SUDDEN INFANT DEATH DISPARITIES: A SYSTEMATIC REVIEW ON HEALTH EDUCATION AND POLICY RECOMMENDATIONS FOR DECREASING SUDDEN INFANT DEATH IN THE AFRICAN-AMERICAN COMMUNITY

by

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APPROVED

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DEDICATION

To Bert and Paula Thompson
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SUDDEN INFANT DEATH DISPARITIES: A SYSTEMATIC REVIEW ON HEALTH EDUCATION AND POLICY RECOMMENDATIONS FOR DECREASING SUDDEN INFANT DEATH IN THE AFRICAN-AMERICAN COMMUNITY

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The University of Texas
School of Public Health, Spring 2012

Thesis Chair: Dr. Henry S. Brown III, PhD

Objective: To perform a systematic review of the literature on SIDS and SUID deaths concentrated in the African-American community, describe health education and policy recommendations and recommend a new approach that may aid in decreasing the disparity of infant mortality in the African-American community.

Methods: The PubMed database was systematically searched to identify relevant articles for final review and analysis. Using the CASP 2006 system to critique literature, twelve articles were found that met inclusion and exclusion criteria.

Results: Evidence in the literature confirmed there was a current disparity among African Americans' infant mortality rates in comparison to other US ethnic groups. The underlying reasons for these disparities included the following maternal and infant characteristics: mothers younger than eighteen, having more than one live infant, having a high school education or less, never been married, and have infants born preterm or with low
birth weight. Maternal smoking, substance abuse, and breastfeeding did not have a significant impact on infant sleep environments among African Americans.

Conclusion: Tailored health education programs at the community level, better access to pre-pregnancy and prenatal care, and increased maternal perception of risk that is relevant to the infants sleeping environment are all possible solutions that may decrease African American infant mortality rates.
# TABLE OF CONTENTS

List of Tables.................................................................................................................. 9
List of Figures.................................................................................................................. 10
Background...................................................................................................................... 11
  Introduction................................................................................................................. 11
  Public Health Significance......................................................................................... 13
  Study Objectives and Aims......................................................................................... 14
Methods......................................................................................................................... 15
  Data Sources............................................................................................................... 15
  Search Strategy........................................................................................................... 15
  Study Selection Criteria............................................................................................ 16
  Data Collection.......................................................................................................... 17
  Data Validity & Analysis........................................................................................... 19
Results.......................................................................................................................... 21
Discussion..................................................................................................................... 31
Conclusion..................................................................................................................... 33
References.................................................................................................................... 34
LIST OF TABLES

Table 1: Quality of Studies Used.................................................................20
Table 2: General Study Characteristics..................................................22
Table 3: Reasons Given for Using Prone Position and Bedsharing.............27
Table 4: Relevant Risk Factors of Sudden Infant Death Addressed.............28
Table 5: Common Demographics of AA Mothers of SIDS/SUID Victims.....29
Table 6: Health Education and Policy Recommendations..........................30
LIST OF FIGURES

Figure 1: Sudden Unexpected Infant Death Umbrella.................................................................12
Figure 2: Methodology Flowchart of Article Selection..............................................................18
BACKGROUND

Introduction

In the United States, Sudden Infant Death Syndrome (SIDS) is the leading cause of death of infants less than one year of age [2]. SIDS is defined as infant deaths that cannot be determined by a routine investigation of death by the death scene, in an autopsy, or by clinical investigation [2]. Sudden Unexpected Infant Death (SUID) is used to describe infant death that is both explainable or unexplainable. Causes of death under the SUID umbrella include but not limited to: accidental suffocation (AS), asphyxiation, strangulation, overlay, entrapment, unspecified illness, and other unspecified causes of death due to trauma [2]. The third category of infant death includes the "Unknown" or "Unspecified" causes of infant death. Accidental suffocation and strangulation in bed (ASSB) is the major cause defined under this category. Unexpected infant death is preventable and should be addressed as an important injury prevention public health issue.
In 1992, The American Academy of Pediatrics (AAP) recommended that forgoing prone (on stomach) sleep positioning and practicing supine (on the back) or side infant sleep positioning was the best method to reduce sudden infant death. By 2002, more evidence showed similar risk of death by SIDS was still present with side sleeping. Now, supine sleep positioning is the sole recommendation for infant sleep positioning. The "Back to Sleep" campaign efforts that began in 1995 in the United States have cut SIDS death rates in half [2]. However, SIDS deaths have reached a plateau since 2006 and have not shown much decline despite these national policies and health education efforts to inform mothers on infant sleep safety [15].
Public Health Significance

