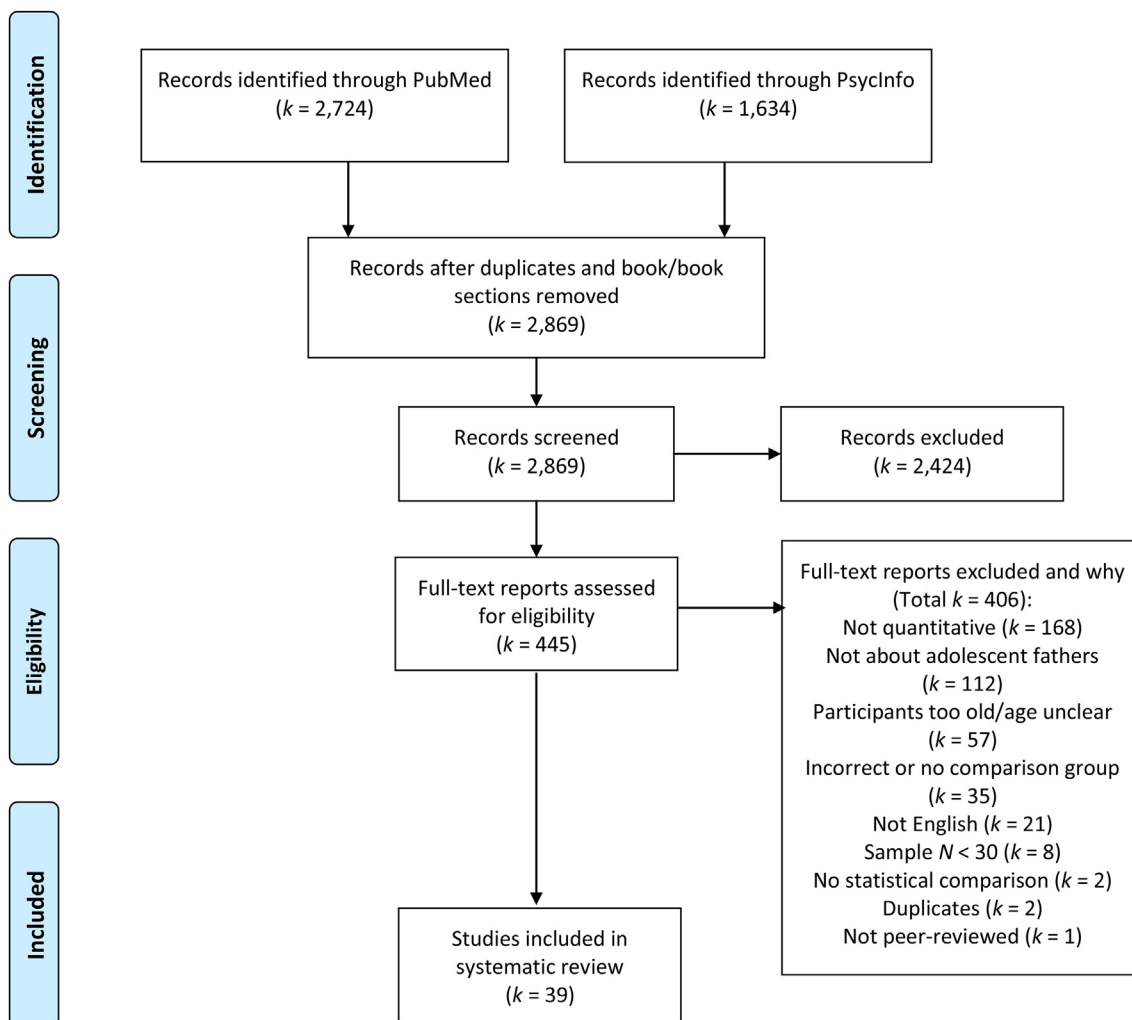


Fig. 2. Flow of reports into the current systematic review.

Table 1
Study characteristics of 39 reviewed studies.

| Authors | Year | Type of Study | Independent Dataset (Yes or No; Dataset) | Study Design | Country |
|----------------------|------|-------------------------|--|--|----------|
| Abel et al. | 2002 | Consequence | Yes; North Dakota Birth Certificates | Retrospective Chart Review/Record Linkage/Case Control | USA |
| Alio et al. | 2012 | Consequence | Yes; Missouri Maternally Linked Vital Statistic Records | Retrospective Chart Review/Record Linkage/Case Control | USA |
| Assini-Meytin et al. | 2015 | Antecedent; Consequence | Yes; Woodlawn Study | Longitudinal | USA |
| Aurox et al. | 2009 | Consequence | Yes; French Army Survey | Retrospective Chart Review/Record Linkage/Case Control | France |
| Biello et al. | 2010 | Antecedent; Consequence | No; Longitudinal Survey of Labor Market Experience of Youth-1997 (NLSY-97) | Longitudinal | USA |
| Campa et al. | 2006 | Antecedent | Yes; Elmira Nurse Family Partnership Project | Longitudinal | USA |
| Card et al. | 1978 | Consequence | Yes; Project TALENT | Longitudinal | USA |
| Chen et al. | 2008 | Consequence | Yes; USA Linked Birth/Infant Dataset | Retrospective Chart Review/Record Linkage/Case Control | USA |
| Chudal et al. | 2015 | Consequence | Yes; Finnish Prenatal Study of ADHD | Retrospective Chart Review/Record Linkage/Case Control | Finland |
| Dearden et al. | 1992 | Antecedent | No; National Child Development Study (NCDS) | Retrospective Chart Review/Record Linkage/Case Control | UK |
| Dearden et al. | 1995 | Antecedent | No; NCDS | Retrospective Chart Review/Record Linkage/Case Control | UK |
| Elster et al. | 1987 | Antecedent | No; NLSY-79 | Longitudinal | USA |
| Fagan et al. | 2011 | Consequence | No; Fragile Families and Child Well-Being Study (FFCWS) | Longitudinal | USA |
| Fagot et al. | 1998 | Antecedent | Yes; Oregon Youth Study (OYS) | Longitudinal | USA |
| Farrie et al. | 2011 | Consequence | No; FFCWS | Longitudinal | USA |
| Fletcher et al. | 2012 | Antecedent; Consequence | Yes; National Longitudinal Study of Adolescent Health | Longitudinal | USA |
| Hanson et al. | 1989 | Antecedent | Yes; High School and Beyond Survey | Longitudinal | USA |
| Heath et al. | 1993 | Consequence | No; National Survey of Families and Households (NSFH) | Cross-sectional | USA |
| Heath et al. | 1995 | Consequence | No; NSFH | Cross-sectional | USA |
| Herrenkohl et al. | 1998 | Antecedent | Yes; Longitudinal Pre-School Study | Longitudinal | USA |
| Kessler et al. | 1997 | Antecedent | Yes; National Comorbidity Survey | Longitudinal | USA |
| Ketterlimus et al. | 1992 | Antecedent | No; NLSY-79 | Longitudinal | USA |
| Khurana et al. | 2011 | Antecedent | Yes; Mid-Western Juveniles | Longitudinal | USA |
| Krishnaswamy et al. | 2009 | Consequence | Yes; Malaysian Mental Health Study | Cross-sectional | USA |
| Landers et al. | 2015 | Antecedent; Consequence | No; NLSY-97 | Cross-sectional | Malaysia |
| McGrath et al. | 2014 | Consequence | Yes; Danish Psychiatric Central Research Register | Longitudinal | USA |
| McLaughlin et al. | 1999 | Antecedent | Yes; Richmond Juveniles | Retrospective Chart Review/Record Linkage/Case Control | Denmark |
| Mollborn et al. | 2011 | Antecedent; Consequence | Yes; Early Childhood Longitudinal Study-Birth Cohort | Retrospective Chart Review/Record Linkage/Case Control | USA |
| Prog-Good | 1995 | Antecedent | No; NLSY-79 | Longitudinal | USA |
| Prog-Good | 1996 | Consequence | No; NLSY-79 | Longitudinal | USA |
| Rivara et al. | 1986 | Consequence | No; University of Tennessee | Longitudinal | USA |
| Rivara et al. | 1987 | Consequence | No; University of Tennessee | Longitudinal | USA |
| Sipsma et al. | 2010 | Antecedent | No; NLSY-97 | Longitudinal | USA |
| Sriyajak et al. | 2015 | Antecedent; Consequence | Yes; Fathers from Thailand | Cross-sectional | USA |
| Stouthamer-Loeber | 1998 | Antecedent; Consequence | No; Pittsburgh Youth Study | Longitudinal | Thailand |
| Thomberry et al. | 1997 | Antecedent | Yes; Rochester Youth Development Study | Longitudinal | USA |
| Unruh et al. | 2003 | Antecedent; Consequence | No; Transition Research on Adjudicated Youth in Community Settings (TRACS) | Longitudinal | USA |
| Unruh et al. | 2004 | Antecedent | No; TRACS | Longitudinal | USA |
| Wei et al. | 2002 | Antecedent | No; Pittsburgh Youth Study | Longitudinal | USA |

