

Summary of studies for which NVP rates were collated and related to dietary data

Country	Study	Year of data collection	NVP rate (%)	Sample size (n)
Australia	Abraham et al (1994)	1994	62.0	100
Australia	Biggs (1975)	1975	63.0	116
Australia	Kricker et al (1986)	1970-1981	71.0	429
Canada	Drake et al (1988)	1988	65.0	20
Canada	McBride et al (1991)	1982-1984	67.0	732
Ecuador	Weigel et al (2000)	1996	67.0	1000
Greece	Iatrakis et al (1988)	1988	63.0	102
Hungary	Czeizel & Puho (2004)	1980-1996	53.0	38151
India	Anath & Rao (1993)	1977	35.0	2500
Israel	Medalie (1957)*	1950-1952	71.0	100
Israel	Shirin et al (2004)	2000	72.0	185
Italy	Chatenoud et al (1998)	1993-1995	60.0	1097
Japan	Mori et al (1988)	1988	84.0	132
Kenya	Pike (2000)	2000	44.0	54
Korea	Lee et al (2004)	2000-2002	90.0	143
Netherlands	Paarlberg et al (1996)	1996	48.0	396
Nepal	Christian et al (1998)	1997	48.0	120
Norway	Corey et al (1992)*	1915-1960	64.1	22241
Saudi Arabia	al-Kanhal & Bani (1995)	1991	28.0	321
South Africa	Walker et al (1985)	1985	60.0	1771
Sri Lanka	Wijewardene et al (1994)	1989	47.0	1000
Sweden	Järnfelt-Samsioe et al (1983)	1980-1981	70.0	948
Sweden	Järnfelt-Samsioe et al (1985)	1985	62.0	102
Sweden	Järnfelt-Samsioe (1987)	1987	60.0	43
Sweden	Kullander & Källén (1976)	1963-1965	72.0	5377
Sweden	Uddenberg et al (1971)	1970	69.0	152
Tanzania	Walraven et al (1997)	1989-1990	15.0	2142
UK	Baylis et al (1983)	1983	92.0	36
UK	Davies et al (1986)	1978	90.0	212
UK	Diggy & Tomkinson (1962)	1962	88.0	100
UK	Evans et al (1985)	1985	83.0	342
UK	Fairburn & Welch (1990)	1989	70.0	50
UK	Fitzgerald (1984)	1978-1979	73.3	86
UK	MacIntyre (1983)	1983	94.0	50
UK	Masson et al 1992	1992	59.0	116
UK	Meyer et al (1994)	1982-1984	79.0	1513
UK	Robinson et al (1996)	1991-1992	86.0	569
UK	Stewart et al (1988)	1988	69.0	242
UK	Vellacott et al (1988)	1988	67.0	500
UK	Wolkind & Zajicek (1978)	1977	53.1	96
USA	Brandes (1967)*	1960-1963	72.9	7111
USA	Brown et al. (1997)	1989-1994	79.4	549
USA	Crystal et al (1999)	1994-1994	85.3	129
USA	Dilorio (1985)	1985	56.0	78
USA	Fawcett & York (1986)	1986	68.0	70
USA	Jenkins & Shelton (1989)	1989	67.0	55
USA	Klebanoff et al (1985)*	1959-1966	56.0	9098
USA	Little & Hook (1979)	1979	72.0	210
USA	Milkovich and van den Berg (1967)*	1959-1966	58.0	11481
USA	Pettiti (1986)	1981-1982	71.0	1933
USA	Rodin & Radke-Sharpe (1991)	1991	79.0	80
USA	Schuster et al (1985)	1985	67.0	180
USA	Speert & Guttmacher (1954)*	1954	70.0	285
USA	Tierson et al (1986)	1976-1977	89.4	414
USA	Weigel & Weigel (1989a)	1983-1984	69.0	903
USA	Yerushalmey & Milkovich (1965)*	1960-1964	71.0	3853

(*These seven studies are dropped from selected analyses because data were collected before 1961 (when FAOSTAT data collection began)).