According to the National Vital Statistics Report from 2011 using 2007 linked infant birth and death data, the infant mortality rate (IMR) for all causes of infant death for Black, non-Hispanic mothers was 13.31 compared to the White, non-Hispanic IMR of 5.63, and Hispanic IMR of 5.42 [16]. The average infant mortality rate (IMR) in the United States was 6.75 per 1,000 live births. Infants born to mothers of Central and South American origins had the lowest IMR of 4.57 per 1,000 live births while Blacks had the highest IMR out of any ethnicity category at 13.31 per 1,000 live births. Black infants are dying at a much higher rate from sudden infant death than both non-Hispanic White, and the Hispanic population in the U.S combined. Infants born to African-American women in the US tend to be more susceptible to SIDS during early neonatal (first seven days post birth) and post neonatal time periods after birth [16]. A possible risk factor for SIDS that has been addressed in some literature is preterm birth (from elective deliveries or pregnancy difficulty) and low birth weight. Infants born preterm and with a low birth weight have the highest IMR in the United States. African American infants have 4.1 times the rate of Whites for low birth weight (LBW) related death, 2.6 times that of Whites for SIDS related deaths, and 2.7 times that for Whites for infections acquired during infancy [17, 23]. Other risks strongly associated with Black infant death include poverty, nutrition, and lack of appropriate sleeping environments.

It is pertinent to think critically, if the rationale for current safe sleep and prenatal care instruction is correct, then so many African-American infants should not be dying at a high rate from the very risks being targeted nationally and at the community level. Culturally specific recommendations could be the key to educating families within the African
American community. Sometimes it is useful to condescend national health education efforts in a way most suitable to appeal to the population at risk [19, 27]. Custom tailored recommendations for the African American community may decrease the rate of sudden infant death in the country overall, starting by addressing risk particular to this vulnerable population.

**Study Objectives and Aims**

This systematic review will critically analyze literature published on safe sleeping practices among mother-infant pairs and caregivers and define previous recommendations accepted to decrease risk of SIDS or SUID death. The review will concentrate further on how these recommendations may or may not relate to prenatal care, and the perinatal and infant environments typical of the African American community. Finally, new recommendations will be synthesized and presented for to consider education and policy recommendations that may not have been addressed that are specific to the African American community in an attempt to stimulate better methods of decreasing risk associated with sudden infant death.
METHODS

Data Sources

This literature review will be concentrated in the PubMed database and consist only of articles published since 2005. This year was chosen as the cutoff because the most recent AAP recommendations were published in 2005 [2]. Also, this time frame will cover IMR statistics published in 2011 by the National Vital Statistics Report based on infant mortality data from the 2007 linked birth and infant data set [17].

Search Strategy

Key words and phrases to be used during will consist of but are not limited to: "SIDS African American," "unexpected infant death," "SUID and race," "bedsharing," "bedsharing African American," "cribs African Americans," "Back to Sleep African American," "infant sleep position African American," "breastfeeding infant sleep," and "breastfeeding safe sleep," "Preterm birth and SIDS," "Low Birth Weight and SIDS," and "Prenatal Care African American," "Congenital defects and SIDS." Variations of these terms along with other sudden infant death risk factors will be used to search for the largest volume of related literature.
Study Selection Criteria