Table 2
Sample characteristics of 39 reviewed studies.

| Authors | Year | Age Cut-Off | Adolescent Father Group | Comparison Group |
|----------------------|------|-------------|---|---|
| Abel et al. | 2002 | < 20 | <i>N</i> not reported for adolescent fathers, although Total <i>N</i> = 154,391 | <i>N</i> not reported for adult fathers, although Total <i>N</i> = 154,391 |
| Alio et al. | 2012 | < 20 | <i>N</i> = 24,626 adolescent fathers | <i>N</i> = 222,051 25–29 year old fathers |
| Assini-Meytin et al. | 2015 | < 20 | <i>N</i> = 97 Black adolescent fathers | <i>N</i> = 406 Black adult men |
| Auroux et al. | 2009 | < 20 | <i>N</i> = 144 men in the French military whose fathers were teens at time of their birth | <i>N</i> = 6402 men in the French military whose fathers were older than 20 at time of their birth |
| Biello et al. | 2010 | < 20 | <i>N</i> = 178 adolescent fathers | <i>N</i> = 330 non-father peers |
| Campa et al. | 2006 | < 20 | <i>N</i> = 28–29 adolescent fathers | <i>N</i> = 113–114 non-father peers |
| Card et al. | 1978 | < 20 | <i>N</i> not reported for adolescent fathers, although Total <i>N</i> = 375,000 high schoolers from across the country | <i>N</i> not reported for adult men, although Total <i>N</i> = 375,000 high schoolers from across the country |
| Chen et al. | 2008 | < 20 | <i>N</i> = 28,257 live births by adolescent fathers | <i>N</i> = 1,791,815 live births by fathers |
| Chudal et al. | 2015 | < 20 | <i>N</i> = 221 Finnish adolescent fathers children with ADHD | <i>N</i> = 2951 adult fathers children with a DHD |
| | | | <i>N</i> = 228 Finnish adolescent fathers children without ADHD | <i>N</i> = 11,200 adult fathers children without ADHD |
| Dearden et al. | 1992 | < 20 | <i>N</i> = 209 teen fathers | <i>N</i> = 401 non-fathers matched on social class |
| | | | | <i>N</i> = 397 non-fathers unmatched |
| Dearden et al. | 1995 | < 20 | <i>N</i> = 200 fathers | <i>N</i> = 844 Adult (20–23) fathers |
| | | | | <i>N</i> = 401 Matched non-fathers |
| | | | | <i>N</i> = 397 Non-matched non-father peers |
| Elster et al. | 1987 | < 19 | <i>N</i> = 357 adolescent fathers | <i>N</i> = 1000 non-father peers |
| Fagan et al. | 2011 | < 20 | <i>N</i> = 175 adolescent fathers | <i>N</i> = 1365 adult fathers |
| Fagot et al. | 1998 | < 20 | <i>N</i> = 35 adolescent fathers | <i>N</i> = 160 non-father peers |
| Farrie et al. | 2011 | < 20 | <i>N</i> = 3027 couples with both adult parents, both adolescent parents, father is adolescent, or mother is adolescent | <i>N</i> = 3027 couples with both adult parents, both adolescent parents, father is adolescent, or mother is adolescent |
| | | | <i>N</i> = 2535 couples with both adult parents, both adolescent parents, father is adolescent, or mother is adolescent | <i>N</i> = 2535 couples with both adult parents, both adolescent parents, father is adolescent, or mother is adolescent |
| Fletcher et al. | 2012 | < 20 | <i>N</i> = 177 adolescent fathers | <i>N</i> = 81 non-father peers whose partners had an abortion |
| | | | | <i>N</i> = 104 non-father peers whose partners had a miscarriage |
| Hanson et al. | 1989 | < 20 | <i>N</i> = 148 adolescent fathers | <i>N</i> = 5400–7100 adult men |
| Heath et al. | 1993 | < 20 | <i>N</i> = 227 adolescent fathers | <i>N</i> = 3913 non-father peers |
| Heath et al. | 1995 | < 20 | <i>N</i> = 227 adolescent fathers | <i>N</i> = 1032 men who fathered as adults |
| Herrenkohl et al. | 1998 | < 20 | <i>N</i> = 36 adolescent fathers | <i>N</i> = 1032 adult fathers |
| Kessler et al. | 1997 | < 20 | <i>N</i> not reported for adolescent fathers, although Total <i>N</i> = 2385 males | <i>N</i> = 180 adolescent non-father peers |
| | | | | <i>N</i> not reported for adult fathers, although Total <i>N</i> = 2385 males |
| Ketterlinus et al. | 1992 | < 20 | <i>N</i> = 82 adolescent fathers | <i>N</i> = 815 Virgin non-father peers |
| | | | | Sexually experienced non-father peers <i>N</i> = 1023 |
| Khurana et al. | 2011 | < 20 | <i>N</i> = 101 adolescent fathers from juvenile courts | <i>N</i> = 2730 non-father peers from Juvenile courts |
| Krishnaswamy et al. | 2009 | < 20 | <i>N</i> = 78 Malaysian individuals with adolescent fathers | <i>N</i> = 1873 Malaysian individuals with adult fathers |
| Landers et al. | 2015 | < 20 | <i>N</i> = 239 adolescent fathers | <i>N</i> = 3180 adult men |
| McGrath et al. | 2014 | < 20 | <i>N</i> not reported but population-based study | <i>N</i> not reported but population-based study |
| McLaughlin et al. | 1999 | < 17 | <i>N</i> = 50 incarcerated adolescent fathers | <i>N</i> = 205 incarcerated non-father peers |
| Mollborn et al. | 2011 | < 20 | <i>N</i> = Approximately 50 teen fathers | <i>N</i> = Approximately 4700 adult fathers |
| Pirog-Good | 1995 | < 20 | <i>N</i> = more than 650 adolescent fathers | <i>N</i> = 5752 not teen fathers |
| Pirog-Good | 1996 | < 20 | <i>N</i> = more than 600 adolescent fathers | Total <i>N</i> = 6403 young men who are adult men |
| Rivara et al. | 1986 | < 20 | <i>N</i> = 100 Black adolescent fathers | <i>N</i> = 100 Black non-father peers matched on age |
| Rivara et al. | 1987 | < 20 | <i>N</i> = 67 Black teenage fathers | <i>N</i> = 66 Black teenage non-father peers |
| Sipsma et al. | 2010 | < 20 | <i>N</i> = 140 adolescent fathers | <i>N</i> = 1356 adult fathers |
| Sriyasak et al. | 2015 | < 20 | <i>N</i> = 70 Thai adolescent fathers | <i>N</i> = 70 Thai adult fathers |
| Stouthamer-Loeber | 1998 | < 19 | <i>N</i> = 62 teen fathers | <i>N</i> = 444 non-father peers matched on age, race |
| Thornberry et al. | 1997 | < 20 | <i>N</i> = 175 teen fathers from Rochester | <i>N</i> = 440 adult men |
| Unruh et al. | 2003 | < 20 | <i>N</i> = 125 incarcerated juvenile fathers | <i>N</i> = 317 incarcerated juvenile non-father peers |
| Unruh et al. | 2004 | < 20 | <i>N</i> = 125 incarcerated juvenile fathers | <i>N</i> = 317 incarcerated juvenile non-father peers |
| Wei et al. | 2002 | < 20 | <i>N</i> = 81 teenage fathers | <i>N</i> = 344 non-father peers |

after parenthood (e.g., parental satisfaction). After the data were categorized, study characteristics and sample characteristics were extracted by the first author and are reported in [Tables 1 and 2](#), respectively. Study findings were extracted by the first author and are reported in [Supplementary Tables S2 and S3](#).

