

A LITERATURE REVIEW OF PREGNANCY SICKNESS

Dr R Gadsby & Dr A M Barnie-Adshead

B. FACTORS IN A WOMAN'S PERSONAL HISTORY RELATED TO NVP OR HG

Contents

11. Marital status.
12. Wanted and unwanted pregnancy.
13. Ethnic origin.
14. Genetic factors.
15. Pre- pregnancy motion sickness.
16. Smoking cigarettes.
17. Drinking alcohol.
18. Age.
19. Parity.
20. Women's initial weight.
21. Previous nausea when taking an oral contraceptive.
22. Diabetes.

Chapter B

11. MARITAL STATUS IN RELATION TO NAUSEA AND VOMITING IN PREGNANCY (NVP)

Marital status refers to married or unmarried women only.

1. Marital status has no bearing on occurrence of hyperemesis gravidarum. (10)
Three separate references from 10 and Fairweather's own series.
2. In this group of hyperemesis patients, about 10% of the total were unmarried and this is about the same ratio as the unmarried group bears to the whole clinic (396 patients). (14)
3. Vomiting was not more common in women whose partners were not cohabiting.
4,517 women vomited, 3,502 did not vomit. (18)
4. The correlation between marriage and increased pregnancy nausea was $P=0.013$ which just failed to meet our criteria of $P=0.01$. (363 women). (53)
5. No statistical difference in marital status between the two groups, i.e. those with or without symptoms. (500 women). (27)
6. Marital status was similar for patients with hyperemesis gravidarum, 193 in the study and the

- general population 13,053. (61)
7. 95.4% of 87 patients with hyperemesis gravidarum were married. (69)
 8. The percentage of women married at LMP increasing from the group with no vomiting, to a maximum in the group using anti-emetic drugs. ($P < 0.001$). (16)

Summary

No association between marital status and NVP.
(10 with three references) (14) (27) (18) (53) ▲ (61) Total: Six References

More married women have HG (69) Total: One Reference

Married women more NVP (16) Total: One Reference

▲ P value recorded

12. WANTED AND UNWANTED PREGNANCIES IN REALTION TO NVP

1. Women who wanted the pregnancy were more likely to experience NVP than those who did not want the pregnancy. 78 women. (23)
2. Planned pregnancies had a higher incidence of nausea. 1,000 women. (40)
3. Nausea is more prevalent among those whose pregnancy is planned. 1,513 women. (45)
4. Women with wanted pregnancies were more likely than those with unwanted pregnancies to report pregnancy symptoms which include amenorrhoea, morning sickness and breast tenderness. 99 women. (52)
5. The percentage of women with wanted pregnancies is significantly lower among women who report not having NVP than among women who report this complaint. 4,954 women. (16)
6. Women having both nausea and vomiting during the first trimester reported significantly more unplanned unwanted pregnancies than women experiencing nausea only or no symptoms. 86 women. (15)
7. 80% of unwanted pregnancies (25 legal abortions) have nausea, 70% in total study population of 948 pregnancies had NVP. (6)
8. No difference in NVP among planned and unplanned pregnancies. 9,098 women, 4,517 vomited, 3,502 did not vomit. (18)

Summary

Wanted pregnancy more NVP. (23) (40) (45) (52) (16) Total: Five References

Unwanted pregnancy more NVP. (15) (6) Total: Two References

No difference in NVP between wanted and unwanted pregnancies. (18)
Total: One Reference

13. ETHNIC ORIGIN IN RELATION TO NVP

1. Colour and race do not significantly influence the incidence of hyperemesis gravidarum. Three references and the author's own experience. (10)
2. Afro-Caribbean patients (71%) had symptoms of NVP compared to 78.5% of