Inclusion of studies will be based on quality and relevance to the objectives of this review. Most inclusion criteria will be based on the methodology and structure of the technical report by the American Academy of Pediatrics Task Force on Sudden Infant Death Syndrome, 2005 entitled *SIDS and other Sleep Related Infant Deaths: Expansion of Recommendations for a Safe Infant Sleeping Environment*. Establishing and identifying risk will be captured using studies with statistical reporting of risk ratios, odds ratios, years of potential life lost (YPLL), univariate, bivariate, and multivariate analysis with standard deviations and confidence intervals. Study Inclusion criteria will consist of:

- Articles published after 2005
- Peer-reviewed articles
- English language only
- Studies associated with factors pertaining to SIDS and SUID (explicitly state SIDS and SUID, adverse birth outcomes, or any risk factors pertaining to infant mortality)
- Randomized control trials, controlled trials, cohort studies, case control studies, cross sectional, qualitative studies
- Retrospective and prospective studies with particular attention to recall and information bias
- Qualitative and Individual level results: interviews, questionnaires, medical records, death certificates, focus groups
- Socio-economic and Socio-demographic factors (race, marital status, household income, education)
Exclusion of studies will mainly focus on eliminating studies with bias by denying the following studies:

- Articles that contain no pertinent qualitative or quantitative measures
- Articles that did not include African-American infants or mothers into their analysis
- Articles that did not have SIDS or SUID related risk factors or characteristics as a factor in any of the forms of sudden infant death investigated

**Data Collection**

Using the PubMed database, article abstracts were initially read to determine relevance to the topic of SIDS and SUID. After it was determined an article met superficial inclusion criteria, the Methods, Results, and Conclusion sections were read to conclude if African American's were considered for analysis and if study results were supported by the study design and methods. Finally, articles were chosen that passed the criteria met in the inclusion and exclusion which showed the most relevant data to the literature review topic of this paper. The Preferred Reporting Items for Systematic Reviews (PRISMA) flow diagram was used to organize article selection and deletion during the literature review process [18].
Figure 2: Methodology Flowchart of Article Selection

*AA=African American

Articles Identified Through PubMed
n=107

Records Identified from Other Sources
n=4

Records After Duplicates Removed
n=92

Initial Records Screened
n=92

Records Excluded Due to No Specified/Relevant SIDS/SUID info
n=29

Full Text Articles Read
n=63

Records Excluded Due to Lack of Analysis of AA in Results/Discussion
n=31

Additional Studies Excluded Due to Small Percentage of AA's
n=19

Studies Included in Final Review
n=12
Data Validity & Analysis

Data analysis will include organization of articles into tables for in depth analysis and visual comparison of similarities and differences in study design and results. It is hypothesized that the article review will reveal reasons that explain disparities in information receipt of safe sleep policies and recommendations within the African American population, and synthesize new health education recommendations to decrease sudden infant death. Analysis tables that will accompany the results were created in Excel. These tables will include: infant death risk factors, common sleep practices in the African American community, causes of infant death, and comparisons of social factors (SES, education, marital status, urban versus rural, access to prenatal care) that may be risk factors of sudden infant death.

The Critical Appraisal Skills Programme or CASP 2006 system will be utilized in order to critique the content and validity of the articles chosen for systematic review [6]. The articles were scored form a scale of one to ten. Any articles that gained a compiled score of less than seven will be excluded. None of the twelve articles chosen were scaled under a seven so all were kept as the foundation for the literature analysis. In Table 1, each article has been critiqued based on the CASP 2006 system and scored accordingly.
**Table 1: Quality of Studies Used**  
*Using CASP 2006*  
*Y=1 or Yes Validly Discussed, N=0 or Not validly discussed, S=0.5 or Somewhat validated*