2.4. Methodological quality

The methodological quality of each of the 39 studies was assessed using the Specialist Unit for Review Evidence (SURE) Critical Appraisal of Cohort Studies checklist (2018). This checklist assesses 13 characteristics of the study, including: whether the study design is clearly stated, if participants characteristics are provided, if the statistical methods are well-described, if the results are well-described, and if the

authors identify limitations of the study. Responses are “yes,” “no,” or “can't tell.” SURE critical appraisal checklists are widely used in systematic review to assess the quality of cohort studies ([Oakley et al., 2018](#); [Thompson et al., 2018](#)). Results from the SURE checklists are reported in [Supplementary Table S4](#).

3. Results

A total of 39 studies met criteria for inclusion, 24 of which were on antecedents and 23 on consequences. Eight studies overlapped and addressed both antecedents and consequences.

3.1. Study characteristics

Table 1 displays the study characteristics. The 39 studies comprised 28 distinct datasets. Of the 39 studies, 25 reported on longitudinal datasets, nine studies reported data from either retrospective chart review, record linkage, or case-control studies, and five studies used cross-sectional datasets. The majority of these studies were conducted in the U.S., and only seven of the studies reported results of studies conducted in other countries. When two or more studies reported results from the same dataset, it is noted in text.

3.2. Sample characteristics

Table 2 displays the characteristics of the samples in the studies. Of the 39 studies, 35 provided either a number or a percentage of adolescent fathers in the study. Sample sizes for adolescent fathers ranged from 35 adolescent fathers (Fagot et al., 1998) to more than 28,000 adolescent fathers (Chen et al., 2008). Four studies (Abel et al., 2002; Card and Wise, 1978; Kessler et al., 1997; McGrath et al., 2014) did not report a sample size or an estimate of the number of adolescent fathers; however, each of those studies were nationally representative or population-based. Of the 39 studies, 36 used 'less than 20 years of age' as the cut-off to define adolescent fatherhood. Two studies used 'less than 19 years of age' (Elster et al., 1987; Stouthamer-Loeber and Wei, 1998), and one study used '17 years or younger' as the cut-off (McLaughlin et al., 1999).

Of the 39 studies, 18 compared adolescent fathers to non-father peers, 16 studies compared adolescent fathers to adult fathers, and six studies compared adolescent fathers to a heterogeneous control group referred to here as 'adult men' (i.e., sample composed of adult fathers combined with non-fathers). One study compared adolescent fathers to both adult fathers and non-father peers (Dearden et al., 1995), and one study compared adolescent fathers to adult fathers taking into account the age of their female partners (Farrie et al., 2011). Four studies, two of which used the same dataset, also explicitly examined teens who were involved with the criminal justice system (Khurana and Gavazzi, 2011; McLaughlin et al., 1999; Unruh et al., 2003, 2004).

3.3. Methodological quality

Supplementary Table S4 displays the findings from the SURE critical appraisal checklist (SURE, 2018). There were many strengths regarding the methodological quality of the studies. Out of the 39 studies, at least 80% (a) did not report a conflict of interest, (b) had a clearly focused question, (c) clearly described how the study size was determined, (d) provided relevant settings, locations, and dates, (e) clearly stated the study design, (f) provided information to show that the participants were fairly selected, (g) described statistical methods well, and (h) described the results well.

However, there were also some methodological weaknesses of this literature. Of the 39 studies, less than 80% (a) identified limitations of the study, (b) provided information to determine whether the measures were appropriate, (c) provided sufficient baseline characteristics about the participants, (d) discussed potential bias in the sample, and (e) described information on participant flow.

3.4. Antecedents of adolescent fatherhood

Supplementary Table S2 describes the findings in detail from each of the 24 studies on antecedents. Findings are summarized and discussed below in this order: race/ethnicity, individual antecedents, familial antecedents, extra-familial antecedents, and cultural antecedents.

Race/Ethnicity. Of the 39 studies, 15 tested racial/ethnic differences in adolescent paternity. The majority ($k = 9$) of these studies reported that Blacks were significantly more likely to be adolescent fathers than Whites (Elster et al., 1987; Hanson et al., 1989; Ketterlinus

et al., 1992; Landers et al., 2015; Mollborn and Lovegrove, 2011; Sipsma et al., 2010; Stouthamer-Loeber and Wei, 1998; Thornberry et al., 1997; Wei et al., 2002), while five studies (two of which used the same dataset) found no significant differences by race/ethnicity (Biello et al., 2010; Khurana and Gavazzi, 2011; McLaughlin et al., 1999; Unruh et al., 2003, 2004). One additional study found that adolescent males whose female partners had abortions were more likely to be Black (vs. White) when compared to adolescent fathers; adolescents whose partners had miscarriages were more likely to be Latino (vs. White) than adolescent fathers (Fletcher and Wolfe, 2012).

Of the 15 studies that examined race/ethnicity, only four included Latinos as a separate ethnic group. Three of the four studies found that Latino adolescents were more likely to be adolescent fathers than White adolescents (Landers et al., 2015; Sipsma et al., 2010; Thornberry et al., 1997), and one study found that Blacks were more likely to become adolescent fathers than Latinos (Elster et al., 1987). In addition, one study found that Native American/American Indian males were more likely to become adolescent fathers than White or Asian/Pacific Islander males (Mollborn and Lovegrove, 2011).

In summary, there is some evidence that Black adolescents and Latino adolescents are more likely to be adolescent fathers than White adolescents. These findings were true even after controlling for SES and other variables of interest. Insufficient research precludes conclusions for other racial/ethnic groups.

Individual influences. In total, 16 unique studies on individual influences were identified and are reviewed below.

Risky sexual behaviors and attitudes and knowledge about sex. Six studies examined risky sexual behaviors and attitudes and knowledge about sex as antecedents of adolescent fatherhood. Four studies tested age at first sexual intercourse as a predictor of adolescent fatherhood; two prospective longitudinal studies found that adolescents who engaged in sexual intercourse at earlier ages were significantly more likely to become adolescent fathers than non-father peers (Stouthamer-Loeber and Wei, 1998) and 'adult men' (Thornberry et al., 1997). The other two longitudinal studies found no association between age at start of sexual intercourse and adolescent fatherhood (Campa and Eckenrode, 2006; Fagot et al., 1998). With regard to other sexual behaviors, Campa and Eckenrode (2006) found that adolescents who used birth control less frequently were more likely to become adolescent fathers, and Sriyasaki et al. (2015) found that adolescent fathers were significantly more likely to have an unplanned pregnancy than adult fathers. Only one study investigated attitudes about sex as a predictor of adolescent fatherhood (Hanson et al., 1989) and found no significant association.

Mental health. Four studies investigated mental health as an antecedent. One nationally representative study compared adolescent fathers to adult fathers; adolescent fathers were significantly more likely to have prior psychiatric disorders such as anxiety disorders, addictive disorders, and conduct disorders (Kessler et al., 1997), but not affective disorders, such as depression. Two longitudinal investigations also found that depressed mood or depressive symptoms did not predict becoming an adolescent father (Fagot et al., 1998; Stouthamer-Loeber and Wei, 1998). One longitudinal study showed that depression and internalizing symptoms predicted becoming an adolescent father (Thornberry et al., 1997), but after controlling for covariates and other risk factors, the association was no longer significant. Stouthamer-Loeber and Wei (1998) also found no association of ADHD and adolescent fatherhood.

Substance use (tobacco, alcohol, illicit drugs). Of six relevant studies, three longitudinal studies found that greater drug use was a significant predictor of becoming an adolescent father (Ketterlinus et al., 1992; Sipsma et al., 2010; Thornberry et al., 1997) and two longitudinal studies found no such association (Assini-Meytin and Green, 2015; Fagot et al., 1998). In addition, Stouthamer-Loeber and Wei (1998) found that although greater exposure to drugs and more positive attitudes toward drug use predicted adolescent fatherhood, actual drug use did not.

Self-esteem. Of the four relevant studies, three showed no association of self-esteem and adolescent fatherhood (Fagot et al., 1998; Herrenkohl et al., 1998; Thornberry et al., 1997). One study with over 650 adolescent fathers did find, however, that White adolescent fathers had significantly lower self-esteem than White ‘adult men’ (Pirog-Good, 1995).

