

Hyperemesis gravidarum in premarital pregnancy: scoping review

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Abstract

Hyperemesis gravidarum is the main cause of death, currently the hyperemesis gravidarum is no longer the main cause of maternal mortality, however the hyperemesis gravidarum is still the main cause of maternal morbidity. The cause of hyperemesis gravidarum is not yet known with certainty, with an incidence of 2/1000 pregnancies. Several influences have factors, including predisposing factors (primigravida, hydatidiform mole, and multiple pregnancy). Organic factors (allergies, entry of chorial villi in the circulation, metabolic changes due to pregnancy, and the maternal resistance is decreased). Psychological factors (age, household, job loss, fear). The method used through five stages, namely identifying scoping review questions with the PEOT framework (Population, Exposure, Outcome, and Thema), identifying articles using relevant databases (PubMed, Ebsco, Wiley, Science Direct) and gray literature (Google Scholar). by using keywords, article selection, data charting, compiling, summarizing and reporting results. Five articles had the highest and lowest scores. Four themes emerged as a result of the scoping review, it consisted of the prevalence, incidence, degree and management of hyperemesis gravidarum in premarital pregnancy.

Keywords: hyperemesis gravidarum; premarital; pregnant

INTRODUCTION

According to the World Health Organization (WHO) as the United Nations agency that deals with the health issues, hyperemesis gravidarum occurs throughout the worldwide, including countries on the American continent with incidence rates vary. Whereas, the incidence of hyperemesis gravidarum also occurs in Asia, for instance in Pakistan, Turkey and Malaysia, while the incidence of hyperemesis gravidarum in Indonesia ranges from 1% -3% of all pregnancies. The prevalence of hyperemesis gravidarum occurs in the worldwide with a wide variety of incidence, it starts from 0.3% of all pregnancies in Sweden, 0.5% in California, 0.8% in Canada, 10.8% in China, 0.9% in Norway, 2.2% in Pakistan, 1.9% in Turkey, 0.5-2% in the United States, and 1-3% of all pregnancies in Indonesia (Cooper, 2019).

Hyperemesis gravidarum is the main cause of death, currently hyperemesis gravidarum is no longer the main cause of maternal mortality, however hyperemesis gravidarum is still the main cause of maternal morbidity. The cause of hyperemesis gravidarum is not yet known with certainty, with an incidence of 2/1000 pregnancies. Several influences have factors, including predisposing factors (primigravida, hydatidiform mole and multiple pregnancy), organic factors (allergic entry of chorial



villi in the circulation, metabolic changes due to pregnancy and decreased maternal distress) and psychological factors (age, household, job loss and fear) (Cooper, 2019).

Nausea and vomiting are one of the most common complications during pregnancy, it is assumed that approximately 70% of all pregnant women in the worldwide. Most pregnant women experience nausea in the first trimester, between the sixth and twelfth weeks of pregnancy. Nausea can last up to 20 weeks, or even longer in 20% of women. Hyperemesis gravidarum (HG), the strongest form of nausea and vomiting in pregnancy (Kloter et al., 2019). Hyperemesis gravidarum is defined as persistent vomiting, vomiting, severe dehydration, electrolyte disturbances, weight loss of more than 5% of body weight before pregnancy, and significant ketonuria (Aleyasin et al., 2016).

The cause of hyperemesis gravidarum is still unclear and may be multi-factorial with biological, psychological and high levels of human chorionic gonadotropin (Tan et al., 2010). The cause of emesis gravidarum is not clear until now, however, nausea and vomiting are considered as multifactorial problems. The related theories are hormonal, vestibular, digestive, psychological, hyperolfaction, and genetic factors (Rudiyanti, 2019).

Other causes include persistent low food intake and/or frequent vomiting which can lead to dehydration, the imbalance of metabolism, nutritional deficiencies and weight loss. Severe maternal weight loss in early pregnancy or insufficient body weight has been associated with unfavorable fetal outcomes such as preterm birth and growth restriction (Birkeland et al., 2015). Hyperemesis gravidarum is clinically classified as mild or severe, depending on associated metabolic disorders such as depletion of carbohydrate, dehydration, and the imbalance of electrolyte. The incidence is estimated at 0.3 to 1.5% of all live births but is evenly distributed at the global level (Koudijs et al., 2016).