<table>
<thead>
<tr>
<th>Citation</th>
<th>Clear Research Aim</th>
<th>Appropriate Methodology</th>
<th>Relevant Research Design</th>
<th>Recruitment Strategy</th>
<th>Data Collection Described</th>
<th>Bias Discussed</th>
<th>Ethical</th>
<th>Data Analysis Discussed</th>
<th>Clearly Defined Findings</th>
<th>Valuable or Useful</th>
<th>Total 1-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>{{Smith,M.G. 2010}}</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>10</td>
</tr>
<tr>
<td>{{Oden,R.P. 2010}}</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>9</td>
</tr>
<tr>
<td>{{Joyner,B.L. 2010}}</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>9</td>
</tr>
<tr>
<td>{{Smith,L.A. 2010}}</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>9.5</td>
</tr>
<tr>
<td>{{Fu,L.Y. 2010}}</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>10</td>
</tr>
<tr>
<td>{{Von Kohorn,I. 2010}}</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>9.5</td>
</tr>
<tr>
<td>{{Colson,E.R. 2009}}</td>
<td>Y</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>S</td>
<td>Y</td>
<td>8.5</td>
</tr>
<tr>
<td>{{Kitsantas,P. 2008}}</td>
<td>Y</td>
<td>Y</td>
<td>S</td>
<td>Y</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>8.5</td>
</tr>
<tr>
<td>{{Ostfeld,B.M. 2006}}</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>10</td>
</tr>
<tr>
<td>{{Alio,A.P. 2011}}</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>10</td>
</tr>
<tr>
<td>{{Kiely,M. 2011}}</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>10</td>
</tr>
<tr>
<td>{{Carlberg,M.M. 2011}}</td>
<td>S</td>
<td>Y</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>S</td>
<td>Y</td>
<td>8.5</td>
</tr>
</tbody>
</table>
RESULTS

Once the twelve articles were chosen, a strong representation of studies was obtained which included one randomized control trial, five cohort studies, five cross sectional studies, and one case control study. Each study reported using a significant number of African American mothers, infants, or caregivers in the study population. Study results and conclusions can all be linked to the following categories: sleep position disparities, sleep location disparities, bedsharing risks, population perception of SIDS risk, and maternal health risks due to medical and sociodemographic factors and the effect on infant health [1, 3, 5, 9, 11, 12, 13, 22, 24, 26, 27, 30]. Within these conclusions, the reoccurring assumption provided was the need for health education to be tailored specifically to the African American population in order to ensure the most compliance with safe sleeping recommendations for infants and adherence to better maternal health [1, 3, 5, 9, 11, 12, 13, 22, 24, 26, 27, 30].

In relation to risk of SIDS/SUID, when sociodemographic factors such as income, marital status, education, and access to prenatal care were low, ethnicity was not a significant factor. However, because more African Americans tend to fall into the lower levels of the sociodemographic scale, there is a disproportionately higher percentage that are mothers of infants that die suddenly and unexpectedly [13]. Table 2 shows the general study characteristics of the twelve articles chosen and the similarities between each studies' implied policy objectives as a result of the varied study designs.
<table>
<thead>
<tr>
<th>Citation</th>
<th>Study Type</th>
<th>Hypothesis/ Research Question</th>
<th>Data Collection Method</th>
<th>Study Setting</th>
<th>Sample Size, Age Range</th>
<th>%AA</th>
<th>Analysis Tools &amp; Software</th>
<th>Conclusive Policy/Health Education Aim</th>
</tr>
</thead>
<tbody>
<tr>
<td>{{Oden,R.P. 2010}}</td>
<td>CS</td>
<td>using qualitative methods, examine factors influencing AA parent's decisions regarding sleep positioning</td>
<td>interview and focus groups</td>
<td>Washington, DC &amp; Maryland Community Level</td>
<td>N=83 mothers Ages 18-42</td>
<td>100%</td>
<td>NVivo 7</td>
<td>Consistency needs to be priority among trusted sources to provide information demonstrating why sleep position can affect SIDS risk</td>
</tr>
<tr>
<td>{{Joyner,B.L. 2010}}</td>
<td>CS</td>
<td>using qualitative methods, examine factors influencing AA parent's decisions regarding sleep location(room location &amp; sleep surface)</td>
<td>interview and focus groups</td>
<td>Washington, DC &amp; Maryland Community Level</td>
<td>N=83 mothers Ages 18-42</td>
<td>100%</td>
<td>NVivo 7</td>
<td>encourage room sharing without bedsharing, increase availability of portable cribs, change sleep safety perception</td>
</tr>
<tr>
<td>{{Smith,L.A. 2010}}</td>
<td>CS</td>
<td>1. determine if mothers from at risk</td>
<td>face-to-face interviews</td>
<td>Birmingham, AL; Dallas, TX;</td>
<td>N=2355 mothers Age Mean=</td>
<td>74%</td>
<td>SAS descriptive statistics, bivariate</td>
<td>high maternal rating of physician qualification</td>
</tr>
</tbody>
</table>