Academic competence. Ten studies examined academic competence (i.e., IQ, grade point average, student academic expectations, teacher ratings of student ability or motivation, scores on state or national tests) as an antecedent of adolescent fatherhood. Eight longitudinal studies (two using the same dataset) found that adolescent fathers reported significantly lower academic competence than non-father age peers (Biello et al., 2010; Dearden et al., 1992, 1995; Fagot et al., 1998; Hanson et al., 1989; Herrenkohl et al., 1998; Stouthamer-Loeber and Wei, 1998; Thornberry et al., 1997). One study found no association between academic competence and adolescent fatherhood (Campa and Eckenrode, 2006). One longitudinal study found that adolescent fathers were significantly less likely to attend a private school than non-father age peers (Hanson et al., 1989), while another study found no association between adolescent fatherhood and private school attendance (Fletcher and Wolfe, 2012).

Delinquent behavior. Nine studies tested delinquent behavior as an antecedent of adolescent fatherhood. In four longitudinal studies, delinquent behavior, as measured with composite delinquency scales, significantly predicted adolescent fatherhood (Dearden et al., 1995; Hanson et al., 1989; Sipsma et al., 2010; Wei et al., 2002). Four studies that examined specific delinquent behaviors (e.g., gang membership, running away from home) showed no association with adolescent fatherhood (Fagot et al., 1998; Pirog-Good, 1995; Stouthamer-Loeber and Wei, 1998; Thornberry et al., 1997). However, one study did find that adolescent fathers were more likely to engage in specific behaviors such as theft and personal violence and were more likely to be suspended from school (Ketterlinus et al., 1992) than ‘adult men.’

Antisocial and aggressive behaviors. Of four studies, two found no relationship between aggressive behaviors and adolescent fatherhood (Fagot et al., 1998; Sipsma et al., 2010). However, adolescent fathers were more likely to engage in aggressive behaviors than non-father age peers, but not adult fathers, in one longitudinal study (Dearden et al., 1995). Adolescent fathers were also more likely to be cruel to others and more untrustworthy than non-father peers in another longitudinal study (Stouthamer-Loeber and Wei, 1998). Stouthamer-Loeber also found, however, that adolescent fathers were not more likely to be manipulative or have oppositional or conduct disorder problems.

Other individual antecedent factors. Regarding pubertal development, one longitudinal study found that adolescent fathers were more likely to have earlier self-rated physical development than non-father age peers (Campa and Eckenrode, 2006) and another found no relationship between puberty and adolescent fatherhood (Fagot et al., 1998). Two longitudinal studies found that adolescent fathers reported a more external locus of control than non-father peers (Hanson et al., 1989) and ‘adult men’ (Pirog-Good, 1995). Regarding views of their future SES, one longitudinal study found that, compared to non-father age peers, adolescent fathers reported lower educational aspirations and viewed work as less important (Hanson et al., 1989). Dearden et al. (1992) found no relationship between an adolescent's projected occupation and adolescent fatherhood. One longitudinal study demonstrated no association between adolescent fatherhood and history of neglect or physical abuse (Herrenkohl et al., 1998).

Familial influence: indicators of SES. Twelve studies on familial SES as an antecedent to adolescent fatherhood were identified and are reviewed below.

Parental education. Nine studies examined parental education as an antecedent of adolescent fatherhood. All nine studies, two of which used the NLSY-79 and two of which used the NLSY-97, found that adolescent fathers had parent(s) with significantly lower educational attainment in comparison to non-father age peers (Biello et al., 2010;

Elster et al., 1987; Fletcher and Wolfe, 2012; Hanson et al., 1989; Ketterlinus et al., 1992; Unruh et al., 2004), adult fathers (Sipsma et al., 2010), or ‘adult men’ (Pirog-Good, 1995; Thornberry et al., 1997).

Parental income. In four relevant studies, adolescent fathers were significantly more likely to have parents with a lower income, in comparison to non-father age peers (Elster et al., 1987; Fagot et al., 1998; Fletcher and Wolfe, 2012; Hanson et al., 1989).

Poverty status. In four of five relevant studies, adolescent fathers were significantly more likely to live in poverty than non-father peers (Biello et al., 2010; Pirog-Good, 1995; Stouthamer-Loeber and Wei, 1998; Thornberry et al., 1997). However, Pirog-Good (1995) found that the relationship between poverty and adolescent fatherhood was significant only among White fathers. The mothers of adolescent fathers reported significantly more financial hardship (Dearden et al., 1995) than the mothers of their non-father age peers in controlled analyses.

Parental occupation and composite SES. Three studies tested parental occupation and composite measures of SES as antecedents of adolescent fatherhood. One study showed that adolescent fathers were more likely to have a father with a blue-collar job (e.g., factory worker, laborer) in comparison to ‘adult men’ (Pirog-Good, 1995). There was no association between maternal number of hours worked (Hanson et al., 1989) or composite measures of SES (Fagot et al., 1998).

Familial influence: familial characteristics. Twelve studies on familial characteristics were identified and are reviewed below.

Siblings. Of four studies, two found that adolescent fathers were significantly more likely to have older siblings in comparison to adult fathers, non-father age peers (Dearden et al., 1995), and ‘adult men’ (Pirog-Good, 1995). Two other studies demonstrated no relationship between adolescent fatherhood and number of siblings (Hanson et al., 1989; Stouthamer-Loeber and Wei, 1998) or the quality of relationship between siblings (Stouthamer-Loeber and Wei, 1998).

Parental age. Compared to adult fathers, adolescent fathers were more likely to have at least one parent who was also an adolescent parent, as shown in two studies (Sipsma et al., 2010; Thornberry et al., 1997). In another study, Campa and Eckenrode (2006) also found that adolescent fathers were more likely to have mothers who were adolescents themselves at the time of their birth, but only if their mother was unmarried.

Parental marital status. One of two relevant studies reported that adolescent fathers were more likely to be born out of wedlock than non-father age peers (Campa and Eckenrode, 2006), and the other study showed that they were less likely to have parents who were married (parents could have never been married or married but divorced; Fletcher and Wolfe, 2012).

Living arrangements. In six of eight studies, four of which used two of the same samples, adolescent fathers were significantly less likely to live with both of their parents than non-father age peers (Biello et al., 2010; Elster et al., 1987; Hanson et al., 1989; Sipsma et al., 2010; Stouthamer-Loeber and Wei, 1998) or ‘adult men’ (Pirog-Good, 1995). However, two studies showed no association between adolescent fatherhood and coming from a two-parent home (Fagot et al., 1998) or the number of years an adolescent's father lived in the home (Campa and Eckenrode, 2006).

Pirog-Good (1995) conducted an in-depth study comparing the living arrangements of over 650 adolescent fathers to over 5700 non-father age peers. Black and White adolescent fathers were less likely to live with a biological, adoptive, or step-parent, and were more likely to ever live in a children's home, detention center, or children's center. In addition, when compared to White age peers who were not fathers, White, but not Black, adolescent fathers were more likely to live with step-parents, to have instances of not living with a parent, to be younger the first time they stopped living with a parent, and, if they did not live with a parent, the parent was more likely to have an illness that precluded their ability to care for them. Living with adoptive parents or living with a foster parent was not associated with adolescent fatherhood.

Parenting. Two of six relevant studies, which used the same dataset, showed that adolescent fathers reported marginally significant ($p < .10$) lower parental monitoring than their non-father age peers (Biello et al., 2010; Sipsma et al., 2010). Other studies found that adolescent fatherhood was not associated with parenting factors such as parenting quality (Campa and Eckenrode, 2006), parental discipline (Fagot et al., 1998; Stouthamer-Loeber and Wei, 1998), parental communication (Hanson et al., 1989; Stouthamer-Loeber and Wei, 1998), parental reinforcement of behaviors (Stouthamer-Loeber and Wei, 1998), or parental relationship quality or satisfaction (Biello et al., 2010; Campa and Eckenrode, 2006; Stouthamer-Loeber and Wei, 1998).

Maladaptive familial behaviors. Two studies showed no significant association between parental substance use (Stouthamer-Loeber and Wei, 1998) or parental antisocial behavior (Fagot et al., 1998) and adolescent fatherhood.