Unplanned, uncomfortable or unwanted pregnancy, the workload will cause mental suffering and conflict. Feelings of guilt, anger, fear and anxiety can add to physical symptoms. The lack of knowledge, information and poor communication between women and their caregivers also affects women's perceptions of the severity of symptoms (Rudiyanti, 2019). Hyperemesis gravidarum can also increase the possible risk of slow growth, congenital abnormalities or damage to the fetus. Hyperemesis gravidarum does not merely threaten the life of pregnant women, but it can also lead to the side effects in the fetus such as abortion, low birth weight, premature birth, and malnutrition in newborns (Koudijs et al., 2016).

Scoping review aims to determine the literature, explore research activities related to the topic to be studied and investigate any problems or gaps in the research area to be studied.

RESEARCH METHOD

This scoping review used the method that was consisted of five stages, namely identifying scoping review questions with the PEOT framework (Population, Exposure, Outcome, and Thema), identifying articles used relevant databases (PubMed, Ebsco,

Wiley, Science Direct) and gray literature. (Google Scholar) by using keywords, article selection, data charting, compiling, summarizing and reporting the results.

In the selection of relevant articles the researcher determined the inclusion criteria, namely articles published from 2000-2019, articles from Indonesian and English language documents/reports/draft policies/guidelines from WHO/certain formal organizations, articles that discussed hyperemesis gravidarum in pregnancy, in particular. Premarital pregnancy, articles discussed the prevalence of hyperemesis gravidarum in pregnancy, especially premarital pregnancy, articles discussed the management of hyperemesis gravidarum in pregnancy, especially premarital pregnancy, articles that discussed the degree of hyperemesis gravidarum in pregnancy, especially premarital pregnancy, articles that discussed the incidence of hyperemesis gravidarum in pregnancy, especially premarital pregnancy and articles that discussed nausea and vomiting in pregnancy, particularly the premarital pregnancy.

The exclusion criteria for this article were opinion articles, letters and book reviews, article reports, articles that only discussed pregnancy in adolescents, literature searches, articles whose participants were fathers and articles that were not full text.

This scoping review has identified a literature study. Designing a framework as a basis for determining inclusion and exclusion criteria so that the data sought did not widen and it merely focused on the context that was sought. Including the keyword "hyperemesis gravidarum, premarital, pregnant into a search engine on the PubMed, Scencedirect, Wiley, EBSCO and Google Scholar databases. In the PubMed, Scencedirect, Wiley, EBSCO and Google Scholar databases managed the filters on the page such as full text filtering, Data publish in 2000-2019, Human, English, and Indonesian. There were database findings, namely 165 articles. Storage of database pages to the storage engine of bibliography mendeley.