*UD=Undetermined, UK= Unknown, AA= African American, NS= Not Specified, OR= Odds Ratios, CI= Confidence Intervals, PC= Prospective Cohort, RC= Retrospective Cohort, RCT= Randomized Control Trial, CC= Case Control, CS= Cross Sectional
<p>| {{Fu,L.Y. 2010}} | CC | is bed sharing risk modified by other characteristics in the sleep environment | secondarily data analysis, CIMS (Chicago Infant Mortality Study), interviews | Chicago, Ill | N= 390 infants (195 cases, 195 controls) Ages &lt;1 | 100% | SAS 9.1 descriptive statistics, t tests, Wilcoxon rank sum, chi-square, logistic regression (OR) | need for educational messaging specific to AA on bed sharing, bed sharing is an overall risk and is not associated with supine sleep or removal of soft bedding |
| {{Von Kohorn,I. 2010}} | CS | determine relationship between mothers advice mothers receive on infant sleep position and actual position infants are placed in, understand modifiers of these | face-to-face interviews | Birmingham, AL; Dallas, TX; Detroit, MI; New Haven, CN; Clarksdale, MS; Jackson, MS Community Level | N- 2299 mothers Age &lt;20 to&gt;29 | 74% | SAS 9.1 Descriptive statistics, chi-square, logistic regression, Cochran-Armitage | the more sources of information given through maternal relationships that promote supine sleep increase the chance of an AA mother to place infant supine |</p>
<table>
<thead>
<tr>
<th>Source</th>
<th>Study Type</th>
<th>Methods</th>
<th>Findings</th>
<th>Statistical Tests</th>
<th>Research Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colson, E. R. 2009</td>
<td>CS</td>
<td>determine trends and factors associated with choices in sleep position across the US from 1993-2007, also known as NISP (National Infant Sleep Position) Study</td>
<td>NISP, telephone interviews</td>
<td>national (48 states)</td>
<td>N= 13,580 mothers Age &lt;20 to &gt;30</td>
</tr>
<tr>
<td>Kitsantas, P. 2008</td>
<td>RC</td>
<td>examine ethnic differences among non-Hispanic blacks and whites and distribution of maternal risk factors of infant mortality across specific causes of death</td>
<td>secondary data analysis, North Carolina linked birth/infant death files</td>
<td>North Carolina</td>
<td>N= 5274 Age &lt;20 to &gt;34</td>
</tr>
</tbody>
</table>
| Ostfeld, B. M. 2006 | RC | to characterize a profile of risk factors associated with bed | secondary data analysis, SIDS Center of New Jersey | New Jersey | N= 239 (bedsharing info) N= 152 (subset) Age <19 | 49.4% | Statistical 5.5 chi square, Fishers exact, Mann-Whitney U, research needs to identify barriers to action or education among the at
<table>
<thead>
<tr>
<th>Reference</th>
<th>Design</th>
<th>Objective</th>
<th>Methodology</th>
<th>Findings</th>
<th>Risk Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>{{Alio,A.P. 2011}}</td>
<td>RC</td>
<td>assess the impact of paternal involvement on adverse birth outcomes in teenage mothers</td>
<td>secondary data analysis, Florida Department of Health (FDOH) birth records</td>
<td>AA teenage mothers &lt;20 without a father in the household (only mother) reported increased risk for low birth weight, very low birth weight, preterm birth, very preterm birth, need more research on paternal involvement in birth outcomes</td>
<td>risk group for bedsharing: black mothers, &lt;19, single, high gravida, and maternal smoking</td>
</tr>
<tr>
<td>{{Kiely,M. 2011}}</td>
<td>RCT</td>
<td>(1) explore the relationship between medical and behavioral risks, sociodemographic factors, and pregnancy outcomes; (2) identify relative predictors of adverse pregnancy outcomes;</td>
<td>randomized control trial, medical record review</td>
<td>preconceptual medical, sociodemographic, and behavioral factors may strongly influence pregnancy outcomes</td>
<td>risk group for bedsharing: black mothers, &lt;19, single, high gravida, and maternal smoking</td>
</tr>
</tbody>
</table>
(3) characterize women at highest risk of poor pregnancy outcomes