References

- Abraham, S., King, W. & Llewellyn-Jones, D. 1994 Attitudes to body weight, weight gain and eating behaviour in pregnancy. *Journal of Psychosomatic Obstetrics and Gynecology*. **15**, 189-195.
- al-Kanhal, M. A. & Bani, I. A. 1995 Food habits during pregnancy among Saudi women. *International Journal of Vitamin and Nutrition Research*. **65**, 206-10.
- Anath, C. V. & Rao, P. S. S. 1993 Epidemiology of nausea and vomiting of pregnancy and its relation to fetal outcome in a rural area. *Journal of Tropical Paediatrics*. **39**, 313.
- Baylis, J. M., Leeds, A. R. & Challacombe, D. N. 1983 Persistent nausea and food aversions in pregnancy. *Clinical Allergy* **13**, 263-269.
- Biggs, J. S. G. 1975 Vomiting in pregnancy: Causes and management. *Drugs* **9**, 299-306.
- Brandes, J. M. 1967 First trimester nausea and vomiting as related to outcome of pregnancy. *Obstetrics and Gynecology*. **30**, 427-431.
- Brown, J. E., Kahn, E. S. & Hartman, T. J. 1997 Profet, profits and proof: Do nausea and vomiting of early pregnancy protect women from "harmful" vegetables? *American Journal of Obstetrics and Gynecology*. **176**, 179-181.
- Chatenoud, L., Parazzini, F., Di Cintio, E., Zanconato, G., Benzi, G., Bortolus, R. & La Vecchia, C. 1998 Paternal and maternal smoking habits before conception and during the first trimester: Relation to spontaneous abortion. *Annual Epidemiology*. **8**, 520-526.
- Christian, P., West, K. P., Khatry, S. K., Katz, J., Shrestha, S. R., Pradham, E. K., LeClerq, S. C. & Pokhrel, R. K. 1998 Night blindness of pregnancy in rural Nepal – nutritional and health risks. *International Journal of Epidemiology*. **27**, 231-237.
- Corey, L. A., Berg, K., Solaas, M. H. & Nance, W. E. 1992 The epidemiology of pregnancy complications and outcome in a Norwegian twin population. *Obstetrics and Gynecology*. **60**, 989-994.
- Crystal, S. R., Bowen, D. J. & Bernstein, I. L. 1999 Morning sickness and salt intake, food cravings and food aversions. *Physiology and Behaviour*. **67**, 181-187.
- Czeizel, A. E. & Puho, E. 2004 Association between severe nausea and vomiting in pregnancy and lower rate of preterm births. *Paediatric and Perinatal Epidemiology*. **18**, 253-259.
- Davies, T. W., Williams, D. R. R. & Whitaker, R. H. 1986 Risk factors in undescended testis. *International Journal of Epidemiology*. **15**, 197-201.
- Diggory, P. L. C. & Tomkinson, J. S. 1962 Nausea and vomiting in pregnancy: A trial of meclozine dihydrochloride with and without pyridoxine. *The Lancet*. **25**, 370-372.
- Dilorio, C. 1985 First trimester nausea in pregnant teenagers: Incidence, characteristics and intervention. *Nursing Research*. **34**, 372-374.
- Drake, M. L., Verhulst, D. & Fawcett, J. 1988 Physical and psychological symptoms experienced by Canadian women and their husbands during pregnancy and the postpartum. *Journal of Advanced Nursing*. **13**, 436-440.
- Evans, A. J., Li, T. C., Selby, C. & Jeffcoate, W. J. 1986 Morning sickness and thyroid function. *British Journal of Obstetrics and Gynaecology*. **93**, 520-522.
- Fairburn, C. G. & Welch, S. L. 1990 The impact of pregnancy on eating habits and attitudes to shape and weight. *International Journal of Eating Disorders*. **9**, 153-160.