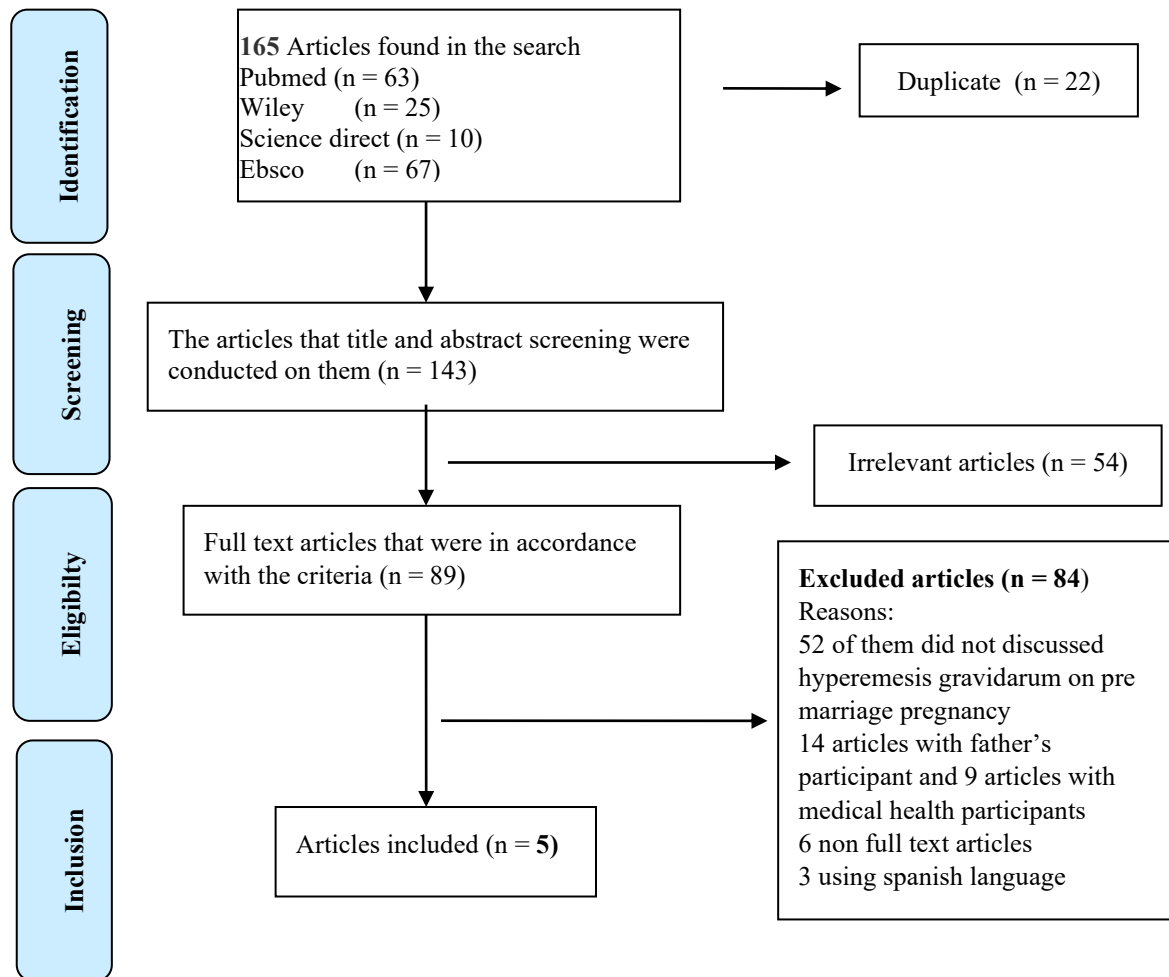
In the search for articles, 165 articles were found. From the number of articles, many articles were filtered or excluded because of titles that did not fit the framework, all articles were in English and Indonesian. There were articles in original form and it consisted of 89 articles, so that number was reduced and then the results consisted of 5 articles.

RESULT AND DISCUSSION

Unmarried women undergo the hyperemesis gravidarum as much as 16% and it can cause adverse births, such as preterm birth (Goossens et al., 2016). The incidence of hyperemesis gravidarum in cases and controls is more frequent in the first trimester that compared to the second and third trimester (Mekonnen et al., 2018). 6.4% of women encounter hyperemesis gravidarum in premarital pregnancy, hyperemesis gravidarum can lead to the pregnancy complications and affect the quality of life of pregnant women, so antiemetics, hospitalization or IV fluids are needed. Hyperemesis gravidarum often occurs in premarital pregnancy (Temming et al., 2014).

In the case and control groups hyperemesis gravidarum was higher in married than unmarried mothers. Hyperemesis gravidarum is more common in the first trimester than in the second and third trimester. The most severe or severe degree of hyperemesis

gravidarum occurs in the first trimester (James, 2004). 3/4 of the women who were hospitalized for hyperemesis gravidarum, and the majority showed clinical signs of dehydration, ketonuria, and weight loss. Antiemetics are prescribed based on the need. Metoclopramide and meclizine are the most commonly used (Havnen et al., 2019).



Picture 1. Prisma

Table 1. Data Extraction

No	Research Name/Year/Title	Research Location	Aim	Research Design	Data collection	Population and Research Sample	Finding	Comments about the article	Score
1	Goossens et al / 2016 The prevalence of unplanned pregnancy ending in birth, associated factors, and health outcomes	Belgium	To discover the prevalence of hyperemesis gravidarum in unwanted pregnancies	Cross-sectional	Data were collected using a questionnaire based on an extensive literature review on the intention of pregnancy and planning, pre-existing surveys	517 women were recruited from May to September 2015	Unmarried women underwent hyperemesis gravidarum as much as 16% and it could cause adverse births, such as preterm birth	The strength of this article is the use of a reliable and validated instrument to measure such a complex pregnancy planning. The weakness of this article is that there is a risk of biased sampling even though the midwives were instructed to invite all pregnant women to participate but it was not explained about the studies to be conducted. The studies that were conducted were about adverse births.	22/33
2.	Mekonnen, Amogne, & Worku Kassahun / 2018 Risk Factors of Hyperemesis Gravidarum among Pregnant Women in Bale Zone Hospitals	Southeast Ethiopia	To discover the incidence of hyperemesis gravidarum	Case control	Data were collected by structured interviews and questionnaires	396 pregnant women (132 cases and 264 controls) based on marital status	The incident of hyperemesis gravidarum in cases and controls was more common in the first trimester, compared to the second and third trimester.	Study has investigated the risk factors for hyperemesis gravidarum outside of Ethiopia, but studies have reported conflicting results. These results were contrast with the significant limitations in terms of study	25/30