| RC | analyze association between maternal and infant characteristics for infants that died from accidental Suffocation and strangulation in bed (ASSB) | secondary data analysis, 2000-2002 US Linked Infant Birth/Death data | national | N= 1064 infants Age <1 | 32.92% | better safe sleep prenatal education for at risk population for ASSB: young, less educated, multiparous Blacks that are smokers and give birth to preterm males | SAS 9.1 MantelHaenszel, chi square, OR, CI |
Contributing Factors

The five cross sectional studies employed a mixture of phone and face-to-face interviews, and focus groups to qualitatively explain possible risk factors and covariates that contribute to African American mother's decisions to continue practicing unsafe sleeping behaviors [22, 11, 26, 30, 5]. Table 3 explains why an overwhelming majority of the participants admitted to continuing prone and lateral (side) sleep positioning and bedsharing following the Back to Sleep campaign and after receiving (if provided) prenatal education.

Table 3: Reasons Given for Using Prone Position and Bedsharing

<table>
<thead>
<tr>
<th>Reason</th>
<th>Articles</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother Perception of Infant Safety</td>
<td>22, 11, 26, 30, 5</td>
<td>• Infant is safer sleeping with mother</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Infant may feel neglected</td>
</tr>
<tr>
<td>Lack of Knowledge/Acceptance of AAP</td>
<td>11, 22, 26</td>
<td>• Not aware of sleep recommendation for supine and decline of bedsharing</td>
</tr>
<tr>
<td>Recommendation</td>
<td></td>
<td>• Lack of trust in physician advice</td>
</tr>
<tr>
<td>Cultural Influences</td>
<td>11, 22, 26, 30</td>
<td>• Family, friends encourage bedsharing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• History of prone and lateral practices in family</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• History of bedsharing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Because the methods that are not recommended have worked without death/injury, no change is made</td>
</tr>
<tr>
<td>Space</td>
<td>11</td>
<td>• Infant sleeps in the room with mother due to of lack of living/sleep space</td>
</tr>
</tbody>
</table>
Risk Factors & Population Demographics

Analysis of the cross sectional, cohort, and randomized control trial studies provides a clearer explanation of the risk associated with SIDS/SUID among African Americans as well as the current disparity prevalent among the infant deaths in this population. This disparity is largely due to lack of adherence to safe sleep positioning, safe sleep location, bedsharing, population demographics, and pre-pregnancy maternal behavior [9, 1, 27, 13, 24, 3, 12]. Table 4 lists the major risk factors identified from the articles among African American mother-infant pairs and how significant these risks are in contributing to sudden infant death. Significance was determined based on the percent or rate measured among African Americans as compared to Whites and Hispanics in the studies. Based on these risk factors, common demographic characteristics reported were compiled in Table 5 to explain the association of risk factors with demographics among these mothers.

Table 4: Relevant Risk Factors of Sudden Infant Death Addressed

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Articles</th>
<th>Rate of Death AA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prone or Lateral Sleep Positioning</td>
<td>3, 22, 5, 24, 27</td>
<td>Very Significant</td>
</tr>
<tr>
<td>Bed Sharing or Co Sleeping</td>
<td>1, 3, 24, 9</td>
<td>Very Significant</td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>1, 9, 12, 27, 13, 24, 3, 22, 11, 26, 30, 5</td>
<td>Somewhat Significant</td>
</tr>
<tr>
<td>Preterm and Very Preterm Birth</td>
<td>1, 12, 3, 9</td>
<td>Significant</td>
</tr>
<tr>
<td>Low Birth Weight and Very Low Birth Weight</td>
<td>1, 12, 9</td>
<td>Significant</td>
</tr>
<tr>
<td>Maternal Medical Factors</td>
<td>12, 13</td>
<td>Significant</td>
</tr>
<tr>
<td>Lack of Familial Support</td>
<td>1, 12</td>
<td>Somewhat Significant</td>
</tr>
</tbody>
</table>
Table 5: Common Demographics of AA Mothers of SIDS/SUID Victims