- Fawcett, J. & York, R. 1985 Spouses' physical and psychological symptoms during pregnancy and the postpartum. *Nursing Research*. **35**, 145-148.
- FitzGerald, C. M. 1984 Nausea and vomiting in pregnancy. *The British Journal of Medical Psychology*. **57**, 159-165.
- Iatrakis, G. M., Sakellaropoulos, G. G., Kourkoubas, A. H. & Kabounia, S. E. 1988 Vomiting and nausea in the first 12 weeks of pregnancy. *Psychotherapy & Psychosomatics*. **49**, 22-24.
- Järnfelt-Samsioe, A. 1987 Nausea and vomiting in pregnancy: A review. *Obstetrical and Gynecological Survey*. **41**, 422-426.
- Järnfelt-Samsoie, A., Eriksson, B., Waldenstrom, J. & Samsoie, G. 1985 Some new aspects on emesis gravidarum. Relations to clinical data, serum electrolytes, total protein and creatinine. *Gynecological and Obstetric Investigation*. **19**, 174-186.
- Järnfelt-Samsoie, A., Samsoie, G. & Velinder, G.-M. 1983 Nausea and vomiting in pregnancy – A contribution to its epidemiology. *Gynecological and Obstetric Investigation*. **16**, 221-229.
- Jenkins, M. L. & Shelton, B. J. 1989 The effectiveness of self-care actions in reducing "morning sickness". In *Key Aspects of Comfort: Management of pain, fatigue, & nausea*. (ed. S. G. Funk), pp. 267-272. New York: Springer.
- Klebanoff, M. A., Koslowe, P. A., Kaslow, R. & Rhoads, G. G. 1985 Epidemiology of vomiting in early pregnancy. *Obstetrics & Gynecology*. **66**, 612-616.
- Klebanoff, M. A., Levine, R. J., DerSimonian, R., Clemens, J. & Wilkins, D. G. 1999 Maternal serum paraxanthine, a caffeine metabolite, and the risk of spontaneous abortion. *New England Journal of Medicine* **341**, 1639-1644.
- Kricker, A., Elliot, J., Forrest, J. & McCredie, J. 1986 Congenital limb deficiency: Maternal factors in pregnancy. *Australia and New Zealand Journal of Obstetrics and Gynecology* **26**, 272-275.
- Kullander, S. & Kallen, B. 1976 A prospective study of drugs and pregnancy. *Acta Obstetrica et Gynecologia Scandinavica*. **55**, 105-111.
- Lee, J. I., Lee, J. A. & Lim, H. S. 2003 Morning sickness reduces dietary diversity, nutrient intakes, and infant outcome of pregnant women. *Nutrition Research* **24**, 531-540.
- Little, R. E. & Hook, E. B. 1979 Maternal alcohol and tobacco consumption and their association with nausea and vomiting during pregnancy. *Acta Obstetrica et Gynecologia Scandinavica*. **58**, 15-17.
- MacIntyre, S. 1983 The management of food in pregnancy. In *The Sociology of Food and Eating* (ed. Murcott & Aldershot), pp. 57-72. Aldershot, UK: Gower Publishing.
- Masson, G. M., Anthony, F. & Chau, E. 1985 Serum chorionic gonadotrophin (hCG), schwangerschaftprotein 1 (SP1), progesterone and estradiol levels in patients with nausea and vomiting in early pregnancy. *British Journal of Obstetrics and Gynaecology*. **92**, 211-215.
- McBride, M. L., Van Den Steen, N., Lamb, C. W. & Gallagher, R. P. 1991 Maternal and gestational factors in cryptorchidism. *International Journal of Epidemiology*. **20**, 964-970.
- Medalie, J. H. 1954 Relationship between nausea and or vomiting in early pregnancy and abortion. *The Lancet* **2**, 117-119.
- Meyer, L. C., Peacock, J. L., Bland, J. M. & Anderson, H. R. 1994 Symptoms and health problems in pregnancy: their association with social factors, smoking,