Other family characteristics. Six additional studies tested other family characteristics as antecedents of adolescent fatherhood. Three studies found that the parents of adolescent fathers reported significantly lower educational expectations for their child than their non-father age peers (Dearden et al., 1992, 1995; Thornberry et al., 1997). Compared to non-father age peers (Pirog-Good, 1995), adolescent fathers lived in households less likely to receive magazines or newspapers in the home, and it was less likely for someone in their household to own a library card, which is considered a proxy for cultural capital. Sipsma et al. (2010) found that, compared to adult fathers, adolescent fathers were more likely to live in less enriching home environments (e.g., homes without computers). One study reported that adolescent fathers had significantly more religious parents in comparison to adolescent males whose female partners had miscarriages (Fletcher and Wolfe, 2012); there was no significant difference between adolescent fathers and adolescent males whose partners had abortions.

Extra-familial influences. Extra-familial influences were identified in eight studies.

Peer associations. Of three relevant studies, two longitudinal studies found that adolescent fathers were more likely to have a girlfriend at an earlier age and have peers who engaged in more anti-social behaviors (e.g., smoking, drinking, or being in a gang) than ‘adult men’ (Thornberry et al., 1997) and adult fathers (Sipsma et al., 2010). Sipsma et al. (2010) also found no association between having peers who engaged in enriching behaviors (e.g., participation in organized activities or religious events) and adolescent fatherhood. One study indicated that adolescents who had peers with lower academic competence were more likely to become adolescent fathers than adolescent males with peers who had greater academic competence (Hanson et al., 1989).

Neighborhood urbanity and region. Of five studies, three studies found no significant difference between adolescent fathers and either adult fathers or non-father age peers in being from urban or rural environments (Biello et al., 2010; Fletcher and Wolfe, 2012; Ketterlinus et al., 1992). After controlling for covariates, adolescent fathers in one study were significantly more likely to come from the Southern U.S. than non-father age peers (Hanson et al., 1989). Pirog-Good (1995) also found that adolescent fathers were more likely to come from the South than non-father age peers, but the association was significant only among White fathers.

Neighborhood SES. Two of four studies found that adolescent fathers were significantly more likely to live in neighborhoods characterized by a high community unemployment rate, a high percent of female-headed households, a high percent of families in poverty, and a high number of juvenile offenders compared to ‘adult men’ (Thornberry et al., 1997) and non-father peers (Stouthamer-Loeber and Wei, 1998). One longitudinal study found that adolescent fathers were significantly more likely to live in poorer housing conditions than adult fathers, after controlling for covariates (Sipsma et al., 2010), but another study found no such association (Stouthamer-Loeber and Wei, 1998).

One study compared adolescent fathers to adolescents whose partners had abortions or miscarriages (Fletcher and Wolfe, 2012). Controlling for covariates, adolescent fathers came from communities with lower unemployment rates than communities of adolescents whose partners had a miscarriage. In comparison to adolescents whose partners had abortions, adolescent fathers were significantly more likely to come from communities that received less government aid and had lower median incomes. There were no differences in percentages of the community in poverty or welfare.

Cultural influences. Only two studies investigated cultural influences as predictors of adolescent fatherhood. Pirog-Good (1995) found that, compared to ‘adult men,’ adolescent fathers had more traditional beliefs about sex roles (e.g., women are happier at home when they take care of the children). Hanson et al. (1989) found no difference in religious values between adolescent fathers and non-father peers.

3.5. Consequences of adolescent fatherhood

Supplementary Table S3 describes in detail the findings from each of the 23 studies on consequences, and they are reviewed below by topic.

Individual outcomes. Only three studies examined individual consequences of adolescent fatherhood for the father himself.

Mental health. Of two studies, one found that adolescent fathers, compared to non-father peers, reported worse mental health two years after the birth of the child but not four or six years after the birth (Biello et al., 2010). The other study showed no significant mental health or mood differences between Black adolescent fathers and non-father age peers either nine months or 18 months after the birth of the child (Rivara et al., 1986).

Substance use. In one longitudinal study of delinquent youth, rates of marijuana use dropped 23% and hard drug use dropped 29% after adolescent males became adolescent fathers, compared to those who did not become fathers (Landers et al., 2015).

Familial outcomes. Fourteen studies examined familial outcomes of adolescent fatherhood.

Maternal and child physical health. Four population-based studies compared adolescent fathers to adult fathers (20–29 years or 25–29 years) on their child’s birth outcomes, all of which controlled for paternal and maternal race, education, income, and other relevant covariates. All four studies indicated that adolescent fathers were more likely to have children born preterm (< 37 weeks) and born with low birth weight (< 2500 g; Abel et al., 2002; Alio et al., 2012; Chen et al., 2008; Mollborn and Lovegrove, 2011). Adolescent fathers were more likely to have children born very preterm (< 32 weeks; Alio et al., 2012; Chen et al., 2008), small for gestational age (Alio et al., 2012; Chen et al., 2008), or very low birth weight (< 1500 g; Mollborn and Lovegrove, 2011). Two studies found no association between adolescent fatherhood and very low birth weight (Abel et al., 2002; Chen et al., 2008).

Chen et al. (2008) also found that the children of adolescent fathers were more likely to have low Apgar scores, a measure of a newborn’s health (American Academy of Pediatrics, 2006), compared with adult fathers, but not very low Apgar scores. Babies of adolescent fathers were also at higher risk for neonatal mortality and post-neonatal mortality than those of adult fathers (Chen et al., 2008). In contrast, Alio et al. (2012) found no differences in stillbirth or early stillbirth between the children of adolescent fathers and the children of adult fathers. In addition, the children of adolescent fathers were less likely to have a late stillbirth than the children of adult fathers. Chen et al. (2008) found no relationship between adolescent fatherhood and fetal distress.

One study tested the relationship between paternal age and child health beyond the postpartum period (Mollborn and Lovegrove, 2011). Children of adolescent fathers had lower general health (as reported by their primary caregiver), and at age two, they had lower cognitive development. There were no differences in acute or chronic illness,

motor development, or serious injury. In the sole study of maternal health, [Alio et al. \(2012\)](#) found that the female partners of adolescent fathers were at higher risk of anemia, preeclampsia, and eclampsia but not placental abruption, placental previa, or hypertension compared to female partners of adult fathers.

Child mental health. Of four relevant studies, one Danish population-based study ([McGrath et al., 2014](#)) found that, compared to adult fathers (25–29 years), the children of adolescent fathers were more likely to have mental and behavioral disorders due to alcohol use or other substance use, more likely to have schizophrenia and related disorders, mood disorders, neurotic stress-related and somatoform disorders, specific personality disorders, intellectual disability, behavioral and emotional disorders, and hyperkinetic disorders. Their children were also more likely to have any psychiatric disorder compared to the children of adult fathers. However, they were not more likely to have schizoaffective disorder, eating disorders, anorexia nervosa, developmental disorders, or childhood autism. In a study of Malaysians, children of adolescent fathers were at higher risk of common mental disorders, such as general anxiety disorder, depressive episode, anxiety disorder, mixed anxiety and depressive disorders, phobic disorders, panic disorder, and obsessive-compulsive disorder ([Krishnaswamy et al., 2009](#)). A nationwide study from Finland found that adolescent fathers were more likely to have children with ADHD than fathers aged 25–29 years ([Chudal et al., 2015](#)), and a study of French men in the military found that those who were the children of adolescent fathers had lower intelligence scores compared to those who were children of adult fathers ([Auroux et al., 2009](#)).

Paternal involvement and parenting behaviors. Of four studies, [Sriyasak et al. \(2015\)](#) found that adolescent fathers reported less positive childrearing behaviors (e.g., physical care, prevention of harm) than adult fathers. Two studies ([Fagan and Lee, 2011](#); [Mollborn et al., 2011](#)) found no difference in paternal involvement based on age at fatherhood. [Farrie et al. \(2011\)](#) found that, in couples where both parents were adolescents, adolescent fathers reported significantly higher engagement with their children than in couples where both parents were older. There were no differences between couples in which only one parent was an adolescent, regardless of sex of the parent.

Knowledge and attitudes regarding fatherhood and parenting. In one of three relevant studies, no significant difference was found in knowledge of child development nine months after the birth of a child between Black adolescent fathers and Black non-father age peers, but at 18 months, Black adolescent fathers knew less about the normal development and diet of a newborn than their non-father age peers ([Rivara et al., 1986](#)). Compared to adult fathers, adolescent fathers were not significantly different in attitudes toward parenting proficiency or beliefs in an involved father role ([Mollborn and Lovegrove, 2011](#)). However, adolescent fathers reported significantly higher average negative attitudes about fatherhood. [Sriyasak et al. \(2015\)](#) found that adolescent fathers reported feeling less competent as a father than adult fathers.