- Caucasians. 500 women. (27)
3. The percentage of women who were nauseated was not significantly associated with race, 7,767 women. (51)
 4. Racial status was similar for hyperemesis patients 193, and the general population. 13,053 women. (61)
 5. 47 Negro women had the same incidence of pregnancy sickness as Caucasians. (Barnie-Adshead, not published).
 6. Vomiting compared to non-vomiting was more common in 'Blacks' than 'Whites'. Highly significant. 8,019 women, 4,517 vomited, 3,502 did not vomit. $P < 0.001$. (18)
 7. In general it may be said that coloured women are apt to be afflicted more often in hyperemesis than white women of the same social class. 43 women with hyperemesis gravidarum. (7)
 8. Low incidence of NVP has been reported among Eskimos and Native African Tribes (Review Article). (24)
 9. The incidence of NVP is similar in both Eastern and Western populations. 1,453 women with singleton pregnancies. (63)
 10. White ethnicity was associated with increased vomiting. 825 women in study population. (78)
 11. Hospitalisations were higher for black than white women for vomiting. White women 1.1 hospitalisation/100 deliveries; black women 1.7 hospitalisation/100 deliveries. Information gained from approximately 274,000 records sampled from 978 hospitals between 1991-1992. (119)
 12. Of all the societies available in the Human Relation Area Files (1980) the 30 societies having information on morning sickness, eight (27%) reported no morning sickness. All the geographical areas are represented in the sample of 30 societies. The authors give the reason as a stable diet of maize in these eight societies, rather than genetic make-up of families. (110)
 13. Black and Asian Women have less NVP than Caucasians in the 1st trimester of pregnancy. (146).
 14. In Norway, Pakistani women have been 3.7 times more likely to report HG than ethnic Norwegians. A larger study showed that women born in Pakistan had more than twice higher risk of developing HG than women born in Norway. 798311 Norwegian, 3927 Pakistani women in study. (151)

Summary

No difference in incidence of NVP with ethnic origin. (10) (27) (51) (61) (B-A) (63)

Total: Six References

NVP more likely in Negros. (18) (7) (119)

Total: Three References

Low incidence of NVP in Eskimos and native African tribes.

One Reference

White ethnicity was associated with increased vomiting. (78)

One Reference

Stable diet of maize associated with no NVP. (110)

One Reference

14. GENETIC FACTORS IN RELATION TO NVP

1. NVP is more than twice more common in women who have monozygotic (one egg) twins than in women who have dizygotic (two egg) twins, which suggests there is a maternal genetic factor responsible for NVP. Information from 2,655 twin pairs who each had a pregnancy. This included 830 monozygotic female, 902 dizygotic female, 459 monozygotic male and 464 dizygotic male twin pairs. (47)

2. There was an association between the women in our clinic suffering nausea and vomiting and their mother having experienced pregnancy sickness ($P > 0.0001$). 343 out of 518 said their mother was sick. (40)
3. Women whose mothers had trouble with NVP were significantly more likely to have NVP themselves ($P > 0.001$). 363 women in study population. (53)
4. 202 of the women studied whose sisters who had themselves been pregnant. The results show that women whose sisters had been nauseous in pregnancy were statistically more likely to be so themselves ($P < 0.001$). The results concerning mothers were similar but narrowly failed to match statistical significance. (27)
5. Whether mothers of the study subjects had had nausea during pregnancy was not related to the study subjects' current experience with nausea and to their scores in the overall nausea index. 160 women in study. (80)
6. Different partners have no impact on NVP. Paternal contribution to placental function does not effect NVP. (142)
7. 28% (348/1224) of participants reported that their mother had experienced severe NVP or HG while pregnant with them. A strong family history of HG (two or more affected relatives) was reported by 109 /1224 (9%). 1224 women completed an online survey administered by the Hyperemesis Education and Research (HER) Foundation www.helper.org between 2003 – 2006. (152)
8. 504 participants reported on the pregnancy history of 721 sisters prevalence of HG (HG specifically mentioned) was 19% 137/721 affected sisters. (152)

Summary

Women whose mother suffered from NVP more likely to have NVP themselves.

(27) ▲ (40) ▲ (53) ▲

Total: Three References

Women whose sisters had NVP more likely to have NVP.

(27)

Total: One Reference

Maternal genetic factor responsible for NVP. (47)

Total: One Reference

Mothers' NVP not related to study subjects' experience of NVP. (80)

Total: One Reference

Paternal contribution does not effect NVP. (142)

Total: One Reference

▲ P value recorded.