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Articles</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>22, 11, 26, 30, 5, 9, 1, 27, 13, 24, 3, 12</td>
<td>Those at highest risk were more likely to have never been married</td>
</tr>
<tr>
<td>Education</td>
<td>22, 11, 26, 30, 5, 9, 1, 27, 13, 24, 3, 12</td>
<td>Those at highest risk reported less than or equal to 12 years of education</td>
</tr>
<tr>
<td>Age</td>
<td>22, 11, 26, 30, 5, 9, 1, 27, 13, 24, 3, 12</td>
<td>Highest risk was associated with mothers that were younger than 18</td>
</tr>
<tr>
<td>US Location</td>
<td>26, 27, 11, 22</td>
<td>US region with highest risk was the South</td>
</tr>
<tr>
<td>Parity (#live births)</td>
<td>22, 11, 26, 30, 5, 9, 1, 27, 13, 24, 3, 12</td>
<td>Highest risk of SIDS was in multiparous women</td>
</tr>
</tbody>
</table>

Study Recommendations

Each study synthesized a recommendation regarding how the disparity of infant death within the African American community might be eliminated. Certain recommendations were related to health education while others could be interpreted as possible policy level action items. Table 6 describes each of these recommendations in detail. Effectiveness of these recommendations was based on author citation of other studies with successful results, or the reporting of community-level and national measures currently being utilized.
Table 6: Health Education and Policy Recommendations

<table>
<thead>
<tr>
<th>Health Education or Policy Recommendation</th>
<th>Reasoning</th>
<th>Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prenatal Care Education</td>
<td>Better prenatal care education will ensure compliance with AAP recommendations</td>
<td>Effective</td>
</tr>
<tr>
<td>Crib Use</td>
<td>The crib is the safest location for a baby to sleep and access to cribs should be increased</td>
<td>Not Effective</td>
</tr>
<tr>
<td>Uncluttered Cribs</td>
<td>Information should be tailored to address items that women believe are comforting but can cause suffocation or strangulation hazards in cribs</td>
<td>Somewhat Effective</td>
</tr>
<tr>
<td>Tailor Safe Sleep Messages to AA</td>
<td>Increased Perceived Susceptibility to SIDS to warrant action/change of maternal behavior</td>
<td>Somewhat Effective</td>
</tr>
<tr>
<td>Maternal Health</td>
<td>If AA women take care of themselves during pre-pregnancy, infant has a greater chance at not experiencing sudden infant death</td>
<td>Somewhat Effective</td>
</tr>
<tr>
<td>Increase Perceived Risk/Susceptibility among AA</td>
<td>If AA believe their infants are susceptible to SIDS/SUID, they will comply with AAP recommendations</td>
<td>Not Effective</td>
</tr>
<tr>
<td>Increase Trust in Medical Providers</td>
<td>If AA trust physicians and nurses, they are more likely to practice what is learned in prenatal care</td>
<td>Somewhat Effective</td>
</tr>
<tr>
<td>Address Importance of AA Family Structure</td>
<td>Trusted sources of information play a large role on child-rearing among AA's</td>
<td>Not Effective</td>
</tr>
<tr>
<td>Teenage Pregnancy</td>
<td>Teenage AA mothers are more likely to lose an infant to SIDS. Need better prevention of teenage pregnancy</td>
<td>Somewhat Effective</td>
</tr>
<tr>
<td>Underserved Need Better Access to Care and Health Education</td>
<td>Better access to pre-pregnancy and prenatal care will grant better infant outcomes among the underserved</td>
<td>Somewhat Effective</td>
</tr>
</tbody>
</table>
DISCUSSION

