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Caesarean Section Surgical Site Infection and Associated Personal Patient Risk Factors: An Integrative Review

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Introduction: Surgical site infection (SSI) is the most prevalent healthcare associated infection in developing countries and the second most prevalent in the developed world (WHO, 2016). SSI complications have been documented in various forms of surgeries such as orthopaedic, cardiac, gynaecologic and obstetric, among others.

Post-operative caesarean section SSI are associated with various complications, cost, extended hospital stay and can negatively impact on the life of new mothers, their babies and their families (Berríos-Torres et al., 2017; Mangram et al.,1999). A woman's journey through a caesarean operation exposes her to multiple risk factors that contribute to the development of SSI. These factors relate to preventable risks during the pre-operative, operative and post-operative phases of patient care (Mangram et al.,1999). A substantial number of literature on the prevention of SSI addressing various risk factors identified in these phases exist globally. However, it is not known whether extensive high quality evidence on the association of personal patient risk factors to SSI development exist. This integrative review, thus, aims to critically evaluate published research material on caesarean section surgical site infection and associated personal patient risk factors and to provide nursing recommendations that relate to this area of practice.

Purpose: To synthesize and examine published literature on caesarean section surgical site infection and associated personal patient risk factors

Methods: This integrative review was informed by Whittemore and Knafl's integrative review approach which allows the inclusion of various research methodologies to present different perspectives regarding a research problem. The five-stage framework includes: problem identification, literature search, data evaluation, data analysis and presentation of findings.

Key words and medical subject headings were used in conjunction with Boolean operators, truncation and spelling variants to search four electronic databases. The search term used were: "Caesarean section surgical site infection" OR "Cesarean section surgical site infection" OR "Caesarean section infection" OR "Cesarean section infection" AND "risk factor*" OR "patient factor*" OR "patient character*" OR "patient cultural practice*". Cultural practice was operationally defined as traditional or customary activities in relation to post-caesarean section hygiene, wound care and physical activity. The inclusion criteria were: caesarean section wound infection as an outcome measure, personal patient risk factors such as age, obesity, smoking, diabetes mellitus and cultural practices associated with caesarean section wound infection, full text peer-reviewed academic journal with abstract and the article should be written in English. The databases searched included: CINAHL, Discover, PubMed and Science Direct. A ten-year time period from January 2008 - January 2018 was chosen to ensure that only current relevant literature will be covered in the review. The process of review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) format – identification, screening, eligibility and inclusion.

Database searches identified 157 articles. Free-hand related article search yielded 32 publications resulting in a total of 189 publications. Of these, two articles were removed due to unavailability of full text resulting in 187 publications. Duplicates were removed which further resulted in 88 articles. Screening involved the removal of publications regarding patient-related issues that occurred in the pre-, intra- and post-operative period. Abstracts were screened by the researchers twice by swapping publications to

ensure rigour in evaluating whether the inclusion criteria have been met. A total of 46 research articles were eligible for full text evaluation.

Results: Forty-six peer-reviewed publications met the inclusion criteria for full-text review. The selected research publications covered research with varying designs. The quality of five research elements were evaluated, namely: sample size, control, consistency of result, conclusion and research implications. Twenty out of the 46 studies scored highly on quality. These studies supported an association between caesarean section surgical site infection and at least one of the following identified risk factors - age, obesity, smoking and diabetes mellitus. However, only one of the high-quality researches studied cultural practices and its association with caesarean section surgical site infection.

Conclusion: Evidence regarding the association of personal patient risk factors such as age, obesity, smoking and diabetes mellitus to caesarean section surgical site infection is inadequate. Even more scarce are studies that evaluate the association of cultural practices to caesarean section surgical site infection.

Recommendation: Further research is required to address the lack of high-quality studies in the area of personal patient risk factors. Research focusing on cultural practices as risk factors to caesarean section surgical site infection is highly recommended.

Implications for practice: Nurses are in the best-position to implement interventions that address personal patient risk factors associated with caesarean section surgical site infection. Identification of these personal patient risk factors should be supported by evidence in order for the nurse to implement appropriate research-based interventions.

Title:

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Keywords:

Caesarean section surgical site infection, integrative review and personal patient risk factors

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Abstract Summary:

An integrative literature review was conducted using four databases CINAHL, Discover, PubMed and Science Direct to provide a critical evaluation of published research on caesarean section surgical site infection and associated personal patient risk factors.

Content Outline:

I. Surgical site infection (SSI) is the most prevalent healthcare associated infection in developing countries and the second most prevalent in the developed world (WHO, 2016).

A. SSI complications have been documented in various forms of surgeries such as orthopaedic, cardiac, gynaecologic and obstetric, among others.

B. Post-operative caesarean section SSI are associated with various complications, cost, extended hospital stay and can negatively impact on the life of new mothers, their babies and their families (Berríos-Torres et al., 2017; Mangram et al.,1999).

C. A substantial number of literature on the prevention of SSI addressing various risk factors identified in the pre-operative, operative and post-operative phases exist globally.

D. It is not known whether extensive high quality evidence on the association of personal patient risk factors to SSI development exist.

E. This integrative review was conducted to critically evaluate published research material on caesarean section surgical site infection and associated personal patient risk factors and to provide nursing recommendations that relate to this area of practice.

II. The process of review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) format – identification, screening, eligibility and inclusion.

A. Key words and medical subject headings were used in conjunction with Boolean operators, truncation and spelling variants to search four electronic databases, namely: CINAHL, Discover, PubMed and Science Direct.

B. The inclusion criteria were: caesarean section wound infection as an outcome measure, personal patient risk factors such as age, obesity, smoking, diabetes mellitus and cultural practices associated with caesarean section wound infection, full text peer-reviewed academic journal with abstract and the article should be written in English.

C. A ten-year time period from January 2008 - January 2018 was chosen to ensure that only current relevant literature will be covered in the review.

D. Database searches identified 157 articles.

E. Free-hand related article search yielded 32 publications resulting in a total of 189 publications.

F. Duplicates were removed which further resulted in 88 articles.

G. Screening involved the removal of publications regarding patient-related issues that occurred in the pre-, intra- and post-operative period.

H. A total of 46 research articles were eligible for full text evaluation.

I. Twenty out of the 46 studies scored highly on quality.

J. Twenty studies supported an association between caesarean section surgical site infection and at least one of the following identified risk factors - age, obesity, smoking and diabetes mellitus.

K. Only one of the high-quality researches studied cultural practices and its association with caesarean section surgical site infection.

III. In conclusion, evidence regarding the association of personal patient risk factors such as age, obesity, smoking and diabetes mellitus to caesarean section surgical site infection is inadequate. Even more scarce are studies that evaluate the association of cultural practices to caesarean section surgical site infection.

IV. It is recommended that further research be conducted to address the lack of high-quality studies in the area of personal patient risk factors. Research focusing on cultural practices as risk factors to caesarean section surgical site infection is also highly recommended.

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