Parental satisfaction. Of four relevant studies, two used the same sample ([Heath et al., 1993, 1995](#)) and found that adolescent fathers reported greater parental satisfaction than adult fathers. [Mollborn and Lovegrove \(2011\)](#) found that adolescent fathers reported feeling more attached to their child than adult fathers. In contrast, [Sriyasak et al. \(2015\)](#) found that adolescent fathers reported a less positive attachment to their children than adult fathers.

Family formation. Of five studies, [Mollborn and Lovegrove \(2011\)](#) found that adult fathers were significantly more likely to be married to their baby's mother than adolescent fathers, but adolescent fathers were significantly more likely to cohabit with their baby's mother and be unmarried than adult fathers. One study with a nationally representative sample of 375,000 U.S. high schoolers showed that adolescent fathers were marginally significantly ($p < .10$) more likely to have more children than 'adult men' ([Card and Wise, 1978](#)). In other

studies, adolescent fathers were more likely to have more children than adult fathers ([Heath et al., 1995](#)) and non-father age peers ([Rivara et al., 1987](#)). [Rivara et al. \(1986\)](#) found that Black adolescent fathers were more likely to be heads of their household at 18 months postpartum, but not nine months postpartum, and were more likely to plan for marriage than Black non-father age peers.

Socioeconomic outcomes. Factors related to the father's SES later in life as measured after becoming a father and up to 10 years later was covered in the nine studies reviewed below.

Educational attainment. In two of four studies, adolescent fathers reported significantly lower educational attainment in comparison to non-father age peers ([Fletcher and Wolfe, 2012](#)) and 'adult men' ([Pirog-Good, 1996](#)). In contrast, one study found no significant differences in educational attainment between adolescent fathers and non-father age peers after controlling for prior SES ([Assini-Meytin and Green, 2015](#)). Another study found no significant differences between Black adolescent fathers and non-father age peers on a composite measure of education and occupation ([Rivara et al., 1986](#)).

Employment. Of six studies, one study with a nationally representative sample found that adolescent fathers were significantly more likely to work blue-collar jobs, but did not report lower job satisfaction than 'adult men' ([Card and Wise, 1978](#)). [Card and Wise \(1978\)](#) also found that adolescent fathers were more likely to have a job than 'adult men' five years after high school, but not 11 years after high school. In two studies, adolescent fathers were more likely to be unemployed than 'adult men' ([Assini-Meytin and Green, 2015](#); [Pirog-Good, 1996](#)) with [Assini-Meytin et al.](#) controlling for prior SES. [Fletcher and Wolfe \(2012\)](#) found that adolescent fathers were more likely to be idle (e.g., not working or in school) than non-father age peers, but also found that, after controlling for prior SES, a higher percentage of adolescent fathers were working full-time than teenage peers whose partners had abortions. Three studies found no differences in rates of employment or type of occupation (blue-collar vs. white-collar) compared to non-father age peers ([Rivara et al., 1986](#); [Unruh et al., 2003](#)) and adult fathers ([Sriyasak et al., 2015](#)). One study ([Unruh et al., 2003](#)) found that incarcerated adolescent fathers were more likely to use career development and vocational rehabilitation services in correctional facilities than their non-father age peers.

Income. In one of five studies, [Sriyasak et al. \(2015\)](#) found that adolescent fathers reported significantly lower income and were significantly less likely to have saved money than adult fathers. Two studies found no significant differences in income between adolescent fathers and 'adult men' ([Card and Wise, 1978](#); [Fletcher and Wolfe, 2012](#)) and another study reported no difference in poverty status between Black adolescent fathers and Black 'adult men' ([Assini-Meytin and Green, 2015](#)). It is important to note, however, that [Fletcher et al.](#) and [Assini-Meytin et al.](#) did control for prior SES. [Pirog-Good \(1996\)](#) compared adolescent fathers to 'adult men' and reported that in their late adolescence and early 20s, adolescent fathers earned a higher hourly wage and higher income than 'adult men.' In their mid-20s, there was no difference in income between these groups, but starting at around age 27, adolescent fathers had lower incomes.

Indicators of poverty. One study of incarcerated fathers demonstrated that adolescent fathers were more likely to use welfare than non-father age peers ([Unruh et al., 2003](#)), but one study did not after controlling for prior SES ([Assini-Meytin and Green, 2015](#)). Adolescent fathers and adult fathers did not differ on food insecurity ([Mollborn and Lovegrove, 2011](#)). Black adolescent fathers, but not White adolescent fathers, were more likely to endorse shoplifting if unable to support their family in comparison to non-father age peers ([Pirog-Good, 1996](#)).

Other consequences of adolescent fatherhood. Other consequences of adolescent fatherhood were examined in four studies. [Farrie et al. \(2011\)](#) calculated an index of risk behaviors (e.g., poor parental health, parental substance use, parental incarceration status, parental employment status) to study paternal engagement. Adolescent fathers with adult partners who reported more than four risk behaviors

also reported 57% fewer activities with their children compared to adult fathers with adult partners who also reported more than four risk behaviors. After having a child, adolescent fathers did not show a significant change in number of arrests compared to 'adult men' (Landers et al., 2015). Stouthamer-Loeber and Wei (1998) found that, in the first two years of fatherhood, adolescent fathers were more likely to engage in delinquent behaviors than 'adult men.' Adolescent fathers in juvenile detention facilities were significantly less likely to be recidivists 12 months later compared to juvenile non-fathers, but there was no significant difference at six months (Unruh et al., 2003).

4. Discussion

This systematic review is based upon a model derived from Parke's systems view (1996), which posited that, in order to understand factors related to a father's involvement in their children's lives, attention must be paid to individual, familial, extra-familial, and cultural influences. This review extended Parke's systems view by (a) exploring how these influences predicted becoming an adolescent father and (b) investigating the contribution of paternal age to outcomes related to the father himself, the father's subsequent family, and the father's subsequent SES. This review examined research from the fields of medicine, developmental psychology, family psychology, clinical psychology, social work, public health, epidemiology, criminology, demography, and economics.

Antecedents. Regarding the 24 studies on antecedents of adolescent fatherhood, the most consistent evidence indicates that adolescents who come from single-parent homes, lower SES neighborhoods, and have parents with lower educational attainment and lower income are themselves more likely to become adolescent fathers than adolescents who do not come from those backgrounds. In addition, some evidence suggests that Black adolescents, and possibly Latino adolescents, are more likely to become adolescent fathers than are White adolescents, even after controlling for SES. These findings are concerning for many reasons, but in part because they could be a basis of stereotyping and discrimination.

Some evidence demonstrates that the adolescents who engage in more delinquent behavior and have lower academic competence, as well as those who have friends with the same characteristics, are more likely to become adolescent fathers. In addition, some evidence demonstrates that adolescent fathers are more likely to have parents who became parents during their own adolescence. Mixed evidence exists for an association between adolescent fatherhood and the other factors described in this review (i.e., siblings, parenting behaviors, maladaptive familial behaviors, aggressive or antisocial behaviors, self-esteem, risky sexual behaviors) with some studies yielding significant associations and others reporting null findings. Limited evidence exists for a relationship between adolescent depression and adolescent fatherhood and little research is available on the relationship between adolescent fatherhood and cultural influences and knowledge regarding sex and becoming an adolescent father.

Consequences. Regarding the 23 studies on the consequences of adolescent fatherhood, the most consistent evidence is that the babies of adolescent fathers are more likely to have adverse birth outcomes (e.g., low birth weight and pre-term birth) than the offspring of adult fathers, even after controlling for factors such as maternal and paternal education, income, and race/ethnicity). Consistent evidence also demonstrates that the children of adolescent fathers are at greater risk for psychological disorders than the children of adult fathers. Some evidence demonstrates that, in comparison to their peers who waited to have children, adolescent fathers have more children in their lifetime. Mixed evidence exists for an association between adolescent fatherhood and the father's own poor mental health, lower educational attainment, lower income, type of occupation (blue-collar vs. white-collar), and less paternal involvement, with some studies reporting significant associations, other studies reporting null findings, and some reporting

contradictory findings. Insufficient evidence exists to draw conclusions on the association between adolescent fatherhood and their substance use.