Based on the findings of this systematic literature review, the most prevalent observation is African American's are not receiving adequate education to maintain a safe environment for their infant, whether this is in relation to medical sources or trusted sources. The extensive search completed reveals this study is among few that have attempted to systematically review SIDS/SUID risk factors in African Americans to synthesize relevant health education changes. This study discerned how maternal characteristics and demographics are important covariates that precede a mother's action of not practicing safe sleep positioning, location, and protection of the delicate pre-pregnancy and prenatal infant environment [5, 12]. The AAP Task Force on Sudden Infant Death Syndrome [28] has thoroughly analyzed the major risk factors associated with SIDS in the United States; from possible genetic makeup, to sleep position and maternal characteristics. However, this review further analyzes specific risk factors for African Americans only.

African American women are at a greater risk of SIDS when: they are younger than eighteen, have more than one live infant, have a high school education or less, have never been married, and have infants born preterm or with low birth weight. These factors are being reported because each article that mentions these risks produced statistical evidence or percentages showing the categories to be significant in relation to characteristics that contribute to IMR. The main study objective for analysis was to show relevance of these risks in relation to African American access to updated health education programs and information. These studies suggest that more education efforts outside of the prenatal care setting should be implemented to achieve uniform infant care ideologies within the African
American population. At the current time, there are no national level initiatives to increase African American susceptibility to SIDS that is in the form of an intervention within the prenatal care or supplementary care, and community environments. The Back to Sleep campaign has a brochure tailored to African American's that may be a useful blueprint to begin tailoring messages to this population [8].

Another deducted finding from this review is the importance of the independence of the mothers perception of the infants sleeping environment [3, 5, 9, 1, 14, 22, 23]. African American mothers reported increased safety related reasons why an infant is positioned a certain way or placed in a specific location while sleeping. Reducing the perceived norms and perceived susceptibility that give rise to these assumptions may warrant better acceptance of maternal behaviors more accurate in their methodology to keep the infant safe and reduce the chances of sudden infant death by SIDS/SUID.

Finally, maternal health during pre-pregnancy and prenatal time periods is vital to the development and health of an infant and may determine the level of the infant's susceptibility to SIDS/SUID [1, 2, 12, 17]. Regular physicals and checkups before pregnancy as well as scheduling all prenatal visits during pregnancy can determine if a mother has pre-existing conditions such as diabetes, obesity, or high blood pressure. These conditions can be corrected prevented early to ensure the outcome of a healthy infant, not compromised by congenital abnormalities, preterm birth, or low birth weight, which are found to be common risk factors of African American infants that die from SIDS/SUID [17]. Also maternal smoking, substance abuse, and breastfeeding did not have a significant impact on infant sleep environments. This suggests demographics of these African American mothers should not be
made susceptible to programs that are specific to preventing prenatal substance abuse and smoking or focus on breastfeeding as a risk of bedsharing. Rather, programs should be rich in preventive physical and medical health education and target perceived norms that lead to bedsharing and incorrect infant placement.

CONCLUSION

Infant death disparities are an important public health issue that has major cultural implications due to the high rate of infant death concentrated among African American infants. Tailoring health education programs outside of the prenatal care environment on the community level may be the key in increasing knowledge and adherence of AAP recommended practices for safe infant sleep. Abandoning maternal perceptions of infant safety that are more emotionally relevant to the mother is a key action item when addressing this population's perception of what constitutes the best method to create a safe infant sleeping environment. Accessibility to preventive pre-pregnancy (standard women's care) and prenatal care facilities can aid in developing better maternal health and in turn, decrease infant susceptibility to the various risks associated with sudden infant death. A limitation to this review is that there is limited SIDS/SUID literature that is specifically tailored to African-American risk factors. Future research on this topic is needed to gain more study power in performing a systematic review on this topic.
References


(30) Von Kohorn, I., Corwin, M. J., Rybin, D. V., Heeren, T. C., Lister, G., & Colson, E. R.
(2010). Influence of prior advice and beliefs of mothers on infant sleep position.


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