15. PRE-PREGNANCY MOTION SICKNESS IN RELATION TO NVP

1. Women who reported occurrences of travel sickness ($n = 131$) within 3/12 before pregnancy were more likely to vomit. 1,000 women in study population. Whitehead. (40)
2. Women who generally suffered from travel sickness showed a difference in total hours of nausea which just failed to reach statistical significance at the 0.01 level. The women were asked if they had generally or ever suffered from travel sickness. Those who replied 'generally' had a median total hours of 58 hours of nausea compared to 33 hours for those who did not generally so suffer. (Mann-Whitney U Test $P = 0.032$). This was not true for those who had 'ever' suffered travel sickness compared to those who had 'never' so suffered. $P = 0.32$. 363 women in study population. Gadsby. (53)

3. There was no difference in emesis rate in patients who suffered from motion sickness in the non-pregnant state compared to those who do not. 90 women in study population. (19)
4. A history of nausea while travelling was unrelated to NVP or intensity of NVP. 160 women in study. (80)
5. However, motion sickness was aggravated during pregnancy in emetic women. (19)
6. What makes NVP worse?. Factors which interfere with the ability to use relief measures for NVP, travel (particularly to work). (109) 19 women in study kept diaries for seven days.

Summary

Women who suffered from pre-pregnancy travel sickness get more NVP.

(40) (53) ▲

Total: Two References

No difference in emesis rate, those who did or did not have

Pre-pregnancy travel sickness. (19) (80)

Total: Two References

Travel sickness worse during pregnancy. (19) (109)

Total: Two References

▲ P value recorded.

16. NAUSEA AND VOMITING OF PREGNANCY IN RELATION TO SMOKING CIGARETTES IN THE CURRENT PREGNANCY

1. Smokers had significantly less NVP than non-smokers, 52% versus 79%. 210 patients. (38a)
2. Nausea and vomiting of pregnancy (NVP) reported less frequently by women who were simultaneously both regular smokers and drinkers of alcohol, especially if these habits existed prior to pregnancy. (38b)
3. Non-smokers are statistically more likely to have nausea and vomiting than smokers. 151 of the women studied were smokers, 500 in study. (27)
4. There was a negative correlation between nausea and smoking. 855 singleton deliveries. (6)
5. Women who smoked cigarettes had a lower median number of total hours of nausea compared to women who did not smoke (18 hours versus 45 hours Mann-Whitney U Test $P=0.004$). 363 women in study. (53)
6. Smoking, and to a lesser extent alcohol intake, are related to a decreased risk of nausea and vomiting. 1,513 women in study. (45a)
7. Women who gave up smoking during pregnancy reported more nausea and vomiting than those who continued to smoke. (45b)
8. Smokers had lower scores than non-smokers for nausea and vomiting. The difference between the two groups approached significance. 100 women in the study. $P=0.013$. (48)
9. Vomiting more likely to occur in non-smokers. Among women who never smoked, 58% vomited, whereas 46% of current smokers vomited. 4,517 women vomited, 3,502 did not. $P<0.001$. (18)
10. Women with hyperemesis less likely to smoke in pregnancy. 78 women in study. (23)
11. Women with hyperemesis gravidarum were less likely to smoke during pregnancy (O.R. = 0.6). 419 women with hyperemesis gravidarum. 836 who did not vomit. (22)
12. Of 74 patients admitted with hyperemesis gravidarum, none were smokers. (28)
13. Smoking was not associated with either nausea or vomiting during pregnancy or with scores on the overall nausea index. 160 women in study, 19 smoked cigarettes. (80)
14. A risk factor for taking Meclozine by 16,536 women in the first 12 weeks of pregnancy was

not to smoke. Meclozine was mainly taken for NVP. (133)

Summary

Nausea and vomiting of pregnancy including hyperemesis gravidarum more common in non-smokers.

(6) (18) ▲ (22) ▲ (23) (27) (28) (38) ab (45) ab (48) (53) ▲ (133)

Total: Thirteen References

Smoking cigarettes not associated with NVP. (80)

Total: One Reference

▲ P or O.R. value recorded.

PLEASE NOTE

BERNSTEIN L, PIKE MC, LOBO RA, DEPUE RH, ROSS RK, HENDERSON BE. Cigarette smoking in pregnancy damages placental cells.

Brit J. Obstet Gynaecol 1989;96:92-96.

17. NVP IN RELATION TO DRINKING ALCOHOL

1. For non-smokers, alcohol use was unrelated to the occurrence of NVP. 210 women in study. (38)
 - 1a. Change in alcohol consumption in early pregnancy was unrelated to NVP for smokers and non-smokers alike. 210 women in study. (38)
 - 1b. For smokers, regular drinking before pregnancy was significantly related to the occurrence of NVP, with less than half of women who smoked and drank regularly in this period reporting NVP. Of the 210 subjects in the study population 72% experienced NVP. (38)
2. Women who were ethnically white, of white-collar or professional occupation and who consumed alcohol prior to conception were at decreased risk of NVP. 825 women in study. (31)
3. There was no correlation between emesis and alcohol use. Roughly three-quarters of the women in the study (102 study population) report no or little alcohol use in pregnancy. (19)
4. Alcohol consumption not associated with NVP or with scores on the overall nausea index. 160 women in study. (80)
5. Alcohol consumption was associated with lower risk of nausea and of nausea and vomiting. 1,513 women in study. (45)