4.1. Parke's systems view

Regarding antecedents, Parke's systems view (1996) performed well. Familial influences were the most consistent predictor of adolescent fatherhood but there was also consistent evidence that individual influences (e.g., delinquent behavior) and extra-familial influences (e.g., peer associations) predicted early entry into fatherhood. However, only two reviewed studies examined the associations between cultural influences and adolescent fatherhood. Regarding consequences, there was consistent evidence of the links between adolescent fatherhood and outcomes related to the child's physical and psychological health. It is critical to note that the studies focused on child's physical and psychological health typically compared adolescent fathers to fathers between the ages of 20 and 29. Future research should explore birth outcomes and child health in comparison to fathers over the age of 30 since they are more likely to have children with women over the age of 30, and thus more likely to have children that face adverse birth outcomes.

There was mixed evidence for outcomes related to the father's parenting behaviors, the father's SES, and limited evidence for outcomes related to the father himself. Future studies on the experiences of adolescent fathers can use Parke's model to investigate the role of cultural influences on becoming an adolescent father as well as how adolescent fatherhood affects the father himself.

Findings from this systematic review are important for better understanding adolescent fathers. Some research from this review shows that boys who become adolescent fathers are more likely to be Black or Latino and to have grown up in high-risk social environments, as previously theorized (Elster et al., 1987). These environments are characterized by "single parent families and households that were financially and educationally disadvantaged" (p. 935). Outside the household, these adolescents also live in communities that suffer from high unemployment rates, poverty, and crime.

Geronimus' (1992) research on weathering, the hypothesis that Black women's health declines at an earlier age due to socioeconomic disadvantage, racial discrimination, and high-effort coping required to endure marginalization and exclusion, may help to explain why low-income and minority boys are at greater risk of becoming adolescent fathers. In interviews with a sample of low-income Black female teenagers, Geronimus (1996) found that these adolescent females were more likely to have children at earlier ages because they expected poorer health earlier in their lives and shortened lifespans. Perhaps findings would be similar if a parallel study were conducted with adolescent fathers. Although the research on weathering has focused on Black women, it can equally be applied to low-income minority boys and men who are at greater risk of earlier death from homicide than White boys (Singh and Yu, 1996) and greater risk of health problems compared to White men (Geronimus et al., 2006). Similarly, the links between racism and poorer physical health in Black men has been previously explored (Williams, 1999). The weathering hypothesis should be tested in future research concerning adolescent fathers.

Adolescents who become adolescent fathers are negatively stereotyped as "super studs" or adolescents with low self-image and adolescent fathers are viewed as deadbeat dads or invisible fathers (Gottfried, 2001) but limited evidence in this review exists to support or refute these characterizations. More research is needed on adolescent fathers to explore whether these perceptions are accurate. Findings from this review, however, do show adolescent fathers tend to grow up in low-income environments. Accordingly, perhaps it is appropriate to take a more compassionate view of adolescent fathers as individuals who face "limited education, family instability, and judgmental behavior on the parts of families, schools, or providers" (Joshi and Battle, 1990, p. 30).

Shifting the societal perspective of adolescent fathers to a less judgmental and more empathic view may facilitate better solutions to help address the many barriers fathers face as they transition from adolescence to adulthood.

4.2. Strengths of literature

One strength of this literature is that many studies were prospective and longitudinal in design, which allows inferences based on temporal precedence. Several studies with nationally representative samples were included, which allows generalizable conclusions to be drawn about adolescent males and adolescent fathers across the U.S. In addition, several studies also either controlled for race and SES in statistical analyses or compared adolescent fathers to matched samples of non-father age peers or adult fathers. Matched comparison groups and well-controlled statistical analyses were useful in drawing conclusions about the antecedents and consequences of adolescent fatherhood over and above the established relationship between adolescent fatherhood and race or SES. Another strength was the comparison groups, non-father age peers and adult fathers. When reviewing predictors of adolescent fatherhood, the comparison to non-father age peers allows the researchers to better determine what factors predict fatherhood at an earlier age. When exploring consequences, the comparison to adult fathers allows researchers to better understand the ways in which adolescent fathers and their families differ from older fathers and their families as a function of age.

Despite these strengths, there were several mixed or contradictory findings from the research on antecedents and consequences. These inconsistent findings may be a result of limitations that the next subsection elaborates.

4.3. Methodological limitations of the literature

Construct Definition and Measurement. One limitation is the conceptualization and measurement of certain constructs. For example, there are many ways to operationally define “parenting behaviors.” In the studies reviewed, parenting behaviors were operationalized as parental discipline, communication, reinforcement, and parent-child relationship quality. These different ways of measuring parenting behaviors could explain why some relationships are significant and others are not. Certain aspects of parenting may be associated with teen parenting and further work in this area identifying specific aspects would be valuable for science and translation.

Another limitation related to measurement, identified through SURE (2018), was that 11 of the 39 studies did not provide sufficient information on validity or reliability of the scales used for measurement. If scales are not valid or reliable, then significance and generalizability of the findings are extremely limited. Although these scales may be valid and reliable, the information was not provided in the published articles. Future researchers in this field should report evidence of scale validity and reliability.

Heterogeneity of Samples. Another potential limitation is the variability in age of the men who participated in these studies. Some studies investigated adolescent fathers while they were still adolescents (e.g., ages 17 to 19), some studies examined adolescent fathers a few years after they became fathers (e.g., ages 20 to 25), and other studies examined adolescent fathers much later in their lives (e.g., up until age 29). These men are still considered adolescent fathers because their partner had a child when the male was at most 19-years old, but differences that exist at certain phases of the father's life may not exist at other stages. For example, a study (Pirog-Good, 1996) that tested differences in income between adolescent fathers' and non-fathers' ages showed no significant differences between adolescent fathers and ‘adult men’ at age 22. However, at age 29, significant differences in income were apparent. Future research should attend closely to this issue of sample age.

Participant Bias and Characteristics. As identified from the SURE (2018) checklist, three major limitations were that only 22 studies discussed biases such as selection bias, only 17 studies discussed participant flow (although there were five cross-sectional studies for which this is not relevant), and only 26 of the 39 studies provided sufficient information (e.g., race/ethnicity, age, SES) regarding the characteristics of the participants. Each of these three limitations impacts the external validity of the results and findings are less generalizable. Future research in this area should attend to these issues and ensure that sufficient information about participants is provided either in-text or in a table.

Racial/Ethnic Issues. The racial/ethnic background of the different samples may also play a role in inconsistent findings. Certain factors that predict adolescent fatherhood among members of one racial/ethnic group may not predict fatherhood among members of another racial/ethnic group. For example, Pirog-Good (1995) found that lower self-esteem predicted adolescent fatherhood among White adolescents but not Black adolescents. In the current review, many studies had diverse samples, but did not examine racial/ethnic differences, which may explain inconsistent or null findings. Future studies must attend closely to race and ethnicity, SES, as well as familial and cultural factors that may explain these findings.

Absence of research. Finally, some categories of antecedents (e.g., attitudes and knowledge about sex and cultural influences) and consequences (e.g., substance use) received very little investigation. Significantly more research is needed on these topics before conclusions can be drawn about their relationship to paternal age.

4.4. Conceptual limitations

Age of Literature. One major limitation of this literature is that 18 of the 39 studies were published prior to the year 2000, and eight studies were published between 2000 and 2009. This limitation is important because the rate of adolescent parenting has seen a substantial decrease since the early 1990s and even since the year 2000. The 2014 birth rate for adolescent parents (15–19) was 21 per 1000 births as compared to 48 per 1000 births in 2000, and a high of 62 per 1000 births in 1991 (Gutmacher Institute, 2004). Adolescent birthrates dropped the most for Black women with a decrease in 32% between 1990 and 2000 compared to 28% for Whites during that same time period. Some theorized contributors to this decline are that (a) adolescents are having less sexual intercourse, (b) adolescents are using more contraceptives and using them more effectively, and (c) pregnancy prevention television programs such as ‘16 and Pregnant’ and ‘Teen Mom’ aimed at teens may be effective (Boonstra, 2014; Kearney and Levine, 2015). The economy is also a potential contributor to decreases in adolescent birth rates. One study found that when one percent of the working-age population suffers job losses, the birth rate drops two percent (Ananat et al., 2013), but this pattern held true only for Blacks, not Whites. This factor could partially explain why the adolescent birthrate dropped more significantly for Blacks than Whites as well. Considering the change in the rate of adolescent births, a more current and comprehensive assessment of adolescent fathers is warranted as the adolescent fathers of today may differ from the adolescent fathers of previous decades.