									design, the lack of the sample size in the case group.	
3	Temming et al / 2014 Adverse pregnancy outcomes in women with nausea and vomiting of Pregnancy	United States of America	To find out the prevalence and management of hyperemesis gravidarum premarital	Cohort	Data were collected by conveying information and using an interview process and were collected 2-6 weeks postpartum	Women who volunteer to enroll in a maternity screening program	6.4% of women underwent hyperemesis gravidarum in premarital pregnancy, hyperemesis gravidarum could cause pregnancy complications and affect the quality of life of pregnant women, thus, the antiemetics, hospitalization or IV fluids were needed. Hyperemesis gravidarum often occurs in premarital pregnancy.	Lack of this article data collected at the end of pregnancy (retrospectively) could be biased.	22/33	
4	James / 2012 The sex ratio of pregnancies complicated by hospitalisation for hyperemesis gravidarum	United States of America	To find out the incident and level of hyperemesis gravidarum	Case control	The sex ratio of infants to pregnant women hospitalized for hyperemesis gravidarum was evaluated	2110 pregnant women who were hospitalized due to they encountered hyperemesis gravidarum and 9783 pregnant women without hyperemesis	In case and control groups hyperemesis gravidarum was higher in married than unmarried mothers. Hyperemesis gravidarum was more common in the first trimester compared to the second and third trimester. The most severe or severe degree of hyperemesis gravidarum occurred in the 1st trimester.	In this study data collection used the State Comprehensive Hospital Abstract Reporting System (CHARS), however, the cases of severe hyperemesis gravidarum were identified. Although this strengthens the case, it may limit the generality of findings.	23/30	

5	Havnen et al / Norway 2019 Women's perspectives on the management and consequences of hyperemesis gravidarum – a descriptive interview study	To find out the management of hyperemesis gravidarum	Cross-sectional	Data collected through structured telephone interviews and online questionnaires structured.	Norwegian woman who experienced with hyperemesis gravidarum (based on marital status)	3/4 mothers were treated at home pain due to hyperemesis gravidarum, and the majority showed clinical signs of dehydration, ketonuria, and weight loss. Antiemetics were prescribed as needed. Metoclopramide and meclozine ones most commonly used.	The drawback of this article is that most of the data have been collected retrospectively. 75% of participants almost had hyperemesis gravidarum in the previous year. However, for 27 women, data were collected between 1 year and 2 years after pregnancy. This is a long time interval and it can lead to the bias.	20/24
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The prevalence of hyperemesis gravidarum in premarital pregnancy is higher compared to the married people (16% VS 10%) & 25.7% VS 19.0%) (Goossens et al., 2016 & Temming et al., 2014). This is due to the unwanted pregnancy status. Hyperemesis gravidarum that is experienced by the mother can increase, cause dehydration, weight loss, imbalance of electrolyte and it can lead to the preterm labor (1,3). However, this opinion differs from article (James, 2012) which argue that the prevalence of hyperemesis gravidarum is more likely to occur in married women than premarital women. This is affected by factors of marital status, pregnancy status, higher education level, low weight before pregnancy and maternal age at pregnancy.

Hyperemesis gravidarum on premarital generally occurs in the first trimester or in early pregnancy. Unwanted pregnancy leads to the maternal stress, psychosocial disorders and causes hyperemesis gravidarum to become more severe (Mekonnen et al., 2018 & James, 2012). This opinion is supported by the research of Romero-Gutierrez et al. (2012) that unwanted pregnancy causes the mother to be stressed, experience mal adaptive and causes hyperemesis gravidarum in the first trimester. The peak of hyperemesis gravidarum occurs in the first trimester due to the Human Chorionic Gonadotropin (HCG) hormone produced by placenta during pregnancy. In addition, hyperemesis gravidarum can also be affected by the hormones estrogen and progesterone.