Summary

Alcohol consumption not related to NVP. (38) (19) (80)

Total: Three References

Alcohol consumption decreased risk of NVP. (31) (45)

Total: Two References

18. AGE IN RELATION TO NVP

1. Vomiting compared to no vomiting was more common among younger women. Vomiting present in 69%, 54% and 38% of women aged less than 20, 20-34 and 35+ years respectively.

- 8,019 women, 4,517 vomited, 3,502 did not vomit. (18) ▲ $P < 0.001$.
2. Younger age was significantly associated with risk of hyperemesis gravidarum (HG). 419 women with HG, 836 women who did not vomit. (22)
 3. Younger age is significantly associated with an increased risk of hyperemesis gravidarum. 78 women in study. (23)
 4. The incidence of hyperemesis gravidarum is highest in the pregnant women between 21- 25 years if age. 15,099 single pregnancies, 86 with hyperemesis gravidarum. (26)
 5. The greatest percentage of 87 HG patients occurred between age 21-25 years, 31%. (69)
 6. A shift towards younger women in HG. 3,068 women with HG. (29)
 7. A negative correlation was noted between the Rhodes INV scores and age, i.e the higher the score, the lower the age. 100 women. (48)
 8. Younger women were significantly ($P=0.05$) more likely to be nauseated than older women. 7,767 pregnancies. (51)
 9. Hyperemesis gravidarum is more prevalent among younger women. Average age HG 26.6 years. Average age controls 27.7 years, $P < 0.05$. HG 164 women control 209 women. (64)
 10. The age of women who do not report morning sickness is significantly higher than in that of women with morning sickness. 6,376 pregnancies, 894 anti-emetics. (16)
 11. Younger women experience more severe episodes of morning sickness. 129 women in study. (77)
 12. Like others we found that the frequency of NP (nausea during pregnancy) decreased with age. 4,029 women in study. (67)
 13. 35 years and older was associated with decreased nausea ($P < 0.05$) and vomiting ($P < 0.001$) in the current pregnancy. 825 women in study. (31)
 14. NVP is not related to the patient's age. 855 singleton deliveries. (6)
 15. Age is not related to the symptoms of hyperemesis gravidarum, 43 cases of vomiting of pregnancy admitted to hospital. (7)
 16. Nausea is not as common in the women between 25-29 years as in the younger and the older age groups. 90 women. (19)
 17. Age was found to have no statistical significance as far as comparing those with NVP to those with no NVP was concerned, 500 women, 120 no NVP. (27) ▲
 18. The mean age of 46 patients with severe hyperemesis, 26 patients with mild hyperemesis and a control group were not different. 8,802 in control group. (28)
 19. There was no significant correlation between the incidence of nausea with age. 1,000 women. (40)
 20. No significant correlation between NVP and age. 363 women. (53)
 21. Age was similar for those women who developed hyperemesis gravidarum, 193, and the general population. 13,053 women. (61)
 22. Greater maternal age did not produce a marked increase in risk of vomiting in the present study. 1,867 women with single live births, 1,666 no vomiting, 201 severe vomiting. (65)
 23. Age did not differ among the four groups.
 - Group 1: Those with no symptoms, 361 women.
 - Group 2: Those with nausea but no vomiting. 165 women.
 - Group 3: Those with vomiting. 922 women.
 - Group 4: Those with hyperemesis gravidarum. 5 women.
 24. The woman's age was not predictive of nausea and vomiting during pregnancy. 160 women in study. (80)
 25. There was a clear cut maternal age effect with a decline in the rate of NVP with age. The major increase in risk occurred in women aged younger than 25 years.

3,675 women in the study.

2,906 reported NVP. (132)

26. Risk factors for taking Meclozine in early pregnancy. Young maternal age. This effect was possibly due to NVP. 16,536 women used Meclozine in the first 12 weeks of pregnancy. (133)

Summary

Women of younger age (up to 26 years) likely to have increased symptoms of NVP particularly hyperemesis gravidarum. 33,939 women in studies.