- alcohol, caffeine and attitude to pregnancy. *Paediatric and Perinatal Epidemiology*. **8**, 145-155.
- Milkovich, L. & van den Berg, B. J. 1975 An evaluation of the teratogenicity of certain antinauseant drugs. *American Journal of Obstetrics and Gynecology*. **125**, 244-248.
- Mori, M., Amino, N., Tamaki, H., Miyai, K. & Tanizaw, O. 1988 Morning sickness and thyroid function in normal pregnancy. *Obstetrics & Gynecology*. **72**, 355-359.
- Paarlberg, K. M., Vingerhoets, A. J. J. M., Passchier, J., Heinen, A. G. J. J., Dekker, G. A. & van Geijn, H. P. 1996 Psychosocial factors as predictors of maternal well-being and pregnancy-related complaints. *Journal of Psychosomatic Obstetrics and Gynecology*. **17**, 93-102.
- Pettiti, D. B. 1986 Nausea and pregnancy outcome. *Birth* **13**, 223-226.
- Pike, I. L. 2000 The nutritional consequences of pregnancy sickness: A critique of a hypothesis. *Human Nature* **11**, 207-232.
- Robinson, S., Godfrey, K., Osmond, C., Cox, V. & Barker, D. 1996 Evaluation of a food frequency questionnaire used to assess nutrient intakes in pregnant women. *European Journal of Clinical Nutrition* **50**, 302-308.
- Rodin, J. & Radke-Sharpe, N. 1991 Changes in appetitive variables as a function of pregnancy. In *Chemical Senses, Appetite and Nutrition* (ed. M. I. Friedman), pp. 325-340. New York: Marcel Dekker.
- Schuster, K., Bailey, L. B., Dimpero, D. & Mahan, C. S. 1985 Morning sickness and vitamin B6 status of pregnant women. *Human Nutrition: Clinical Nutrition* **39**, 75-79.
- Shirin, H., Sadan, O., Shevah, O., Bruck, R., Boaz, M., Moss, S. F., Everon, S., Glezerman, M. & Avni, Y. 2004 Positive serology for *Helicobacter pylori* and vomiting in the pregnancy. *Archives of Gynecology Obstetrics* **270**, 10-14.
- Speert, H. & Guttmacher, A. F. 1954 Frequency and significance of bleeding in early pregnancy. *Journal of American Medical Association*. **155**, 712-715.
- Stewart, J., Wheeler, E. & Schofield, C. 1987 Regional differences in British attitudes to diet in pregnancy: Priorities and pragmatism. *Ecology of Food and Nutrition* **20**, 211-229.
- Tierson, F. D., Olsen, C. L. & Hook, E. B. 1986 Nausea and vomiting of pregnancy and association with pregnancy outcome. *American Journal of Obstetrics & Gynecology*. **155**, 1017-1022.
- Uddenburg, N., Nilsson, A. & Almgren, P. E. 1971 Nausea in pregnancy: Psychological and psychosomatic aspects. *Journal of Psychosomatic Research*. **15**, 269-276.
- Vellacott, I. D., Cooke, E. J. A. & James, C. E. 1988 Nausea and vomiting in early pregnancy. *International Journal of Gynecology & Obstetrics*. **26**, 57-62.
- Walker, A. R. P., Walker, B. F., Jones, J., Verardi, M. & Walker, C. 1985 Nausea and vomiting and dietary cravings and aversions during pregnancy in South African women. *British Journal of Obstetrics and Gynecology*. **92**, 484-489.
- Walraven, G. E. L., Mkanje, R. J. B., van Asten, H. A. G. H., van Roosmalen, J., van Dongen, P. W. J. & Dolman, W. M. V. 1997 The aetiology of low birthweight in a rural area of Tanzania. *Tropical Medicine & International Health*. **2**, 558-567.
- Weigel, M. M., Caiza, M. E., Lascano, Y., Barreno, G. & Mosquera, L. 2000 Early pregnancy nausea and vomiting in a high-altitude Andean population. *International Journal of Gynecology and Obstetrics*. **69**, 9-21.

- Weigel, R. M. & Weigel, M. M. 1989 Nausea and vomiting of early pregnancy and pregnancy outcome. An epidemiological study. *British Journal of Obstetrics and Gynaecology*. **96**, 1304-11.
- Wijewardene, K., Fonseka, P. & Goonaratne, C. 1994 Dietary cravings and aversions during pregnancy. *Indian Journal of Public Health*. **38**, 95-98.
- Wolkind, S. & Zajicek, E. 1978 Psycho-social correlates of nausea and vomiting in pregnancy. *Journal of Psychosomatic Research*. **22**, 1-5.
- Yerushalmy, J. & Milkovich, L. 1965 Evaluation of the teratogenic effect of meclizine in man. *American Journal of Obstetrics and Gynecology*. **93**, 553-562.