Another reason the age of the literature is important is because of the limitations reported in each of these studies. As identified in the SURE checklist (2018), only 29 of the studies reported limitations of the studies. Of the 10 remaining studies that either did not report limitations or limitations were unclear, eight of these studies were published prior to 2000. It is imperative that authors identify limitations of their studies so readers can accurately evaluate the quality and significance of the findings.

Homogeneity of Datasets. Another limitation is that several of the findings come from the same studies. Specifically, although 39 studies were reviewed in this systematic review, the studies reflect only 28

distinct samples. More studies with large samples are needed to determine whether many of the findings regarding antecedents and consequences of adolescent fatherhood are replicable. In comparison to adolescent mothers, adolescent fathers are understudied and deserve increased attention and resources to assist them as they transition from adolescence to adulthood while also transitioning into fatherhood.

Limited Research on Consequences for Fathers. Another major limitation of this literature is that many findings of studies on consequences are focused primarily on outcomes related to the rest of the family and the father's SES, rather than on the father himself. Only two studies investigated the mental health of adolescent fathers, and only one study examined their substance use. Fathers' physical health also warrants investigation but was not investigated in a single study in this review. This factor is critical because consistent evidence demonstrated that the offspring of adolescent fathers are at greater risk for adverse birth outcomes and psychological disorders, after controlling for relevant factors such as maternal and paternal race, education, and income. Historically, paternal factors and characteristics have not been examined in the field of family research (Phares, 1992; Phares et al., 2005) because fathers were not viewed as important for children's development. Future research should explore paternal physical health and mental health, independently, as well as in relation to familial well-being.

4.5. Limitations of the systematic review

Of course, this systematic review is also not without its own limitations. One significant limitation is that this paper only focused on research studies published in peer-reviewed journals. As such, findings from this systematic review may suffer from publication bias. Another limitation of this study is that it only focuses on quantitative studies. Qualitative research is a valuable form of research and there is a considerable body of qualitative research on adolescent fathers. However, since this is the first systematic review of its kind, the authors wanted to focus on findings where statistically significant differences could be identified. A systematic review on the qualitative experience of adolescent fatherhood is also warranted. A third limitation is that this study did not examine the interaction between paternal age and romantic relationships between parents as they relate to outcomes for the child. A large body of research demonstrates that the romantic relationship between parents plays an important role in child development (Lindsey et al., 2009; Reid and Crisafulli, 1990), however, the goal of this paper was to examine adolescent fatherhood as a factor itself. Future research should examine paternal age, relationship quality, and child well-being. Another limitation of this systematic review lies in the framework chosen to guide this paper, Parke's systems view. While this framework adequately addresses individual and familial factors associated with fatherhood, the absence of structural level factors such as area-level SES or schooling quality impacts its ability to fully capture forces that may dictate who becomes an adolescent father, as well as the experience of fatherhood. The current paper does examine a structural level factor, neighborhood SES, but it is included under extra-familial influences. Parke's systems view could be strengthened by including structural-level factors in the model.

4.6. Future research

Despite these limitations, findings from this review can set the stage for future research on this important topic. More research is needed to understand possible mechanisms for the associations between adolescent fatherhood, adverse birth outcomes and psychological disorders in children. Researchers have examined possible mechanisms for the consistent relationships of advanced paternal age (> 45) and adverse birth outcomes (Bray et al., 2006; Yang et al., 2007) and psychological and developmental disorders in children (Croen et al., 2007; Zammit et al., 2003), such as sperm volume, motility, and morphology (Kidd

et al., 2001); telomere length, a measure of biological aging, (Wiener-Megnazi et al., 2012); and paternal health behaviors such as alcohol use and smoking (Savitz et al., 1991). Now that similar associations between younger paternal age and adverse birth outcomes have been demonstrated, explanatory pathways require study. One potential pathway could be neighborhood environment as previous research shows that mothers from more disadvantaged neighborhoods are at greater risk of pre-term birth and low birth weight than mothers from less disadvantaged neighborhoods (Ncube et al., 2016). Another potential pathway could be stress. Research indicates that greater psychological stress is associated with worse sperm quality (Fenster et al., 1997; Gollenberg et al., 2010). As this systematic review has shown, adolescent fathers are more likely to come from low-SES backgrounds; perhaps the stress associated with low-SES backgrounds affects their sperm quality. More in-depth research on adolescent fathers and their children is needed to understand how biopsychosocial factors contribute to these health disparities and more theory and empirical research would be useful on this topic.

Future research should also address the fact that adolescent fathers do not have complete reproductive responsibility. An adolescent male may impregnate a partner; however, having an abortion or keeping the baby is, legally, the mother's decision. An incomplete picture of the adolescent males at risk might result. The only difference between the adolescent father and the adolescent male whose partner had an abortion is a decision that can be out of the father's control. In this review, only one study (Fletcher and Wolfe, 2012) compared adolescent fathers to adolescents whose partners had abortions and adolescents whose partners had miscarriages. Future studies should investigate differences between adolescent fathers and adolescents who have ever gotten someone pregnant, although identifying them might be difficult. By investigating this distinction, interventions could help adolescent fathers and adolescent males at risk of becoming fathers while still adolescents.

4.7. Implications

Findings from this review may have implications for better understanding how adolescent mothers and fathers differ as well as for the development of interventions to assist adolescent fathers. Several systematic reviews of the antecedents and consequences of adolescent motherhood have previously been conducted. Some findings from these systematic reviews bear similarities to the current review's findings on the antecedents and consequences of adolescent fatherhood. Specifically, low SES (Imamura et al., 2007; Rigsby et al., 1998) and lower academic competence (Imamura et al., 2007; Maravilla et al., 2017) predicted adolescent motherhood, and, younger maternal age was associated with an increased risk of preterm delivery (Scholl et al., 1994).

There were differences in some antecedents of adolescent parenthood when comparing mothers and fathers. One systematic review on mothers showed consistent associations between maltreatment (e.g., sexual, physical, emotional abuse) and adolescent motherhood (Blinn-Pike et al., 2002). In comparison, the current review only had one study on maltreatment and adolescent fatherhood and found no association. A meta-analysis of 26 studies found that less contraceptive use, greater depression, and a history of abortion were significant predictors of adolescent motherhood (Maravilla et al., 2017). In the current review, however, only a single study examined an association between contraceptive use and adolescent fatherhood, only one out of four studies supported an association between depression and adolescent fatherhood, and no study in the current review explored history of a female partner's abortions. Much more research needs to be conducted on adolescent fatherhood to be able to adequately compare findings to the literature on adolescent motherhood, however, understanding similarities and differences may be important for the development of interventions to assist adolescents at-risk for adolescent fatherhood.

Certain sex education interventions may not be effective in decreasing adolescent fatherhood. Indeed, a systematic review of 26 randomized controlled trials found that sex education interventions, which typically feature information about contraception, pregnancy, and the risks early sexual intercourse, did not delay the initiation of sexual intercourse or improve use of birth control (DiCenso et al., 2002). Actually, in four abstinence-only programs (which teach teenagers to refrain from sexual contact until marriage) and one school-based sex education program, there was a significant increase in reported pregnancies in the female partners of adolescent males. These programs may not be effective because these adolescents are facing serious socioeconomic disadvantage and until social barriers are addressed through comprehensive occupational, vocational, and financial resources, limited change in the rate of fatherhood is likely. Future interventions focused on adolescent fathers and mothers must address these systemic barriers as previously suggested by King (2017).

To our knowledge, only two interventions have been tested for adolescent fathers and both focused on parenting (Fagan, 2008; Mazza, 2002). Both interventions included parenting classes and both were successful in increasing adolescent fathers' involvement and use of more positive parenting behaviors. Mazza (2002) also included a component in which adolescent fathers met with social workers who addressed their life needs and found that these fathers made significant gains in their employment and vocational planning. Joshi and Battle (1990) recommended interventions for adolescent fathers that focus on their financial, educational, and occupational needs and suggest schools as sites for interventions.

5. Conclusions

In conclusion, findings from this systematic review demonstrate that adolescent males who became adolescent fathers tend to be from low-income backgrounds and neighborhoods, and as fathers, their offspring are at risk for adverse birth outcomes and mental health problems. However, with more recent high-quality research on adolescent males and adolescent fathers and the development of interventions and policies to address the needs of at-risk adolescents and adolescent fathers, steps can be taken to improve the lives of adolescent fathers and the lives of their families.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2019.04.031>.

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