(18) (22) (23) (26) (69) (29) (48) (51) ▲ (64) ▲ (67) (77) (132) (133)

Total: Thirteen References

(Of this 13, the following refer to HG):- (22) (23) (26) (69) (29) (64)

Women of older age less likely to have NVP. (16) (31) Total: Two References

Women's age not related to NVP. 28,258 women in studies.

(6) (7) (19) (27) ▲ (28) (40) (53) (61) (63) (65) (80) Total: Eleven References

(Of this 11, the following refer to HG):- (7) (28) (61) (63)

▲ P value recorded.

19. **PARITY IN RELATION TO NVP**

1. Vomiting compared to no vomiting was more common among primigravida. 8,019 pregnancies, 4,517 vomited, 3,502 did not vomit. $P = 0.02$. (18)
2. Nulliparity was significantly associated with increased risk of hyperemesis. 419 women with hyperemesis, 836 women did not vomit. (22)
3. Hyperemesis gravidarum. 51 Nulliparous, 30 para 1, 1 para 2. (26)
4. There was a higher proportion of primigravida in the hyperemetic group. 72 hyperemetic women. (28)
5. A shift towards para 1 is seen in hyperemesis. 3,068 women with hyperemesis gravidarum. (29)
6. Nulliparous women reported more severe vomiting or retching symptoms. 100 women in the study population. (48)
7. Less women with hyperemesis gravidarum who were para 3 or greater. 193 women with hyperemesis gravidarum. (61)
8. Hyperemesis gravidarum more prevalent among women with fewer pregnancies. Average number pregnancies HG = 2.8. Average number of pregnancies control 3.60 < 0.01. Hyperemesis 164, controls 209 women. (64)
9. Primigravida did not produce a marked increase in risk of vomiting in this study. 1,867 women in study. 1,666 no vomiting, 201 severe vomiting. (65)
10. Multigravida suffered from emesis gravid arum at a higher rate than did primigravida. 90 women in study population. (19)
11. Women of higher parity were significantly ($P < 0.05$) more likely to be nauseated than primigravidas. 7,767 pregnancies in study population. (51)
12. 72.4% of HG 'cases' were multipara. 87 women with HG in study, records from 1921-1937 in Baltimore University Hospital. (69)
13. Women who experience morning sickness, 67%, had a greater number of previous pregnancies, 2.0 ± 1.7 , than those who had no morning sickness, 1.4 ± 1.4 .

- 180 women in study. (104)
14. The woman's parity was not related to NVP. 100 women in study. (4)
 15. Incidence of nausea did not appear to be higher in first pregnancy, when white population was considered ($P < 0.02$). (10)
 16. There was no correlation between the incidence of nausea and parity. 1,000 women in study population. (40)
 17. No relation between NVP and parity. 363 women in study population. (53)
 18. The parity did not differ among the four groups. Group (Gr) 1 No symptoms; Gr2 Nausea only; Gr3 Vomiting; Gr4 HG. 1,453 women with singleton pregnancies in study. (63)
 19. Parity not associated with NVP. 825 women in study. (31)
 20. The number of previous children of the study subjects was unrelated to the study subjects' current experience with nausea and to their scores on the overall nausea index. (McGill Nausea Questionnaire). 160 women in study. (80)
 21. Twenty patients were admitted with hyperemesis gravidarum to Tygerberg Hospital over a 1 year period. Sixty percent of the group were primigravid. (125)
 22. Women expecting their first baby (parity 0) had a decreased risk of NVP. 3,675 women in study. 2,906 reported NVP. (132)
 23. Women who used Meclozine in the first 12 weeks of pregnancy, 16,536 were less often of parity 1 (their first child). Meclozine was mainly used for NVP. (133)

Summary

Primigravida (or in more recent references nulliparity) relative to increased NVP.

(18) (22) (26) (28) (29) (48) (125). All seven references refer to HG.

12,596 women in six studies.

Total: Seven References

The greater the gravida the less likely to have HG.

(61) (64) ▲

Both references refer to HG.

566 women in six studies.

Total: Two References

Multigravida more NVP than primigravida.

(19) (51) ▲ (69) (104) (133)

One of these references refers to HG (69).

24,660 women in five studies.

Total: Five References

No relationship between nausea and parity.

(4) (10) ▲ (40) (53) (63) (31) (80)

Of these seven, only (63) refers to HG.

11,848 women in seven studies.