Based on the analysis of hyperemesis gravidarum, it is merely discussed in article 2, this article explains that in the second trimester, hyperemesis gravidarum may occur even though early pregnancy is more common but gestational age cannot be used as a benchmark. Hyperemesis gravidarum can occur in each trimester. This is consistent with research conducted by Romero-Gutierrez et al., (2012) which assert that hyperemesis gravidarum can still occur in the second trimester, it usually ends at 22 weeks of gestation to mother with primigravida and even multigravida.

In the third trimester, pregnancy usually can be accepted and in the third trimester, hyperemesis gravidarum is rare, however the gestational age cannot be used as a benchmark for hyperemesis gravidarum (James, 2012). This is in line with research conducted by Romero-Gutierrez (2012) which argue that hyperemesis gravidarum can occur in all trimesters but often occurs in the first trimester because the mother who do not have willingness her pregnancy.

Mild hyperemesis gravidarum is measured using ICD-9 codes. ICD-9-CM codes are used in medical billing and coding to describe illness, injury, symptoms, and conditions. The ICD-9 is one of thousands of ICD-9 codes used in health care. Mild hyperemesis gravidarum is a condition that does not cause metabolic disorders or weight loss and dehydration, it can still be treated at home and does not require special treatment (James, 2012).

Severe hyperemesis gravidarum is characterized by persistent vomiting and it causes the weight loss, dehydration, electrolyte imbalance and may result in preterm labor (James, 2012). Usually, in the first trimester severe hyperemesis gravidarum can lead to severe dehydration and ketonuria, and the mother has to treat in the hospital so that it requires more special care (Bottomley & Bourne, 2012).

Hyperemesis gravidarum at a mild degree only requires adequate rest and adjusting the diet. The degree of hyperemesis gravidarum at this severe level requires special treatment because the mother has already been dehydrated and if it is not handled properly, most of it causes preterm birth (James, 2012).

Most pregnancy complications require special inpatient care or antiemetic therapy (Temming et al., 2014). The aim is to reduce and prevent further complications such as electrolyte disturbances and malnutrition. First generation antihistamines are considered safe and first-line antiemetic treatments. Dopamine receptor antagonists, such as metoclopramide and phenothiazines, are considered second-line drug therapy. Ondansetron is used after other antiemetic drugs have failed. In some countries, a combination of doxylamine and vitamin B6 (pyridoxine) has been licensed to treat hyperemesis gravidarum (Havnen et al., 2019).

Therapy of pharmacological is generally started early in pregnancy by giving metoclopramide and meclizine. Duration of treatment is significant among women who report the efficacy are compared with women who report that there is no efficacy (metoclopramide meclizine and prochlorperazine) (Havnen et al., 2019).

Generally, antihistamines are sedative and cyclizine (second generation) antihistamines such as loratidine and cetirizine are not currently recommended in early pregnancy due to the insufficiency. Therapy with intravenous rehydration, antiemetics and correction of vitamin deficiency complications predominate has good safety to support the use of antihistamines, phenothiazines and metoclopramide in hyperemesis gravidarum. Phenothiazines prochlorperazine and chlorpromazine are dopamine antagonists, which are commonly used as antipsychotic drugs that can inhibit and block hyperemesis gravidarum (Bottomley & Bourne, 2012 & London et al., 2017).

CONCLUSION

Dealing with the research result, it indicated that hyperemesis gravidarum in premarital pregnancy did not yet find the certain factor or multi-factorial. It can be caused by unwanted pregnancy by the increase of Human Chorionic Gonadotropin (HCG) and can lead to preterm labor. Hyperemesis gravidarum will end at 22 weeks of gestation, however, the age of gestation cannot be used as benchmark because hyperemesis gravidarum in premarital pregnancy can also occur in third trimester however it was rarely found. The implementation of hyperemesis gravidarum on the pregnancy with the pharmacological treatment.

The research gap that is used as a reference in future research is the article that the author can find, there is no article that focuses on discussing premarital hyperemesis gravidarum. In addition, the articles that the authors found only discussed pharmacological treatment. Whereas premarital hyperemesis gravidarum is caused by multifactorial such as hormonal and psychological. So that there is a need for non-pharmacological treatment with a holistic care approach.

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