Total: Seven References

Primigravida no marked increase in vomiting. (65)

Total: One Reference

Primigravida (parity 0) decreased risk of NVP. (132)

Total: One Reference

▲ P value recorded.

20. NVP IN RELATION TO WOMEN'S INITIAL WEIGHT

1. Vomiting is more likely to occur in patients weighing 77.1kg (170lbs = 12st 1lb) or more. 8,019 pregnancies, 4,517 reported vomiting, 3,502 did not vomit. (18) ▲ P=0.003.
2. Maternal risk factor is high body weight in hyperemesis. 419 women with hyperemesis, 836 did not vomit. (22)
3. Pre-pregnant weight of the group experiencing no nausea or vomiting was lower than that of the groups with nausea, and nausea and vomiting. 414 women, 44 women had no NVP. (21)
4. No relation between NVP and woman's weight. 363 women in study. (53)
5. Weight was found to have no statistical significance in comparing those with symptoms to those with no symptoms. 500 women in study, 124 had no symptoms. (27) ▲
6. Body mass index was not significantly associated with nausea or vomiting or retching subscales. 100 women in study population. (48)
7. The woman's weight was not predictive of nausea and vomiting in pregnancy. 160 women in study. (80)

Summary

Heavier women more likely to have NVP. (18) ▲ (21) (22)

9,688 women in three studies.

Total: Three References

No relation between body weight and NVP. (27) ▲ (48) (53) (80)

1,123 women in four studies.

Total: Four References

21. NVP IN RELATION TO PREVIOUS NAUSEA WHEN TAKING THE CONTRACEPTIVE PILL

1. Of those who had taken the contraceptive pill, the ones in whom it caused nausea were more likely to have nausea and vomiting of pregnancy. P<0.05. Study population 500 women. (27)
2. Strong correlation between those who had nausea with the pill and those who had NVP. The patients who did not tolerate oral contraceptives suffered NVP at a considerably higher frequency, P<0.001, and also the longer the duration, P<0.01, was striking. 855 singleton pregnancies. (6)
3. In the present study 33% (n = 19) did not tolerate the drugs (oral contraception) for various reasons (nausea, bleeding disorders, weight increases or tendency to depression) and these women showed a remarkably higher frequency of emesis gravidarum. 68 pregnant women in study population. (32)
4. Among the 45 women who reported sickness whilst they had been taking oral contraceptives there was a higher incidence of pregnancy vomiting (P<0.05). 1000 women in study population. (40)
5. Increased incidence of nausea when taking an oral contraceptive failed to reach statistical significance at the P=0.01 level. Differences in the median total hours of nausea found for the group who complained of suffering nausea when taking an oral contraceptive, compared to those who had no nausea with this treatment, was 58.8 hours compared with 35.5 hours (Mann-Whitney U Test, P=0.12). 363 women in study population. (53)
6. A history of nausea while using oral contraceptives was unrelated to NVP or to intensity of nausea scores. 160 women in study. (80)

Summary

Women who reported sickness when taking oral contraceptives more likely to have NVP. (27) ▲ (6)
▲ (32) (40) ▲ (53) ▲ Total: Five References

A history of nausea when taking an oral contraceptive was unrelated to NVP. (80)
Total: One Reference

▲ P value recorded

22. PRE-PREGNANCY DIABETES IN RELATION TO NAUSEA AND VOMITING IN PREGNANCY

1. No correlation between nausea of pregnancy and diabetes. 855 singleton deliveries, no record number of diabetics in the study. (6)
2. Vomiting was not more common among diabetics. 4,517 women vomited, 3,502 did not vomit. Number of diabetics not stated. (18)
3. The incidence of impaired glucose tolerance or gestational diabetes mellitus was not different between vomiting and non-vomiting patients. 1,453 patients with singleton deliveries, impaired glucose tolerance 42, gestational diabetes mellitus 14. (63)
4. There was no statistical difference in women with gestational diabetes between those with hyperemesis gravidarum and controls. Hyperemesis 7.9% 13/164; controls 17/209 8.1%. (64)
5. A maternal pre-pregnancy existing diagnosis of diabetes was less frequent than in the 540,660 births in the study when women had used meclizine. 16,536 women 3.0% used meclizine mainly for NVP. (133)

Summary

No difference in nausea and vomiting of pregnancy in pre-pregnancy diabetic women compared to normal controls. (60) (18) (63) (64) Total: Four References

NVP less common in diabetic women. (133) Total: One Reference